water for life and livelihoods

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

December 2008
The Environment Agency works with other regulators and co-deliverers to protect the water environment in the Thames River Basin District and improve it for the benefit of people and wildlife. We have produced this draft plan together with a liaison panel of representatives from key sectors. Achieving the outcomes of this plan will involve an even wider range of organisations and individuals – everyone has a part to play. In preparation of the draft plan the liaison panel developed its shared vision.

The Liaison Panel’s vision

The water environment has been transformed beyond all recognition over the last few decades. Rivers once devoid of life now teem with fish. Bathing waters are the cleanest on record. This has been a catalyst for the rebirth of many of our towns and cities. The benefits to people have been immense.

But huge challenges remain. Parts of urban rivers are still in poor condition and the way the land is managed has given rise to complex pollution issues, such as elevated levels of nutrients. The demand for water is causing flow problems. Wildlife continue to suffer. Rivers, lakes and coastal waters are also coming under increasing pressure from a changing climate and a growing population.

The Water Framework Directive is an ambitious, wide-ranging piece of legislation that challenges everyone to manage the whole water environment and all of its subtle, interrelated problems. It challenges us all to improve the quality of every aspect of the water environment. It ‘raises the bar’.

To take advantage of this opportunity we all need to work more effectively together and manage the water environment in an integrated way. Sustainable, cost-effective and innovative solutions need to be found. Everyone who can, needs to play their part. A longer term view also needs to be taken to achieve everything by 2015.

This draft plan sets out the actions that are needed to meet the objectives for the river basin district. By 2015 action will need to be taken to deliver the following benefits:

- Cleaner sources for drinking water, bathing, communities and economic uses
- Wiser sustainable use of water
- Better habitats for wildlife that live in and around water
- Protect and enhance our native wildlife
- Protect the natural landscape, promoting the value of recreation

This will be achieved by:

- Reducing impacts from rural land management activities
- Achieving built environments with lower environmental impacts
- Promoting the sustainable use of water
- Restoring wildlife habitats
- Addressing point source pollution.

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Your views count – how to respond

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

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

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

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

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

**Q**

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

**Q**

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

**Q**

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

**Q**

Any other comments you may have on this plan?

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

**This sign indicates where you can find further information.**

**The annexes to the plan can be downloaded from our website at [www.environment-agency.gov.uk/wfd](http://www.environment-agency.gov.uk/wfd)**

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

1.1 Background

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

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

1.1.3 This Draft River Basin Management Plan has been prepared with advice from the liaison panel. Whilst acknowledging that further work will continue during the consultation period (for example, the potential impact on water bills and the willingness to pay for benefits), its members support its publication for consultation, but do not necessarily endorse its content. It sets out detailed proposals for the next 6 years and looks beyond. We want to know what you think, so we can improve the proposals, and compile an effective first River Basin Management Plan for the river basin district. This plan will be published in December 2009. It will review the current condition of our water environment, set out what improvements are necessary, and the actions that we all need to take.

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

A record of consultation and participation that has helped to develop this plan and the river basin management planning process, and a description of the Thames River Basin District Liaison Panel is given in annex L

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

1.2 River basin management

1.2.1 The water environment is a precious and vital resource that must be protected. The Draft River Basin Management Plan focuses on achieving the protection, improvement and sustainable use of the water environment - surface freshwaters (including lakes, streams and rivers), groundwater, ecosystems such as some wetlands that depend on groundwater, coastal waters out to one nautical mile, and all estuarine waters. The Environment Agency have prepared the Draft River Basin Management Plan under the Water Framework Directive, which requires all countries throughout the European Union to manage the water environment to consistently high standards.
1.2.2 All countries in the European Union have to:
- prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- aim to achieve at least good status for all waters. Where this is not possible, good status should be achieved by 2021 or 2027;¹
- promote sustainable use of water as a natural resource;
- conserve habitats and species that depend directly on water;
- progressively reduce or phase out releases 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.

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

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


Further information on river basin management planning can be found on our website www.environment-agency.gov.uk/wfd.

Government Ministerial guidance on river basin management planning and management can be found at www.defra.gov.uk/environment/water/wfd/management

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

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

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

¹ Annex B explains the objective setting process. Annex E contains the appraisal of measures including justifications for extended deadlines
1.2.8 Protected areas have been established under European legislation and include in the Thames river basin district the Lee Valley SPA/Ramsar site and the River Lambourn SAC. For many years action has been taken progressively to make sure the objectives set for them are achieved. Achieving the protected area objectives is also a key part of the Water Framework Directive and one of the priorities for the first cycle of river basin management. Many of the actions in this plan are directed towards these objectives and most also help in aiming to achieve the good status or good potential objective.
2.0 About the Thames river basin district

2.1 The Thames River Basin District covers an area of 16,133 square kilometres from the river’s source in Gloucestershire through London to the North Sea. Dominated by Greater London, the eastern and northern parts of the River Basin District are heavily urbanised, although constrained by the greenbelt and therefore considerable areas of rural land remain (Figure 1). The western parts of the catchment are predominantly rural with towns such as Oxford and Swindon concentrated along the M40 and M4 motorway corridors.

2.2 The district is one of the driest in the UK because the rainfall levels are below the national average. The River Thames is an important water source, providing two-thirds of London’s drinking water. Groundwater is very important, providing around 40 per cent of public water supplies with chalk forming the predominant aquifer. Current assessments show that groundwater is fully utilised over much of the Thames River Basin District. This means that the quantity and quality of groundwater is extremely important in maintaining these resources.

Figure 1 Map of the Thames river basin district

2.3 The population is forecast to grow by 0.7 per cent between 2002 and 2015, more than the average for all River Basin Districts. The District includes areas that have been designated as growth areas for new housing and jobs as part of the government’s Sustainable Communities Plan. The 2012 Olympics will bring additional changes to the east of London.
2.4 Business services makes up almost one fifth of the economy in the Thames River Basin District. The transport sector is also important. The ports of London and the Medway provide deepwater facilities for international marine traffic. Agriculture makes up only a very small part of the economy, with animal husbandry and the growing of vegetables being the largest agricultural activities.
3.0 The environmental outcomes for the Thames river basin district

3.1 Background

3.1.1 The environmental outcomes expected to be achieved as a result of the planned actions are grouped under the headings below, and discussed in more detail in the following sections.

- Improving rural land management
- Reducing the impact of transport and the built environment
- Managing future development
- Securing sustainable amounts of water
- Improving wildlife habitats
- Addressing point source pollution

3.1.2 Overall, the actions outlined in this plan are expected to enable the achievement of significant outcomes for the environment across the river basin district by 2015. The actions will:

- improve fish populations in just over 200 km of rivers
- improve invertebrate communities in over 350 km of rivers
- improve dissolved oxygen levels in 58 km of rivers
- reduce levels of phosphorus in over 1000 km of rivers
- reduce levels of ammonia in over 350 km of rivers
- reduce levels of pesticides in about 270 km of rivers.

3.1.3 As a result of these improvements and work to ensure no deterioration in status, by 2015 it is expected that the implementation of the planned actions will allow the achievement of good ecological status or potential in 10.9 percent of assessed river length. This represents over 536 kilometres of river. Good ecological status or potential in also expected in 4.4 square kilometres of lakes. Just over five percent of surface water bodies have yet to be assessed. Seventeen groundwater bodies will be at good quantitative status in 2015 which represents over 3,050 square kilometres of aquifer outcrop.

3.1.4 The priorities for action are ensuring no deterioration in the status of water bodies, achieving protected area objectives and dealing with problems in urban areas.

3.1.5 Sectors already invest considerable resources to maintain the standard and performance of existing assets and this investment will help to ensure no deterioration in the status of waters. The challenge of achieving no deterioration will increase given the amount of new development expected in parts of the river basin district in the coming years.

3.1.6 Major new investments are planned, including improvements at a number of sewage treatment works and sewer outfalls to help reduce organic pollution and address excess phosphorus. Much of this investment will be made through water companies’ Asset Management Plans for reasons other than the Water Framework Directive (for example compliance with other European Directives). The improvements will all help towards the achievement of good status.
3.1.7 Action will be taken, often in partnership, across many of the catchments to reduce the amounts of nutrients, sediments and pesticides entering the waters from rural and urban areas.

3.1.8 Pollution in groundwater will be prevented and limited. Action will be taken to improve water efficiency and reduce levels of abstraction from rivers and groundwater thereby providing more water for wildlife and wetlands whilst ensuring sustainable supplies of water for use.

3.1.9 Work will be undertaken to repair some of the historical physical changes to rivers, lakes and estuaries that have had a negative impact on wildlife, for example by improving access for migratory fish.

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

- all elements of a water body’s ecology and chemistry have to be at good status before it reaches good status overall;
- more research is needed in many areas, particularly hydromorphology, before it can be determined how, or how best, to reach good status;
- there are situations where the cause of the failure or how technically to improve things is not fully understood; in these situations investigations will be undertaken to ensure the effectiveness of future actions and full achievement of objectives in successive cycles;
- there are situations where the water environment takes a long time to benefit from improvements (for example groundwater), or the most cost-effective way to make improvements is to spread them over a longer timescale.

3.2 Improving rural land management

3.2.1 Changes in the way rural land is managed will encourage the restoration of natural habitats, species and natural sediment transport processes. This will ensure that areas of drinking water and sources of groundwater are protected. Prevention and reduction in nutrient enrichment will be required to reduce excessive growth of algae and other plants which can reduce overall biodiversity. Similarly, the prevention and reduction of the loss of toxic pollutants in runoff, which also reduces diversity in plants and animals, will be needed. Reducing sediment loss will also protect and restore fish spawning grounds, encouraging healthy sustainable fish stocks.

3.2.2 The main causes of the problem have been associated with activities such as:
- using too much fertiliser or pesticides, or using them in areas sensitive to groundwater pollution
- inappropriate timing of fertiliser application
- managing water on farms and manure from livestock
- spillage of fertiliser, pesticide and liquid wastes with high organic content
- discharging water from industrial waste that contains organic matter
- livestock access to watercourses
- erosion control.

3.2.3 The main responsibility for implementing actions that will improve rural land management falls on the agricultural sector. In many cases this will require significant
changes and some times restrictions to farming practices. The types of actions included in the programme of measures involve for example, extending Nitrate Vulnerable Zone designation and action programmes, local agricultural partnerships offering land management, creation of Water Protection zones and targeted farmer education.

3.2.4 Problems in groundwater are caused by using fertilisers and pesticides in areas sensitive to pollution, particularly where there is only a thin or highly permeable soil layer overlying the aquifer.

3.2.5 Additional measures for improving groundwater with respect to nitrates and pesticides are education through the Groundwater Protection: Policy and Practice document; Pesticides Statutory Code of Practice and General Binding Rules with associated registration. Site specific farm visits and investigation are included where it is believed additional local measures are appropriate.

3.2.6 What this means for the Thames river basin district

The improvements envisaged as a result of the actions planned include:

- continued improvement to 712 km of watercourses as a result of the Catchment Sensitive Farming (CSF) programme in the Kennet, Roding and Beult catchments. Improvement in the Loddon catchment through strategic partnership work. Increased understanding by farmers resulting from targeted high impact farm visits and pollution prevention notices.
- Improved plant diversity and invertebrate populations in chalk rivers.
- Less pollution entering groundwater, and, in the long term, drinking water and the wider environment benefiting from lower concentrations of nitrate, pesticide and other pollutants.
- Improvements in the reduction of banned pesticide concentrations in groundwater have been noticed over the last 15 years. These are expected to continue for similar period of time. It is expected to take longer to see the benefits of nitrate controls since there is a large amount of nitrate already in aquifers which has not yet reached the groundwater used for supply.

3.3 Reducing the impact of transport and the built environment

3.3.1 A reduction in runoff from urban development and roads will be required. The way in which urban land is used should protect and restore habitats, species and natural processes. It should also protect drinking water sources and bathing areas. There will need to be a reduction and, where possible, prevention of pollutants, which reduce diversity in plants and animals and damage sustainable populations.

3.3.2 The main causes of the problem have been linked to:
- flood defences – for example with artificial river embankments
- population and housing growth, leading to pressures on water quality and water resources
- leaks from sewerage systems and private sewage treatment works
- discharge of industrial waste containing pollutants or organic matter
- using fertilisers and pesticides in parks and gardens
- releasing contaminants from stirred up sediment during river dredging and maintenance (transport purposes)
- run-off from roads, driveways, car parks, car washing, contaminated land.
3.3.3 Pressure from urban development has historically affected Thames River Basin District. This is now one of the most densely populated areas of Europe. Significant amounts of housing growth are forecast for the RBD and hence the pressures from built and transport environment are set to increase².

3.3.4 The main responsibility for implementing action that will contribute to lowering the impact of transport and the built environment will fall on a number of different sectors including urban and transport, the water industry and the construction industry. A significant lead will have to be provided by Local Government, particularly planning authorities.

3.3.5 Examples of the actions that are being proposed in this plan include changes in planning permissions and more pro-active implementation of sustainable drainage systems. In most cases these are global actions that will benefit across the country or at river basin district level, for example the ban on phosphorus in detergents or the promotion of sustainable drainage, but in some cases they are specific to catchments or sub-catchments.

3.3.6 Formal agreements with national infrastructure providers and major developers are of great benefit to groundwater quality together with specific programmes such as the Highways Agency Programme to investigate soakaways and could be extended.

