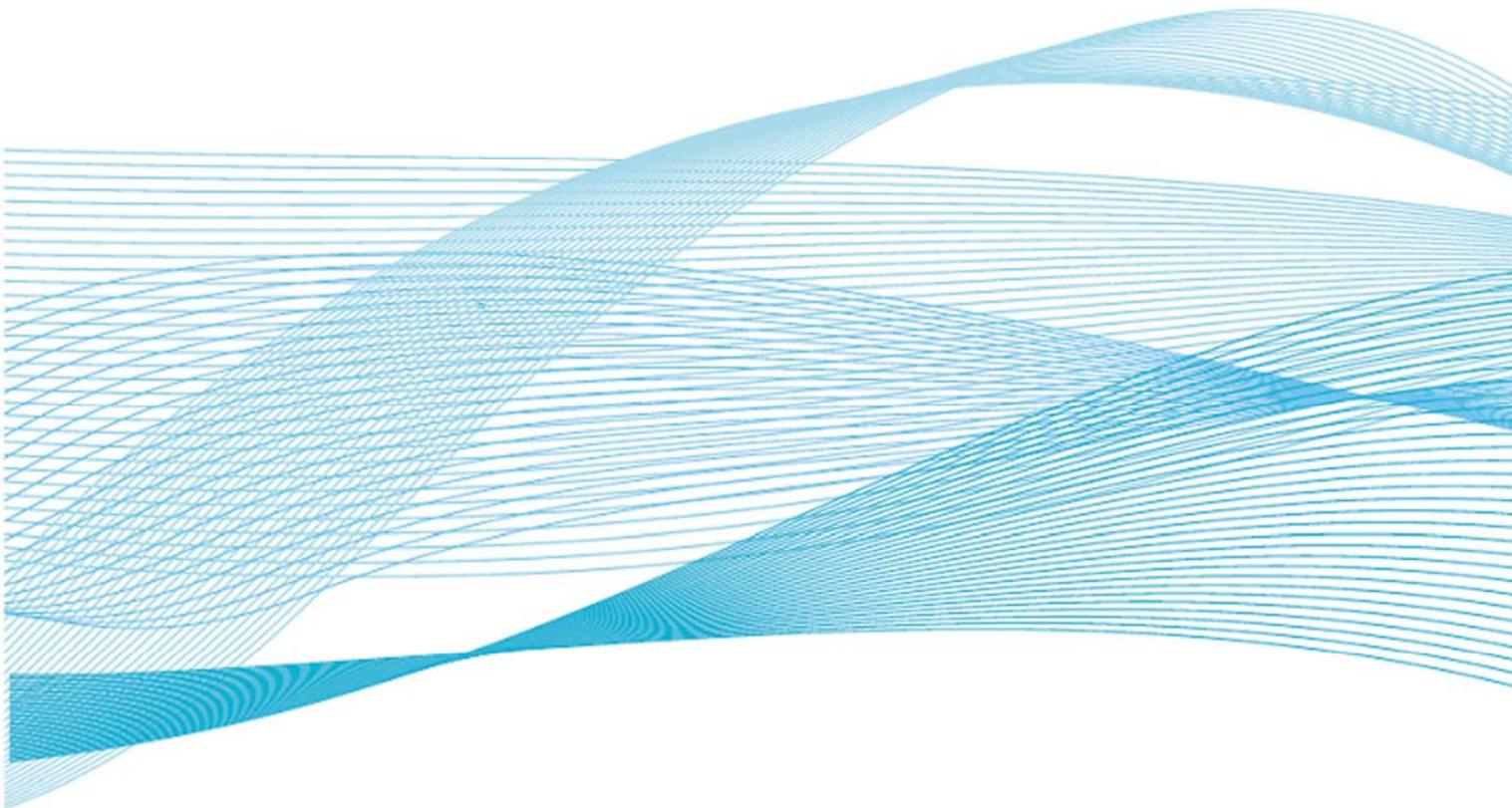


# Water for people and the environment

Water Resources Strategy  
Regional Action Plan for Midlands Region



We are the Environment Agency. It's our job to look after your environment and make it **a better place** - for you, and for future generations.

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December 2009

# Water for people and the environment in Midlands Region

Water resources in parts of the Midlands are already stressed and population growth and climate change will only stretch our resources further. By 2017 the population of the East Midlands will increase by over 10 per cent (466,000 additional people)<sup>1</sup>. Over the same period the population in the West Midlands will increase by about 5.7 per cent (306,000 people)<sup>2</sup>.

We can no longer afford to take water for granted. This action plan shows how we intend to deal with these pressures in Midlands Region to ensure that there will be enough water for people and the environment.

In many parts of the Midlands there is no more water available for abstraction during low flows. There are a number of locations where existing abstractions are causing significant environmental damage. We will take action to make these abstractions sustainable.

We want to ensure that people in the Midlands make the best use of the water that is available. We can achieve this by promoting water efficiency, increasing household water metering, ensuring leakage does not rise, abstraction licence trading, and promotion of high flow storage reservoirs for agriculture.

Careful planning is essential to ensure there is sufficient water for society and the economy, as well as the environment now and in the future. In developing this action plan we've had the support of many key partners. I look forward to working with these partners, together can we address the challenges that we face.



Mark Sitton-Kent, Regional Director

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# 1 Introduction

Water is precious. It is essential for life. It supports valued and diverse ecosystems in wetlands, lakes, rivers and estuaries. It is vital to economic recovery and growth, and key to health, recreation and tourism. It is used to generate power, run industries, grow food and in our homes.

But the future of water resources in Midlands Region is uncertain. Pressure on water resources will grow from increases in population, changes in lifestyle, climate change, the development of new technologies, and from changes in the use of land. These pose significant challenges to the way water resources are managed, and as a result, the way water is valued will become more important.

We are planning for what we know the future will bring, but we also need to plan for what the future might bring. We need a strategic approach to water management; otherwise we risk an expensive and damaging impact on the economy and the environment, which will affect lifestyles.

Our aim is to have 'enough water for people and the environment'. The management and use of water and land must be shown to be sustainable - environmentally, socially and economically. We require the right amount of good quality water for people, agriculture, commerce and industry, and the environment.

In Midlands Region, we already face some significant challenges:

- 34 per cent of the catchments in this Region are over-abstracted or over-licensed at low flows.
- 36 designated nature conservation sites<sup>3</sup> are at risk from, or are being damaged by, too much abstraction.

If we do nothing, these pressures may get worse because of the impact of climate change and from a growing population.

Our Water Resources Strategy for England and Wales, *Water for People and the Environment*<sup>4</sup>, sets out a number of actions that are reflected in this Regional Action Plan. This Plan takes the aims and objectives of the strategy and identifies Regional actions that will enable:

- Water to be abstracted, supplied and used efficiently;
- The water environment to be restored, protected and improved so that habitats and species can better adapt to climate change;
- Supplies to be more resilient to the impact of climate change, including droughts and floods;
- Water to be shared more effectively between abstractors;
- Improved water efficiency in new and existing buildings;
- Water to be valued and used efficiently;
- Additional resources to be developed where and when they are needed in the context of a twin-track approach with demand management;
- Sustainable, low carbon solutions to be adopted;
- Stronger integration of water resources management with land, energy, food and waste.

We intend to work with others to understand and quantify the scale of the challenge and the solutions needed to address it.

Each region within the Environment Agency has developed a Water Resources Strategy Regional Action Plan. This plan shows how we propose to implement the actions within the Water resources strategy for England and Wales locally. It considers local pressures and priorities, and reflects the measures in River Basin Management Plans and our new Corporate Strategy.

By working together with other organisations our aim is to ensure there is enough water for people and the environment whatever the future might have in store for us. In parallel, we have developed a Water Resources Action Plan for England and Wales, which covers the actions which will be progressed by the Environment Agency's national teams.

# 2 Current and future pressure on water resources in Midlands Region

## 2.1 Current state of water resources

Midlands Region has a rich diversity of urban and rural landscapes ranging from the mountains and uplands of the Peak District to the agricultural plains of Shropshire and the Vale of Evesham. The region is made up of the Severn and Humber River basins and their sub-catchments (Figure 1). We manage these rivers of national and international importance and wetlands such as the River Severn Estuary. We also work across national boundaries to regulate the River Severn.

We share our boundaries with six other Environment Agency regions. Some of our catchments in Midlands Region still have water available, so we need to take a strategic view beyond our boundaries when considering future water resources demands.

