Department
for Environment
Food & Rural Affairs

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Action taken by Government to encourage the conservation of water

Progress report to Parliament on the steps taken to encourage the conservation of water as required by Section 81 of the Water Act 2003

May 2014

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Foreword by the Secretary of State for Environment, Food and Rural Affairs

I am very pleased to publish today this report outlining Government activities to encourage the conservation of water. The report covers the three years from 1 April 2010 to 31 March 2013 and some of the steps planned for the future.

We cannot do without water. It touches all our lives whether at home or work and is a key component of economic growth. Protecting our natural resources, growing the economy and improving the natural environment go hand in hand.

Society has too readily assumed that water will always be available. However, we cannot be complacent about our ability to meet future demand. As we publish this report, we realise that many people this winter have experienced the misery caused by flooding. It seems difficult to remember that between September 2010 and March 2012, many parts of England experienced the driest 18 months for over 100 years. In stark contrast, this was then followed in 2012 by the wettest year on record for England and the second wettest for the UK as a whole.

This shows that the UK does have to face up to changing weather. As we set out in the Water White Paper, Water for Life, the combined effects of climate change and population growth in the coming years are likely to put pressure on both water quality and water supply. Much has already been achieved. There is more happening in the future with the Water Bill, further social research and the promotion of water efficient products. Too much of our water still goes to waste; we need to manage it better.

Government cannot however act on its own. We all have a responsibility. As Water for Life said, it is through working with others that we can ensure a sustainable and secure water supply for the future.

Rt Hon Owen Paterson MP

Secretary of State for Environment, Food and Rural Affairs

Executive Summary

Water conservation is an essential element in managing the balance between water supply and demand. Under Section 81 of the Water Act 2003 the Secretary of State for Environment, Food and Rural Affairs has a duty to encourage water conservation and to report to Parliament every three years on actions taken to promote it as well as steps proposed for the future.

This report highlights how water conservation has developed during the reporting period April 2010 to March 2013. It contains a snapshot of the many water conservation projects and initiatives carried out either directly by Government and its agencies or through partnership working. Many others have completed activities that are not mentioned in the report, all of which have played a role in helping to conserve water. The variations in weather during 2010 to 2013, including significant droughts and floods, together with projected increases in population and the potential impact of climate change, demonstrate how managing pressure on water resources is increasingly important. Overall demand for water from the public supply network has decreased by about 3% during the period of this report because of the improved efficiency of appliances, reduced industrial use and water efficiency activities. Household water use has decreased by about 6 litres per head per day. However, projections indicate that, in the long term, demand is likely to increase.

The uncertainties caused by weather, climate change and changing population mean that society will need to adapt to ensure that demands for water can be met. Water conservation is an essential part of this adaptation. The projects and outcomes that are described in this report are a vital basis upon which saving water can be built.

Government actions highlighted in this report include the Water White Paper – *Water for Life*. This sets out our expectations regarding the future demand for water and the responsibilities of water companies and others for delivering them. The results are already being seen in the way that water companies are making their long-term plans to meet future demand.

In this period, leakage has reduced by 190 million litres per day but we cannot be complacent and there is still more to do. Leakage continues to be an important issue for customers and features strongly in the work that Ofwat and Government are continuing with water companies.

This reporting period has seen an increased emphasis on the way people value and use water when we are predicting and managing the demand for water. This is reflected in the research that has been led by Government and others which will help to deliver improved understanding of people's behaviour and how to influence this in future.

Looking ahead, there will be continued emphasis on water conservation. The National Planning Policy Framework set out the Government's planning policies for England and how these are expected to be applied. It states that local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, including taking full account of water supply and demand considerations.

Increased use of labelling on bathroom products will make it easier for people to choose appliances that are more water efficient. The Water Bill currently progressing through Parliament will deliver reforms to the water industry to enable competition and innovation thereby providing opportunities for water conservation. Planned changes to the way abstraction is regulated will incentivise investment to help us meet our resource needs and increase the efficiency with which we use water in future.

Background to Water Resources 2010–13

Managing the demand for water and effective projections of use are essential to ensure that Government, water companies, regulators and businesses can plan how to manage and meet demand in future. The Government, through the Environment Agency, used a range of scenarios to look at the possible impacts of future pressures on water resources in support of the Water White Paper, *Water for Life*, which was published in December 2011. The scenarios took into account climate change and potential variations in population growth, demand and environmental requirements. It was clear from this work that water resource availability in the future is uncertain and that there could be less water available for people, businesses, agriculture and the environment than there is today. Demand management will therefore have an important role to play, given the pressure on our water resources from the needs of an increased population, the environment and changing climate. The projects described in this report are helping to meet these challenges.

Two extremely dry winters in succession were experienced in 2011 and 2012 in East Anglia, South East England and parts of the Midlands. The January to March 2012 period was cumulatively the driest since 1973 and, with ground water, river and reservoir resources extremely low, seven water companies imposed water use restrictions on 5 April, affecting a total of 20 million customers. The restrictions were lifted a few months later and 2012 was the wettest year on record for England and the second wettest for the UK as a whole.

Overall demand for water from the public supply network decreased by about 3% during the period of this report because of improved efficiency of appliances, reduced industrial use and water efficiency activities (Figure 1). Household water use has decreased by about 6 litres per head per day (Figure 2).

Figure 1: Total demand for water projected by water companies in England 1999 to 2013 (Ml/d)

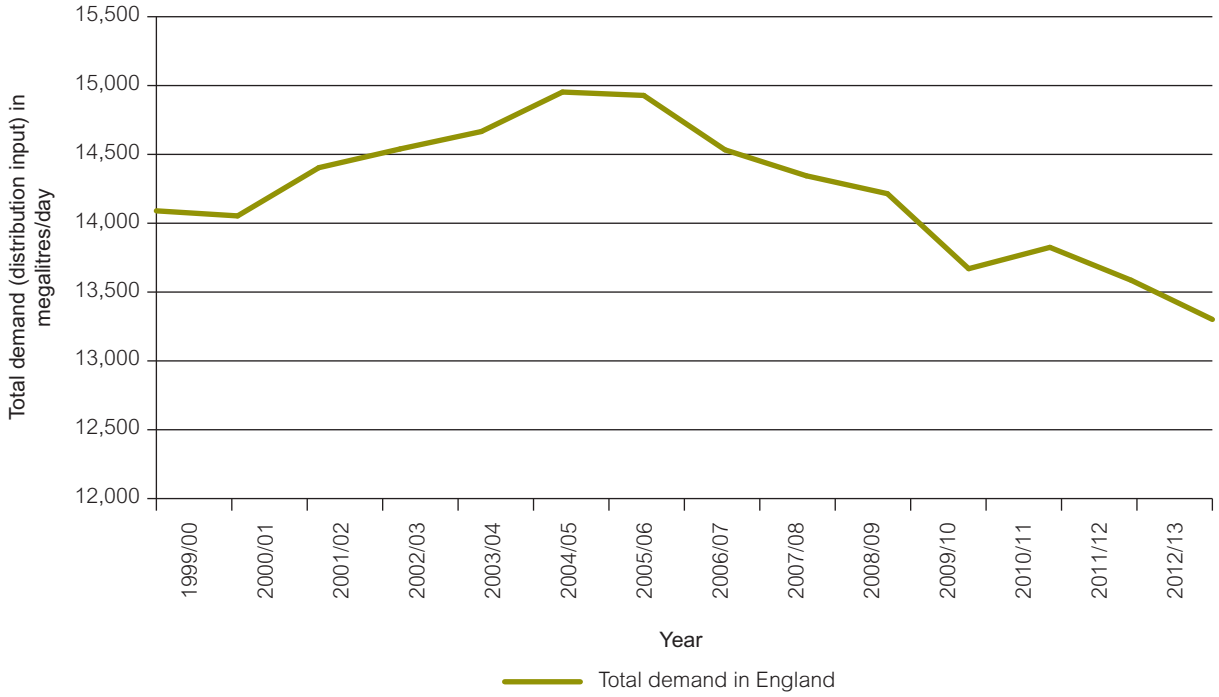
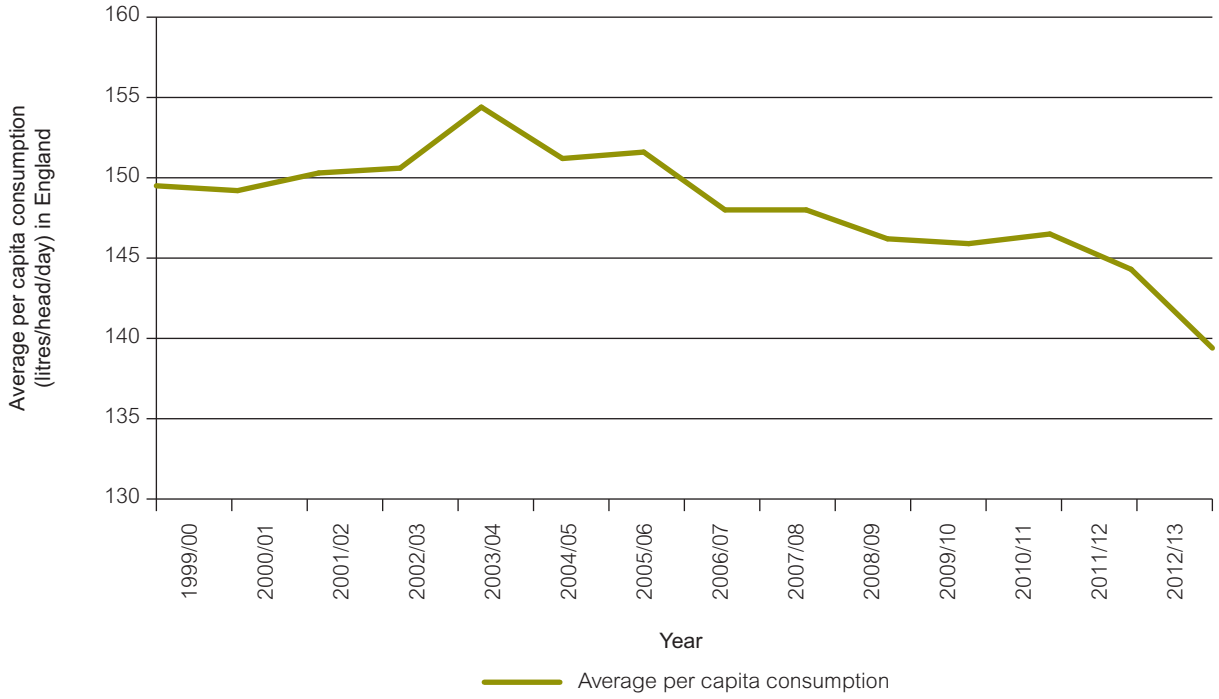


Figure 2: Per capita consumption projected by water companies in England 1999 to 2013[1]



[1] Note that reported per capita consumption in 2012 was influenced by the wet summer which typically reduces demand.