3.3.7 The Environment agency and its partners will look to educate through the Groundwater Protection: Policy and Practice document; and seek best practice through: Pesticides, Petrol Stations and Solvents Statutory Code of Practice; and General Binding Rules with associated registration.

3.3.8 Legal notices will be issued to prevent and limit inputs to groundwater and to remove pollutants where protection cannot be achieved by other means.

3.3.9 Further investigation and monitoring needs to be undertaken, for example inputs from areas of landfill and road run-off, into the Reigate Lower Greensand groundwater body. Pollution prevention partnerships (e.g. in the Basingstoke Chalk) also need to be set up to start the process of moving groundwater bodies from poor to good status. Frequently, drinking water sources are affected.

3.3.10 Although local authorities and the Environment Agency have several Contamination Land Part IIa schemes in place and others in progress, more often, clean-up of land contamination is dealt with on a voluntary basis.

3.3.11 **What this means for the Thames river basin district**

The main improvements expected as a result of the actions planned include:

- Increased incorporation of sustainable drainage systems in new developments
- Sustainable management of surface waters (as indicated in London Plan, for example)
- Increased awareness of water cycle requirements by planning authorities, particularly in areas of significant growth.

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- Reduction in inputs to groundwater of nitrogen compounds, pesticides, chlorinated solvents, metals and bromate. In the longer term this will lead to improvements to drinking water supplies and the wider environment.

3.4 Managing future development

3.4.1 The main risks to the water environment may come from:
- flood defences – for example with artificial river embankments
- housing growth - leading to pressures on water quality and water resources
- sewage systems – leaks and overflows
- industrial waste - containing organic matter
- open space management - using fertilisers and pesticides
- river maintenance and dredging - releasing pollutants from contaminated sediment
- surface run-off - from roads, driveways, car parks and contaminated land.

3.4.2 A number of sectors are responsible for implementing actions that will contribute to lowering the impact of the built environment future development including urban and transport, the water industry and the construction industry. Local Government, particularly planning authorities are expected to take a significant lead.

3.4.3 There are a mixture of threats as well as exciting opportunities presented as a result of future development, and the planning and development sector therefore has a vital role to play. This sector, and Regional Government, will be expected to not only ensure that future development does not contribute to existing pressures, but to also help realise some of the many opportunities presented by new growth.

3.4.5 At both the strategic planning and development control scale there will be a need to consider how both the levels, and location of growth, can assist in achieving the Water Framework Directives objectives.

3.4.6 In considering how future development can contribute to the river basin planning process, it is also important to remain aware of other pressures and influencing factors such as climate change, and new or emerging legislative and policy directions. In addition to this, resources available to deliver actions through the planning and development sector will need to be considered.

3.4.7 The Town and Country Planning system can be used to ensure that groundwater is protected. Planners and developers are advised on sensitive locations and development types through the Groundwater Protection: Policy and Practice document, as well as the Environment Agency being consulted on specific developments so that new inputs to groundwater can be prevented or limited. A key to success in this is the appropriate use of sustainable drainage systems.

3.4.8 Successful management of future development is the single most important means by which groundwater quality can be improved in the long-term.

3.4.9 What this means for the Thames river basin district

3.4.10 The Thames river basin district has already suffered historically from urban development, much of which is responsible for some of the issues faced in river basin planning today. In some instances inappropriate or insensitive development has
resulted in physical modifications to rivers, loss of riparian habitats, increased surface water run-off and over-abstraction of catchments.

3.4.11 The Thames river basin district is already one of the most densely populated river basin districts in Europe, and this is set to rise. It is covered by four Regional Spatial Strategies (RSS); the East of England Plan, the South East Plan, the South West Plan and the London Plan. The combined effect of these plans means that over the next 15 years growth of around 50,000 new homes per year is expected, some of which will be concentrated in the growth areas.

3.4.12 In addition to this it is also possible that there will be the development of one or more Eco-towns within the river basin district. Of the 15 short-listed sites published in the CLG consultation document; ‘Living a Greener Future’ (April, 2008), three proposals fall within the Thames river basin district; Weston Otmoor, Whitehill-Bordon, and North East Elsenham, with the potential to deliver an additional 25,500 new homes. There will also be other opportunities such as the development associated with the 2012 Olympics and the Thames Gateway.

3.4.13 Distribution of growth, and the precise policies relating to it will be set out in the emerging Local Development Frameworks. A number of RSSs and LDFs will already have policies that relate to matters such as; water quality, water resources, biodiversity, contaminated land and the management of flood risk. These policies will need to consider the Water Framework Directive objectives and River Basin Management Plans. The Sustainability Appraisals will have an important role to play in ensuring that the objectives of the River Basin Management Plan influence RSSs and LDFs.

3.4.12 The improvements expected as a result of the actions planned include:

Water Quality

Growth will place additional demands on the ability to deal with waste water. If physical infrastructure, such as sewage treatment works, and environmental capacity to receive discharges is exceeded, water quality, which is already suffering in some locations, may deteriorate.

Assessments, such as those forming part of wider water cycle strategies, should inform the planning process. Infrastructure must be provided prior to, or alongside proposed development, to prevent further deterioration and, potentially, contribute to improved water quality. By taking a more strategic approach, development can help to address existing problems as well as those posed by new development.

Water Resources

The whole of the South East is an area classed as suffering from serious water stress. Over abstraction of water bodies, particularly groundwater, contributes to low flow, which in turn can contribute to poor water quality as a result of the reduced ability to dilute polluting inputs. Increased growth will put additional pressure on the available water resources.

New development, will need to be built to the highest available water efficiency standards, such as those set out in the Code for Sustainable Homes. Where possible, development should contribute to overall water neutrality in order to contribute to WFD objectives.
**Biodiversity and River Restoration**

Development can impact on biodiversity through both direct habitat loss as well as through indirect affects, such as the loss of water from water dependent habitat types.

New development presents opportunities for enhancing and re-creating habitats both within a development, and in the wider environment where this contributes to provision of multi-functional green infrastructure.

Set back of new development from rivers can create the space for wildlife, whilst enhancement and re-creation of habitats can contribute to meeting local Biodiversity Action Plan targets as well as increasing flood storage, assisting in the management of invasive non-native species and improving water quality. If new development is planned in the right way it should contribute to an overall net gain in biodiversity.

**Example: Surface water run-off**

New development will result in the creation of more impermeable urban development such as; roads, paved areas and buildings, that can contribute to increased surface water run-off.

By incorporating sustainable drainage systems, such as permeable surfaces and green roofs, run-off can be reduced. This can assist in preventing further deterioration in water quality and managing flood risk.

3.4.13 Many of the actions that are proposed have other cross-cutting benefits, such as improving the ability to adapt to climate change, helping to create sustainable communities by providing green infrastructure, and helping to achieve UK Biodiversity Action Plan targets. Therefore, some of the actions set out in this draft plan are already being delivered through initiatives that are underway, or policies that are already informing planning decisions. Where new opportunities exist we are looking for your help and expertise to identify them.

### 3.5 Securing sustainable amounts of water

3.5.1 Water should be affordable, yet supplies need to be provided in a sustainable way. There should also be sufficient flow for wildlife (invertebrates, fish, plants and birds) to flourish.

3.5.2 The main cause of flow problem have been linked to:
- providing public water supply
- irrigation for agriculture, horticulture and recreational use
- industrial abstractions
- modified channels and structures such as weirs
- water transfers.

3.5.3 The main responsibility for implementing actions that secure sustainable use and availability of water falls on a number of different sectors, including the water industry, agriculture, navigation and the public as a whole as consumers. Examples of actions proposed in this plan include demand management and review of abstraction consents under the Habitats Directive.
3.5.4 As the provision of public water supply is the main source of demand for water, it is clear that the main player will be the water industry, specifically Thames Water, Three Valleys Water and the Environment Agency as the regulator.

3.5.5 **What this means for the Thames river basin district**

3.5.6 The main improvements expected as a result of this plan include:

- Making sure there is no deterioration of the water environment as a result of the significant planned growth.
- Around 260km of river length is currently being investigated or is proposed for investigation into the impacts of abstraction. The majority of the investigations are within the Lee, Colne, Kennet and Wye catchments and on some stretches of the River Thames, where there is considered to be over abstraction. There is a need to improve the understanding of groundwater and the interaction with the rivers in 21 of our groundwater bodies. In these water bodies there will be an aim to restore flow to a level that appropriately supports the local ecology.
- By 2027, 90 km² of wetlands such as those of the Kennet and Lambourn Floodplain SAC, which depend on groundwater, will be protected by limiting the impact of abstraction through the Restoring Sustainable Abstraction process.
- Demand management activities by the water companies will be required to manage more effectively how water is used.

3.6 **Improving wildlife habitats**

3.6.1 Habitats and wildlife corridors, which are areas that allow wildlife to move freely, should be of good quality with few artificial barriers. Floodplains and rivers should be allowed to interact in as natural a way as possible to help sustain aquatic and riparian habitats. A reduction is required in the impact of invasive non-native species, where plants or animals take over a particular habitat, displacing existing species and damage the area they invade. Special consideration will need to be given to SACs and SPAs designated under the Birds and Habitats Directives. There will need to be a limit and reversal of man made impacts in rivers, lakes, estuaries and coastal waters from physical and chemical changes and they will need to be made robust in the face of climate change.

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

- land drainage for agricultural improvement, reclamation for agriculture and urban development, historical structure;
- development pressures – weirs, barrages, barriers, bed and bank protection / erosion, river traffic, habitat fragmentation and disturbance;
- river re-sectioning, straightening, realignment, channelisation, substrate manipulation;
- flood risk management, dredging;
- culverting to allow development;
- various non-native species known to cause problems across the river basin.

3.6.3 The main responsibility for implementing actions that secure improvement to wildlife habitats when linked to physical modifications will fall to the Environment Agency as the body responsible for flood risk management. However, long term success is just as reliant on Regional and Local Planning Authorities, the navigation sector and riparian owners.
3.6.4 **What this means for the Thames river basin district**

3.6.5 Riverine improvements expected in the river basin district include:

- Completing our programme of improvements to riverine Sites of Special Scientific Interest to ensure they are in favourable / recovering condition e.g. restoration works on the Kennet and Lambourn.
- Completion of the London River Restoration Plan and driving its implementation.
- Aligning our Flood Risk Management actions and other relevant works with our biodiversity responsibilities to ensure activities as a whole have a beneficial effect on their WFD status.
- Championing the creation of a Non-Native Invasive Species Forum to steer co-ordinated action.
- Using our powers and duties to ensure that our works and those of others contribute towards the River Basin objectives.
- Restoring Sustainable Abstraction (RSA) programme: It is important to ensure that the amount of water taken from rivers and groundwater can be sustained without causing damage. The RSA programme is designed to resolve the impacts of unsustainable abstraction on internationally and nationally designated conservation sites and on other undesignated sites.
- Encouraging Local Planning Authorities to place WFD requirements in their Development Planning Documents at all levels from Regional Spatial Strategies to planning applications e.g. habitat restoration.
- Work with the Marine Management Organisation (MMO) to ensure marine licences / plans are WFD compliant.
- Continuing the regional river restoration work to make sustained progress towards WFD targets. The present target is an improvement of 7.5km of river bank per annum.
- Supporting local initiatives from third parties including Thames River Restoration Trust and the London Climate Change demonstration site.
- Modification or revocation of all abstraction licences adversely affecting the conservation objectives of Natura 2000 sites (by 2015)
- Investigations as to the need for actions required to modify abstraction licences for those surface and groundwater bodies where there is a high risk that abstraction maybe limiting the achievement of good ecological or good quantitative status (by 2015)
- Modification of abstraction licences to ensure no adverse effect on conservation objectives of Sites of Special Scientific Interest, by 2021

3.7 **Addressing point source pollution**

3.7.1 Cleaning up water will mean more is available for abstraction. Using the agreed environmental quality standards will reduce excess nutrients and toxic pollution entering the environment, which alter the balance of natural plants and animals. High levels of nutrients lead to excessive plant growth, which, in turn, may reduce other wildlife, including fish. No “dead” rivers, lakes or estuaries will be a key aim.

3.7.2 The main causes of the problem have been identified as:
- sewage overflowing from combined sewer overflows (CSOs) on the tidal Thames and River Lee.
- effluent from sewage systems, private sewage treatment works, industrial works
• diffuse source pollution (for example rural) can enter sewage system and become localised or ‘point source’
• industrial point sources.

3.7.3 The main responsibility for implementing actions to address point source pollution will fall on the water industry, agriculture and large industry requiring them to make provision for tighter control on discharges. A number of the actions proposed in this plan are linked to the Water Companies Price Review 2009.

3.7.4 Most point source pollution of groundwater results from former major industrial sites, including landfill; storage facilities which includes petrol filling stations; and specific discharges, for example of sewage effluent. Although much of the so-called diffuse pollution may be made up of a large number of small unidentified point source pollution sources in an area.

3.7.5 Significant improvements can be made by clean-up during re-development but in other cases there will be a need to serve legal notices or encourage their use by others where operators do not do the work voluntarily.