The amount of water taken, or abstracted, in Midlands Region peaked in 2002 at just over 8000 mega litres per day (Ml/d), but has since declined to around 6800 Ml/d (one mega litre is roughly half of an Olympic sized swimming pool).

Water is abstracted for public water supply, power generation, industry, agriculture and a variety of other purposes. Cooling water for power generation and public water supply account for 90 per cent of the total abstraction (49 and 41 per cent respectively) while industrial abstraction makes up about six per cent of the total water abstracted in the region. The majority of the public water supplied to Midlands Region is provided by two water companies, Severn Trent Water and South Staffordshire Water. Both of these companies demonstrated in their recent Water Resources Management Plans that they have enough water to meet current and likely future demands over the next few years.

Agricultural abstraction makes up less than one per cent of the total water abstracted in Midlands Region and most of this water is used for spray irrigation. While this volume of water is relatively small, it is needed during dry periods when our water resources are most limited and little of the water is returned to the environment.

During low flows, much of the region's water resources are already fully committed, and in some cases over committed, threatening the integrity of river and wetland habitats. We have a number of locations where there are potentially unacceptable environmental impacts from abstraction. It is vital that we provide proper protection for these and other water-dependent habitats. We are

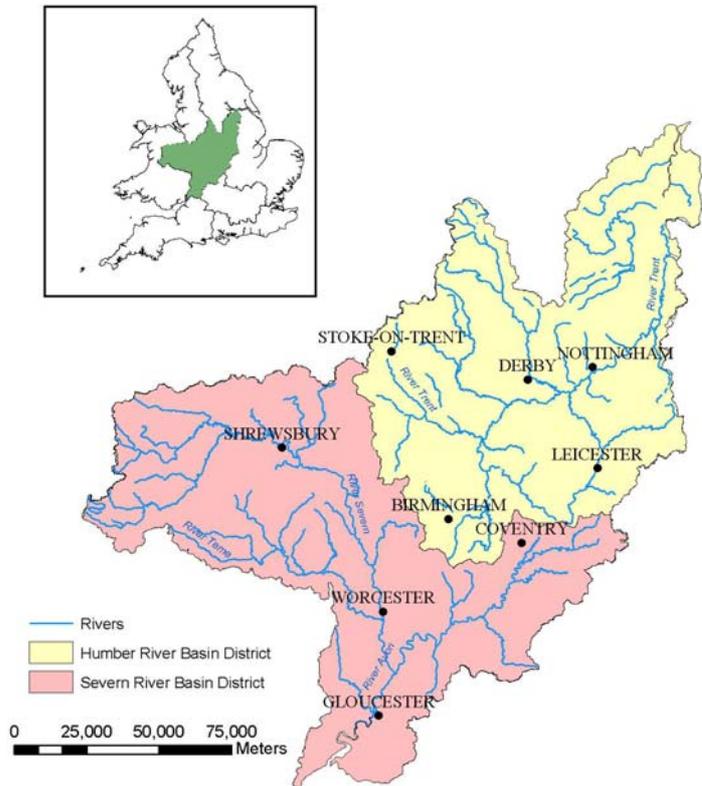


Figure 1: Midlands Region

working with abstractors to reduce these impacts and restore the environment through our Restoring Sustainable Abstraction (RSA) programme.

## 2.2 Future pressures on water resources

Over the next 30 years, there will be an even higher demand for water due to increases in population and development. Although we are currently in a recession and housing growth has slowed in the past year, we are continuing to plan on the basis of housing targets being met in the longer term. We used future scenarios to look at future pressures on water resources. The scenarios consider a range of responses by Government, regulators, water companies, abstractors and individuals to the way that water is used and managed. They are not forecasts, but show a range of possible demands in the future.

Under the worst case scenario, a further 1,025 mega litres per day may potentially be necessary in the Severn (England) and Humber (south) River Basins by 2050 to meet the additional needs of the public, industry and agriculture (Appendix 1, Section 5.8). Our work also shows that by 2050, climate change could reduce river flow by 10 to 15 per cent on an annual average basis, and could reduce summer river flows by 50 to 80 per cent.

Climate change is widely forecast to lead to drier summers and wetter winters. Weather will be more extreme, with frequent periods of intense rainfall, causing floods, and more frequent, prolonged dry periods (droughts). Generally higher temperatures could drastically increase farmers' irrigation requirements and will lead to increases in demand for water at a time when overall availability is reduced.

Sandstone aquifers give us the opportunity to optimise the use of our water supplies and increase resilience to climate change. The combination of surface water near groundwater that is predominantly held in sandstone aquifers allows us to promote conjunctive use. This enables abstractors to take water from sandstone groundwater sources during dry periods and switch to surface water sources when there are high flows. Conjunctive use can increase supply flexibility and reduce the impact of abstraction on the environment.

Population growth and development combined with the prospect of hotter, drier summers and less water in rivers and underground storage will put additional pressure on our already stretched water resources. The future management of this precious resource is too important to be left to chance. We will use this plan to manage our water resources now and to meet the future challenges.

More detailed information about the state of water resources in Midlands Region can be found in Appendix 1.

# 3 Links with other strategies and plans

## 3.1 Environment Agency Corporate Strategy

The Water resources strategy for England and Wales, the Corporate Strategy and the supporting sub strategy for water are aligned and reflect the same aims, objectives and priorities for water resources management. The activities to deliver the Corporate Strategy, its sub strategy for water and those within this Regional Action Plan are captured within our Regional Contribution, and the regional business plan which supports it, ensuring that resources are allocated and work appropriately scheduled.

The corporate strategy is split into five themes:

- Act to reduce climate change and its consequences
- Protect and improve water, land and air
- Work with people and communities to create better places
- Work with businesses and other organisations to use resources wisely
- Be the best we can be

and the actions within this plan are spread across these themes.

Our corporate strategy can be found on our website.

## 3.2 River Basin Management

As the Competent Authority under the Water Framework Directive (WFD), we co-ordinate activity to improve and maintain water quality, quantity and morphology (channel shape) through river basin management.

We develop River Basin Management Plans (RBMPs) in partnership with others which set out measures for achieving 'good' status or potential of all waters, including groundwater, wetlands, rivers, canals, lakes, reservoirs, estuaries and coastal waters. The plans include measures to protect the most valued and sensitive water-reliant habitats and species, and to protect sources of drinking water. The plans also include measures to promote efficient and sustainable water use.

The WFD includes a series of environmental targets that aim to protect and improve the aquatic environment and provides the framework for achieving sustainable water use. RBMPs set out the necessary actions in cycles until 2027.

The RBMPs are wider than just water resources, and cover many other actions, including those relating to the management of ecology, land, water quality, fisheries, channel morphology and flood risk.

The Water Resources Strategy for England and Wales sets out a number of aims and objectives relating to the vision of enough water for people and the environment. The strategy's aims include securing a better environment, which complement RBMPs.

However, the Water Resources Strategy for England and Wales has a longer planning horizon than RBMPs – it looks to 2050 and beyond. It also covers some water resources elements such as drought management and ensuring security of supply, which are not core to the RBMPs. While there is overlap and the water resources related actions within RBMPs and Regional action plans must be consistent with one another, RBMPs by themselves will not fully meet the objectives of the Water Resources Strategy Regional Action Plans and vice versa. They are both required.

In summary, the strategy and the RBMPs have some common elements relating to achieving sustainable water use, but Water Resources Strategy Regional Action Plans ensure coherence to the suite of actions relating to water quantity.

## 3.2 Water Company Water Resources Management Plans and Business Plans

All water companies have a statutory duty to prepare and maintain a water resources management plan (WRMP) to show how the water company intends to maintain the balance between supply and demand for water over the next 25 years. Implementation of WRMPs will be the route by which some of the actions in this Regional Action Plan are delivered (e.g., the actions on metering, tariff development and leakage reduction).

Water companies are also required to produce a Business Plan on a five yearly basis which sets out the company's overall strategy and the implications for price limits and customer bills as part of the Periodic Review. The Business Plan sets out the company's strategic objectives around standards of service, water quality and environmental improvements, and identifies the actions that will be required to meet these objectives. Water company Business Plans will be key to delivering a number of actions in this Regional Action Plan.

## 3.3 Water Company Drought Plans and Environment Agency Drought Plans

Water companies and the Environment Agency produce drought plans which outline how we will manage water resources during a drought and define our respective roles and responsibilities. These plans can be found on the websites of the relevant organisations.