The Government set out the expectations for managing demand by water companies, regulators and individuals. *Water for Life* stated that the Government would strengthen the guidelines that water companies use to produce their statutory water resources management plans to make it clear that all demand management measures must be thoroughly tested and explored.

All water companies will be expected to show how they will reduce water use per person and where companies are in a designated water stress area, or where demand is above the national average, the Government expects them to produce a plan that will deliver overall demand reductions in the first five years (2015–20). Looking further ahead, the Government expects that the demand trend will be significantly downward.

Water companies have been developing their statutory water resources management plans following these principles and the Water Resources Planning Guideline. This includes expectations about leakage, including a downward trend.

Leakage levels (Figure 3) have remained largely static in recent years. In the drought period between 2010 and 2012, water companies in the South East and East Anglia focused on leakage and reduced the amount of water lost. As a result, leakage fell to its lowest recorded level. Since then leakage has increased slightly.

Figure 3: Total leakage reported by water companies in England 1999 to 2013 (Ml/d)

Despite the reductions in demand and the management of leakage, there will still be pressures on water in future and the projects set out in this report will help us prepare to respond to that pressure and meet the needs of people and the environment.

Action Taken to Encourage Water Conservation

The main section of this report describes work on water conservation during the period April 2010 to March 2013. It is not an exhaustive list but gives a flavour of the main activities which have helped to shape and inform Government policy in this area.

Household Behaviour

Understanding how people use and think about water is vital for the design and implementation of initiatives to influence and change behaviour and forecast demand for water. There is an increased emphasis across Government, water companies and other organisations on working with users to understand their behaviour so that they can make conscious and unconscious decisions to use water more efficiently.

Push, pull, nudge – How can we help customers save water, energy and money?

2011

Push, pull, nudge[2] is a focus report published by Ofwat in March 2011. It examines how the balance between supply and demand can be addressed through water companies helping their customers to save water. It highlights the role that various measures could play in the water and sewerage sectors in England and Wales to help customers save water, energy and money. The report discusses why using water wisely is important, and divides ways of doing this into three groups: push, pull and nudge. For example, 'push' includes setting standards for water-efficient devices, 'pull' is about rewarding customers for using water wisely and 'nudge' is about considering consumer behaviour and using it to promote change.

EU LIFE+ Project: Combining water and energy efficiency

2011

LIFE is the European Union's (EU's) financial instrument supporting environmental and nature conservation projects throughout the EU. The current phase of the programme, LIFE+, ran from 2007 to 2013 with a budget of €2.143bn. With LIFE+ funding, the Energy Saving Trust and Waterwise launched the EU LIFE+ Project[3] in January 2009 with the aim of highlighting the links between water and energy to householders in the UK, and promoting the benefits of adopting water and energy-efficient behaviour. The project took place in Cardiff, London and Edinburgh and ran until April 2011. Behaviour change techniques and installation of water-efficient devices were targeted at 18,000 homes (25,000 people) and saved 523 tonnes of CO_2 per year, 176,000m^3 of water, and £135,000 on water and energy bills. A key outcome was that although in-home advice reached fewer householders, it achieved far greater reductions in water and energy use.

[2] http://ofwat.gov.uk/publications/focusreports/prs_web1103pushpullnudge

[3] www.energysavingtrust.org.uk/Organisations/International/Case-study-EU-Life-water-and-energy-project#2

Plug-it: Testing innovative approaches for achieving pro-environmental behaviours: working with intermediaries as facilitators of change to the way people live or consume

2010–12: report not yet published

The Department for Environment, Food and Rural Affairs (Defra) funded this project to develop tools that will enable intermediaries (plumbers, retail store assistants, etc.) to assist consumers in making water-efficient choices as they purchase or source new kitchen and bathroom fittings and white goods. These are described as a 'moment of change' at which water-efficient behaviour can be introduced or reinforced.[4]

By working closely with a small group of retail store assistants and plumbers, the Plug-it project aimed to generate a set of tools to enable the intermediaries and their peers to better communicate with their customers, and offer attractive ways to encourage pro-environmental purchasing choices and behaviour. The project brought together designers with several key stakeholders in the water network (for example, professionals, consumers and water companies) to design a training kit. The aim of the training kit was to better equip public-facing 'water professionals' to advise their customers about the products and services that would enable more responsible consumption of water.

Customer Behaviour and Water Use – A good practice manual and roadmap for household consumption forecasting

2011–12

Reductions in the demand for water may depend as much on behavioural change as technological change from programmes such as metering and water-efficient devices, but how sustained behavioural change will be achieved is still not well understood. A research project run by UK Water Industry Research, with a contribution from the Environment Agency, looked at customer behaviour and water use.[5] The aim of the project was to improve the quality of demand forecasts for water resources management plans and consider how customer behaviour could influence demand in future. The results are referred to in the Water Resources Planning Guideline[6] that advises water companies how to forecast household consumption for the next 25 years. It has been widely used by water companies.

The project developed a simplified and consistent method that water companies use when they produce their demand forecasts. The report summarises the current understanding of the behaviours that have an impact on the demand for water and sets out a framework for further research to develop models that can include changes in behaviour in future.

4 www.waterwise.org.uk/pages/plug-it.html

5 www.ukwir.org/web/ukwirlibrary/94911

6 http://cdn.environment-agency.gov.uk/geho0612bwpe-e-e.pdf

Water Efficiency in Buildings Network

2011–13

During the period covered by this report, the Water Efficiency in Buildings Network (WATEF) organised workshops and masterclasses to disseminate knowledge and good practice in order to:

- promote independent, multi-disciplinary water efficiency research within the academic community
- transfer knowledge between academia, policy makers and regulators, third-sector organisations and the building and water industries
- help develop the evidence base for water efficiency, building on existing knowledge developed by the water industry, Government and delivery bodies and academia.

WATEF hosted a range of network meetings, including an industry session entitled 'Mitigating Water Scarcity: Technologies, Standards and Practices' at the University of Brighton in September 2011 which was attended by a wide range of industry representatives, and a joint conference with Waterwise in March 2013.

Policy fellowships

2010–11

Defra and the Engineering and Physical Sciences Research Council piloted policy fellowships in 2010 including in new technologies for enhanced water use efficiency.[7] The overall aim of the scheme was to provide greater engineering involvement in developing Defra's policy in areas such as water, flooding, animal health, waste, sustainable consumption and production. The placements aimed to provide engineering researchers with a broader context for their work and a greater understanding of the policy process and the evidence base that is required to develop policy. One fellowship resulted in a participatory workshop hosted by the University of Edinburgh in June 2011 and entitled 'UK Innovation Potential in Advanced Water Treatment: Future Directions and Strategy'. A second fellowship resulted in the setting up of WATEF (see above), which has been active in conducting water user studies and engaging with communities on water use and behaviours as well as perceptions towards water efficiency policy.

[7] www.epsrc.ac.uk/SiteCollectionDocuments/Calls/2010/EPSRCandDEFRAPolicyFellowships.pdf; http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/I012982/1

Testing of high-level water efficiency messaging to enable analysis of what motivates water saving behaviours

2012–13

This Defra-funded project undertaken by Icaro Consulting established households' motivations and barriers in respect of water efficiency.[8] The purpose of the research was to:

- understand household behaviours in relation to water use and the key motivations and barriers
- test messages aimed at encouraging water-efficient behaviours.

This forms part of a wider commitment in Defra's *Water for Life*[9] to support the development of effective messages that promote the perception of water as a valuable resource.

The research took a broader view of water using behaviours, incorporating some of the psychological and sociological drivers associated with activities that take place in the home (for example, laundry, showering). The project considered how water is used as a relatively incidental by-product of daily life.

A report, *Understanding household water behaviours and testing water efficiency messages*, was published in September 2013.

The findings included the following:

- The reported effort to reduce in-home water use varies considerably – with broadly speaking half of households making a concerted effort (either a 'great deal' (18%) or 'fair amount' (35%)) whereas the other half are less inclined (either making 'some effort' (32%) or 'not much/none' (15%)). This is the result of some significant differences across subgroups within the population – with greater effort to reduce water use reported among older residents, those with a water meter, those with higher household incomes and those who consider themselves to be 'very' environmentally friendly.
- Water consuming activities show a wide variation across households. For example, around one in four households (24%) do one or two washes per week while around one in ten (11%) do more than eight washes. The results indicate different groups within the population. For example, people who are concerned about water use tend to consider environmental values and the presence of a water meter. When the focus shifts to specific activities such as showering and laundry, then factors such as children, household size, age and gender are significant.
- While water is considered *precious* it is simultaneously considered *abundant*; likewise, although individuals are *conscious* of the issue they are not *concerned*.