3.7.6 **What this means for the Thames river basin district**

3.7.7 The specific improvements expected in the river basin district include:
• Aim to improve the quality of the Thames Tideway by tackling the issue of CSOs and improving tideway sewage treatment works.
• Protection of the quality of the River Kennet (20km) by improving sewage treatment works and undertaking investigations.
• Preventing deterioration to other river systems within the catchment by improving key sewage treatment works
• In groundwater, there are a large number sites where remedial work is on-going and others which need to start. The two largest pollution plumes from a specific site in Thames Region are a bromate plume (20 km long) in the groundwater bodies: Mid-Chiltern Chalk and Upper Lee Chalk, and a chlorinated solvent plume in the Vale of White Horse Chalk (5km long)
• Improvements to the impact of diffuse pollution generally following further investigations.
4.0 The water environment now

4.1 Pressures on the water environment

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

4.1.2 In the **Summary of Significant Water Management Issues** consultation document we set out the view of the Environment Agency and the Liaison Panel of what, together, we thought were the most important issues facing the river basin district. This work will help prioritise and target resources through the programme of actions proposed in this Draft River Basin Management Plan.

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

- Low flow and depleted groundwater due to abstraction
- The impact of physical modification
- The impact of changing agricultural and land management practices on the water environment
- How future development can assist in achieving the Water Framework Directive objectives
- The impact of urban run-off (including flood risk management)
- The impact of aquatic alien species on ecosystem health
- The impact of point source discharges

**Q1a** Do you agree with the assessment of problems in water bodies? What would you change?

River basin characterisation reports can be found at [www.defra.gov.uk/environment/water/wfd/characterisation](http://www.defra.gov.uk/environment/water/wfd/characterisation)

More information about pressures on the environment in the river basin district is given in annex G and H.

4.2 The state of the water environment

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

4.2.2 This new monitoring and classification system ‘raises the bar’. It provides us with a more sophisticated assessment of the whole water environment to help us all understand it better, and take action where it is most needed.
4.2.3 Each of the components of classification (ecological and chemical for surface waters, and quantitative and chemical for groundwater) in turn comprise several different elements, as shown in figure 2. For example the ecological elements include fish and invertebrates, and a series of non-biological elements; and the chemical component includes a range of substances that are harmful to human health and the environment. The elements are measured against a series of specific standards and targets that have been developed by the Department of Environment, Food and Rural Affairs, supported by the Water Framework Directive UK Technical Advisory Group. The spread of non-native invasive species and how well established they have become are also taken into account.

The UK Technical Advisory Group website gives these standards and targets - [http://www.wfduk.org/UK_Environmental_Standards](http://www.wfduk.org/UK_Environmental_Standards)

Defra and Welsh Assembly Government completed their consultation on these standards on 19th December 2008. This consultation can be found at [www.defra.gov.uk/environment/water/wfd/classification](http://www.defra.gov.uk/environment/water/wfd/classification)

4.2.4 New development within the river basin district will bring many additional pressures. The environment needs to be at the heart of these planned developments – which will require water resources, sewage treatment capacity, protection of biodiversity, flood risk management and consideration of the likely impacts of climate change.

4.2.5 Water supplies in the river basin district are already in a delicate balance with relatively low levels of rainfall increasing public consumption. Water resources must be managed to ensure the security of water supply and protect the environment. These pressures on water resources are set to increase through additional demands from population growth and new housing, and the impacts of climate change which is predicted to reduce water availability during the summer months.

4.2.6 Population growth will also result in increased sewage and more treated effluent will be discharged into rivers and coastal waters. Some rivers – especially in their upper reaches – will not be able to take more effluent without damaging their quality.
4.2.7 As pollution from industrial sources has been cleaned up, water pollution from unregulated sources has become proportionately more important. Agricultural and urban runoff contains pollutants such as nutrients, pesticides and other chemicals, sediment, oils and litter.

4.2.8 At the moment 87 per cent of surface water bodies (rivers, lakes, estuaries and coast) and 63 per cent of groundwater bodies are not achieving good status. This is sometimes caused by one thing, but often it can be due to many different factors.

4.2.9 The current status classification is the baseline from which the ‘no deterioration in status’ objective of the Water Framework Directive is measured. Figures 3 to 8 summarise the state of the water environment, based on those waters assessed.

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

Monitoring and classification maps, which describe where we are now are in annex A
More detailed classification results are in annex B
Figure 3  Current ecological status and ecological potential of rivers (by river length assessed)

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

Figure 5  Current ecological status and ecological potential of rivers (by number of waterbodies assessed)

Figure 6  Current biological status of rivers (by number of waterbodies assessed)

Figure 7  Current quantitative status of groundwater bodies in the Thames river basin district (by number of waterbodies)

Figure 8  Current chemical status of groundwater bodies in the Thames river basin district (by number of waterbodies)

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

4.2.12 We are proposing that 43 of 529 surface water bodies in the river basin district (8 per cent of all surface waters) are designated as artificial, and 156 (29 per cent of all surface waters) are designated as heavily modified. We reached this view using a detailed screening process, which involved consulting interested groups and carrying out a technical review.

The reasons for designation of artificial and heavily modified water bodies are given in annex I.

Table 1 Water body numbers in Thames river basin district

<table>
<thead>
<tr>
<th>Natural water bodies</th>
<th>Candidate artificial water bodies</th>
<th>Candidate heavily modified water bodies</th>
<th>Not yet assessed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>River</td>
<td>Lake and reservoir</td>
<td>Estuary (transitional)</td>
<td>Coastal</td>
<td>Groundwater</td>
</tr>
<tr>
<td>299</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td>1</td>
<td>39</td>
<td>3</td>
<td>0</td>
<td>n/a</td>
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<tr>
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<td>5</td>
<td>1</td>
<td>n/a</td>
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<tr>
<td>0</td>
<td>28</td>
<td>2</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>443</strong></td>
<td><strong>72</strong></td>
<td><strong>11</strong></td>
<td><strong>46</strong></td>
</tr>
</tbody>
</table>

4.2.13 In addition, there are 22 canals waterbodies (453 Km in length) and 13 water transfers in the Thames river basin district.

4.2.14 We are proposing to extend the network of water bodies in England to include areas of biodiversity significance. We are also proposing to split some of the larger water bodies.

Details of water bodies are included in annex J.

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3 The Thames river basin district has one coastal waterbody (Thames Coastal North) the details of which, for the purposes of this consultation, have been considered in the Anglian Draft River Basin Management Plan.
5.0 The objectives for waters in the Thames river basin district

5.1 How we set objectives

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

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

5.2 Targets for subsequent cycles

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

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

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

5.2.4 One of the benefits of setting interim targets is that it will encourage all those with a role in achieving the objectives of the Water Framework Directive to work together to identify effective future measures. The targets will be a challenge shared by all with this role.
Objectives for each water body are set out in annex B. More details about alternative objectives are included in annexes E and C.

Information about current status and objectives for protected areas, and actions proposed, is in annexes B, C and D.

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

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

Information about the planning assumptions used when assessing actions is in annex E.

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

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

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

5.2.6 Figures 8 to 10 show what the status of the waters is expected to be in 2015 if the proposed actions are implemented.
Figure 10 Predicted ecological status and ecological potential of rivers in 2015, by length assessed

Figure 11 Predicted biological status of rivers in 2015, by length assessed
Figure 12 Predicted status and potential for surface water bodies in 2015
Figure 13: Predicted quantitative status for groundwater in 2015.
Figure 14  Predicted chemical status for groundwater bodies in 2015
6.0 The Thames river basin district catchments in 2015

This section summarises information about the status of waters in the Thames river basin district and the objectives proposed on a catchment-by-catchment basis. The river basin district has been divided into eighteen catchments.

Figure 15 The catchments of the Thames river basin district
Progress towards achieving good ecological status and good ecological potential

6.1 Cherwell catchment

Currently 26 km of river length (6% of waterbodies) in this catchment are achieving good ecological status/potential. We are proposing that by 2015 this will improve to 35 km, but with additional local input this could increase.

Major issues for the catchment are degraded physical habitat, localised low flows, raised phosphate levels and diffuse pollution.

The impact of water abstraction varies significantly across the catchment, with very little abstraction, for instance, from the Ray catchment. The upper Cherwell catchment supports abstractions for public water supply at Banbury and from the Sor Brook at Adderbury. There are also a number of licensed abstractions for agriculture. There is concern that the flows in the Upper Cherwell are unnaturally low due to the water supply abstractions at Banbury and those used to support the Oxford Canal. Some action has been taken with the water company to mitigate these impacts during low flows, and further proposed measures to tackle this include the promotion of water efficiency measures and operational liaison with British Waterways.

Surface water quality in most of the catchment is generally acceptable with the River Ray having the poorest water quality. Phosphates, however, show high concentrations across most of the catchment but we expect an improvement in about 100 km of river. It is expected that all the other chemicals addressed under the WFD will achieve good status by 2015.

Diffuse pollution arises from both urban and agricultural sources in the North and East of the catchment. Proposed local measures include promoting and supporting partnership work in order to influence agricultural, industrial and service sectors in the implementation of Codes of Good Agricultural Practice (CoGAP), the use of soil and nutrient management plans, providing technical advice cards for farmers covering best practice, and providing pesticide handling advice/education to farmers, industry, golf courses and Network Rail.

Physical habitat restoration may also be required to achieve good ecological status on sections of the Cherwell and Ray. Opportunities will be pursued with landowners and other organisations to restore habitat quality, through e.g. the Upper Ray Restoration Project with the RSPB and local Wildlife Trust. River restoration may also facilitate restoration of floodplain habitat, with associated benefits for flood risk management and water quality. This, along with other improvements in the catchment, is expected to result in the improvement in invertebrates in about 100 km of river.

Figure 16 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Cherwell catchment (as proportion of river length)

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Now</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
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<tr>
<td>Good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Progress towards achieving good ecological status and good ecological potential

6.2 Colne catchment

Currently 8 km of river length (6% of waterbodies) in this catchment are achieving good ecological status/potential. We are proposing that by 2015 this will improve to 15 km, but with additional local input this could increase.

Groundwater abstraction, for the purpose of public water supply, presents the main pressure in the catchment and represents 60% of the total licensed sources here. Three Valleys Water hold the majority of the public water supply licences. Many of these abstraction sources are being investigated under the Restoring Sustainable Abstraction programme. This is due to the impact that abstraction has on individual flow regimes, such as lack of flow in parts of the river Misbourne.

To address these pressures, we have projects looking at the development of a groundwater model to investigate the relationship between abstraction rates and flow levels in the River Ver; Proposed channel modifications and river restoration options to improve the flow regime within the Upper River Gade; and the establishment of river flow objectives for the Rivers Misbourne & Ver based on ecological species classification.

The current level of abstraction has contributed towards the classification of the Colne catchment being identified as an Area of ‘serious’ water stress. This has strengthened the call for universal domestic water metering with the option to introduce seasonal tariffs to better manage available resources. Further measures are linked to water efficiency initiatives, providing evidence to Local Planning Authorities so that water usage targets can be established and working with water companies to reduce household water consumption rates. This is besides the abstraction licensing inspection work to increase the adoption of water efficiency measures on individual abstraction sites. Working with the developers and building contractors will ensure options for rainwater harvesting, grey water recycling, household water efficiency measures and sustainable drainage systems are adopted to coincide with new housing development targets for the catchment.

The rural reaches of the Upper and Middle Colne are also subject to diffuse rural pollution incidents. This can lead to nutrient rich waters. Codes of Best Practice will be used to promote use of soil and nutrient management plans. Working with the Farming Wildlife Advisory Group measures will be adopted to raise awareness of the Codes of Good Agricultural Practice and Catchment Sensitive Farming.

We are expecting the Tykeswater to improve to good status by 2015

![Figure 17 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Colne catchment (as proportion of river length)](image)
Progress towards achieving good ecological status and good ecological potential

6.3 Cotswolds catchment

Currently 139 km of river length (30% of waterbodies) in this catchment are achieving good ecological status/potential. We are proposing that by 2015 this will improve to 167 km, but with additional local input this could increase.

Issues for the catchment are raised phosphate levels, impoverished river habitat due to past engineering works and the impact of alien species such as signal crayfish.

Much of the catchment experiences periodic low flows, which in some locations have been exacerbated by abstraction for public water supply. Previous investigations have resulted in the reduction of abstraction at a number of locations, and flow and ecological monitoring is being undertaken to assess the benefits of this action to rivers such as the Churn and Ampney Brook. Other licences are currently being investigated, such as in the upper Windrush valley, and where these are shown to be damaging to river ecology modifications to existing licences will be secured to address this. Other local measures aimed at reducing demand for water will be centred on working in partnerships to promote and encourage water efficiency through campaigns and advice.

Surface water quality is generally good, most rivers have shown improvements over the last few years and further improvements in phosphate, for example, is expected over about 70 km of river length. However, phosphate concentrations could still cause failures in 2015 for waterbodies on the Rivers Evenlode, Glyme and Ampney Brook, as well as Tributyltin casing failures on the Rivers Windrush, Evenlode and the Cerney Wick Brook. A more targeted collection of water quality and ecological monitoring samples from up and downstream of relevant sewage treatment works along these rivers is proposed to assess the impact of these discharges, and to provide information for future actions where additional data is required to understand how these predicted failures can be addressed.

Signal crayfish are now common in many rivers within the catchment. Further investigations are required to understand how they may be affecting the likelihood of achieving good ecological status by their impacts on invertebrate communities, as well as the application of any measures to control or eradicate them resulting from current ongoing research.

Physical habitat restoration may also be required to achieve good ecological status in parts of the Cotswolds where channels have been heavily degraded, such as on certain reaches of the Evenlode. Nevertheless, an improvement of around 60 km of river for fish is expected by 2015. Opportunities will be looked into with landowners and other organisations to restore habitat quality.

Figure 18 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Cotswolds catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.4 Darent & Cray catchment

Currently 24 km of river length (20% of waterbodies) in this catchment are achieving good ecological status/potential. It is expected that by 2015 this will remain at 24 km, but with additional local input this could change.