## 3.4 Restoring Sustainable Abstraction (RSA) programme and National Environment Programme

The Environment Agency has established the Restoring Sustainable Abstraction (RSA) programme to review the environmental impact of existing licensed abstractions and make changes where the impact is found to be unacceptable. This programme is driven by an overall need to ensure long-term sustainability and, more immediately, to meet the requirements of European Directives, UK law and other environmental and local concerns.

A prioritised programme of investigations, options appraisals and implementation of solutions at specific sites is underway. Where an investigation identifies that a site is being damaged by abstraction we work with abstractors to find and implement an appropriate, cost-effective solution. In cases where the abstractor is a water company, the issue may be included in the National Environment Programme for investigation, options appraisal or implementation, and funded through water company Business.

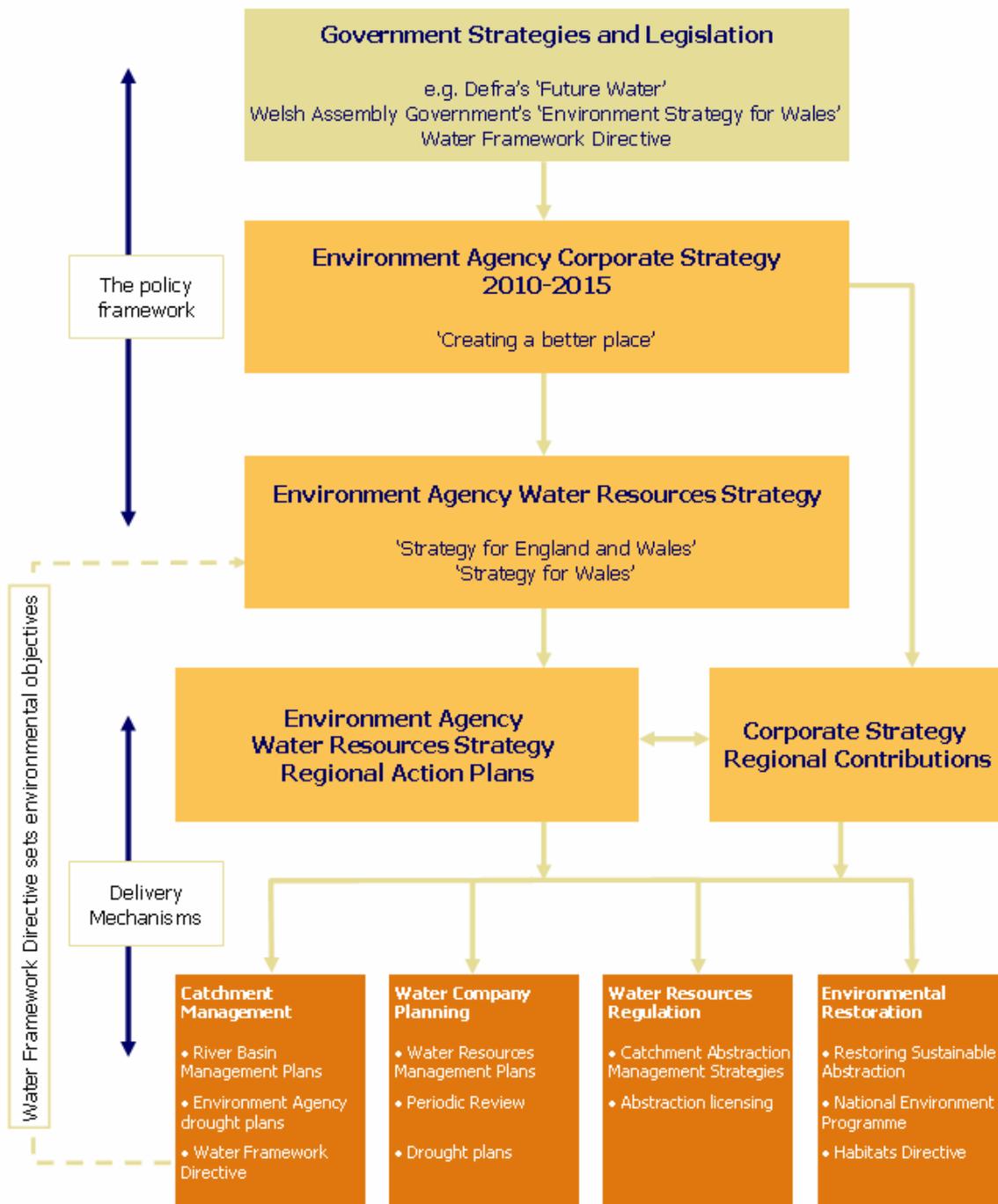
## 3.5 Catchment Abstraction Management Strategies (CAMS)

CAMS provide an assessment of the water resources available in local catchments and set out local water abstraction licensing practice to help balance the needs of water-users and the environment on a local scale. These strategies can be found on our website.

## 3.6 Other Strategies and Plans

To ensure that the management and use of water in Midlands Region is environmentally, socially and economically sustainable, we need to link in with other relevant strategies and plans at both the regional and local level. These include Regional Spatial Strategies (RSS) and Regional Economic Strategies (RES). It is also important that we maintain and strengthen our links with Local Development Frameworks, particularly in areas where water resources are already under stress, as these will be key to delivering many of the actions in our Regional Action Plan.

Figure 2 shows how this Regional Action Plan and other strategies and plans fit together to provide a co-ordinated approach to water resources management.



**Figure 2: Water resources management - linkage between strategies and plans**

# 4 Regional strategy actions

We have identified six **key priorities** for Midlands Region:

- High-flow reservoirs (Mid4): We want to increase the number of agricultural high-flow storage reservoirs in over abstracted catchments. This will help to reduce abstraction pressure and increase agricultural resilience to climate change.
- Abstractor groups and licence trading (Mid30): We want to see more abstractor groups in Midlands Region and we would want to use these groups to facilitate licence trading. We will work with abstractor groups to improve communication and investigate the potential for sharing water.
- Water efficiency (Mid32): We want everyone to make informed decisions about how to use water efficiently. 89 per cent of the greenhouse gas emissions associated with water abstraction, treatment, transport, use and disposal are from water use in the home<sup>5</sup>. It is necessary to increase water efficiency to reduce demand and greenhouse gas emissions.
- Household Metering (Mid24): We want the number of metered households to increase in line with levels identified in the final Water Company Business Plans. We will promote metering to households who would benefit financially from a metered tariff.
- Conjunctive use (Mid22): We want to increase the number of conjunctive use schemes in Midlands Region (conjunctive use is the combined use of groundwater and surface water sources, e.g. use of groundwater when rivers flows are low and river water when river flows are not low). These schemes provide environmental and economic benefits by improving resilience to climate change, reducing long-term constant rate groundwater abstraction, and reducing the impact of abstraction on surface water low-flows.
- Restoring Sustainable Abstraction (Mid15): We want all abstractions in Midlands Region to be sustainable. Over the next five years we will investigate over 100 schemes and develop cost beneficial solutions for any abstractions having an adverse impact on the environment under the RSA programme. In particular we will continue to monitor and model our sandstone aquifers to develop sustainable solutions and increase resilience of our public water supplies.

This plan focuses on the actions or parts of actions which will be progressed within the Region. For detail on the work which will be progressed at a National level, please refer the Water Resources Action Plan for England and Wales, which has been developed in parallel.

Where the actions within this Regional Action Plan result in specific plans or activities, we will take full account of the potential impact they may have on designated sites under the Habitats Regulations.

A formal Habitats Risk Assessment has been produced for the Water Framework Directive River Basin Management Plans and many of the actions relating to the environment are consistent with this assessment. We do not believe that the remaining actions can be considered in terms of their potential for significant impact on specific designated sites.