[8] http://randd.defra.gov.uk/Document.aspx?Document=11538_IcaroConsultingReport-FINAL010813.pdf

[9] www.official-documents.gov.uk/document/cm82/8230/8230.pdf

Patterns of Water project

2010 to present

This project is part of an ongoing programme of research by the Sustainable Practices Research Group (SPRG) which started on 1 July 2010 and runs until 31 March 2014.

The Patterns of Water project focuses on the research results of an 1,800-person survey across the south of England, and a number of qualitative interviews with survey participants. The report, published in March 2013,[10] captures the water-related practices of people in this region, and the links between these practices and wider social, cultural, technological and environmental factors. It covers household water use related to laundry, washing/bathing/showering, toilets, gardening, car washing, cleaning, food consumption, recycling, bottled water and kitchen use.

The report includes a detailed descriptive and clustering/segmentation analysis of the survey findings, and links with other qualitative information from people who took part in the questionnaire. The findings highlight the diversity of the dynamics shaping domestic water demand and have the potential to bring new insights into how to construct more effective interventions, and into the future trajectories of household water consumption.

Homes and Communities

The Government has supported changes to enable increased levels of water efficiency in our homes and communities. Support of community-scale water efficiency initiatives has also helped identify approaches to scale-up water efficiency in a UK context.

Love Your River

2012 to present

The Water White Paper, *Water for Life*, committed the Government to collaborate on a campaign to save water and protect the environment, working with water companies, regulators and customers to raise awareness of the connection between how we use water and the quality of our rivers.

The Love Your River[11] initiative[12] was launched in 2012 with support from the National Trust, the Environment Agency and the Wildlife Trusts, along with the Keep Britain Tidy organisation and various water companies. The initiative asks people to think about what they could do differently to help protect their local environment. It focuses on how the water we use in our homes or businesses affects our local river; the fact that there is likely to be less water available for people and businesses in the future and the knock-on effect this will have on the natural environment around the river; and how we can get by with using less water in the event of drought.

[10] www.sprg.ac.uk/projects-fellowships/patterns-of-water/patterns-of-water-final-report

[11] www.naturalengland.org.uk/ourwork/water/helpingourrivers.aspx

[12] www.defra.gov.uk/loveyourriver/

Planning Effective Water Efficiency Initiatives

2012

This practical guide, developed by Waterwise with the World Wide Fund for Nature, draws on two major water efficiency retrofit programmes (Tap into Savings (see below) and Save Water Swindon),[13] as well as projects included in the Waterwise evidence base to provide direction for those designing water efficiency retrofitting projects.

Tap into Savings programme

2010–11

The Waterwise Tap into Savings programme was launched to help residents in social housing and their neighbours save water, energy and money. During 2010 and 2011, projects were delivered in Merstham and Redhill (Surrey), Coventry (West Midlands) and the Braintree district (Essex). Over 4,500 home visits were carried out during which free water and energy efficiency devices were fitted and advice provided. The programme delivered average water savings (based on the devices installed) of 40 litres per day per home visited. Overall the programme saved more than 57 megalitres of water per year and reduced emissions of climate changing gases by more than 185 tonnes of CO_2e annually. It was the first water efficiency programme to build in energy efficiency and recycling, and to place an equal emphasis on installing efficiency devices and influencing pro-environmental attitudes and behaviours.

Herne Hill Lost Effra project

January 2013 to present

The Effra was a river which flowed into the River Thames from south-east London. Over time, as the area became built up, the Effra disappeared from view, becoming 'lost' to urbanisation. The Lost Effra project originated from a proposal by Defra's Civil Society Advisory Board. Project delivery is being taken forward by the London Wildlife Trust and is overseen by a steering group on which Defra, the Environment Agency, Natural England, Thames Water and the Greater London Authority are all represented.

Year 1 (2013) was a 12-month scoping study designed to produce: (i) a practicable community-led water management strategy for the Herne Hill area in London, which addresses flood risk, better drought management, improved water efficiency and quality, and enhanced biodiversity; (ii) a replicable template for partnership working between Defra and civil society. The key outputs from this were: a water management strategy document, an evaluation of Year 1, and a model for place-based engagement between Defra and civil society. (For Year 2, see page 39.)

[13] www.thameswater.co.uk/save-water/14674.htm

Building Regulations for new dwellings

2010

Changes to Part G of the Building Regulations, which came into force on 6 April 2010, introduced a requirement for all new homes to meet minimum water efficiency standards. The provision required that the water use of a home (calculated using the Water Efficiency Calculator for New Dwellings) is no more than 125 litres per person per day. In effect, the requirement ensures that consideration is given to the water efficiency of fittings specified in new homes. The Water Efficiency Calculator uses water consumption figures provided from manufacturers' product details to determine the consumption of each fitting. The calculation method is used to assess compliance against the water performance targets in the Building Regulations.

Code for Sustainable Homes: Technical Guidance

2010

The *Code for Sustainable Homes* is the national standard for the sustainable design and construction of new homes. It was first published by the Department for Communities and Local Government (DCLG) in April 2007. It is a voluntary code that aims to reduce carbon emissions and promote higher standards of sustainable design above the current minimum standards set out by the Building Regulations.[14] The code can be enforced where:

- local councils require developers to comply with the code by including a requirement in their planning policy
- affordable housing is funded by the Homes and Community Agency that requires homes to be built to code level 3.

Water is included as one of the main measures of sustainable design. DCLG published technical guidance on the requirement for the Code for Sustainable Homes in November 2010. This includes guidance and assessment criteria on reducing the consumption of potable water in the home and designing surface water drainage for housing developments.

Review of local housing standards

2012–13

The housing standards review was a fundamental review of the building regulations framework and voluntary housing standards. It aimed to significantly rationalise the large number of codes, standards, rules, regulations and guidance that potentially add unnecessary cost and complexity to the house-building process. The review looked at how water efficiency in new homes was delivered, assessed how the imposition of national and local standards worked in practice and what approach should be taken in the future. A public consultation was included as part of the review process.

In addition a Challenge Panel of four independent advisers from across the construction sector was commissioned to review the current system of building regulations and standards

[14] www.gov.uk/government/policies/improving-the-energy-efficiency-of-buildings-and-using-planning-to-protect-the-environment/supporting-pages/code-for-sustainable-homes

for housing in England and to advise on how the regulatory system could be improved to work more efficiently. *Housing standards review: towards more sustainable homes*[15] sets out the panel's aspirations for the review and their response to the outcomes of the housing standards review process and working group proposals.

The potential for combining household water and energy retrofitting

2011

This Environment Agency and Energy Efficiency Partnership for Buildings report[16] examines the policy and regulatory framework for both domestic energy and water efficiency retrofitting, along with incentives and funding programmes taking place in these areas. The opportunities for delivery of water and energy retrofit through installation of measures and labelling schemes are set out, followed by a discussion on how these link up with activities for retrofitting for flood resilience and resistance.

Creating water sensitive places – scoping the potential for Water Sensitive Urban Design in the UK

2012–13

Defra co-funded the construction industry research and information association (CIRIA) project and report *Creating water sensitive places – scoping the potential for Water Sensitive Urban Design in the UK*. Water Sensitive Urban Design (WSUD) is an holistic approach to planning/retrofitting development within the limits of the water environment which has been developed in Australia and can help address current and future pressures in the UK. WSUD provides an interdisciplinary and partnership approach to provide multiple benefits for water efficiency, flood risk, water quality, climate change and livability of cities. The project included stakeholder workshops and a questionnaire to scope the applicability of WSUD to the UK.

Water efficiency is a key consideration within WSUD and features in the ideas produced at a range of scales from household to city. The report identifies the need to consider both water efficiency and alternative supply options along with the wider benefits of rainwater and storm-water harvesting for reducing flood risk. A WSUD engagement document *Water Sensitive Urban Design in the UK – Ideas for built environment practitioners*[17] was also published. This was supported by professional organisations including the Chartered Institution of Water and Environmental Management, the Institution of Civil Engineers, the Landscape Institute, the Royal Town Planning Institute and the Urban Design Group.

Building a better environment

2013

The Environment Agency, Natural England and the Forestry Commission produced a document for developers across England to explain their roles throughout the process of building new developments. *Building a better environment*[18] includes an overview of the role

[15] www.gov.uk/government/publications/housing-standards-review-towards-more-sustainable-homes

[16] Environment Agency: The potential for combining household water and energy retrofitting.

[17] www.ciria.org/service/Home/AM/ContentManagerNet/ContentDisplay.aspx?Section=Home&ContentID=25333

[18] http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_2745_c8ed3d.pdf

the Environment Agency plays in managing surface water, managing the risk of flooding and managing the efficient use of water in new development. The aim of the report is to enable developers to work with the agencies and make the development process as smooth as possible. *Building a better environment* provides initial information to help make the most of new development for people and the environment as well as signposting to more technical advice, including consents and permits that developers might need.

National Policy Planning Framework

2012

DCLG's National Planning Policy Framework[19] sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within which local people and councils can produce their own local and neighbourhood plans which reflect the needs and priorities of their communities.

The framework sets out that local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations.

Development plans should set out environmental criteria, in line with the policies in the framework, against which planning applications will be assessed so that permitted operations do not have unacceptable adverse impacts on the environment including surface and ground water.