The River Darent is unusual for a moderate sized river as there are virtually no discharges into the river and consequently the water quality is generally good. Not all the water is from the Chalk aquifers; there is some spring flow from the large Lower Greensand Beds to the south of the upper catchment.

The River Cray is the largest tributary of the Darent, which joins the River Darent at Crayford. As with the River Darent the tidal limit is just upstream of the confluence and is controlled by a weir at Barnes Cray. The River Shuttle is the Cray’s largest tributary, draining approximately 30% of the sub-catchment. The Cray and Shuttle are very urbanised so the Darent has associated ecological pressures from river shape modification and contamination issues.

The impact of low flows upon the River Darent has significantly affected the invertebrate fauna. Several species came close to extinction from this catchment and the observed recolonisation rates of several species have been extremely slow. Although the middle section of the river was observed to experience the greatest impact from low flows, it is known that Otford (a site situated further up the catchment) is also adversely affected by low flows.

The Darent Action Plan has seen reductions in abstraction, from the underlying Chalk aquifer, which benefits many species; in particular fish populations such as Brown Trout, invertebrates such as river limpet, as well as a number of aquatic plant species. The ecology in the mid Darent still suffers in dry years and the final stage of the Darent Action Plan is required to sustain minimum flows in these periods. This will also reduce dependency on the flow augmentation provided by adjacent Chalk boreholes.

There is still concern about the impact of low flows on ecology. In dry years, the flows still need to be supported by augmentation boreholes. In addition, the channel shape is still a limiting factor. Water quality in the more urbanised area of the Cray and in particular, the Shuttle, is particularly influenced by urban runoff.

![Figure 19](image.png) – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Darent & Cray catchment (as proportion of river length)
## 6.5 Kennet & Pang catchment

Currently 81 km of river length (34% of waterbodies) in this catchment are achieving good ecological status/potential. It is expected that by 2015 this will remain at 81 km, but with additional local input this could change.

Water abstraction in the catchment, which is predominately from groundwater sources, is mainly for public water supply. A number of abstraction licences have been investigated to assess their impacts on ecology and measures have been put in place or are planned to reduce these impacts where they have been established as unacceptable (e.g. at Axford on the Kennet). Further investigations are underway on other licences such as at Ogbourne and Pangbourne. Other local measures are aimed at reducing demand for water will be centred on working in partnerships to promote and encourage water efficiency through campaigns and advice.

Surface water quality in the catchment is generally good, although Tributyltin compounds are causing a current failure in the Foudry Brook.

Measures to mitigate against diffuse pollution include promoting and ensuring implementation of Codes of Good Agricultural Practice (CoGAP), promoting the use of soil and nutrient management plans, and providing technical advice cards for farmers covering best practice. Some of this will be delivered through the Kennet Catchment Sensitive Farming Initiative and associated projects with FWAG. Work will continue to understand and mitigate the adverse impacts on river quality due to the interaction between the Kennet and the Kennet & Avon Canal. Other work to combat diffuse pollution includes the provision of pesticide handling advice/education to farmers, industry, golf courses and Network Rail.

Proposed solutions that are intended to deal with point source inputs include further investigation of impacts of emissions from Kintbury and Chilton Foliat STWs to inform options in order to achieve good ecological status. There is also a need to collect water quality and ecological monitoring samples from up and downstream of a number of smaller sewage treatment works along these rivers in order to assess the impact of discharges and to provide information for future actions where additional data is required (i.e. for future AMP schemes).

Physical habitat restoration is needed at a number of locations to address the problems of past engineering and the impacts of control structures where these are severely limiting the ecological potential of the catchment. Some of this work will be done under a programme to restore the River Kennet and River Lambourn SSSIs, but additional works are required for degraded reaches elsewhere.

**Figure 20** – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Kennet & Pang catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.6 Loddon catchment

Currently 30 km of river length (11% of waterbodies) in this catchment are achieving good ecological status/potential. We are proposing that by 2015 this will improve to 79 km, but with additional local input this could increase.

Phosphate and ammonia levels are high but improvements to around 50 km of river are expected by 2015. Specific pollutants such as Tributyltin (TBT) have been identified in a small number of water bodies and in places, dissolved oxygen levels are low. In addition, substantial urban development which will increase demand for water supply and volume of treated effluent, is planned for this catchment. Some water bodies in this catchment are designated heavily modified. Modification of these water bodies including in-stream structures has led to loss of habitat diversity and the creation of barriers for fish migration. These issues and the presence of pollutants give rise to poor water quality on a number water bodies, as well as varied biological quality throughout the catchment.

At specific sites, for example Arborfield and Wargrave sewage treatment works, point source pollution pressure is being addressed through discharge to sewer investigations and options appraisal.

At a local level, in growth areas such as Basingstoke, we will work with local authorities, water companies and other partners to undertake appropriate water cycle studies and ensure these are included in regional and local plans. To address and reduce agricultural pollution in the catchment, we will work with our partners such as Natural England, Wildlife Trusts and land managers to extend catchment sensitive farming delivery and promote land management best practice, alongside local pollution prevention campaigns. Projects already underway include the Loddon Farm Advice Project, managed by the Hants and Isle of Wight Wildlife Trust in partnership with Natural England and the Environment Agency, which can provide free advice to landowners on good practice to reduce diffuse pollution.

Other local measures in this catchment address physical modification pressures including; culverts, closed watercourses, pinch points and in-channel structures. We will work with our partners to investigate and, where possible, implement river restoration projects.

Throughout the catchment, there is a requirement for further monitoring and investigation to allow targeting of additional measures to improve the status of this catchment.

Figure 21 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Loddon catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.7 London catchment

Currently none of the river length in this catchment is achieving good ecological status/potential. We propose that this will still be the case in 2015. The significant water management issues that currently impact on the status of this catchment are: diffuse urban pollution; urban development; point source pollution; physical modification; and flow problems

As a consequence, phosphate and ammonia levels are high. The urbanised nature of the catchment exacerbates the pollution pressures particularly through flash flooding caused by surface water run-off, dominance of effluent in some rivers and acute pollution incidents. The modification of water bodies including in-stream structures, has led to loss of habitat diversity and the creation of barriers for fish migration. These issues and the presence of pollutants give rise to poor water quality and habitat diversity on a number water bodies, as well as varied biological quality throughout the catchment.

In this catchment and across the Thames River Basin District, working with partners, there will be an aim to educate builders and developers to design buildings that consider water efficiency, sustainable drainage systems, rainwater harvesting and grey water recycling systems, and develop good practice for site clearance prior to development.

At a local level working with our partners, we will promote surface water management plans to ensure water quality is considered on a catchment basis and develop a programme of Pollution Prevention Campaigns promoting the use of Environment Agency Pollution Prevention Guidelines.

Many other local measures in this catchment address the physical modification and flow pressures including; the removal of hard bank reinforcement or replacement of it with ‘soft’ engineering solutions, improved floodplain connectivity and alteration of river beds within culverts.

The Lower Lee and associated tributaries such as the Salmon and Pymmes Brook are affected by a range of different pressures and present a number of significant challenges. Some of the waterbodies in this area are regarded as the worst in the Thames RBD and will require significant effort and resources to improve them.

Throughout the catchment, there is a requirement for further monitoring and investigation to allow targeting of additional measures to improve the status of this catchment.

![Figure 22 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the London catchment (as proportion of river length)](image-url)
6.8 Medway catchment

Currently 16 km of river length (4% of waterbodies) in this catchment are achieving good ecological status/potential. We are proposing that by 2015 this will improve to 28 km, but with additional local input this could increase.

There has been considerable urban development in the last thirty years, mainly on former agricultural land around the commuter centres of Crowborough, Edenbridge, Tonbridge and Royal Tunbridge Wells. Northern parts of this area, particularly around the upper Estuary, bear the legacy of an extensive history of heavy manufacturing industry. Even today, the area north of Maidstone is still characterised by industry with chemical, pharmaceutical and major cement works and paper mills.

There are a number of Sites of Special Scientific Interest (SSSIs) within the catchment. These include the River Beult, a riverine SSSI and Bourne Alder Carr, near Ightham, which has one of the best examples of an alderwood characteristic of the Wealden valley. These sites are all sensitive to changes in water flows and levels as stated on the SSSI list of Potentially Damaging Operations.

Elevated nutrients are the main concern. Although the majority is derived from sewage treatment works, diffuse pollution from rural sources will be tackled in parallel.

The Medway suffers from higher nutrient levels and therefore is defined as a eutrophic sensitive area under the Waste Water Urban Directive. The national programme to address these problems will see phosphate stripping in key sewage treatment works across the entire catchment. Partnerships with local authorities and private industry will be pursued in order to improve contamination due to specific harmful substances; particularly around urban areas.

The Catchment Sensitive Farming Programme is working in partnership with farmers in the Beult catchment to improve diffuse pollution and we will investigate whether this approach can be extended more widely across the catchment.

Locally driven action will focus on habitat enhancement works and removal or renovation of impounding structures to allow natural migration of invertebrates and fish species. The Environment Agency will extend our monitoring sites to include Non-native species are present in many areas, such as Giant Hogweed, Zebra Mussels and Mitten Crab.

Figure 23 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Medway catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.9 Mole catchment

Currently 8 km of river length (6% of waterbodies) in this catchment are achieving good ecological status/potential. It is expected that by 2015 this will remain at 8 km, but with additional local input this could change.

The significant water management issues that currently impact on the status of this catchment are: point source pollution; physical modification; diffuse urban pollution; urban development; and diffuse rural pollution.

As a consequence, phosphate and ammonia levels are high and specific pollutants such as Tributyltin (TBT) have been identified in a small number of water bodies. The clay characteristics of the upper catchment exacerbate surface water run-off and some canalised and shaded reaches suffer low dissolved oxygen in times of low flow.

In addition, substantial urban development, which will increase demand for water supply and volume of treated effluent, is planned for this catchment. Some water bodies in this catchment are designated heavily modified. Modification of these water bodies including in-stream structures has led to loss of habitat diversity and the creation of barriers for fish migration.

At specific sites contributing to potential environmental quality standards (EQS) failure, such as Reigate (Earlswood) sewage treatment works, point source pollution pressure is being addressed through investigations and options appraisal. The Environment Agency will work with partners such as Natural England, Local Authorities and developers, to investigate and, where possible, implement river restoration projects to address physical modification pressures including; culverts, closed watercourses, pinch points and in-channel structures.

At a local level, in growth areas such as Crawley, the Environment Agency will work with local authorities, water companies and other partners to undertake appropriate water cycle studies and ensure these are included in regional and local plans. To address and reduce agricultural pollution in the catchment, we will work with our partners such as Natural England, Wildlife Trusts and land managers to extend catchment sensitive farming delivery and promote land management best practice, alongside local pollution prevention campaigns.

Throughout the catchment, there is a requirement for further monitoring and investigation to allow targeting of additional measures to improve the status of this catchment.

Figure 24 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Mole catchment (as proportion of river length)
6.10 North Kent catchment

Currently none of the river length in this catchment is achieving good ecological status/potential. We are not expecting an improvement by 2015.

The North Kent catchment area extends along the North Kent coast between Gillingham in the west and Herne Bay in the east.

The area is made up of the Chalk North Downs and due to the permeable nature of the geology, surface watercourses do not cover a large proportion of the landscape. The existing water features have experienced many pressures. During the 1960s major drainage works were undertaken within the enclosed marshes and this led to the creation of large arable fields and a loss of grazing marshes. Urbanisation has resulted in channel modification notably around Sittingbourne, Faversham, Whitstable and Herne Bay and associated sewage treatment works have all limited the ecology of the Chalk springs.

The principle water dependent habitats in this area are the grazing marshes and intertidal mud flats. The habitat value of the grazing marsh depends largely on careful surface water management. This area has been designated a Special Protection Area and Site of Special Scientific Interest in recognition of the bird population which is supported by the intertidal mud flats and the grazing marshes.

The springs which feature on the north side flow into the Thames Estuary along very modified channels. Much of the action in this area will be to improve the groundwater quality through addressing diffuse and point source pollution. Water quality has been recognised as a problem and action will be taken in the Periodic Review to improve sewage discharges in the Swale, Frognal Drain, Faversham Creek, Milton Creek.

Improvements in the surface waterbodies will also be targeted at reducing physical pressures such as culverts, sluices and concrete banks for example in the Milton, Faversham and Oare Creeks. Many of these surface water bodies require additional biology monitoring to increase confidence in the derived ecological status.

![Figure 25](image)

**Figure 25** – Expected progress towards achieving good ecological status and good ecological potential in rivers in the North Kent catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.11 Roding, Beam & Ingrebourne catchment

Currently none of the river length in this catchment is achieving good ecological status/potential. It is expected that by 2015 this will still be the case, but with additional local input it could change.

Measures such as the promotion of soil and nutrient management plans, Codes of Good Agricultural Practice and pesticide handling advice/education will reduce nutrient loading. The lead for this will come from farmers, the pesticide industry, agronomists, the Highways Agency and Network Rail in the form of voluntary action and education and can be targeted for the likes of river Roding and Cripsey Brook to tackle raised phosphate levels.

However, further down the catchment the geology changes to that similar in the North London catchment, and heavy urbanisation occurs from within the boundary of the M25. The lower reaches are tidal and protected against abnormally high tides and associated flooding by the Barking Barrier.