## Referencing used

Actions within this and other Regional action plans	Mid – Midlands NW – North West W – Wales
Action included within the Water Resources Strategy for England and Wales	WRS A – Adapting to and mitigating climate change WRS B – A better water environment WRS C – Sustainable planning and management of water resources WRS D – Water and the water environment are valued
Actions included within the Water Resources Action Plan for England and Wales	WRAPEW
Reference to other plans	<p><i>Catchment Abstraction Management Systems: CAMS</i>  <i>Restoring Sustainable Abstraction: RSA</i>  <i>River Basin Management Plan: RBMP</i>  <i>Biodiversity Action Plans: BAP</i>  <i>Water Resources Management Plan: WRMP</i>  <i>Periodic Review: PR</i>  <i>East Midlands Regional Plan: EMRP</i>  <i>West Midlands Regional Spatial Strategy: WMRSS</i></p> <p><i>Environment Agency Corporate Strategy Regional Contribution:</i>  <i>CS1 – Act to reduce climate change and its consequences</i>  <i>CS2 – Protect and improve water, land and air</i>  <i>CS3 – Work with people and communities to create better places</i>  <i>CS4 – Work with businesses/other organisations to use water wisely</i>  <i>CS5 – Be the best we can</i></p>

Please note that although each regional action has been identified as contributing to one objective, it does not mean that they contribute to one objective only. The actions may be cross cutting and deliver against other objectives within and outside of a particular aim. Also note that the list of 'other organisations that need to be involved' is not exhaustive.

## Timescales

Short term	5 years
Medium term	5 to 25 years
Long term	25 years plus



## 4.1 Adapting to and mitigating climate change

Climate change is one of the biggest challenges we face in managing water resources in the long term. In Midlands Region we expect to experience more variability in the climate with hotter drier summers and warmer wetter winters giving more frequent and severe droughts and floods.

We should expect:

- different or increased patterns of demand for water;
- changes to seasonal river flow;
- reduced reliability of supplying water from storage reservoirs;
- changes in baseline water quality and capacity for rivers to receive effluent;
- reduced groundwater replenishment.

A co-ordinated and longer-term approach is needed to guarantee reliable water supplies for all types of abstraction and to protect the water environment. The following table sets out our objectives as well as our actions to contribute to climate change mitigation, and to help abstractors, species and habitats adapt to the effects of climate change.

Many of the actions in the other sections of the plan will also help mitigate and adapt to climate change.

### Case Study 1: Shropshire Groundwater Scheme pumping emissions

Electricity used to pump water currently makes up almost a third of our emissions and the Shropshire Groundwater Scheme (SGS) is the largest pumping scheme in Midlands Region. SGS is designed to pump water from the sandstone aquifers of North Shropshire and release it into the River Severn to enhance river flows. On average we need to pump some water once every three years.

In 2006, 54 days of pumping amounted to a total abstraction of 4700 mega litres of water, an electricity bill of £67k, the consumption of 1.2 million kWh units of electricity and emitted 633 tonnes of carbon. This is about the same amount of carbon emitted by 115 households in one year<sup>6</sup>.

In spring 2009, a portion of the groundwater pump control systems were modified to achieve actual energy efficiency savings of 16 per cent (992 kWh per day), reduction of carbon emissions (0.5 tonnes per day) and reduced operating costs (£85 per day)<sup>7</sup>. If these modifications had been in place in 2006 (17 days pumping) we could have saved over £1k in electricity costs and reduced our carbon emissions by 8.5 tonnes.

If all of the pumps were upgraded, we could have saved about £11k in pumping costs and reduced our carbon emissions by about 101 tonnes. This would have represented a five per cent reduction in our pumping based emissions, or two per cent reduction our total annual emissions for Midlands Region (2007/08 figures).

This project demonstrates how innovative technology has enabled us to improve our operating efficiency. We will continue to review our activities and adopt innovative technologies to reduce emissions and running costs, and improve upon the reliability and resilience of our operations.



Water resources strategy objective	Ref no.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
Ecology is more resilient to climate change because abstraction pressures have been reduced and a diverse network of habitats has been allowed to develop.	Mid1	<p><b>Wetlands Vision</b> The area of wetlands in Midlands Region will increase.</p> <p>We will work with key partners to restore, create and manage wetlands in the face of climate change in order to contribute to the Wetlands Vision.</p> <p>We will continue to support work on the Meres and Mosses project in Shropshire and the Moors for the Future project in the Peak District.</p> <p>See also Mid2, Mid8 and Mid17.</p>	WRS A4 WRS B4 RSA BAP CS2	Natural England, Countryside Council for Wales (CCWales), Conservation Bodies, local authorities	Short, medium and long term
	Mid2	<p><b>Habitat Connectivity</b> We will work with others to maintain and improve the connection between habitats across Midlands Region to enable species to migrate as climatic conditions change.</p> <p>See also Mid1 and Mid8.</p>	WRS A4 CS2	Natural England, Conservation Bodies, local authorities	Short, medium and long term
The resilience of supplies and critical infrastructure is increased to reduce the impacts of climate change.	Mid3	<p><b>EA Midlands resilience</b> We will increase the resilience of our operational activities to climate change.</p> <p>Our operational activities will be reviewed to increase their resilience and to ensure that they achieve the best environmental results. We will review these activities in order of greatest impact, continuing with <a href="#">River Severn Regulation</a> (which includes the releases from Llyn Clywedog, Lake Vyrnwy and the Shropshire Groundwater Scheme, see Case Study 1).</p> <p>See also Mid10.</p>	WRS A8 CS1	Abstractors	Short and medium term

Water resources strategy objective	Ref no.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
	Mid4	<p><b>Agricultural resilience</b></p> <p>The number of high flow reservoirs in over abstracted catchments will increase.</p> <p>We will promote high-flow storage reservoirs to farmers with spray irrigation licences in over abstracted catchments to reduce current pressure on resources, increase resilience to climate change and improve biodiversity.</p> <p>We will work with farmers to understand and overcome the barriers to reservoir development and help to identify potential funding sources. We will continue to work with farmers to advise them on good practice in water use.</p> <p>We will encourage development agencies to provide funding for high-flow storage reservoirs and rainwater harvesting in areas that are over abstracted and over licensed. We will also work with development agencies to target these funds into areas of water deficit.</p> <p>See also Mid16, Mid19, Mid27 and Mid30.</p>	<p>WRS A3</p> <p>WRS B1</p> <p>WRS C2</p> <p>RBMP</p> <p>CAMS</p> <p>RSA</p> <p>CS4</p>	<p>National Farmers Union (NFU), Country Land and Business Association (CLA), farmers and growers, Rural Development Programme England (RDPE), local authorities, Advantage West Midlands (AWM), East Midlands Development Agency (EMDA)</p>	<p>Short and medium term</p>
	Mid5	<p><b>Public water supply resilience</b></p> <p>Water companies need to identify opportunities to improve resilience of existing resources and provide security from extreme events by improving the connectivity of their water supply infrastructure.</p> <p>We will work with the water companies in Midlands Region to improve our understanding of the connectivity of sources in the region.</p> <p>We expect Severn Trent Water to review and, if necessary,</p>	<p>WRS A2</p> <p>WRMP</p> <p>CS1</p>	<p>Water companies, Ofwat, Defra, Welsh Assembly Government (WAG)</p>	<p>Short and medium term</p> <p>Project</p>

Water resources strategy objective	Ref no.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		<p>redefine its water resource zone boundaries by 2012 to ensure that the company's resource zones comply with the Environment Agency's definition.</p>			completed by 2012
		<p>See also Mid22 and Mid26.</p>			
	Mid6	<p><b>Industrial resilience</b> We will work with regional development agencies to increase industrial resilience to the impacts of climate change.</p> <p>We will do this through our jointly funded Regional Climate Change Adaptation Coordinator post with Advantage West Midlands. We will do the same for the East Midlands via our involvement in the East Midlands Climate Change Partnership.</p>	WRS A2 CS1	AWM, EMDA	Short and medium term
		<p>See also Mid19.</p>			
	Mid7	<p><b>Water Cycle Studies</b> We expect water cycle studies to be completed in the early planning stages.</p> <p>We expect planning authorities to complete water cycle studies in accordance with Environment Agency guidance<sup>8</sup>. We will work with local authorities to advise where and when water cycle studies are necessary, and where water efficiency measures should be targeted. We will also provide advice to developers, including on specific local issues, to ensure that the appropriate water infrastructure is taken into account when permission is granted for development.</p>	WRS C3 CS3	AWM, EMDA, local authorities, developers, planners	Short, medium and long term
		<p>See also Mid17, Mid18, Mid19, Mid21, and Mid26.</p>			