Water Using Products

Water use labelling supports choice and enables people to make informed purchasing decisions in respect of water-efficient devices. The Enhanced Capital Allowance Scheme for Water provides a means of encouraging the take-up of water-efficient products in the non-domestic sector. The development of water re-use systems has an important role to play in water conservation.

The Water Label

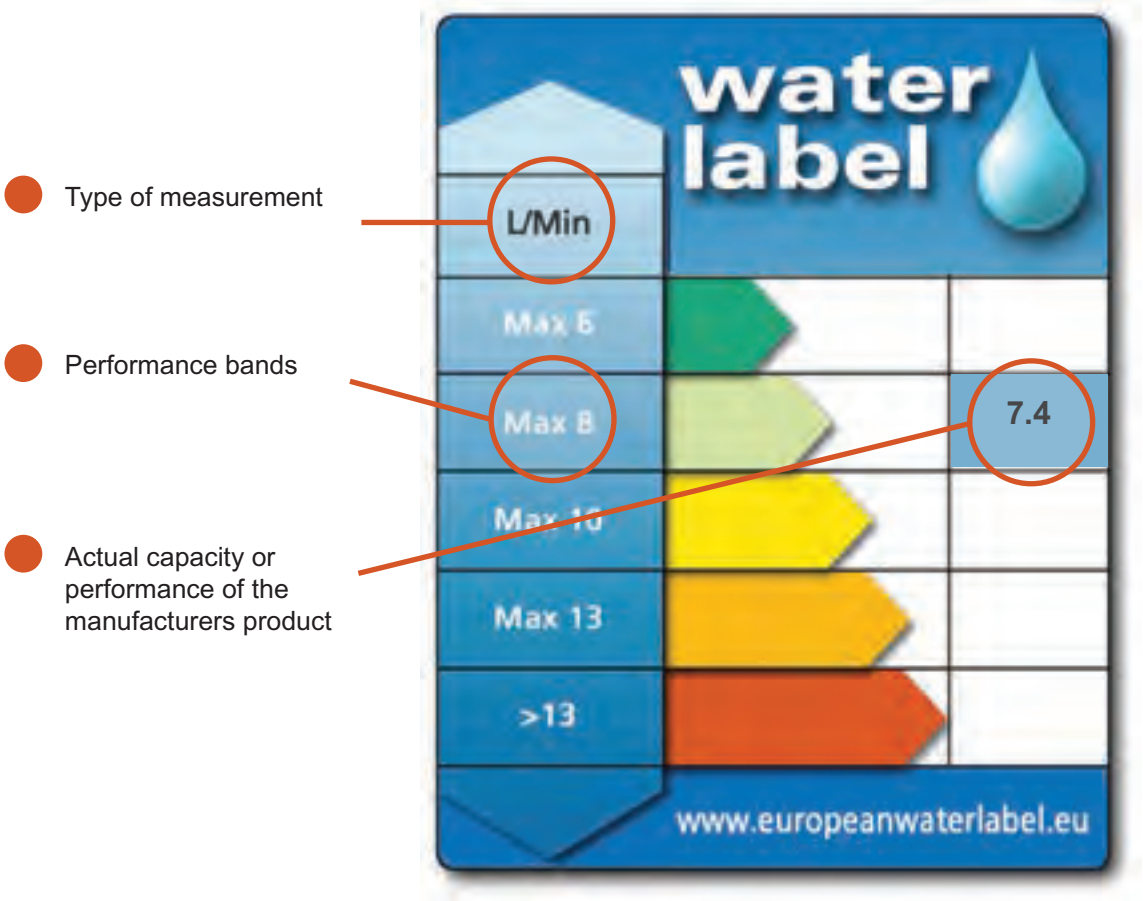
2011 to present

The Water Using Products Group, facilitated by the Waste and Resources Action Plan (WRAP), worked with the Bathroom Manufacturers' Association, major retailers and merchants to increase the sales of water-efficient bathroom products through the use of the Water Label.[20] The Water Label is a voluntary scheme which provides comparative information on volumes of water use between similar bathroom products. The label allows consumers to make an informed purchasing decision.

[19] www.environment-agency.gov.uk/static/documents/Business/NPPF_published_27Mar2012.pdf

[20] www.europeanwaterlabel.eu/

Figure 4: The Water Label



Enhanced Capital Allowance Scheme for Water – Water Technology Criteria List

2003 to present

The Enhanced Capital Allowance scheme is run jointly by Defra and HM Revenue and Customs and offers a 100% first-year allowance for investments in approved water-efficient plant and machinery for companies paying tax in the UK. Launched in 2003, the aim of the Water Technology Criteria List[21] is to improve the water efficiency of the non-domestic sector and encourage businesses to save money by investing in technology and products that reduce water use and improve water quality. The scheme's criteria are reviewed annually, which results in the tightening of some criteria (for example, showers were tightened to a maximum flow rate of 8 litres per minute in 2010–11), while other categories are merged or separated in response to changes in the market and so that they reflect any changes in Government policy, British Standards or European Standards. In addition, new technologies for addition to the scheme are considered each year. Views of stakeholders such as manufacturers and suppliers are taken into account throughout the process. Changes to the criteria or the addition of new technologies are announced in the March Budget by the Chancellor of the Exchequer.

[21] www.gov.uk/government/publications/water-efficient-enhanced-capital-allowances

Energy and carbon implications of rainwater harvesting and greywater recycling

2010

This report presents the findings of a study by AECOM into the energy and carbon implications of rainwater harvesting (RWH) and greywater recycling (GWR) systems. The Environment Agency commissioned the review jointly with the Energy Saving Trust and National House Building Council Foundation. The study quantifies the lifetime carbon footprints of RWH and GWR systems, consisting of embodied carbon and the carbon emitted from operational use; and the contribution of RWH and GWR systems to reducing carbon emissions associated with mains water demand and foul water volumes. The study found that in many cases the carbon emissions from properties that use RWH or GWR were greater than those for properties that used mains water. The project also found that there was scope to improve the efficiency and design of systems to reduce their carbon footprints.[22]

The European Commission's Blueprint for Water

2012

The European Commission developed the Blueprint to address the availability of quality water to meet the needs of people, the economy and the environment.[23] The Blueprint was launched in May 2012 and outlines actions that concentrate on better implementation of current water legislation, integration of water policy objectives into other policies, and filling the gaps regarding water quantity and efficiency. The Commission recommended the development of a voluntary EU Ecolabel and Green Public Procurement criteria for key water-related products as well as including water-related products in the Eco-design Working Plan.

Non-household Water Use

Improved water efficiency in non-household water use has been led by several Government–industry partnership projects and provision of support to businesses through procurement guidance.

The Federation House Commitment

2007 to present

The Federation House Commitment (FHC) is a voluntary agreement which was launched in 2007 and has been led by WRAP since 2010 in partnership with the Food and Drink Federation and Dairy UK with support from the Environment Agency. The FHC was developed in response to Defra's 2006 Food Industry Sustainability Strategy to help companies in the food and drink sector to reduce water use across their manufacturing sites. All companies signing up to the FHC agree to make a contribution to the food and drink industry water reduction target of 20% by the year 2020, against a 2007 baseline. By 2011, a 12.8% decrease in water use was reported and this rose to 16.1% by 2012.

[22] http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/scho0610bsmq-e-e.pdf

[23] http://ec.europa.eu/environment/water/blueprint/index_en.htm

Rippleffect campaign

2010 to present

WRAP's Business Resource Efficiency (BRE) programme was re-launched in 2010 to help businesses identify and implement resource efficiency measures. The BRE programme includes the Rippleffect[24] campaign, which is a free package providing practical advice and support to help businesses save money by using water more efficiently. By registering with Rippleffect, businesses gain access to online training modules, a freephone advice line, and online videos, guides and case studies.

The Rippleffect modules provide structured step-by-step guidance in a readily accessible format making it easy for businesses to follow. There were 900 registrations to the scheme by companies during the period April 2010 to March 2013.

From 2011 to 2013, WRAP's BRE work has engaged with the water industry to develop and deliver a partnership arrangement which aims to accelerate the implementation of water efficiency measures within water companies' non-household (commercial and industrial) customer base. In total, over 430 organisations participated in pilot projects resulting in over 390,000m^3 (1.08Ml) per year of actual water savings with further potential savings identified through on-site water efficiency reviews of over 290,000m^3 (0.81Ml) per year.

Government Buying Standards

2003–13

The Government Buying Standards (GBS) are product specifications which support public authorities in procuring sustainable and value-for-money solutions. Currently, there are around 50 standards in a range of product areas, including water using products (water efficient taps, showers, toilets and urinals) which were added to the set of GBS in 2010. A standard for construction projects, which contains a water efficiency component, also exists. GBS are currently mandatory for all central Government departments and related bodies (as set out in the Greening Government Commitments).

Water-efficient buildings through good procurement practice

2011

In consultation with practitioners, WRAP has developed guidance and model clauses to help clients and developers ask for water-efficient buildings when procuring design, construction and facilities management services. Summary guidance is available for those involved in new build and management and refurbishment of existing buildings.[25]

Food and drink manufacturing water demand projections to 2050

2013

The Environment Agency led a project that looked at how demand for water from food and drink manufacturing may change in the future.[26] The project was supported by Defra,

[24] www.wrap.org.uk/category/initiatives/rippleffect

[25] www.wrap.org.uk/content/asking-water-efficient-buildings-through-good-procurement-practice

[26] www.environment-agency.gov.uk/research/planning/135501.aspx

WRAP, and the Food and Drink Federation. It has provided additional narrative on the food and drink industry to supplement the information already provided to Defra's programme of work to evaluate the options for abstraction reform. It also helped to deliver the commitment in Defra's Water White Paper to 'develop demand scenarios in partnership with different sectors, and use the outputs to develop a common understanding of the future risks to both the abstractors and the environment and provide advice to Government'. The results of this work were published in 2013.