Diffuse urban and point source pollution pressures are exacerbated in this part of the catchment by physical modification causing flow problems including flash flooding from surface water run-off. Measures to address these issues at a local level include restoration schemes to remove hard bank reinforcement or replacement with ‘soft’ engineering solutions, improved floodplain connectivity and alteration of river beds within culverts. The Mayesbrook is example of such restoration work, where 1.7km of river channel is being naturalised by meandering the river and creating a new flood plain with a wetland mosaic. A network of reedbed islands has provided valuable new habitat, visual enhancement and improved water quality.

In addition, working with local authorities, water companies and other partners, we will seek to educate builders and developers to consider water efficiency, sustainable drainage systems such as rain water harvesting and grey water recycling. Investigations into discharges from sewage treatment works such as Theydon Bois will allow us to appraise options to meet Environmental Quality Standards.

Regional Spatial Strategies will also be used to ensure Water Framework Directive requirements are incorporated into planning/Local Development Frameworks, and will be implemented by lead partners such as Local Authorities, the construction industry and the Environment Agency by means of working agreements, local development frameworks, voluntary action and education. This will ensure future developments like the expansion of Stanstead Airport will cause no deterioration to the environment.

Figure 26 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Roding, Beam & Ingrebourne catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.12 South West Essex catchment

Currently none of the river length in this catchment is achieving good ecological status/potential. It is expected that by 2015 this will still be the case, but with additional local input this could change.

The Mardyke has a catchment area of 112km² with a main river length of 18.5km. It is generally low-lying with low channel gradients and flows south from the Langdon Hills to the Thames estuary, where its outflow is controlled by a tidal sluice. The catchment area is predominately agricultural. Soils are predominantly clay giving a flashy flow regime with low baseflows.

There are some small water-dependant SSSIs in the headwaters of the Mardyke, at Grays Chalk Pit and West Thurrock Lagoon and Marshes. The Mardyke Valley Project is a multi-partner project working towards improvements to the conservation value of the Mardyke catchment.

Issues in the Mardyke include significant physical modifications to facilitate flood conveyance and land drainage. The junction with the Thames estuary is modified by the tidal sluice. There is also a large sewage treatment works at Upminster. Abstraction occurs from a number of surface water and shallow ground-water locations but the catchment has been assessed as ‘water available’ under the Catchment Abstraction Management Strategy.

A number of very small water bodies drain the coastal strip to the east of the Mardyke mouth. These mostly flow through grazing marshes but significant urban and industrial areas exist in their catchments. Thames Eastuary and Marshes SPA borders the far east of the area occupied by the smaller waterbodies. These waterbodies are also significantly modified (being marsh drains) with controlled outflows. No other issues are known as they are not routinely sampled.

Figure 27 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the South West Essex catchment (as proportion of river length)
6.13 Thame catchment

Currently none of the river length in this catchment is achieving good ecological status/potential. It is expected that by 2015 this will still be the case, but with additional local input this could change.

The north part of the catchment (Thame) is reliant on surface water runoff as the dominant flow to watercourses, whereas the south (Wye) relies on groundwater flows. The River Wye and its tributary, the Hughenden Stream are dependent on groundwater from the chalk and have historically suffered from problems of low flow and drying. Such stresses commonly occur naturally in Chalk streams but can also be the result of abstraction. Measures to tackle these issues include actions from lead partners such as water companies, Local Authorities and the Environment Agency in providing alternative abstraction licence strategies, promoting water efficiency measures, sustainable drainage systems and rainwater harvesting with builders and developers.

The water quality in the catchment is generally good, although Tributyltin compounds are causing a current failure in the Thame and the Kingsey Brook. The Thame also has very high phosphate concentrations and is at high risk from both diffuse and point source pollution. Phosphates are also a problem for the rest of the catchment with most waterbodies currently at risk of failing. Measures for preventing these issues include tightening trade effluent control standards where there is evidence of a detrimental impact on ecological status, and investigating emissions and appraising options in order to address the adverse impacts of the Princes Risborough and Towersey STW. There is a need for targeted water quality and ecological monitoring up and downstream of other sewage treatment works in order to assess the impact of discharges, and to provide information for future actions where additional data is required (i.e. for future AMP schemes).

Diffuse pollution arises from both urban and agricultural sources in the catchment. Proposed local measures involve promoting and supporting partnership work in order to influence agricultural, industrial and service sectors in the implementation of Codes of Good Agricultural Practice (CoGAP), the use of soil and nutrient management plans, and providing technical advice cards for farmers.

Physical habitat restoration will be pursued through partnership with landowners and other organisations, such as the recently completed restoration of the Thame at Eythrope working with the water company, landowners and angling interests. Restoration of degraded habitat will also be pursued through the planning process, for example through continuing to work with Wycombe DC to achieve improvements to the River Wye through High Wycombe, and through influencing the policies in Local Development Frameworks.

![Figure 28 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Thame catchment (as proportion of river length)](image)
Progress towards achieving good ecological status and good ecological potential

6.14 Thames (Maidenhead to Sunbury) catchment

Currently none of the river length in this catchment is achieving good ecological status/potential. It is not expected that any river length to be at good status or higher by 2015, but with additional local input this could change.

The majority of water bodies in this catchment are designated heavily modified for navigation, flood risk management and abstraction purposes. The catchment is further characterised by urban development and includes the towns of Bracknell, Maidenhead and Windsor.

The significant water management issues that currently impact on the status of this catchment are: physical modification; flow problems; diffuse urban pollution; urban development; point source pollution; and diffuse rural pollution.

As a consequence, phosphate and ammonia levels are high, specific pollutants such as Tributyltin (TBT) have been identified in a small number of water bodies and in places, dissolved oxygen levels are low. Modification of these water bodies including in-stream structures has led to loss of habitat diversity and the creation of barriers for fish migration. Considerable water abstraction requires the flow on the main river Thames to be closely managed through the Lower Thames Operating Agreement with Thames Water.

Many local measures in this catchment address the physical modification and flow pressures including; the removal of hard bank reinforcement or replacement of it with ‘soft’ engineering solutions, bank rehabilitation/re-profiling and the removal of obsolete structures. Working with our partners, we will investigate and, where possible, implement river restoration projects. In addition, through the Restoring Sustainable Abstraction programme working with Water Companies, we will investigate potentially damaging surface water and groundwater abstractions and where appropriate alter, limit and/or cease abstraction.

At a local level working with our partners, we will promote surface water management plans to ensure water quality is considered on a catchment basis and develop a programme of Pollution Prevention Campaigns promoting the use of Environment Agency Pollution Prevention Guidelines. At specific sites contributing to potential environmental quality standards (EQS) failure, such as Slough ‘A’ sewage treatment works, point source pollution pressure is being addressed through investigations and options appraisal.

Throughout the catchment, there is a requirement for further monitoring and investigation to allow targeting of additional measures to improve the status of this catchment.

Figure 29 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Thames (Maidenhead to Sunbury) catchment (as proportion of river length)

<table>
<thead>
<tr>
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<th>40%</th>
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<td>Moderate</td>
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<td>Good</td>
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<tr>
<td>High</td>
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</table>
6.15 Upper Lee

Currently 19 km of river length (19% of waterbodies) in this catchment are achieving good ecological status/potential. It is expected that by 2015 this will still be the case, but with additional local input this could change.

The geology is dominated by unconfined chalk housing a major aquifer, thus abstraction for public water supply (66% of licences), industry and agriculture have a significant impact here, creating an area of ‘serious’ water stress. Three Valleys Water and Thames Water hold the majority of the public water supply licences but there is also significant surface water abstraction. Local investigations looking at relocating and/or reducing public water supply pumping stations at Fulling Mill (River Mimram) and at Whitehall (River Beane) are measures aimed at reducing the abstraction pressures. Further work is being undertaken with the local water companies to reduce household water consumption rates and to provide evidence to Local Planning Authorities so that water usage targets can be established.

At a national level, we will work with water companies and other partners to reduce water demand through the promotion of free household water meters, the use of seasonal tariffs and through specification of water efficient fittings such as rainwater harvesting, grey water recycling, household water efficiency measures and sustainable drainage systems in new and refurbished homes under building regulations.

Land use in the Upper Lee is dominated by agriculture bringing pressures from diffuse rural pollution and causing many waterbodies, such as the river Stort to be nutrient rich. The raised phosphate levels affect the ecological status of the river Stort. This pressure will be tackled by raising awareness of Codes of Agricultural Practice and promotion of soil and nutrient management plans to farmers through the Farming Wildlife Advisory Group, along with catchment sensitive farming.

The proposed expansion plans linked to Luton, Stevenage, Harlow, Hertford, Welwyn Garden City and Bishops Stortford are likely to place further burden on the natural environment. The Rye Meads Water Cycle Strategy has been commissioned to look at the infrastructure needed to support the proposed growth. This includes looking at additional sewage treatment options within the catchment. Currently, the majority of sewage treatment capacity is at Rye Meads and results in a net export of treated water from the catchment area. Further pressures are represented by the possible expansion of the Stansted Airport and Elseham Eco-Town in the east of the catchment.

Despite these pressures, ecological quality is occasionally very good in the catchment. We are expecting the Fiddlers and Bourne Brooks and the river Lee around its confluence with the River Stort to improve to good status by 2015.

Figure 30 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Upper Lee catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.16 Vale of White Horse catchment

Currently 18 km of river length (10% of waterbodies) in this catchment are achieving good ecological status/potential. It is expected that by 2015 this will still be the case, but with additional local input this could change.

Major issues for the catchment are low flows, increased resource demand and other pressures from development, degraded channel habitat as a result of past heavy engineering, and diffuse pollution.

Water abstraction in the area is mainly for public water supply, however, there are a large number of licences that are used for farming and domestic purposes. There are currently no significant abstractions requiring investigation at present.

Surface water quality in the catchment is generally good, with the Rivers Ock, Key and Ginge Brook having the poorest water quality in the catchment. Phosphate concentrations due to diffuse pollution are a concern across most of the catchment, with Tributyltin compounds causing a current failure in the River Key. However, it is expected that the other chemicals monitored under the Directive to achieve good status by 2015, with an overall good ecological status by 2027.

Measures intended to counteract any negative impacts from development, and to secure net benefits, will require partnership and influencing of the Local Planning Authorities and developers on meeting the requirements of National, Regional and Local Planning Policy. This includes measures in relation to Pollution Prevention, sustainable drainage systems, land and groundwater contamination, ecological safeguard and enhancement, local area action plans and development briefs for major development areas.

Proposed solutions intended to deal with point source discharges include investigating emissions from installations and appraising options in order to attain good ecological status at Faringdon and Buscot STW. Further investigations may also be focused on timber treatment plants or treated timber storage areas.

Physical habitat restoration, where this is limiting ecological status, will require partnership with landowners and a range of other organisations – the Ray, Cole, Key and parts of the Ock catchment are all in need of restoration to re-instate habitat features needed to support the ecology expected of these rivers.

Figure 31 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Vale of White Horse catchment (as proportion of river length)
Progress towards achieving good ecological status and good ecological potential

6.17 Wey catchment

Currently 21 km of river length (10% of waterbodies) in this catchment are achieving good ecological status/potential. We are proposing that by 2015 this will improve to 59 km, but with additional local input this could increase.

The significant water management issues that currently impact on the status of this catchment are: point source pollution; physical modification; diffuse rural pollution; diffuse urban pollution; and urban development.

As a consequence, Phosphate levels are high and specific pollutants such as Tributyltin (TBT) have been identified in a small number of water bodies. A considerable number of water bodies in this catchment are designated heavily modified. Modification of these water bodies including in-stream structures has led to loss of habitat diversity and the creation of barriers for fish migration.

Nationally, working with the building industry, we will aim to restrict the use of plastics containing TBT in applications where the TBT may leach. In addition, across the Thames River Basin District working with our partners, we will aim to educate builders and developers to design buildings that consider water efficiency, sustainable drainage systems, rainwater harvesting and grey water recycling systems.

At specific sites contributing to potential environmental quality standards (EQS) failure, point source pollution pressure is being addressed through investigations and options appraisal. For example, historic pollution to the Cranleigh Waters from a disused brick works in the area, is being investigated and options are being appraised to reduce at source or treat pollution to meet the EQS. We will work with our partners such as Natural England, Local Authorities and developers, to investigate and, where possible, implement river restoration projects to address physical modification pressures including; culverts, closed watercourses, pinch points and in-channel structures.

To address and reduce agricultural pollution in the catchment, we will work with our partners such as Natural England, Wildlife Trusts and land managers to extend catchment sensitive farming delivery and promote land management best practice, alongside local pollution prevention campaigns. In growth areas such as Bordon, due to the proposed development of an eco-town, we will work with local authorities, water companies and other partners to undertake appropriate water cycle studies and ensure these are included in regional and local plans.

Figure 32 – Expected progress towards achieving good ecological status and good ecological potential in rivers in the Wey catchment (as proportion of river length)
6.18 Estuaries and Coastal waters

Currently none of the surface water bodies in this Heavily Modified catchment are classed as having good ecological potential. This is not expected to change by 2015.

**Thames Estuary**

The tidal Thames is characterised by significant urban development including the City of London and the industrial and port areas in the outer Estuary. The catchment is also dominated by flood defence structures, the Thames Barrier being the most visible example.

The Thames is one of the most ecologically diverse estuaries in England and Wales, with over 45 species of fish resident at some stage in their lifecycle, 350 benthic invertebrates and plays a major role in supporting North Sea fish stocks. The catchment is also home to a number of invasive non-native species, including Mitten Crab and Zander.