Water resources strategy objective	Ref no.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
Flexible and incremental solutions in water resources management allow adaptation to climate change as it happens.	Mid8	<p><b>Managing conservation sites</b> We will work with Natural England to understand the implications of their work to review designations of conservation sites and adapt our own processes where appropriate, particularly where they involve protecting habitats that may change as climate change progresses.</p> <p>See also Mid1 and Mid2.</p>	WRS A4 CS2 RBMP RSA	Natural England	Short, medium and long term
Everyone is able to make more informed decisions and choices about managing water resources, protecting the environment and choosing options to avoid security of supply problems.	Mid9	<p><b>Creating and providing information</b> We want everyone to make informed decisions when using water resources in the face of climate change.</p> <p>We will develop and promote water resources related guidance, such as our irrigation reservoir, rainwater harvesting booklets and state of the environment reports.</p> <p>We will work with key partners to identify where there are gaps in information/advice and we will develop and promote the necessary products to fill these gaps.</p> <p>See also Mid16 and Mid32.</p>	WRS A3 WRS A6 WRS B1 WRS C2 RBMP CAMS CS1	Abstractors, NFU, CLA, local authorities, farmers and growers	Short and medium term
Greenhouse gas emissions from using water resources are minimised and properly considered in future decisions	Mid10	<p><b>EA Midlands water resources emissions</b> Our operational activities will achieve the best environmental results for the smallest carbon footprint.</p> <p>We will review these in order of greatest impact, continuing with <a href="#">River Severn Regulation</a> (which includes the releases from Llyn Clywedog, Lake Vyrnwy and the Shropshire Groundwater Scheme, see Case Study 1).</p> <p>See also Mid3.</p>	WRS A8 CS1	Abstractors	Short and medium term

Water resources strategy objective	Ref no.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
	Mid11	<p><b>Other abstractor water resources emissions</b> Abstraction licence operating agreements will take greenhouse gas emissions into account. We will work with abstractors to review existing agreements in order of greatest environmental impact.</p> <p>We will support and work with South Staffordshire Water on their project to re-evaluate the company's water supply infrastructure to determine whether changes could reduce the company's pumping head and carbon footprint.</p> <p>We will look to work with Severn Trent Water to develop a similar project.</p>	WRS A5 WRS A7 WRS C12 PR CS1	Abstractors, Water companies	Short and medium term
	Mid12	<p><b>Sustainable hydropower developments</b> We will support sustainable hydropower developments across Midlands Region where the needs of the local environment are protected since schemes could provide a positive contribution to the UK's green energy target.</p> <p>We will encourage developers to use our good practice guidelines<sup>9</sup> and, where proposals are inappropriate, we will work with developers and others in attempting to agree viable, sustainable projects.</p>	WRS A9	Developers	Short, medium and long term



## 4.2 A better water environment

We are faced with challenges when protecting and improving the water environment. We need to protect and improve river catchments, groundwater, and valuable wildlife sites while still supplying water needs associated with a large and growing population. This includes agricultural and industrial demands for water as well as household needs. While coping with the pressures from climate change and water availability we also have to look for opportunities to improve the water environment.

We use our Catchment Abstraction Strategies (CAMS) to plan the management of water resources in particular river catchments. Through CAMS we determine how much water is available for abstraction. In Midlands Region there are legacy issues that we must resolve where abstraction is currently unsustainable and is having a negative impact on the environment. The majority of our region already has either no spare water available or over committed water resources at low flows. Given the expected changes to the climate, we must ensure security of supply and environmental protection.

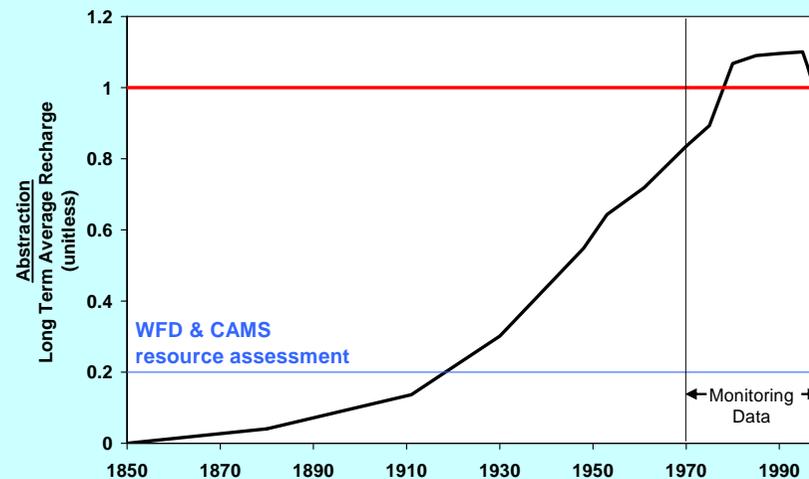
Managing water resources is not just about managing abstraction. Water quality, flood risk management and land management all have the potential to affect the quality and quantity of our water supplies. Integrated catchment management will become even more important in future years. This is recognised in River Basin Management Plans. Many of the actions in this plan will be taken forward through the Severn and Humber River Basin Management Plans.

The following table sets out our objectives as well as the actions we plan to take to restore and improve the environment in Midlands Region.

### Case Study 2: East Midlands Sherwood Sandstone abstraction

The East Midlands Sherwood Sandstone is the most heavily abstracted aquifer in the Midlands providing around 10 per cent of all water supplies. Modelling has demonstrated that abstraction up to the mid 1990s, which peaked at about 400 MI/d, resulted in long-term groundwater level decline and baseflow depletion<sup>10</sup>. Current abstraction is still greatly above the level needed to obtain 'good status' under the Water Framework Directive.

To reach the 'good status' level, abstraction would have to be reduced back to the 1920s levels. Land use changes (i.e., new housing developments) since the 1920s create serious challenges as there is potential for flooding in some areas where springs may emerge due to the rise in groundwater associated with reduced abstraction. This scale of reduction in abstraction would also have significant implications for public water supply. However, the aquifer still provides the potential for additional conjunctive use strategies.



Greater creativity will be required to reduce abstraction and improve baseflows and groundwater levels in the East Midlands Sherwood Sandstone without posing a risk to developments. Solutions will also have to span decades and include incremental reductions. We will continue to monitor and model groundwater levels and surface water flows and develop solutions to improve the status of this aquifer.

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
Measures will be in place to make sure that water bodies achieve Water Framework Directive objectives.	Mid13	<p><b>Ecological status</b> The number of surface and groundwater bodies meeting good status/potential will increase.</p> <p>We will implement the water resources measures identified in the Severn and Humber River Basin Management Plans. Where flow contributes to a failure to meet good ecological status/potential we will investigate the cause and act to remove or mitigate the effect where feasible using CAMS and RSA.</p> <p>We will continue to monitor, model and develop solutions to achieve good status for our aquifers under the Water Framework Directive (see Case Study 2).</p> <p>See also Mid15.</p>	WRS A3 WRS B4 WRS B5 WRS C1 WRS C2 WRS C10 RBMP CAMS RSA CS2	Abstractors, Natural England, CCWales, Wildlife Trusts, Conservation Bodies	Short, medium and long term
Abstraction is sustainable, the environment is protected and improved and supplies remain secure.	Mid14	<p><b>Sustainable Abstraction</b> We will ensure that the needs of the environment and abstractors are taken into account when licences are issued.</p> <p>The following actions within this plan will also help us meet this objective: Mid1, Mid2, Mid4, Mid5, Mid6, Mid7, Mid8, Mid13, Mid15, Mid16, Mid17, Mid18, Mid19, Mid20, Mid21, Mid22, Mid23, Mid24, Mid25, Mid26, Mid27, Mid28, Mid29, Mid30, Mid32 and Mid34.</p>	See referenced actions	Abstractors, Natural England, CCWales, Wildlife Trusts, Conservation Bodies	Short, medium and long term
Environmental problems caused by historic unsustainable abstractions are resolved.	Mid15	<p><b>Restoring Sustainable Abstraction (RSA)</b> All abstractions in the Midlands Region will be sustainable.</p> <p>We will work with Natural England, water companies, and other organisations to investigate and correct cases where the environmental impacts of existing abstractions are</p>	WRS A10 WRS B1 RBMP RSA CAMS BAP	Abstractors, Natural England, CCWales, Wildlife Trusts, Conservation	Short and medium term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		<p>unacceptable.</p> <p>Abstractions which affect sites designated under the Habitats Directive will be our first priority, following up with Special Sites of Scientific Interest, sites holding Biodiversity Action Plan (BAP) species/habitats and local sites. We will do this without compromising the security of public water supplies.</p> <p>We will continue to monitor, model and develop solutions to achieve good status for over-abstracted aquifers under the Water Framework Directive (see Case Study 2).</p> <p>See also Mid13.</p>	CS2	Bodies	
<p>Catchment management is integrated so that impacts on water resources and the water environment are managed together.</p>	Mid16	<p><b>England Catchment Sensitive Farming Delivery Initiative (ECSFDI)</b> ECSFDI staff are able to promote water resource issues as part of Midlands Region's ECSFDI initiatives.</p> <p>We will work with ECSFDI staff and our staff to ensure that appropriate information on water resources issues is available for monitoring and enforcement site visits both within and outside of ECSFDI catchments. We will also work with ECSFDI staff to ensure that sensitive land management is promoted at external events.</p> <p>We will continue to promote this approach after ECSFDI funding is no longer available and we will look for opportunities to expand this wherever possible.</p> <p>See also Mid4, Mid9, Mid19 and Mid30.</p>	WRS B5 RBMP CS1	Natural England, farmers and growers, NFU, CLA	Short and medium term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
	Mid17	<p><b>Green infrastructure and Sustainable Drainage Systems (SuDS)</b></p> <p>We will feed into green infrastructure strategies to allow adaptation to climate change as it happens.</p> <p>We will work with planners, developers and water companies to guide, promote and ensure the implementation/retrofit of green infrastructure, specifically SuDS wherever appropriate. We will work with local authorities to overcome the barriers to the adoption of green infrastructure, specifically funding, design, liability and long-term maintenance.</p> <p>We will work with key partners to develop best practice guidance to maximise the economic and environmental benefits of green infrastructure. As part of this we will work with Natural England to promote good environmental infrastructure planning in our response to Regional and Local Development Framework strategies/plans in the Midlands.</p> <p>See also Mid1, Mid7, Mid18 and Mid26.</p>	<p>WRS A4 WRS B2 WRS B3 WRS B4 WRS C8 RBMP CS3 CS4</p>	<p>Natural England, local authorities, developers, Regional assemblies, Regional development agencies, Water companies</p>	<p>Short and medium term</p>