The Environment Agency used socio-economic scenarios to explore how demand for water by the sector may change under different consumption patterns and levels of governance between 2013 and 2050. The scenarios are intended to help participants imagine, understand and manage the future more effectively. They are not intended to be forecasts of what will happen. There is likely to be a mix of elements from the four scenarios and consideration of these may help businesses to plan for potential changes in water availability and use for future business sustainability. The food and drink sector was consulted for its views and recommendations, with a process that encouraged checking and challenging the outputs. Contributions from food and drink manufacturing representatives were invaluable and a model the Environment Agency would encourage for any future work.

Examining barriers to metering, monitoring and recording water use in the food and drink supply chain

March 2013 to present

This project undertook a desk-top research study of the barriers to effective implementation of water metering and monitoring in the food and drink industry and its supply chain. Defra commissioned the study to gain a better understanding of water use efficiency in the food and drinks supply chain in March 2013. Defra felt that there was a need to focus on small and medium-sized enterprises (SMEs) and consider water saving in addition to the energy saving measures traditionally focused on by these groups.[27]

The research provides insights into the best methods of overcoming those barriers through provision of information and will be used to inform future policy making. The study outputs include a non-technical annex aimed at SMEs to signpost the relevant resources that are currently available.

Greening the Industry: Water Subgroup

2010 to present

The Green Construction Board was established in 2011 in line with one of the central recommendations of the Department for Business, Innovation and Skills (BIS) Low Carbon Construction Action Plan. It set up seven working groups to focus on different aspects of green construction. One of these groups, the Greening the Industry Working Group, is responsible for drawing together an all-encompassing and coherent timeline.

[27] http://webarchive.nationalarchives.gov.uk/20130123162956/http:/www.defra.gov.uk/evidence/files/QA.pdf

The group includes representation from a broad range of construction industry bodies (for example, Construction Products Association, UK Contractors Group) as well as Government (Defra, BIS, DCLG) and agencies (the Environment Agency, WRAP). The Water Subgroup, which is a working group falling under Greening the Industry, developed a methodology for establishing the 2008 baseline for water use. Progress towards, and performance against, the 2012 target of reducing water use in the manufacturing and construction phase by 20% compared with 2008 is being measured against this baseline. The group produces annual reports on progress to the target as well as progress against other actions detailed in the group's action plan.

In addition, the Water Subgroup has included a report summarising the findings from an evaluation of water use on constructions sites, a progress report on the work undertaken by the group, case studies relating to water use on construction sites,[28] and a summary report on reducing water use on construction sites.[29]

Auditing of water use on construction sites – Phase I & Phase II

2010–11

WRAP developed data to quantify where water is wasted and the associated water using processes on construction sites through a series of audits on a range of sites. The project established an evidence base of good practice for reduction of water use in the construction industry.

The final report summarises the findings from an evaluation of water use on construction sites and a water audit of three construction sites over an extended period.[30] The main findings identified the key issues faced by construction companies when trying to address water use on sites. This includes the practical issues associated with the type of activities and equipment required when using water as well as those associated with being able to accurately record water use in a convenient way.

The audits identified water saving opportunities at all audited sites, with savings typically ranging from 13% to 24%, and as high as 40% to 83% where significant leaks were found. Some of the main opportunities identified for improving water efficiency included: the domestic and welfare facilities on sites; improved monitoring and targeting to raise awareness of water consumption; investment in appropriate water saving equipment and devices, particularly for use in dust suppression; and action on leaks.

[28] www.wrap.org.uk/content/water-efficiency-construction

[29] www.strategicforum.org.uk/Report%2012%20Water%20progress%20report.pdf

[30] www.wrap.org.uk/sites/files/wrap/Auditing%20of%20water%20use%20on%20construction%20sites%20-%20Phase%201%20and%202.pdf

Government Estate

We must take action significantly to reduce the impact we make on the environment. This includes bringing down Government water use and making procurement more sustainable. Actions taken by Defra and some organisations from the Executive Agencies are set out below.

Greening Government Commitments

2011 to present

In February 2011, the Government made a commitment in its Vision for Sustainable Development[31] to embed sustainability in all it does, including the way the Government estate is run. The Greening Government Commitments[32] set out firm goals for departments to tackle their carbon emissions, water use, waste and supply chain impacts.

By 2015, Government departments and their Executive Agencies,[33] including Defra, have agreed to reduce water consumption from a 2009–10 baseline, and report on office water use against best practice benchmarks. Cross-Government and individual departmental performance is published transparently in the *Greening Government Commitments Annual Report*.[34] The targets for water are as follows: to reduce water consumption from a 2009–10 baseline, and report on office water use against best practice benchmarks:

- ≥6m^3 water consumption per full time employee (FTE) poor practice
- 4m^3 to 6m^3 per FTE good practice
- ≤4m^3 per FTE best practice
- % offices meeting best/good/poor practice benchmark.

Defra water reduction projects 2010–13

Water meter logging devices

2011

Defra installed logging devices on water meters at sites across its estate (Defra and Executive Agencies) over a three-month period.[35] Defra is now using the half-hourly data to identify trends and exceptions, and to benchmark water consumption across the estate. The data has already helped find water leaks at three sites and identify opportunities for water reduction at a number of sites. It is anticipated that the project will have identified savings of up to £50,000 in the first year.

31 http://sd.defra.gov.uk/gov/vision/

32 http://sd.defra.gov.uk/gov/green-government/commitments/

33 Some exceptions apply, see: www.gov.uk/government/uploads/system/uploads/attachment_data/file/61172/Greening_20Government_20Commitments_20-_20guidance_20on_20measurement_20and_20reporting.pdf

34 www.gov.uk/government/publications/greening-government-commitments-2012-to-2013-annual-report

35 www.gov.uk/government/uploads/system/uploads/attachment_data/file/69624/pb13846-greening-government-commitments.pdf

Defra washroom project

2011–12

Defra implemented a range of measures to reduce water use in washrooms across its offices. Flow restrictors on taps and showers, as well as toilet flush restrictors and waterless or low-flush urinals were installed. Implementing these technologies led to easy and relatively cheap wins, taking three months to complete with minimum disruption to business. The biggest saving came from the waterless and low-flush urinal devices which delivered an annual saving of 9,900m^3. Flow and flush restrictors delivered an annual saving of 2,521m^3. The annual financial saving from this water saving was approximately £25,000. Altogether, these changes have contributed to a 23% reduction in water consumption across the estate, and office water use levels per head of staff are very close to meeting good practice standards.

Rainwater harvesting

2012–13

Rainwater harvesting tanks were installed at Defra's Animal Health and Veterinary Laboratories Agency (AHVLA) premises in Weybridge. The site provides water for cleaning the animal holding pens within the buildings and for the animals to drink, reducing the water consumption. The requirement to maintain a controlled environment within the buildings and for the animals means that the water must be filtered using UV and carbon filters to ensure it achieves the necessary purity. The project is estimated to save up to 10,000m^3 of water per year, saving up to £13,000 in supply costs. This project is a test case for Defra and could lead the way for similar projects where harvested rainwater can be used in controlled environments.

Steam ring

2011–12

The project, also at AHVLA in Weybridge, looked to minimise waste water from the steam ring system through replacement/repair/upgrade of valves and replacement/repair of leaking pipework. Savings included energy, water and purchase of chemicals.

Humidification equipment: Sand Hutton

2012

Defra's Executive Agency, the Food and Environment Research Agency, carries out research into the food chain and the environment at its specialist laboratory facility outside York. In early 2012, the ageing humidification equipment used in the laboratory controlled environments was replaced with innovative evaporative technology. This has reduced the site's water use by almost 40%, saving 19,000m^3 of water and £22,000 in water costs in a year. This has also helped bring Defra's water consumption under tighter control.

Efficiencies in the design of the new technology have also reduced annual electricity use by 340,000kWh, saving 185 tonnes of CO_2 and £37,500 in electricity costs.

Environment Agency water reduction projects

Creating a better place 2010–2015: Improving our own environmental performance

2010

The Environment Agency's corporate strategy sets out its aims for the period to 2015 and describes the role it will play in being part of the solution to the environmental challenges society faces.[36] The Environment Agency has set a target of reducing water use by 25% compared with the 2005–06 baseline. In 2012–13 this target was exceeded and water use has been reduced by 29%.[37]

Apollo Court, Hatfield

2010–12

The Environment Agency undertook a review of water use at its Apollo Court site which resulted in a 70% drop in water use. Water efficiency measures were implemented including low-flow infra-red taps, waterless urinals and reducing the size of cisterns on the toilets. In 2010–11 Apollo Court used over 2,400m^3 of water which has been reduced to less than 800m^3.

Horizon House, Bristol

2010

Horizon House opened for business late in 2010 and won the 2010 Best BREEAM Office Award for its environmental credentials (Building Research Establishment Environmental Assessment Method). The site's water conservation features include rainwater harvesting, waterless urinals, low-flush toilets, infra-red activated spray taps and low-flow showers. Rainwater from the roof is collected, filtered and stored, and used to flush the toilets. This reduces reliance on mains water and subsequently minimises the volume of waste water for treatment. Horizon House uses only a quarter of the water used at the two previous older and less environmentally considerate Environment Agency offices on the western edge of Bristol, and one in Bath.