The main water quality concerns for the Thames Tideway centre around the impacts of the combined sewer overflow discharges. These discharge to the Tideway frequently, resulting in drops in dissolved oxygen, aesthetic pollution, risk to health and fish kills. The impact of effluent discharges to the tideway from the five major sewage treatment works which serve London (Mogden, Beckton, Crossness, Riverside and Longreach) are also of concern.

A major issue for the tidal Thames catchment is physical modification. The tidal Thames has a historic legacy of physical modification to support the various uses of the river, from flood defence to navigation. As a consequence, the tidal Thames has been designated as a candidate Heavily Modified Water Body (HMWB) due flood defence and ports / navigation uses. The status of HMWB dictates that the objective for this waterbody will be to achieve Good Ecological Potential (GEP). Both the morphology and water quality issues will need to be addressed for GEP to be achieved.

Continued development has been identified as a need within this catchment, particularly associated with the ‘Thames Gateway’ Key growth area. Future development represents a further pressure on the water environment, but also offers opportunities to improve the physical environment via sustainable methods of planning and development.

**Medway Estuary**

The Medway and Swale Estuaries are characterised by urban development, including the cities of Rochester and Gillingham and are home to industry and ports. Whitstable Bay is located at the mouth of the Swale, a typical Kent seaside town with an active fishing port and designated bathing waters. Murston Lakes connected to the upper Swale, were initially constructed for brickworks, later used for oyster rearing and are now part of Little Murston Nature Reserve. All Hallows Marshes, connecting to the outer Thames Estuary, lie within the North Kent Marshes These areas provide a valuable habitat for many bird species and as such the majority is designated as a Special Protection Area (SPA).

Diffuse pollution from agricultural land resulting in high nutrient concentrations within the ground and surface waters is a key concern. Diffuse pollution from urban areas also leads to the release of specific harmful substances.
A major issue for these waterbodies is physical modification to allow many uses including navigation, agriculture and flood defence. As a consequence, waterbodies have been designated as candidate Heavily Modified Water Bodies (HMWB) due flood defence and ports / navigation, with the exception of Murston Lakes which are designated candidate Artificial Water Body (AWB). The status of HMWB / AWB dictates that the objective for this waterbody will be to achieve Good Ecological Potential (GEP). The increased need for capital dredging work represents an additional pressure for the Medway.

Continued development has been identified as a need within this catchment, particularly associated with the Key Government growth areas. Future development represents a further pressure on the water environment, but also offers opportunities to improve the physical environment via sustainable methods of planning and development.

**Figure 33** – Expected progress towards achieving good ecological potential in the Estuaries and Coastal waters (percentage of water bodies)
**Progress towards achieving good status in groundwaters**

### 6.19 Groundwater

Currently 37% of groundwater water bodies in the Thames river basin district are achieving good quantitative status. This is not expected to change by 2015. A small improvement in chemical quality from 20% to 21% is proposed.

A number of groundwater bodies currently fail to achieve good status due to elevated levels of nitrate, pesticides, solvents and other contaminants. Furthermore, groundwater monitoring has highlighted widespread increasing trends in nitrate concentration. These are predicted to fail the Drinking Water Protected Area test by 2015.

In many cases it is not known what activity or activities are causing failure and therefore the initial stage will be to carry out focussed investigation. In other groundwater bodies there are measures which can be undertaken which will improve the groundwater quality. What is not known is how long this will take and whether the measures taken will be sufficient to attain good status.

The quantitative impacts of abstraction have been discussed in the catchment summaries above but over 50% of groundwater also requires treatment before it is put into public supply. In addition, a significant volume of groundwater is no longer abstracted as a direct result of quality problems. For example, 9Ml/day is no longer abstracted for supply as a result of the bromate pollution plume which extends for a distance of over 20 kilometres across the Mid-Chilterns Chalk and Upper Lee Chalk groundwater bodies.

The most important sources of groundwater are the Principal aquifers of the Chalk, the Jurassic Limestones, the Lower Greensand and the Lower Thames Gravels. A large part of the Chalk is “hidden” under Unproductive Strata in the London Area. A number of urban areas with a significant industrial past are situated on the Chalk such as Luton, Reading, High Wycombe and Basingstoke. Much of the Chalk aquifer is polluted by nitrates and are already, or are at risk of, exceeding the drinking water standard of 50mg/l particularly in the more rural West Area (Berkshire Downs Chalk and Vale of White Horse Chalk bodies).

Pesticide concentrations show an overall decline, largely as a result of phasing out certain pesticides known to cause a problem in groundwater. However, new cases of groundwater pollution involving pesticides continue to occur.

Other common groundwater pollutants include chlorinated solvents which have been used widely in industry and by dry cleaners. A large chlorinated solvents plume is present within the Vale of White Horse groundwater body. Metals are of concern in a number of bodies across the river basin district but there is no clear pattern to their distribution.

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**Figure 34** – Expected progress towards achieving good quantitative and good chemical status in Groundwater

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7.0 Summary sector action plan

7.1 Background

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

7.2 Impact assessment

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

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

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

We have published a draft impact assessment for consultation at the same time as the consultation on this Draft River Basin Management Plan. Copies are available through our website at www.environment-agency.gov.uk/wfd or from the contact given at the end of this document.

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

7.3.1 What is already happening and what will happen - Scenario A

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

7.3.1.2 The Scenario A costs presented below are an estimate. Whilst costs were not easily available for all Scenario A measures, we do have data for the most costly measures. In the Thames River Basin District almost all of the Scenario A costs are met by the water industry, with approximately 25% of the these costs arising from PR04 and 75% from PR09. A small percentage of costs are also met by the agricultural and rural land management sectors, as a result of complying with the NVZ action plan.

7.3.1.3 This expenditure is also delivering significant benefits. Our best estimate puts this at £16.7 million per year. These monetised benefits only value the public's willingness to pay for surface water improvements. There are many other benefits which have
not been monetised, some of which are listed below.

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

### Costs

<table>
<thead>
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<th>Total PV (£m)</th>
<th>% of PV</th>
</tr>
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<td>74.7</td>
<td>5,851.9</td>
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<tr>
<td></td>
<td></td>
<td>o Water Industry (97.9%)</td>
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<td></td>
<td></td>
<td>o Agricultural and Rural Land Management (1.8%)</td>
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</table>

### Benefits

<table>
<thead>
<tr>
<th>Average Annual Undiscounted Benefits (£m)</th>
<th>Total PV (£m)</th>
<th>Other benefits not expressed in monetary terms include:</th>
</tr>
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<tbody>
<tr>
<td>16.7</td>
<td>323.4</td>
<td>1. Reduced operation costs to water companies due to improved water quality, in particular reduced concentrations of nitrate and pesticides; 2. Protection and enhancement of material assets due to reduced alien species pressures, for example zebra mussels which attach to infrastructure in large numbers; 3. Human health benefits due to improvements in water quality of recreational water bodies; 4. Reduced quantities of waste sent to landfill due to revised dredging techniques; and 5. Reduced long-term costs of coastal defence due to measures which encourage natural coastal erosion.</td>
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</tbody>
</table>

7.3.1.4 Twenty-five per cent of these costs arising from PR04 and seventy-five per cent from PR09. Final decisions on the Periodic Review of prices will not be made by Ofwat until the end of 2009 and until that time be cannot confident that all of the Water Industry measures in PR09 will go ahead. If allowance is not made in prices, the schemes will not proceed. This uncertainty applies particularly to those measure identified by water companies in their draft Water Resources Management Plans (dWRMP) as they are currently only part way through the statutory process. Final decisions on the dWRMPs will not be made until some time in 2009, potentially after public hearings / inquiries have taken place. A further element of uncertainty over which measures will be funded has been added by Ofwat's recent publication of guidance on water supply and demand policy. This suggests that investments required as a result of climate change may not be funded.

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

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

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

7.3.2.3 Delivering Scenario B implies additional costs, over Scenario A, for a variety of sectors. The four main sectors bearing these additional costs are the water industry, the Environment Agency, industry, manufacturing and other business, and central government. This expenditure is also delivering significant benefits. Our best estimate puts this at £7.9 million per year, of which 47% relates to cost savings from investigations and 53% relates to the public’s willingness to pay for surface water improvements.

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

<table>
<thead>
<tr>
<th>Costs</th>
<th>Average Annual Undiscounted Costs (£m)</th>
<th>Total PV (£m)</th>
<th>% of PV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10.6</td>
<td>244.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Industry</td>
<td></td>
<td>o Water Industry (90.3%)</td>
<td></td>
</tr>
<tr>
<td>Environment Agency</td>
<td></td>
<td>o Environment Agency (5.3%)</td>
<td></td>
</tr>
<tr>
<td>Industry,</td>
<td></td>
<td>o Industry, Manufacturing and other Business (2.0%)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td>o Central Government (1.8%)</td>
<td></td>
</tr>
<tr>
<td>and other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Average Annual Undiscounted Benefits (£m)</th>
<th>Total PV (£m)</th>
<th>Other benefits not expressed in monetary terms include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.9</td>
<td>83.3</td>
<td>The other benefits will include all of the benefits expressed under scenario A. These benefits will be greater in magnitude and will occur in more places.</td>
</tr>
</tbody>
</table>

7.3.2.5 Also note the points raised in 7.3.1.4 above.

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

7.3.3.2 Delivering Scenario C implies additional costs over Scenarios A and B. The four main sectors bearing these additional costs are the Environment Agency, industry, manufacturing and other business, local government and the water industry. This expenditure is also delivering benefits. Our best estimate puts this at £0.1 million per year, all of which is through cost savings from investigations.

<table>
<thead>
<tr>
<th>Costs</th>
<th>Average Annual Undiscounted Costs (£m)</th>
<th>Total PV (£m)</th>
<th>% of PV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.1</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>o Environment Agency (73.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Industry, Manufacturing and other Business (14.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Local Government (3.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Industry (3.7%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Average Annual Undiscounted Benefits (£m)</th>
<th>Total PV (£m)</th>
<th>Other benefits not expressed in monetary terms include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1</td>
<td>0.8</td>
<td>The other benefits will include all of the benefits expressed in Scenario A above. Compared to Scenario B, these benefits will be greater in magnitude and will occur in more places.</td>
</tr>
</tbody>
</table>

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

Q4 To develop this plan we have followed a process to appraise the actions. This process is described in detail in annex E. Do you agree with how we have done this?

» Information about the principles for each scenario can be found in annex E.

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

Information about the actions associated with hydromorphology can be found in Annex C.

7.4 **Key contributions from different sectors**

The tables below set out the key actions that the sectors will be expected to lead on, or where they will be the main partner.

### 7.4.1 Agriculture and rural land management

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement Rural Development Programmes agri-environment schemes for England &amp; Wales</td>
<td>Provide incentives for resource protection though environmentally sensitive farming practices Helps to achieve WFD priorities by reducing pollution from agriculture</td>
<td>Basic entry schemes - nationally; higher tiers - targeted areas</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Implement and enforce cross-compliance (inc. Sludge Directive, SSAFO, and Nitrates Directive requirements)</td>
<td>Helps to achieve WFD priorities by reducing pollution from agriculture, at farms receiving subsidies</td>
<td>Nationally</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Enforcement of existing Nitrate Vulnerable Zone Action Plan</td>
<td>Helps to achieve WFD priorities by reducing pollution from agriculture and complies with protected area objectives</td>
<td>in Nitrate Vulnerable Zones</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Promote efficient and responsible use of water</td>
<td>Awareness campaign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary suspension of use of sheep dip containing cypermethrin</td>
<td>Helps to prevent and limit inputs of pollutants to surface and groundwater</td>
<td>Nationally</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Compliance with best practice on fertiliser use</td>
<td>Limits pollution from nutrients and reduces incidence of eutrophication; limits entry into waters of cadmium</td>
<td>Nationally</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Marketing and Use restrictions for specific substances e.g. isoproturon</td>
<td>Restricts use of priority substances, priority hazardous substances or specific pollutants within agriculture</td>
<td>Across EU</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Existing RBD Partnership Projects e.g. River Kennet</td>
<td>Work with a range of partners towards general improvement River Kennet.</td>
<td>River Kennet</td>
<td>Existing RBD Partnership Project</td>
</tr>
<tr>
<td>Enhanced Pesticide Voluntary Initiative (VI)</td>
<td>Enhanced number of VI catchments</td>
<td>Relevant VI catchments</td>
<td>2015</td>
</tr>
</tbody>
</table>

**Additional actions that will happen if this draft plan is approved - scenario B**

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment Sensitive Farming, including advice to farmers on best practice and small grants for capital investment</td>
<td>Helps to achieve WFD priorities by reducing pollution from agriculture</td>
<td>CSF priority catchments</td>
<td>2009-11</td>
</tr>
<tr>
<td>Enforcement of revised Nitrate Vulnerable Zone Action Plan</td>
<td>Helps to achieve WFD priorities by reducing pollution from agriculture and complies with protected area objectives</td>
<td>New Nitrate Vulnerable Zones</td>
<td>From 2008</td>
</tr>
<tr>
<td>Focus existing statutory and voluntary pollution prevention actions in safeguard zones</td>
<td>Provide additional protection to drinking water sources</td>
<td>existing groundwater source protection zones)</td>
<td>2015</td>
</tr>
</tbody>
</table>
### Pesticide Voluntary Initiative (VI) General Advice