## 4.3 Sustainable planning and management of water resources

There is already significant pressure on our water resources and a growing population combined with increased development and climate change will only stretch resources further. It is estimated that the population in the East Midlands will increase by over 10 per cent between 2007 and 2017<sup>11</sup>. This is the largest population increase in all of England and Wales and equivalent to about 466,000 additional people by 2017. Population in the West Midlands is expected to increase by about 5.7 per cent between 2007 and 2017 (about 306,000 people)<sup>12</sup>.

Not only will our population increase, but more households will need to be developed to house these individuals. It is estimated that over 475,000 new homes will be built in the East and West Midlands between 2006 and 2021<sup>13, 14</sup>.

In the future we will need to further integrate sustainable planning and water resources management carefully to meet the needs of people, agriculture and industry while still protecting the environment. Demand management (reducing water use) must also play a part in securing our water supplies even though the average use by each person is relatively low in Midlands Region (Appendix 1, Figure 4b). We must slow the growth in demand due to increased development and a growing population so that our environment can supply enough water in the future. It is important for water companies to develop water efficiency messages and be ambitious with their metering targets as these actions will be key in reducing demand.

We need to influence and work with the water companies, and increase our contribution to the planning process so that appropriate infrastructure is in place before developments are completed. The following table sets out our objectives and the actions we will take to encourage sustainable development and reduce water use at a time when considerable pressures face water resources in Midlands Region.

### Case Study 3: East Midlands household demand scenarios

The East Midlands is the fastest growing region in England and Wales with a projected population increase of 10.6 per cent by 2017. Water companies plan how they will meet the additional demand associated with this growth over the next 25 years using their Water Resources Management Plans (WRMP).



In partnership with the East Midlands Regional Assembly (EMRA), we investigated whether the draft WRMPs could supply enough water to meet forecasted future demands under a variety of housing and population scenarios.

Our study found that the draft WRMPs are able to meet the demand forecasted from the East Midlands Regional Plan<sup>15</sup> figures, but won't necessarily be able to meet the forecasted demand from a variety of other scenarios (e.g. the 2006 trend based household<sup>16</sup> and population<sup>17</sup> demand scenarios).

Since this study was completed the water companies have updated their WRMPs and included additional initiatives that will partially (or fully) allow them to meet future demand. We will update this study and continue to assess whether water companies can meet future demand under a variety of growth scenarios. In the future, we will also incorporate water efficiency measures in our analysis.

The full results of this study can be found on EMRA's website<sup>18</sup>.