[36] www.environment-agency.gov.uk/static/documents/Utility/CS_Our_performance_sub-strat.pdf

[37] www.environment-agency.gov.uk/static/documents/EA_Website_Environmental_Graphs_2012-13_v2.pdf

Government Guidance and Regulation

The role of Government is to provide regulations and guidance where it is needed to help the general public understand complex issues relating to the use of water, or to protect the public from dangers resulting from a range of situations such as unsafe installations or to respond to weather events such as drought or flooding. While the Government aims to minimise the introduction of regulation, the Water Bill makes the necessary legislative changes to extend competition in the water sector. This will have the effect of giving the consumer greater choice and benefits, as well as building the resilience of our water supplies.

Water White Paper, Water for Life

2011

Defra's White Paper sets out a vision for future water management in which the water sector is resilient, water companies are more efficient and customer focused, and in which water is valued as the precious resource it is. The White Paper considers the role of water in the natural environment, the green economy and the need for a secure and affordable water supply. It sets out the expectation that water companies should place an emphasis on managing demand in their water resources management plans and that further action will be needed to tackle demand pressures. All demand-management measures must be thoroughly explored and tested as part of their options appraisal. Further detail on Government policy expectations are given in the guiding principles for developing a water resources management plan.

Water Resources Planning Guideline

2012–13

The Environment Agency, Ofwat, Defra and the Welsh Government developed the Water Resources Planning Guideline to advise water companies producing their statutory 25-year water resources management plans (the 25-year period covering the period 2015 to 2040). A number of documents were published in 2012 and 2013, including: the guiding principles; the Water Resources Planning Guideline and guidance; supply–demand tables; technical methods and instructions for the supply–demand tables; and audit checklists. The guidance follows the policies set out in the Water White Paper and includes the following requirements: where a company is in an area designated as water stressed, or where it has demand that is above the national average (147 litres per head per day), Government expects the demand trend to be significantly downwards. This includes considering all technically feasible demand side options together with other options to balance supply and demand. Metering approaches are also outlined, based on areas of water stress and provision of support such as water audits and water efficiency advice to be provided when implementing metering programmes.

Updated water stress classification

2012–13

In October 2012, the Environment Agency consulted on a new methodology using up-to-date evidence for determining the level of water stress for areas in both England and Wales. The project has produced a complete picture of where there is a recurrent imbalance that arises from an over-use of water resources for a given area. The designation resulting from the new methodology provides information on areas of water stress that show where water companies must consider the costs and benefits of metering in their water resources management plans and enables compulsory metering to be carried out in those areas in accordance with the current regulations.[38]

Ofwat's leakage targets

2010 to present

Ofwat sets yearly targets that each water company has to deliver while meeting its price limits over the period 2010–11 to 2014–15. The targets are based on the sustainable, economic level of leakage. In 2011–12, leakage fell to its lowest level since records began in the early 1990s. Since then leakage has increased slightly.

During 2013, Ofwat started to consider its approach to leakage for the Price Review in 2014 (PR14). This included enabling water companies to propose leakage levels in accordance with the views of their customers and the sustainable economic level of leakage.

Review of the calculation of sustainable economic level of leakage and its integration with water resource management planning

October 2012

Defra, together with the Environment Agency and Ofwat, commissioned a study to review water companies' calculation of the sustainable economic level of leakage. This report recommends greater integration with water resources management plans and provides recommendations on external costs such as taking a catchment-based approach to valuing environmental benefits of leakage reduction.[39] Guidance provided by Ofwat and the Environment Agency states that this report should be the basis for determining leakage levels for water resources planning and for PR14.

Ofwat's water efficiency targets

2010 to present

As part of the Price Review in 2009, Ofwat set targets for the period from 2010–11 to 2014–15.[40] In the first year, they required the water companies to save 24 million litres a day by promoting water efficiency. It is estimated that 35 million litres a day has been saved, nearly 50% more than the target amount and two-and-a-half times the amount saved in 2009–10. Ofwat's future approach to managing demand for water will be considered as part of the PR14 methodology.

38 Water stressed areas: 2013 classification – Publications – GOV.UK

39 www.ofwat.gov.uk/sustainability/waterresources/leakage/rpt_com121012smcsell.pdf

40 Ofwat: Regulating the Industry: RD 15/07: Water efficiency targets

Water efficiency targets and the collaborative fund

2012 to present

Ofwat made changes to the way water companies can meet their water efficiency targets to allow them to pay towards a collaborative research fund and receive an allowance against their targets. This followed a consultation on revisions to the water efficiency target methodology.

A financial contribution of £170,000 is viewed as equivalent to 1 megalitre of the target.[41] The maximum contribution companies can make is the equivalent of 15% of one year's target. The board of the collaborative fund has met and developed projects to further enhance the water efficiency evidence base.

Strategic policy statement to Ofwat, incorporating social and environmental guidance

2013

The strategic policy statement[42] sets out the priorities that Ofwat should keep under review and requires the water companies to report on the steps they have taken in response to this steer. The document incorporates social and environmental guidance that sets out more specific priorities under a range of themes that Ofwat should take into account. On demand management, this sets out Ofwat's statutory duty to further water conservation and ensure that it is thoroughly explored in water company plans; water companies should be encouraged to reduce water use per person; and there is an expectation that water use should be reduced in areas of water stress. The Government expects Ofwat to incentivise water use reduction including a new and sustained approach to reducing leakage. The statement also sets directions in relation to sustainable abstraction and engaging customers to reduce the amount of water they waste.

The Water Bill

Current

The privatisation of the water industry has been successful in attracting investment that has improved infrastructure and produced cleaner water supplies. However, given the future challenges we face and the need to keep customers' bills affordable, we need to find new approaches to water management, to encourage innovation and greater efficiencies.

The Water Bill is one of the main parts of the Government's programme of action to deliver this vision, focusing particularly on the reform of the water industry. Beyond the Bill, the Government is taking action to tackle affordability for customers, water efficiency, leakage, pollution and unsustainable abstraction. The draft Water Bill was published in July 2012.

One of the aims of the Water Bill is to increase competition within the water industry and to allow policy to incentivise innovative water-efficient goods and services through the setting up of a wider retail market.

41 www.ofwat.gov.uk/regulating/gud_pro1204weffcollaborative.pdf

42 Strategic policy statement to Ofwat, incorporating social and environmental guidance – Consultations – GOV.UK

Developing the Evidence Base

The results of water efficiency measures taken by water companies and other organisations have been drawn together so that they can be shared and demand management programmes can be improved.

Water Efficiency and the Water Companies – a 2010 UK Review

2010

This Waterwise report summarises the water efficiency activities of the UK water industry over the past few years and details future projects.[43] It draws on the water resources management plans published by the water companies in 2009, water company websites, individual meetings with water companies and water company feedback. The report concludes that all companies have been active in promoting water efficiency to their customers.

Green Deal Guidance for the Water Sector

2012

Water companies are considering opportunities for creating partnerships with Green Deal Providers to see a range of work being done in people's homes. Defra and others provided funding for an Energy Saving Trust and Waterwise publication that provides guidance on how to increase uptake of joint energy and water efficiency programmes, through partnership working between water companies and energy efficiency programme providers.[44]

Water efficiency evidence base

2008 to present

The Waterwise evidence base[45] was co-funded by Defra, the Environment Agency and Ofwat. It provides resources to support water company decision making on water efficiency options to help with water resources planning and the implementation of the most effective schemes. Work on the evidence base has included the following outputs.

The Phase II Interim Report in 2010 was followed by a Second Report later that year, with a Final Report published in 2012. The Second Report covers retrofitting schools, using data from 600 school retrofit projects in three English regions, and analysed recent work undertaken by Severn Trent Water, Thames Water and Southern Water in partnership with the Environment Agency.

The Phase II evidence base report includes new data on the effectiveness of domestic and school projects in addition to summarising lessons learnt from previous evidence base reports. A major driver for this report was an industry need for understanding the longevity of water savings from domestic water efficiency retrofitting trials.[46]

[43] www.waterwise.org.uk/data/resources/42/2010-Waterwise-water-company-water-efficiency-review.pdf

[44] Green Deal guidance for the water sector / Energy efficiency / Publications / Home (England) – Energy Saving Trust England

[45] Evidence Base – Waterwise

[46] www.waterwise.org.uk/data/resources/12/evidence-base-report_april-2011_final.pdf

Review of the Waterwise evidence base

2012

The Waterwise evidence base Phase I and Phase II reports, published since 2008, represent the most significant available compendium of water efficiency research and results achieved. To support water companies' decisions on demand management, the Environment Agency ran a project to provide an independent scrutiny and audit of the Waterwise evidence base and to undertake a review of water efficiency demand management measures.[47] The review made recommendations about how the analysis could be improved and the results better presented. It is now being used by the collaborative fund to enhance the evidence base.

Investigating the impact of water efficiency educational programmes in schools: a scoping study

2012

Defra, the Environment Agency and Ofwat funded this research project led by Waterwise as part of the evidence base. Water efficiency education is provided to school pupils by water companies and a range of other organisations. Previous work for the water efficiency evidence base highlighted uncertainties, in particular about the interplay between school retrofit programmes and educational efforts. The scoping study brought together a range of evidence from schools programmes and made recommendations on evaluation programmes.[48]

Annual Waterwise water efficiency conferences

2010–13

Waterwise organised annual conferences that focused on the future of water efficiency and brought together key stakeholders in the water sector. The conferences gave delegates an opportunity to hear about developments in water efficiency and to discuss strategies for building on these in the future. The conferences included large-scale water efficiency project partners, metering experts and regulators and heard from leading politicians, regulators and scientists about how water efficiency activities could be sustained in the long term.