**Targeted advice in specific areas**

**Relevant VI catchments**

<table>
<thead>
<tr>
<th>Actions that could happen if we had more certainty they would be proportionate &amp; feasible - Scenario C</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
</table>
| Where appropriate, and subject to local consultation, designate a limited number of Water Protection Zones from 2009 and apply appropriate actions within them to control high risk activities. Further WPZs may be designated, subject to evidence and local consultation, from 2012 | Regulatory tool to control diffuse pollution in high risk areas where other mechanisms are not working or unlikely to work  
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | Initially around 8 WPZs in locations to be decided across England & possibly Wales | From 2009 with possibility of further WPZs from 2012 |
| Promote best practice for use and disposal, including treatment, of spent sheep dip | Helps to prevent and limit inputs of pollutants to groundwater and surface water  
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | Nationally | 2015 |
| Investigate discharges from farm dumps and appraise options for action | Helps to prevent and limit inputs of pollutants to groundwater and surface water  
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | In appropriate catchments | 2015 |
| Enhanced programme of RBD Partnership Projects that could happen if we could identify suitable partners. | A range of potential benefits are possible  
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | Likely to be at an individual water body or small group of water bodies | 2015 |
| Extension to Catchment Sensitive Farming, including advice to farmers on best practice and small grants for capital investment | Helps to achieve WFD priorities by reducing pollution from agriculture  
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | New priority catchments | 2015 |

### 7.4.2 Central Government

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is already happening and what will happen - scenario A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pesticides Safety Directorate Research into amenity use of pesticides</td>
<td>Reduction in pesticide pollution in surface and groundwater.</td>
<td>National</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Reduction of water demand through labelling of water efficient appliances (Market Transformation)</td>
<td>Reduces water demand</td>
<td>National</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Offer tax incentives for the purchase of efficient plant and fittings by commercial organisations (Defra)</td>
<td>Reduces water demand</td>
<td>National</td>
<td>2010</td>
</tr>
<tr>
<td>Veterinary Medicines Directorate National Approvals mechanism for Vet medicines</td>
<td>Restricts use of priority substances, priority hazardous substances.</td>
<td>National</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
### Additional actions that will happen if this draft plan is approved - scenario B

<table>
<thead>
<tr>
<th>Action</th>
<th>Benefit</th>
<th>Location</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actively promote the use of storage reservoirs for non-potable water uses (e.g. irrigation storage reservoirs) (Natural England)</td>
<td>Limits unsustainable abstraction, protects river flows and groundwater dependent conservation sites</td>
<td>River basin district</td>
<td>2015</td>
</tr>
<tr>
<td>Agri-environment schemes targeting will include diffuse pollution as a targeting driver (Natural England)</td>
<td>Water bodies at most risk of diffuse pollution do not deteriorate, and improve in status</td>
<td>Priority waters for resource protection</td>
<td>2015</td>
</tr>
<tr>
<td>Disseminate and develop species identification guides and train key groups (Natural England)</td>
<td>Improve early detection of invasive non native species</td>
<td>River basin district</td>
<td>2015</td>
</tr>
<tr>
<td>New or enhanced local education campaigns to prevent non-native species introduction (Natural England)</td>
<td>Help reduce future problems from invasive non-native species</td>
<td>River basin district</td>
<td>2015</td>
</tr>
<tr>
<td>Remove invasive non-native species from sites that are at risk of becoming a source, where feasible (Natural England)</td>
<td>Identify and control invasive species in key hot spots to reduce the risk of spread and limit local ecological damage</td>
<td>Waters specified in annex B</td>
<td>2015</td>
</tr>
<tr>
<td>A statutory code of practice to provide guidance on the use and management of septic tanks is under preparation for use in conjunction with the forthcoming amended groundwater regulations and Environmental Permitting Regulations</td>
<td>Helps to prevent and limit inputs of pollutants to surface waters and groundwaters</td>
<td>National</td>
<td>2015</td>
</tr>
<tr>
<td>Promote use of soil and nutrient management plans. Raise awareness of Codes of Good Agricultural Practice. Consider the provision of technical advice cards for farmers covering best practice and relevant local issues (Natural England)</td>
<td>Helps to achieve WFD priorities by reducing pollution from agriculture</td>
<td>River basin district</td>
<td>2015</td>
</tr>
</tbody>
</table>

### Additional actions that could happen if we had more certainty that they would be effective - scenario C

<table>
<thead>
<tr>
<th>Action</th>
<th>Benefit</th>
<th>Location</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid to extend English Catchment Sensitive Farming Delivery Initiative into new catchments to reduce diffuse pollution from agricultural sources.</td>
<td>Helps to achieve WFD priorities by reducing pollution from agriculture</td>
<td>Selected catchments</td>
<td>2015</td>
</tr>
<tr>
<td>New developments required to meet high standard of water efficiency.</td>
<td>Limits unsustainable abstraction, protects river flows and groundwater dependent conservation sites</td>
<td>River basin district</td>
<td>2015</td>
</tr>
<tr>
<td>Produce code of conduct for commercial fisheries and sea anglers and help to establish marine protected areas (Sussex Inshore Fisheries and Conservation Authority)</td>
<td>Protect bass nursery and priority reef habitat</td>
<td>Waters specified in annex B</td>
<td>2015</td>
</tr>
</tbody>
</table>

Defra is considering the need to take action on phosphates in the water environment and the contribution that controls on domestic laundry cleaning products might make to that process.

Would help to control the amount of phosphorus in waste waters and in sewage effluent, and help to reduce the risk of eutrophication

- Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits

Nationally 2015

Defra is considering a range of options to reduce the impacts from sewer misconnections. These include voluntary (public awareness raising and training for plumbers) and regulatory (transfer of powers – power currently with local authorities but could be passed to sewerage undertakers) options.

Helps to prevent and limit inputs of pollutants to surface waters

- Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits

Nationally 2015

Defra is considering regulation based on best practice, which will cover the abuse of the drainage system, commercial washing activities, surface water control plans on construction sites and site management for industrial, institutional and commercial sites.

Reduce emissions of priority substances, priority hazardous substances or specific pollutants as well as organic pollution from urban and industrial activity

- Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits

Nationally 2015

7.4.3 Environment Agency

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is already happening and what will happen - scenario A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment Agency modification of abstraction licences in regard to Natura 2000 sites</td>
<td>Ensures no adverse impact on Natura 2000 site integrity</td>
<td>Woolmer Forest and Kennet Valley Alderwoods</td>
<td>By 2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing GiA Funded pollution prevention, response and enforcement action (e.g. farm visits, campaigns and use of anti-pollution works notices)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduction in pollution from paints/solvents, glycols and water treatment chemicals</td>
<td>Industrial estates where appropriate chemicals are used and stored</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional actions that will happen if this draft plan is approved - scenario B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GiA Funded pollution prevention, response and enforcement action (e.g. site visits, campaigns and use of anti-pollution works notices) that could happen with current resource</td>
<td>Reduction in pesticide pollution in surface and groundwater.</td>
<td>Farmers throughout the RBD</td>
<td>2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional actions that could happen if we had more certainty that they would be effective - scenario C</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Enhanced programme of GiA Funded pollution prevention, response and enforcement action (e.g. site visits, campaigns and use of anti-pollution works notices) | More local support for national Memorandums of Understanding on the ground particularly Highways Agency and Network Rail to reduce diffuse pollution.
- To do this we need to demonstrate that the action is not disproportionately costly | Various sites to be confirmed | 2015 |

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

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is already happening and what will happen - scenario A</strong></td>
<td>Develop and deliver programme of habitat management work to improve fish habitats</td>
<td>Improve river habitat quality</td>
<td>In rivers with poor habitat quality</td>
</tr>
<tr>
<td><strong>Additional actions that will happen if this draft plan is approved - scenario B</strong></td>
<td>Remove and control invasive non-native species from problem sites and promote good habitat management</td>
<td>Identify and control invasive species in key hot spots to reduce the risk of spread and limit local ecological damage</td>
<td>Areas to be identified</td>
</tr>
<tr>
<td></td>
<td>Establish Invasive non-native species forum to coordinate action across Thames RBD and produce a non-native species management plan.</td>
<td>Will develop a strategy to manage the process of identification and control of invasive species</td>
<td>River basin district</td>
</tr>
<tr>
<td></td>
<td>Set up a strategic, robust and reliable network of volunteer 'spotters'.</td>
<td>Will assist with the management of invasive non-native species, impacts of litter and notification of environmental issues.</td>
<td>River basin district</td>
</tr>
<tr>
<td><strong>Additional actions that could happen if we had more certainty that they would be effective - scenario C</strong></td>
<td>Establish training, guidance and education campaigns on invasive non-native species</td>
<td>Improve awareness of risks and early detection, limit release of invasive species to the wild.</td>
<td>Across the river basin district</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits</td>
<td></td>
</tr>
</tbody>
</table>

### 7.4.5 Industry, manufacturing and other business

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is already happening and what will happen - scenario A</strong></td>
<td>Remediation of contaminated land and groundwater</td>
<td>Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water</td>
<td>Urban and industrial areas</td>
</tr>
<tr>
<td></td>
<td>Marketing and Use restrictions for specific substances e.g. trichloroethylene, PAHs, some mercury uses</td>
<td>Restricts use of priority substances, priority hazardous substances or specific pollutants within industry, manufacturing and other business</td>
<td>Across EU</td>
</tr>
<tr>
<td><strong>Additional actions that will happen if this draft plan is approved - scenario B</strong></td>
<td>Investigate emissions from various installations e.g. formulators, distributors, manufacturers and waste disposal operators and appraise options for action</td>
<td>Reduces emissions of priority substances, priority hazardous substances or specific pollutants from industry, manufacturing and other business</td>
<td>Sites identified as potentially contributing to a failure in the appropriate standards</td>
</tr>
<tr>
<td></td>
<td>Focus existing statutory and voluntary pollution prevention actions in safeguard zones</td>
<td>Provide additional protection to drinking water sources</td>
<td>existing groundwater source protection zones)</td>
</tr>
</tbody>
</table>
### Actions that could happen if we had more certainty they would be proportionate & feasible - Scenario C

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
</table>
| Where appropriate, and subject to local consultation, designate a limited number of Water Protection Zones from 2009 and apply appropriate actions within them to control high risk activities. Further WPZs may be designated, subject to evidence and local consultation, from 2012 | Regulatory tool to control diffuse pollution in high risk areas where other mechanisms are not working or unlikely to work  
• Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | Initially around 8 WPZs in locations to be decided across England & possibly Wales | from 2009 with possibility of further WPZs from 2012 |
| Enhanced programme of RBD Partnership Projects that could happen if we could identify suitable partners, such as the promotion of environmental reporting by large/medium-sized companies, via EMS / ISO accreditation | Raise awareness of environmental issues within business and industry to reduce environmental impact outside of the usual regulatory mechanisms,  
• Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | River basin district | 2015 |

### 7.4.6 Local and Regional Government

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion of water efficiency and groundwater protection policies in Regional Spatial Strategies and Local Development Plans</td>
<td>Helps to achieve WFD (and GWD) priorities by promoting sustainable water use and preventing and limiting inputs of pollutants to groundwater and surface water</td>
<td>Water stressed areas</td>
<td>2008 onwards</td>
</tr>
<tr>
<td>Inclusion of planning policies that require waste water treatment infrastructure capacity</td>
<td>Reduce risk of deterioration caused by growth</td>
<td>River basin district</td>
<td>2008 onwards</td>
</tr>
<tr>
<td>Promote the wide scale use of sustainable drainage schemes for flood risk</td>
<td>Reduce risks of flooding and of impact on surface water quality at times of high rainfall</td>
<td>Nationally</td>
<td>2008 onwards</td>
</tr>
<tr>
<td>Additional actions that will happen if this draft plan is approved - scenario B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote the wide scale use of sustainable drainage schemes</td>
<td>Reduce risks of flooding and urban pollution of surface waters during periods of high rainfall</td>
<td>Nationally</td>
<td>By 2010</td>
</tr>
<tr>
<td>Provide national guidance for spatial planners on integrating development planning and water planning</td>
<td>Ensure delivery of WFD requirements through planning/Local Development Framework process</td>
<td>River basin district</td>
<td>By 2010</td>
</tr>
<tr>
<td>Actions that could happen if we had more certainty they would be proportionate &amp; feasible - Scenario C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Improved management of surface water drainage by use of sustainable urban drainage systems (SuDS) and development and implementation of Surface Water Management Plans where appropriate | Reduce risk of diffuse pollution  
• Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits | RBD | 2015 |
| Promote inclusion of water environment quality targets in Local Area Agreements | Increase local authority accountability for the quality of the water environment  
• Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits | Nationally | By 2015 |
Inclusion of policies for water neutrality in Regional Spatial Strategies and Local Development Frameworks for new development including retro-fitting of existing development

| Makes the maintenance of flows in fresh water bodies more achievable and reduces risks from water transfer |
| Water stressed areas |
| By 2015 |

Develop and provide approved water planning training for planners through professional institutes/organisations (such as the Royal Town Planning Institute) to ensure the impacts of the planning process on the water environment are fully understood.

| Reduce the impact of urban diffuse pollution |
| River basin district |
| 2015 |

Increase frequency of street cleaning, including litter and gully cleansing.

| Reduce the impact of urban diffuse pollution |
| River basin district |
| 2015 |

7.4.7 Mining and quarrying

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comply with regulations such as Contaminated Land and Groundwater</td>
<td>Prevent and limit pollution of groundwater</td>
<td>Nationally</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

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

| Investigate emissions from working sites and appraise options of best practice controls at mines and quarries | Ensure environmental quality standards are met | Sites contributing to potential environmental quality standard failure | 2015 |