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
The twin track approach of resource development with demand management is adopted in all sectors of water use.	Mid18	<p><b>Twin track approach</b></p> <p>The twin track approach should be applied to planning at a strategic level through Regional and Local Development Frameworks, Water Resources Management Plans (WRMP), Periodic Reviews, and in licence determination and enforcement.</p> <p>Water resources planning will be further integrated with the regional and local planning system. Working with key partners, we will ensure that sufficient understanding of water resources pressures are built into regional and local authority thinking behind plans at an early stage.</p> <p>See also Mid5, Mid7, Mid17, Mid19, Mid20 and Mid26.</p>	WRS A10 WRS C8 RBMP CAMS RSA WRMP PR CS3	Abstractors, local authorities, Regional assemblies, Regional development agencies, Natural England, Consumer Council for Water (CCWater)	Short and medium term
	Mid19	<p><b>Demand Management</b></p> <p>We will promote demand management measures to all of our abstractors and, where suitable, encourage the adoption of such measures over new resource development (e.g. encourage businesses to undertake water efficiency audits and promote best practice guidance for agriculture where suitable).</p> <p>See also Mid 4, Mid 6, Mid7, Mid16, Mid18 and Mid24</p>	WRS A3 CS4	Abstractors, Natural England, farmers and growers, NFU, CLA	Short and Medium term
	Mid20	<p><b>Levels of service</b></p> <p>We will improve our understanding of Levels of Service and other assumptions set by water companies. We will use this understanding to contribute to a national review and will work closely with other regulators and water companies to do this.</p> <p>See also Mid5 and Mid18.</p>	WRS A10	Water companies	Short and medium term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
In England, the average amount of water used per person in the home is reduced to 130 litres each day by 2030.	Mid21	<p><b>Growth point demand</b> We will work with regional assemblies and local authorities to reduce total demand for water in areas identified as growth points in order to reach Defra's aspiration of 130 litres per person per day by 2030.</p> <p>We will do this by continuing to monitor the supply-demand balance across the region, taking into account growth figures, and use our findings to inform the wider planning process (See Case Study 3).</p> <p>See also Mid26 and Mid32.</p>	WRS A10 WRS C3 WRMP CS4	Abstractors, local authorities, Developers, Regional assemblies, Regional development agencies	Short, medium and long term
The Environment Agency targets and adapts its approach to reflect the location and timing of pressures on water resources.	Mid22	<p><b>Conjunctive use</b> There should be more conjunctive use of surface and groundwater sources in the Midlands.</p> <p>We will challenge water companies to increase the conjunctive use of groundwater and surface water resources when it will improve resilience and provide environmental benefits.</p> <p>We will help abstractors identify where conjunctive use schemes can be implemented without adversely impacting the environment and we will consider the overall carbon footprint of these schemes.</p> <p>We will encourage changes to existing water supply schemes and the linking of infrastructure to enable conjunctive use of groundwater and surface water resources to make better use of aquifer storage, maximise resource efficiency and minimise environmental impact.</p>	WRS A2 WRS B1 CS2	Abstractors	Short, medium and long term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		<p>We will promote conjunctive use as an option to reduce environmental problems caused by unsustainable abstraction and when water companies are developing new resources.</p> <p>See also Mid5 and Mid11.</p>			
	Mid23	<p><b>Rising Groundwater</b> We will promote increased abstraction from groundwater in areas where property is at risk of flooding due to rising groundwater levels.</p> <p>Groundwater levels are rising in some urban areas as a result of a reduction in historic industrial abstraction.</p>	WRS B1 CS3	Abstractors	Short and medium term
In England, water companies implement near-universal metering of households, starting in areas of serious water stress.	Mid24	<p><b>Metering</b> Household metering should increase in line with the levels identified in the final Water Company Business Plans.</p> <p>We expect water companies to have ambitious metering targets, including metering on change of occupier.</p> <p>We will investigate the barriers to metering with landlords and housing associations. We will use this information to form a communications plan to increase voluntary meter uptake in tenanted properties.</p> <p>We will work with CCWater and water companies to promote metering to customers who would benefit financially and are currently unmetered. This work will include targeting households supplied by sources which are in over abstracted and over licensed areas.</p> <p>We will promote smart tariffs and support trials with water</p>	WRS C1 WRS D3 RBMP WRMP PR CS4	Water companies, Ofwat, CCWater, landlords, local authorities	Short and medium term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		companies as part of the WRMP and Periodic Review processes.  See also Mid33.			
Leakage from mains and supply pipes is reduced.	Mid25	<b>Leakage</b> Water company leakage volumes should not increase as water into supply increases with population growth and development.  We expect to see improved leakage management in Midlands Region through active leakage control and customer supply pipe repair policies.	WRS C6 RBMP WRMP PR CS4	Water companies, Ofwat	Short and medium term
New and existing homes and buildings are more water efficient.	Mid26	<b>Water efficiency in developments</b> We expect to see the highest possible standards of water efficiency included in new developments.  Where appropriate we will promote water neutrality in new developments and encourage it to be included in development policies.  We will work more closely with all partners to develop coordinated responses, common understandings and common advice positions when responding to consultations and plans from planning authorities (i.e., water companies on Regional and Local Development Framework strategies/plans and planning applications).  See also Mid5, Mid 7, Mid17, Mid21 and Mid32.	WRS A2 WRS C3 WRS C8 RBMP EMRP WMRSS CS3	Water companies, local authorities, Regional assemblies, Regional development agencies, Developers, Natural England	Short and medium term
Water resources are allocated efficiently and are shared within regions where there are areas of	Mid27	<b>Reflecting actual usage and licence trading</b> We will reduce licensed volumes to more closely reflect actual use to achieve catchment sustainability and to ensure that resources can be shared more appropriately.	WRS A10 WRS B1 WRS C11 CAMS	Abstractors, Natural England	Short and medium term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
surplus.		<p>We will review and define appropriate tools to meet this objective.</p> <p>We will target underused licences and request voluntary reductions in catchments which have been identified as over abstracted or over licensed.</p> <p>We will also encourage licence trading where this will bring a reduction in licensed quantity. We will work with Natural England when liaising with licence holders at sites where we have a mutual interest.</p> <p>We recognise that some licences are needed for flexibility, such as water company licences that can be used in times of drought and agricultural licences which may not be used every year, and we will not request reductions on these licences.</p> <p>See also Mid4 and Mid30.</p>	CS1 CS5		
	Mid28	<p><b>Sharing resources beyond Environment Agency regional boundaries</b></p> <p>We will ensure that water resources issues are considered on a wider scale not just within a regional context.</p> <p>We will work with colleagues from bordering regions to make sure we understand what the potential for bulk supply agreements is between companies. We will continue to consider the merits of water resource options across regional boundaries in order to optimise resource use.</p> <p>We will undertake regional and cross border water resources modelling work with Environment Agency Wales</p>	WRS C9 WRMP CS5 NW W	Water Companies	Short, medium and long term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		and North West Region to gain an understanding of wider water resources management issues.			
	Mid29	<p><b>Sharing resources for public water supply</b> We expect Midlands Region water companies to look to neighbouring companies for possible bulk supplies when they need more water and will use our regional knowledge to suggest possible options.</p> <p>If necessary we will use our powers to propose that a water company seeks a supply of water from, or in conjunction with, another water company.</p> <p>In drought situations, we expect water companies to work together so that risks to the environment and to customers' security of supply are shared between companies.</p>	WRS C9 WRMP CS2	Water Companies	Short and medium term
	Mid30	<p><b>Abstractor groups and licence trading</b> We want to see more abstractor groups within Midlands Region.</p> <p>We will promote abstractor groups to investigate the potential of sharing water and improving communication with the farming community. We will focus our efforts in areas which are over abstracted mainly due to agricultural abstraction.</p> <p>We will work with the NFU, CLA and ECSFDI staff to investigate the barriers to forming water abstractor groups.</p> <p>We will work with abstractors to understand the barriers to and facilitate licence trading particularly when it will reduce overall abstraction in over licensed catchments.</p>	WRS C10 WRS C11 CS2	NFU, CLA, farmers and growers, Natural England, Abstractors, UK Irrigation Association (UKIA)	Short and medium term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
See also Mid4 and Mid27.					



## 4.4 Water and the water environment are valued

Many people in England and Wales believe that we have more than enough water to meet our needs and they take it for granted. However, parts of England and Wales have less water available per person than many hotter and drier countries. The Midlands are already moderately water stressed and some parts of England are severely water stressed. People need to understand that our water resources are finite and use them accordingly.

A recent study, completed by the Environment Agency and the Energy Saving Trust, found that 89 per cent of the greenhouse gas emissions associated with water abstraction, treatment, transport, use and disposal are due to water use in the home<sup>19</sup>. By helping the public to understand how water use is contributing to global warming we could reduce greenhouse gas emissions, and save households money on their energy and water bills.

While increased metering will help to reduce demand for water, we recognise that this could have a negative impact on vulnerable households. We will work with the water companies and the Consumer Council for Water so that smart tariffs are developed to ensure that water is affordable for everyone.

The following table sets out our objectives and the actions we will take, with others, to encourage people to value water and the water environment. By using water efficiently, changing habits and being better informed, people can make better choices.

### Case study 4: Water efficiency educational programme

We want everyone in Midlands Region to value water, enjoy their water environment and understand how it contributes to their quality of life. We intend to meet this aim by developing and delivering water efficiency messages across the region.



We are working in partnership with Severn Trent Water to develop and roll out a water efficiency educational programme across Midlands Region. This programme is currently running in five Local Authorities: Leicestershire, Leicester City, Telford & Wrekin, Worcestershire and Coventry.

As part of this programme Severn Trent Water will install water-saving equipment in the schools. By March 2010, Severn Trent Water will have audited and installed water efficient devices in 600 schools across Midlands Region. The estimated water saving is five mega litres per day, equivalent to the water usage of about 15,000 households.

We will also work with Severn Trent Water to develop and deliver a collection of learning resources, including online home and school water audits. These resources will help to support water efficiency and help change customer behaviour.

We will continue to work with Severn Trent Water and other organisations to develop and communicate water efficiency messages across the region in the future.



Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		Staffordshire Water to develop and roll out water efficiency messages to Walsall and Sandwell housing associations.  See also Mid9, Mid21, and Mid26.			South Staffordshire Water partnership planned for 2010-11
Innovative tariffs are adopted by water companies to maximise savings and minimise issues of affordability.	Mid33	<b>Smart tariffs</b> We will promote smart tariffs and support trials with water companies as part of the Water Resources Management Plan and Periodic Review processes. These tariffs can provide an incentive to use water more wisely and safeguards for vulnerable households.  See also Mid24.	WRS D3 RBMP WRAPEW	Water companies, CCWater, Ofwat, Defra, WAG	Short and medium term
The needs of wildlife, fisheries, navigation and recreation, as well as the environment and abstractors, are fully taken into account when allocating water resources.	Mid34	<b>Licence applications</b> We will continue to take an environment led approach so that the needs of the environment and abstractors are taken into account when reviewing abstraction licence applications and renewals.	WRS A10 CS1	Abstractors	Short and medium term
	Mid35	<b>Access to water bodies</b> We will promote public access to water features and the water environment to enhance people's enjoyment, understanding, and appreciation of their local environment.	RBMP CS2	All	Short, medium and long term
Innovative technology is developed to improve water efficiency by all water users.	Mid36	<b>Innovation</b> We will continue to adopt innovative technology when it will improve our operating efficiency and greenhouse gas emissions (see Case Study 1).  Through the national water efficiency awards we will promote and reward innovation. We will encourage organisations in Midlands Region to enter our national	WRS D2 WRAPEW CS4	Abstractors	Short term

Water resources strategy objective	Ref No.	Regional action	Reference to other plans and strategies	Other organisations that need to be involved	Timescale for action
		water efficiency awards.			

# 5 Implementing the regional actions

In April 2010, we intend to change the existing river catchment based operating boundaries of Environment Agency Wales, North West Region and Midlands Region. The new boundaries will align with the political administrative boundary between England and Wales. This change will enable the Environment Agency to be more responsive to the needs of people on both sides of the border, and allow us to operate more effectively in response to the requirements of the governments in England and Wales.

In anticipation of the upcoming boundary change, the actions within this plan relate to England only. The analysis and maps presented in this plan include parts of the upper Severn catchment in Wales. This is because water resources will still need to be managed on a whole river catchment basis.