Environment Agency tariff trials workshops

2011 and 2012

The Environment Agency and Water UK held joint workshops to discuss tariff trials being undertaken by the water companies. The 2012 workshop discussed how the value of water can affect or shape tariff structures; explored whether tariffs can be an effective demand management tool; and shared information, experiences and lessons learnt from metering and tariff programmes.

[47] http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geho0712bwsz-e-e.pdf

[48] www.waterwise.org.uk/data/resources/47/Scoping-water-efficiency-educational-programmes-in-schools_Final.pdf

Managing Abstraction and Reacting to Drought

The 2012 drought resulted in changes to the management of and the approach to communication about drought. It was the first time Temporary Use Bans were used. Two consecutive dry winters between 2010 and 2012 caused parts of England to suffer the lowest 18-month rainfall for 100 years. By April 2012, water levels at several reservoirs were the lowest ever recorded. In April 2012, seven water companies in England imposed Temporary Use Bans on around 20 million customers.

The Government also manages abstraction through the abstraction licensing process which is operated by the Environment Agency. The approach to managing abstraction is currently being reviewed.

National Drought Group

2012

The National Drought Group was established by Defra. It included representatives from the water industry, regulators, business, agriculture and non-governmental organisations. The Group produced a range of recommendations during and following the drought, including the approach to take in communications and messaging.

Monitoring the impact of water company drought demand measures

2013

The Environment Agency, Defra, Water UK and representatives from the water companies which applied restrictions agreed to a collaborative approach to develop a model that could be used to show the impact of drought measures. The project was jointly funded by the Environment Agency and Defra with support from water companies in the form of data, information and advice. The project has built an understanding of the impact of drought-related demand measures in a wet year and developed an approach that can be used to monitor this in future droughts. The project has also been able to determine the essential data requirements for effective monitoring of drought measures by water companies. This understanding will be shared with water companies so that they are better prepared to manage droughts in future.[49]

Modelling Abstractors' Supply and Demand for Water into Production

2010

Defra led a project that looked at enhancing the evidence relating to the demand for, and the costs of, water for non-water industry abstractors, to ensure the availability of a more comprehensive set of data for the main abstracting sectors in England.[50] The project identified and documented case studies that showed how businesses had adapted their use of water to improve their water efficiency.

[49] http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_8953_bdde41.pdf

[50] http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=2&ProjectID=17535

Assessment of regulatory barriers and constraints to effective interconnectivity of water supplies

2010

As part of Defra's Water Availability and Quality Research Programme, this report aims to identify potential barriers to prospective regulatory or planning regimes in support of inter-basin transfers and to provide an objective assessment of their implications so that legitimate options for inter-basin transfers are not artificially constrained.[51]

Impacts of abstraction reform options

2012–13

Defra is working closely with stakeholders to assess the impacts that different reform options may have. Defra has commissioned research to assess the impacts that these have on people and organisations which rely on water taken directly from rivers and ground water. This research has fed into the impact assessment of reform options, the consultation for which was launched on 17 December 2013.[52]

Climate Change

Water is a major indicator of the impacts of climate change. The Government has responded to climate change through developing work on climate change adaptation. This has resulted in a range of research and reporting about water efficiency in relation to the changing climate.

Climate change adaptation reporting

2010–12

Under the Climate Change Act 2008, the Secretary of State for the Environment, Food and Rural Affairs can require organisations with functions 'of a public nature' to report progress on adapting to climate change. This includes Ofwat, the Environment Agency and water companies.

Ofwat's climate change adaptation report (May 2011) identifies key risks for reduction in surface and ground water yields and increased demand for potable water. Water conservation measures put forward include water efficiency targets, a sustainable economic level of leakage targets and a metering policy.

The Environment Agency's adaption report (November 2010) highlights its role in promoting guidance on the construction and development of suitable new water resource solutions, water efficiency and advising and providing evidence to Government departments, Government, regulators and abstractors on how to improve water efficiency.

Defra published the reports from each water company (May 2011) which identify the risks that climate change will pose to their service, and what actions they are taking to address them.[53]

[51] http://archive.defra.gov.uk/environment/quality/water/resources/documents/wt0921-technical-report.pdf

[52] www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop

[53] http://webarchive.nationalarchives.gov.uk/20130123162956/http:/www.defra.gov.uk/environment/climate/sectors/reporting-authorities/reporting-authorities-reports/

National Adaptation Programme

Work towards the National Adaptation Programme (NAP) (see Forward Look) began during the period of this report. In 2012, Defra ran a series of workshops with around 700 organisations and held two informal consultations. These helped the Government to identify the most important areas for the NAP, and allowed stakeholders to comment on the draft objectives of the NAP report. The Government has also carried out a number of pieces of research which have contributed to the evidence base for the NAP.

Attitudes to water service in a changing climate

2011

Ofwat commissioned research to explore customers' attitudes to water and sewerage services in a changing climate. The research found that customers accept the need to respond to climate change, are prepared to pay a little more now to avoid future costs, and are not prepared to accept reduced levels of service in the future. Findings from the research support Ofwat's climate change policies.

Climate change approaches in water resources planning – overview of new methods

2013

The Environment Agency and UK Water Industry Research (UKWIR) co-funded a project to examine how climate change has been built into water resources management plans to date, and to recommend best and appropriate practice for the future, with particular reference to the use of the detailed tools and probabilistic climate data in the climate change scenarios documented in the climate projections produced in 2009.

UKWIR Impact of Climate Change on Water Demand

2011–13

This project was established to derive estimates of the impact of climate change on water demand that can be used by water companies for their demand forecasts for their 2014 water resources management plans. Five case studies were analysed to derive relationships between water use and variations in weather. These relationships were then used with the 2009 UK climate projections to provide estimates of the impact of climate change on household water demand for each UK river basin district. The project has improved the understanding of the impacts of climate change on demand for water and is being used to inform further work on customer behaviour and the demand for water.[54]

UK Climate Change Risk Assessment

2012

The UK Climate Change Risk Assessment (CCRA) has reviewed the evidence for over 700 potential impacts of climate change in a UK context. Detailed analysis was undertaken for over 100 of these impacts across 11 key sectors, including water, on the basis of their likelihood, the scale of their potential consequences and the urgency with which action may

[54] www.ukwir.org/ukwirlibrary/96588

be needed to address them. The CCRA identified a number of the impacts for which the UK water sector may need to prepare. These are: dryness and river flows; water supplies; water assets and infrastructure; and water quality and environment.

A key challenge with respect to adaptation is the lack of clear evidence of water quality changes resulting from complex interactions between land-use changes, aquatic ecosystems and climate change. Areas where the CCRA has identified a need for further investigation also include: the environmental impacts of drought; incentives and mechanisms to encourage water trading between water companies, and between water companies and other water users; mechanisms to encourage increased efficiency in water use; and the impacts of changes in water demand on river flows.

Programme of Research on Preparedness, Adaptation and Risk

2012–13

The Programme of Research on Preparedness, Adaptation and Risk (PREPARE)[55] supports the UK Government in developing its strategy on adaptation policy, and in particular its statutory programme of climate adaptation policies laid before Parliament in July 2013 under the Climate Change Act. This research included a survey of attitudes towards climate change adaptation including water efficiency measures that were taken forward into a cost–benefit assessment. The research programme was delivered by a consortium of Ipsos MORI, Ricardo-AEA, Alexander Ballard Ltd, the University of Leeds and a panel of experts in climate change adaptation.

The first report on the National Adaptation Programme (NAP) sets out what Government, businesses, communities and civil society are doing to prepare for and adapt to climate change. The research programme produced a number of significant studies which will help the Government to design the types of policies and services described in the NAP. The objectives of the PREPARE research programme are wide-ranging. They include improving understanding of the barriers and enablers to organisational and sectoral adaptive capacity in the UK and investigating the climate risk resilience and adaptation expectations of the public.

[55] www.ipsos-mori.com/researchpublications/publications/1611/Defra-Programme-of-research-on-preparedness-adaptation-and-risk-PREPARE.aspx

Innovation

Defra, along with the Research Councils, contributed £1m towards a Technology Strategy Board[56] competition on water scarcity launched in 2012. The challenge was set for companies to create a new technology or process that would either save or recycle 1,000 million litres of water per day. Feasibility studies (to test how feasible an innovative idea or technology is for development for market) and R&D projects were funded as part of this competition.

UK Water Research and Innovation Partnership

Under the leadership of Sir John Beddington, public, private and third-sector stakeholders with a strong interest in water published *Taking Responsibility for Water*.[57] This sets out priority actions for research and innovation in both the UK and global water security context over the next 20 years. Its findings and recommendations are being taken forward through the UK Water Research and Innovation Partnership (UKWRIP).[58]

Water Sector Innovation Leadership Group

The Water Sector Innovation Leadership Group[59] (comprising representatives from water companies, the supply chain, Defra, BIS, Ofwat, the Environment Agency and the Technology Strategy Board) was set up first under the chairmanship of Jonson Cox and then Tom Flood. The Group aims to provide leadership and guidance to drive innovation in the water sector by encouraging partnerships, stimulating investment and helping to establish an environment that nurtures progressive innovation.

[56] www.innovateuk.org/

[57] www.bis.gov.uk/assets/bispartners/goscience/docs/t/aa-a390-taking-responsibility-for-water-research-and-innovation-framework

[58] www.ukwrip.org/

[59] www.ofwat.gov.uk/regulating/prs_web_innovationforum

Forward Look

Section 81 of the Water Act requires the Secretary of State to report on any steps he proposes to take. We are also here providing a brief update on any policies or initiatives that have been implemented in the period between March 2013 and the publication of this report. Additionally, we are sharing some of the work the Environment Agency has done on projecting future patterns of water use.