7.4.8 Navigation and ports

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ban on marketing of TBT as a biocide in the EU. Imports of TBT in biocides (pesticides) now controlled under the Rotterdam Convention PIC Procedure, covering hazardous chemicals and pesticides. Imports in other articles controlled under Directive 76/769/EC and REACH.</td>
<td>Reduces emissions of priority substances, priority hazardous substances or specific pollutants</td>
<td>Across EU</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

Non-application of TBT to boat hulls by July 2003. From January 2008 TBT should not be used on ship hulls or there should be a coating to prevent leaching of underlying TBT anti-foulants.

| Reduces emissions of priority substances, priority hazardous substances or specific pollutants | Across EU | Ongoing |

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

| Help prevent illegal use of old TBT containing products | Reduces emissions of priority substances, priority hazardous substances or specific pollutants from navigation | England | 2012 |
Develop national guidance framework on dredging to inform Programme of Measures to meet WFD objectives. Reduces emissions of priority substances, priority hazardous substances or specific pollutants from navigation England 2012

Review existing controls for disposal of dredgings inside and outside harbour limits as appropriate. Reduces emissions of priority substances, priority hazardous substances or specific pollutants from navigation England 2012

7.4.9 Urban and transport

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is already happening and what will happen - scenario A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highways Agency programme to investigate impact of soakaways</td>
<td>Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water</td>
<td>Road transport network</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Existing GIA Funded pollution prevention, response and enforcement action (e.g. site visits, campaigns and use of anti-pollution works notices).</td>
<td>Awareness raising of potential causes of pollution with the aim of preventing pollution before it happens.</td>
<td>Identified high risk sites</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

**Additional actions that will happen if this draft plan is approved - scenario B**

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage sustainable and efficient use of salt/grit used on motorways, and highways - partnership with Highways Agency and Local Authorities</td>
<td>Limits inputs of salt to surface water and groundwater</td>
<td>Road transport network</td>
<td>2015</td>
</tr>
<tr>
<td>Encourage uptake of Amenity Forum best practice advice, including use of Amenity Assured contractors. Encourage consideration of non chemical weed control</td>
<td>Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses</td>
<td>Sites contributing to potential EQS failures</td>
<td>2015</td>
</tr>
<tr>
<td>Identify hot spots for contaminated sediment and other pollutants from highway run-off</td>
<td>Identifies sources of priority substances, priority hazardous substances or specific pollutants to allow development of effective programmes of measures</td>
<td>Sites contributing to potential failure in environmental standards</td>
<td>2015</td>
</tr>
<tr>
<td>Implement guidelines in the Memorandum of Understanding on herbicide use between Network Rail, Water UK and the Environment Agency</td>
<td>Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses</td>
<td>Sites contributing to potential EQS failures</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage enhanced use of sustainable drainage systems and improved design and codes of practice for runoff, e.g. from highways and other transport – partnership with Highways Agency and Local Authorities</td>
<td>Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses</td>
<td>At defined priority sites across the river basin district</td>
<td>2015</td>
</tr>
<tr>
<td>Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved street and green space cleaning</td>
<td>Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses</td>
<td>At defined priority sites across the river basin district</td>
<td>2015</td>
</tr>
<tr>
<td>Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Promote best practice on use of household and garden chemicals, including non-chemical weed control

Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits

Sites contributing to potential EQS failures 2015

Where appropriate, and subject to local consultation, designate a limited number of Water Protection Zones from 2009 and apply appropriate actions within them to control high risk activities. Further WPZs may be designated, subject to evidence and local consultation, from 2012

Regulatory tool to control diffuse pollution in high risk areas where other mechanisms are not working or unlikely to work
- Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits

Initially around 8 WPZs in locations to be decided across England & possibly Wales from 2009 with possibility of further WPZs from 2012

7.4.10 Water industry

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is already happening and what will happen - scenario A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvement of continuous discharges at sewage treatment works - coordinated under PR04 by Defra/WAG/Ofwat/EA/Water Companies</td>
<td>Improve and protect the quality of over 171 kilometres of rivers.</td>
<td>Specified sites by 2010</td>
<td></td>
</tr>
<tr>
<td>Improvement of unsatisfactory intermittent discharges at combined sewer overflows, pumping stations and polluted surface water outfalls - coordinated under PR04 by Defra/WAG/Ofwat/EA/Water Companies</td>
<td>Improvements to 33 discharges Specified sites by 2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvements to water company assets under the next round of company investment (PR09) to meet statutory (non-WFD) requirements (Water companies)</td>
<td>Deliver further water quality improvements and continue to reduce the impact of abstraction across the river basin district Rivers, coasts and estuaries across the river basin district By 2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment Agency modification of abstraction licences in regard to Natura 2000 sites and Sites of Special Scientific Interest</td>
<td>Ensures no adverse impact on Natura 2000 site integrity and on conservation objectives of Sites of Special Scientific Interest Natura 2000 sites and SSSIs By 2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigation of discharge impacts and appraisal of options for action - coordinated under PR04 by Defra/WAG/Ofwat/EA/Water Companies</td>
<td>Assesses the impact of the discharge and any action we need to take to deal with this to prevent and limit inputs of pollutants to groundwater and surface water Specified sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment Agency extension of abstraction control to previously unlicensed areas</td>
<td>Limits unsustainable abstraction, protects river flows and groundwater dependent conservation sites Specified sites 2013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Action</th>
<th>What this does</th>
<th>Where</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve continuous discharges at sewage treatment works to meet WFD specific requirements - coordinated under PR09 by Defra/WAG/Ofwat/EA/Water Companies</td>
<td>Expected to protect 166 kilometres of river for ammonia and 120 kilometres for phosphorus and 46 hectares of lakes, estuaries and wetlands Specified sites 2015</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Improve further unsatisfactory polluting intermittent discharges at combined sewer overflows, pumping stations and polluted surface water outfalls to meet WFD specific requirements - coordinated under PR09 by Defra/WAG/Ofwat/EA/ Water Companies

Investigate discharge impacts and appraise options for action to meet WFD specific requirements - coordinated under PR09 by Defra/WAG/Ofwat/EA/ Water Companies

Manage demand for and use of water of water through leakage reduction, provision of household meters, seasonal tariffs and education programmes

Investigate emissions from STWs and appraise options for action meet WFD specific requirements-coordinated under PR09 by Defra/WAG/Ofwat/EA/ Water Companies

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

<table>
<thead>
<tr>
<th>Action</th>
<th>Outcome</th>
<th>Location</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional actions under PR09 for phosphate discharges when biological evidence is available and provides corroboration of need.</td>
<td>Further reduction in phosphate and resulting improvement in ecological quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish county or unitary authority level of water debate/forum across Thames RBD</td>
<td>To raise awareness and further integrate local strategies on the management of water in the river basin district</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examine options for decentralised sewerage treatment arrangements including upgrading existing works</td>
<td>Should help create locally sustainable systems and, in particular, assist in areas where there are low flow issues</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finalisation of the water industry periodic review process is running in parallel to this consultation. Measures to be delivered by the water industry, and their predicted outcomes can change from those used to develop the draft plan. Any additions, deletions or alterations and any subsequent changes of predicted outcomes will be made available to inform the consultation as they become available.
This is a summary of the actions that will be taken. Full tables of actions are in annex C and D (for Natura 2000 actions).
Local actions acting on a particular water body can be found through the Environment Agency's website at [www.environment-agency.gov.uk/maps](http://www.environment-agency.gov.uk/maps)

<table>
<thead>
<tr>
<th>Q5</th>
<th>What comments do you have on these actions? Are there any actions that have been missed, or any changes you'd propose?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q6</td>
<td>What comments on Scenario C actions do you have, including any additional information you can supply about specific actions?</td>
</tr>
<tr>
<td>Q7</td>
<td>What support can you offer, such as undertaking any actions or providing resources, to help deliver more for your environment?</td>
</tr>
</tbody>
</table>
8.0 Planning for changing conditions

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

8.2 Climate change

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

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

Table 2 Qualitative description of how climate change may change the risk of pressures

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Increased risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstraction and other artificial flow pressures</td>
<td>Very high</td>
</tr>
<tr>
<td>Biological pressures (fisheries management and invasive non-native species)</td>
<td>Medium</td>
</tr>
<tr>
<td>Biological pressures (invasive non-native species)</td>
<td>Medium</td>
</tr>
<tr>
<td>Microbiological pressures (including faecal indicator organisms)</td>
<td>Medium</td>
</tr>
<tr>
<td>Organic pollution (sanitary determinands) pressure</td>
<td>Medium</td>
</tr>
<tr>
<td>Nutrients pressure (nitrogen and phosphorus)</td>
<td>High</td>
</tr>
<tr>
<td>Hazardous substances pressure</td>
<td>Low</td>
</tr>
<tr>
<td>Acidification pressure</td>
<td>Low</td>
</tr>
<tr>
<td>Salinity pressure</td>
<td>Low</td>
</tr>
<tr>
<td>Temperature pressure (from point source discharges)</td>
<td>Low</td>
</tr>
<tr>
<td>Physical modification pressure</td>
<td>Medium</td>
</tr>
<tr>
<td>Sediment pressure</td>
<td>High</td>
</tr>
</tbody>
</table>

8.2.3 Our screening analysis of the proposed actions shows what would be effective under a range of climatic conditions so they will help tackle pressures both now and under the future climate. Most actions can also be adapted so climate change should not rule out implementing them now.
8.2.4 No single body is responsible for ensuring climate change adaptation in the water environment. Delivery will best be achieved through partnerships and integration of activities. Working together on river basin management is a great opportunity to achieve this.

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

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

8.3 Development

8.3.1 Current and emerging spatial plans will set out proposed future growth. In addition Ecotowns may be developed in the Thames river basin district. In our catchment profiles we have acknowledged the key centres where growth is likely to take place. In turn the spatial plans are an opportunity for us to improve the water environment by influencing the planning policy framework, and planning decisions, to direct resources that can assist in achieving appropriate environmental outcomes.

8.3.2 We are working with South East River Basin District to identify where growth may be particularly difficult to manage while maintaining the quality of our water environment. This major piece of work is an extension of our examination of growth and water quality at Natura 2000 sites, and will be completed by March 2009.

8.3.3 The environmental report under the Strategic Environmental Assessment reviews the effect of the actions proposed in this plan, including any impacts on climate change and from development.

8.4 Flooding and coastal erosion

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

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

8.4.3 Implementation of the Thames, North Kent Rivers, Medway and South Essex CFMPs will help to achieve the objectives, especially those for physical modification in urban waterbodies. One of the key messages from the CFMPs is that development and
urban regeneration provide a crucial opportunity to manage the risk. Where appropriate, this will also present the chance to improve the status of urban waterbodies through re-creating river corridors and removing physical modifications such as culverts and trash screens. On some watercourses, long-term adaptation of the urban environment to be more flood resilient will result in the set-back of development from the river, land in the floodplain protected for water-compatible uses and a more natural environment that can provide additional storage for floodwaters.

8.4.4 In a wider context, flood risk management activities across the RBD area may result in the protection, enhancement and restoration of the ecological status of water bodies through, for example, enabling greater floodplain connectivity, reducing detrimental erosion and sedimentation, and reducing polluted run-off from land. It is important that opportunities to achieve WFD objectives as part of or through Flood Risk Management activities are clearly identified and taken account of as interventions are planned and implemented.
9.0 Further information

9.1 Strategic environmental assessment

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

We will publish an environmental report at the same time as this consultation. Copies are available through our website at www.environment-agency.gov.uk/wfd or from the contact given at the end of this document.

9.2 Habitats Directive assessments

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

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

9.2.3 If the River Basin Management Plans do not pass these tests and do not appear to be meeting their obligations for Natura 2000 sites, then a fuller assessment may be required.
Give us your views
We encourage you to respond by using our online consultation on our website at www.environment-agency.gov.uk/wfd. From here, you will be able to see other people’s responses, download the consultation document and annexes and find out more information about river basin management planning and the Water Framework Directive.

Alternatively you can return a copy of the question form, and request further information, or contact us in any of these ways:
- email at thamesRBD@environment-agency.gov.uk
- phone on 01189 535100
- post to Andy Turton, Kings Meadow House, Kings Meadow Road, Reading, RG1 8DQ

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

This consultation closes on 22 June 2009.

Data Protection Notice

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

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

Compliance with the Government’s Code of Practice on Consultation

This consultation is being run in accordance with the criteria set out in the Government’s Code of Practice on Consultation. If you have any queries or complaints about how the consultation has been carried out, please contact:
- post to Cath Beaver, Consultation Co-ordinator, Environment Agency, Rio House, Aztec West, Bristol BS32 4UD.
- email cath.beaver@environment-agency.gov.uk
Consultation questions

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

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

2. Do you agree with the proposed objectives? What would you change?

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

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

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

5. What comments do you have on these actions? Are there any actions that have been missed, or any changes you’d propose?

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

6. What comments on scenario C actions do you have, including any additional information you can supply about specific actions?

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

Other comments you may have on this plan?

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

9. Do you have any other comments on this draft plan that you haven’t already given?
Would you like to find out more about us, or about your environment?

Then call us on
08708 506 506 (charged at local rates)

email
enquiries@environment-agency.gov.uk

or visit our website
www.environment-agency.gov.uk

incident hotline 0800 80 70 60
(Freephone 24 hour)
(Calls from mobile phones are not free and will be charged at normal network operator's call rates)

floodline 0845 988 1188 (24 hour)