## 5.1 A targeted approach

While this plan shows how we will address the pressures and priorities within Midlands Region, we recognise that we will need to focus our efforts in certain locations and on certain actions. In Midlands Region we will focus our efforts on three main areas of work in the short term:

**Increasing resilience of supply.** We will work with abstractors to increase efficiency and improve the resilience of water resources infrastructure and supplies. For example, we will promote high flow storage reservoirs and abstractor groups for agricultural purposes (Mid4 and Mid30). We will continue to promote conjunctive use of surface water during periods of high flow and groundwater during periods of low flow to increase flexibility of supplies and reduce the environmental impact of abstraction (Mid22). We will also become more involved in planning and development so that appropriate environmental infrastructure, including public water supply, is in place before developments are completed (Mid26).

**Reducing the impact of unsustainable abstraction.** Over the next five years we will investigate over 100 schemes and develop cost beneficial solutions for any abstractions having an adverse impact on the environment under the RSA programme (Mid15). This activity will be part of the programme of measures identified in the relevant RBMPs (Mid13). In particular we will continue to monitor and model our sandstone aquifers to develop sustainable solutions (Case Study 2).

**Valuing Water.** We believe that it is necessary to increase water efficiency to reduce future demand, reduce greenhouse gas emissions and to encourage people to value the water environment (Case Study 4). We will work in partnership with water companies and the Consumer Council for Water to develop water efficiency messages for the public, housing associations and small to medium sized businesses (Mid32). We will also promote water metering to households that would benefit from a meter and encourage water companies to have ambitious metering targets (Mid24).

We aim to review and update the action plan as our water resources strategy is implemented. Updated versions of this plan will also show our progress in achieving the aims and objectives of the Water Resources Strategy for England and Wales and how we have incorporated any new information and developments. Through this review process we will identify where we should target our resources.

Many of the actions identified in this plan will be taken forward through the Severn and Humber RBMPs. This will ensure that they are focused on achieving the best environmental outcome for the Midlands.

## 5.2 A better regulation approach

The Environment Agency is the lead organisation responsible for managing the water resources in England and Wales. We will continue to use a risk-based approach and focus our resources on those areas that will have the greatest potential impact or benefit.

The 'better regulation' approach<sup>20</sup> that we follow reduces the administrative burden on business and provides abstractors with an incentive to improve their environmental performance while remaining competitive.

### 5.3 The role of others

Many industries, farmers, water companies and other individuals and organisations have an invested interest in water resources management. It is essential that all organisations work together as there is no single solution to the challenges that we face. We will work hard to ensure that our partner organisations are fully involved in taking forward the actions identified in this plan.

While there is currently enough water for people and the environment, it is important that people use water efficiently and value our water dependant environments. It will take a great deal of work to ensure that we manage our water resources in a way that will allow people to enjoy and protect the environment for future generations.

## 6 Acknowledgements

In developing the Regional Action Plan we held meetings and workshops, and consulted with other teams within the Environment Agency and our regional partners. These include water companies, Consumer Council for Water, Natural England, Country Land and Business Association, National Farmers Union, British Waterways and local authorities. We would like to thank everyone for their comments and support in developing this plan.

# Glossary of terms

**Abstraction** – Removal of water from a source of supply (surface or groundwater).

**Abstractor groups** – Groups of abstractors that come together to foster a commitment among members to use water efficiently, to build a direct channel of communication between themselves and the Environment Agency and/or to share water resources.

**Conjunctive use** – The coordinated management of surface water and groundwater supplies to maximise the amount of overall water supplies. Conjunctive use can gain environmental benefits, improve resilience, reduce long-term constant rate groundwater abstraction and reduce the impact of abstraction on surface water low flows.

**Green Infrastructure** – Green Infrastructure is a relatively new concept that describes a network of green spaces designed to meet the environmental, social and economic needs of a community. Parks, allotments, community gardens, sustainable drainage systems and green corridors are examples of green infrastructure.

**Effective rainfall** – The rainfall that is available to percolate into the soil or runoff into streams and rivers.

**High-flow reservoirs** – Storage reservoirs that are filled when river flows are high. This water can then be used when resources are scarce.

**Operating agreements** – An abstraction licence can only define how water will be abstracted, therefore we have separate operating agreements associated with complicated licences to ensure that other conditions, such as compensation flows, are met.

**Resource Zone** – The largest possible zone in which all resources, including external transfers, can be shared and hence the zone in which all public water supply customers experience the same risk of supply failure from a resource shortfall.

**River Severn Regulation** – The River Severn is the longest river in Britain and is an important source of water for public supply. This means that the river needs to be carefully managed to ensure that these needs are met without compromising the natural environment. One way of doing this is to support the amount of water in the river with water from reservoirs and groundwater. This is known as river regulation, which is carried out by the Environment Agency.

**Sustainable Drainage Systems (SuDS)** – Surface water drainage systems that take account of water quantity, quality and amenity issues. These systems are more sustainable than conventional drainage methods because they manage rainfall runoff, protect or enhance water quality by managing pollution at its source, provide a habitat for wildlife, and are sympathetic to the environmental setting and the needs of the local community.

**Twin track approach** – An approach to planning that balances demand management, such as leakage control and increased metering, with resource development, such as building new reservoirs.

**Water neutrality** – The total demand for water in a pre-defined area does not increase after a new development is built. This is achieved by offsetting the demand from the new development by making existing homes and buildings in the wider area more water efficient.

# List of abbreviations

AWM	Advantage West Midlands
BAP	Biodiversity Action Plan
CAMS	Catchment Abstraction Management Strategy
CCWales	Countryside Council for Wales
CCWater	Consumer Council for Water
CLA	Country Land and Business Association
CS	Corporate Strategy
ECSFDI	England Catchment Sensitive Farming Delivery Initiative
EMDA	East Midlands Development Agency
EMRP	East Midlands Regional Plan (March 2009)
NFU	National Farmers Union
pcc	per capita consumption
RBMP	River Basin Management Plan
RSA	Restoring Sustainable Abstraction
RSS	Regional Spatial Strategy
SuDS	Sustainable Urban Drainage Systems
UKCIP02	UK Climate Impacts Programme 2002
UKCP09	UK Climate Projections 2009
UKIA	UK Irrigation Association
WAG	Welsh Assembly Government
WFD	Water Framework Directive
WRMP	Water Resource Management Plan
WRS	Water Resources Strategy for England and Wales

# Endnotes and References

- <sup>1</sup> Based on Office of National Statistics 2006-based sub-national projection data for the East Midlands
- <sup>2</sup> Based on Office of National Statistics 2006-based sub-national projection data for the West Midlands
- <sup>3</sup> This figure includes Habitats Directive sites, Sites of Special Scientific Interest and local sites where it has not yet been agreed that there is no impact on the environment. It also includes CAMS driven 2009 Periodic Review proposed investigations.
- <sup>4</sup> 'Water Resources Strategy for England and Wales – Water for people and the environment', Environment Agency, March 2009, <http://publications.environment-agency.gov.uk/pdf/GEHO0309BPKX-E-E.pdf>
- <sup>5</sup> 'Quantifying the energy and carbon effects of water saving', Environment Agency and Energy Saving Trust, April 2009, <http://www.environment-agency.gov.uk/business/topics/water/109835.aspx>
- <sup>6</sup> Based on data from the Energy Saving Trust website, <http://www.energysavingtrust.org.uk/Climate-Change/How-we-contribute-to-climate-change>
- <sup>7</sup> 'Shropshire Groundwater Scheme reduces it's carbon footprint', *Making it Geo*, Kevin Voyce, 2009
- <sup>8</sup> 'Water cycle guidance', Halcrow and Environment Agency, Spring 2009, <http://publications.environment-agency.gov.uk/pdf/GEHO0109BPFF-e-e.pdf>
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- <sup>12</sup> Based on Office of National Statistics 2006-based sub-national projection data for the West Midlands
- <sup>13</sup> 'East Midlands Regional Plan', Government Offices for the East Midlands, March 2009
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<sup>19</sup> 'Quantifying the energy and carbon effects of water saving', Environment Agency and Energy Saving Trust, April 2009, <http://www.environment-agency.gov.uk/business/topics/water/109835.aspx>

<sup>20</sup> 'Hampton Review, Reducing administrative burdens effective inspection and enforcement', Report to HM Treasury, 2005

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