The Water Bill

A draft Water Bill was initially published in July 2012. Following comments made during pre-legislative scrutiny of the draft Bill by the Environment, Food and Rural Affairs Select Committee, the Government strengthened the Water Bill, which was introduced to Parliament on 27 June 2013.

One of the key aims of the Water Bill is to build upon the strengths of the current regime, using enhanced competition to introduce innovation into the provision of water services by removing barriers to competition and encouraging new entrants into the market. It is envisaged that this will encourage the development of new technology, enabling water resources to be used more efficiently and flexibly, or to be re-used or treated more effectively, therefore increasing our resilience and benefiting the environment.

Competition will also incentivise water companies to offer better services to attract large customers, such as water efficiency advice and smart metering. This will also have knock-on benefits for all water company customers.

The market reform provisions of the Water Bill extend to England and Wales, although the Welsh Government has taken the decision not to implement some of the provisions for incumbent water and sewerage companies operating wholly or mainly in Wales.

Household Behaviour

Water Efficiency in Buildings Network

Since March 2013, the Water Efficiency in Buildings Network (WATEF) has organised a masterclass on water efficiency for non-domestic users and has presented and organised conferences to share good practice in water demand management activity, such as smart metering, climate change adaptation, risk management and low carbon infrastructure. It has launched its messaging programme to encourage people to use less water and is running research to examine consumers' attitudes to water and sustainability and socio-demographics. In addition, WATEF masterclasses are planned for February and June 2014 dealing with Retrofitting for Water Efficiency and Global Trends in Water Efficiency respectively.

Action based research

In August 2013, Defra called for Expressions of Interest for action based research projects to test innovative approaches to encouraging sustainable behaviours including for water use in the home.

At Home with Water

At Home with Water[60] was published in summer 2013 by the Energy Savings Trust (EST), with funding from Defra. The report presents analysis from EST's water energy calculator and includes the biggest ever review of domestic water use in the UK. The calculator helps households to understand their water use and identify potential savings, with more than 100,000 households having benefited from it. The analysis in this report shows, for example, that showers are now the largest user of water in the home. Across the UK, around 840 billion litres of water are used each year, and people spend around £2.3bn on heating water for showers.

Homes and Communities

Customer Behaviour and Water Use

A follow-up project to the UKWIR *Customer Behaviour and Water Use* publication (see page 12) is now being run by UKWIR with support in kind from the Environment Agency. The project will take forward the impact of customer behaviour on demand and use this to inform forecasts of demand in future.

Review of local housing standards

A consultation on the review of housing standards ran from 20 August 2013 to 22 October 2013.

Herne Hill Lost Effra project

Year 2 will implement a water management strategy through community-led initiatives, thereby also testing the robustness of an engagement model. Delivery activities will include: targeted water efficiency projects, the construction of three rain gardens and three green roofs, de-paving in three locations, and delivery of education and awareness sessions.

Non-household Water Use

Government Buying Standards

Defra is working with partners including the Crown Commercial Service (formerly the Government Procurement Service) to mainstream sustainable procurement. We are monitoring the currency of existing GBS (including an in-depth review of the construction standard), and exploring a range of tools that, building on the GBS, do more to promote eco-innovation. We continue to encourage other departments to take a leading role in developing tools to support sustainable procurement. We have also contributed to wider EU policy, including the EU Green Public Procurement programme and Procurement Directives.

[60] www.energysavingtrust.org.uk/About-us/The-Foundation/At-Home-with-Water

Water Using Products

Announcement on labelling and future promotion

Leading DIY retailers, builders' merchants and manufacturers of bathroom fittings reached agreement in July 2013 to put the Water Label on their entire product ranges by summer 2014, to help consumers make an informed purchasing decision. Data on water use and running costs will be added at point-of-sale and on websites over the next 12 months, so that information is readily available to consumers. Increased visibility of the water label will mean that consumers will be able to compare products on a like-for-like basis and see which ones offer the greatest water savings.

Managing Abstraction and Reacting to Drought

Water stressed areas

The water company water stress designations were updated in July 2013, using up-to-date evidence for determining the level of water stress for areas in England and Wales. When an area is designated as being in 'serious water stress', the water company for that area must consider the costs and benefits of universal metering in its water resources management plan. If water metering is the most cost-effective option, the company may include proposals for metering everyone in the area in their plan.

Future abstraction reform

As mentioned above (see page 34), a consultation was launched in December 2013.[61]
In 2014, further work will be done to refine reform options drawing on consultation responses due by 28 March 2014. This will feed into final policy proposals to be published in 2015. These will then lead to legislation in the next Parliament after the 2015 election. Implementation of abstraction reform will take place in the early 2020s.

Non-household Water Use

Ecodesign

The Ecodesign Directive relates to energy-using products, and has resulted in standards for a number of these products being rolled out EU-wide. The Ecodesign Directive also covers a smaller number of non-energy-using products. A preparatory study on taps and showers started in June 2013 and a report is due for publication in summer 2014.

Rippleffect campaign

2013

In 2013, partnership work has moved towards the promotion and delivery of the Rippleffect campaign (see page 22) through other business support organisations (for example, trade associations and other key regional and sector-based stakeholders).

[61] www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop

Water Technology Criteria List

A new contract for the Water Technology Criteria List is being tendered, with an Invitation to Tender published on the Official Journal of the European Union on 10 December 2013 with a deadline for tenders of 22 January 2014. The contract will be for an initial three years, with the possibility of extension for a further two years.

Government Guidance and Regulation

PR14 – approach to water efficiency

Current

Ofwat's Price Review process determines the amount that water companies can charge their customers for water and sewerage services. The current Price Review (PR14) will set charges from 2015 to 2020. Ofwat will set separate price caps for the wholesale and retail parts of the water companies' businesses. This is to support the UK Government's reforms to legislation to allow non-household customers to choose their supplier and improve customer service across the business. The PR14 methodology sets out that water efficiency should form part of the retail business of water companies.

Two funding mechanisms for water efficiency have been developed by Ofwat as part of the PR14 process. These are a baseline level of water efficiency and additional water efficiency. The baseline service of water efficiency in 2013–14 should be funded through retail services and will be funded in the PR. It is up to companies to decide whether other expenditure on water efficiency sits between wholesale and retail. Ofwat is of the view that both demand-side water efficiency services and customer-side leak repairs are best carried out in the retail part of the business.

Water companies have a legal duty to promote efficient use of water and must demonstrate that their proposed actions will meet this requirement. If water companies propose additional water efficiency measures, Ofwat will check that this is part of a best value approach to balancing supply and demand and decide whether it can be funded through customers' bills.

PR14 – approach to leakage

Current

Ofwat is considering leakage is as part of the PR14 process. The approach is based on the sustainable economic level of leakage. This includes customers' willingness to pay for leakage reductions. The approach to leakage will be designed to ensure that companies listen to their customers' views and understand if they are unhappy with current levels of leakage.

Ofwat is considering leakage as part of the PR review process. Ofwat will expect all companies to put forward a performance measure on leakage in their PR14 submission. If Ofwat considers that the proposals fall short, it will substitute its own performance measures.

Private water supply pipes
2013

Defra consulted on policy options for the future management of private water supply pipes between May and July 2013. This is the section of pipe which runs between a property boundary and the property itself. Consultation responses, along with the results of independent research which was separately commissioned, will help inform future policy decisions.

Review of WRAP
Defra's funding for WRAP was reviewed between January and July 2013. WRAP activities were assessed against three guiding principles:

- future funding for WRAP should reflect Defra's ministerial priorities
- Government should only intervene where there is a true market failure, or where behavioural barriers could justify intervention
- where Government does intervene, it must secure good value for money.

The review concluded that WRAP was properly operating in areas of market or behavioural failures and that it mostly provided good or very good value for money. WRAP was judged to be the best (and often the only) body to carry out the work. The detailed work plans for future WRAP delivery to Defra, including its work on water efficiency, are currently being finalised to reflect the outcomes of the review.

Climate Change

National Adaptation Programme
2013

The National Adaptation Programme (NAP) was published in July 2013 and sets out what Government, businesses and society are doing to become more climate ready. Defra has developed the NAP as a response to the UK Climate Change Risk Assessment, which analysed the potential effects of climate change and the risks and opportunities for the UK.

The NAP report is supported by an annex, the 'Economics of the NAP', which outlines the role of society in adaptation efforts, the challenges of uncertainty, the costs and benefits of climate change and the impacts of climate change on economic activity. It also provides recommendations on where future work should focus attention.

Defra has worked with businesses, local councils and community groups to develop the NAP. Action in the NAP is divided into the following broad categories:

- raising awareness of the need for climate change adaptation
- increasing resilience to current climate extremes

- taking timely action for long lead time measures
- addressing major evidence gaps.

Innovation

The Water Sector Innovation Leadership Group hosted an event on 17 December 2013. A range of speakers discussed the role of leadership in various sectors. The Group also showcased its work on developing indicators of innovation, giving a much more informed view of the national picture and providing a source of benchmark and trend data at an industry level. An insight model (Linking Initiatives to Societal Needs) was also unveiled which will give greater visibility of coverage and details of initiatives as well as highlighting gaps.

Water Resources Management Plans – initial analysis

Water companies set out their approach to managing demand and leakage in their draft water resources management plans that were submitted in spring 2013. The Environment Agency has analysed the plans and provided recommendations to Defra on how to respond to the plans.

Water companies have generally risen to the challenges in the Water White Paper and the Water Resources Planning Guideline. They have set out how they will work with their customers to manage demand as well as manage leakage. The Government will continue to work with water companies and industry to support innovation and progress on leakage and managing demand.