



Sustainability

Conservation

Climate Change

The Itchen Initiative

Executive Summary

BACKGROUND TO THE ITCHEN INITIATIVE

The Itchen Initiative was launched to provide recommendations for the future of water management and regulation, in particular the reviews to be completed in 2011 by OFWAT and Defra.

The Initiative is named after the River Itchen, one of the world's most beautiful and iconic rivers, now threatened with over-abstraction of water to meet the needs of a

growing population in the context of climate variability and change. The Initiative has brought together leading water industry and policy experts to develop a compelling and coherent response to these challenges. The Initiative is intended to inform, in particular, Defra's forthcoming White Paper on the water industry and Ofwat's review of the regulatory arrangements for the water industry in England and Wales.

We've brought together leading water industry and policy experts to develop a compelling and coherent response to the water abstraction challenge.

The Initiative has been based on a series of background discussion papers prepared by Colin Fenn, Rob Wilby, Waterwise, WWF-UK and an independent research report paper prepared by Policy Exchange¹. Southern Water and South West Water have very kindly co-operated in testing some of the approaches proposed in this paper with their water resource system models. We extend our warmest gratitude to them both.

The Initiative has benefited from the advice and guidance of an Advisory Group composed of Lord Deben, Jonathon Porritt, Sir Graham Wynne, Tim Keyworth (Ofwat), Neil Whiter (South West Water), Meyrick Gough (Southern Water) and Professor George Yarrow. We'd like to express our thanks to the members of this group. The views and recommendations expressed are, however, those of WWF, and not the advisory group.

THE SCOPE OF THE ITCHEN INITIATIVE

We established the Itchen Initiative to identify solutions to the challenge of over-abstraction and its impacts on our natural environment, now and into the future.

As is now well recognised, these are already significant challenges, and both climate variability and an increasing population will make them more so. It is our

vision that the water management policies, regulations and systems in this country should ensure that the water needs of the environment and people can be met, in a way that involves the least cost. In safeguarding our natural environment, these systems must be robust to climate variability and change, and ensure that the water needs of vulnerable customers are met.

RESTORING FLOWS TO RIVERS WILL REQUIRE CHANGE TO THE WAY WE MANAGE WATER. NEW ECONOMIC REGULATION AND CHANGES TO WATER LICENSING AND CHARGES ARE NEEDED TO CHANGE THE WAY INDIVIDUALS AND COMMUNITIES USE WATER.

Meeting this challenge will not be straightforward. It will have implications right across the way in which we manage water, including reforms to economic regulation, abstraction licensing, the basis on which abstractors and customers are charged for water, and the way in which individuals and communities use water. The inter-connected nature of these problems has, however, created challenges for the scope of our work. While it's clearly beyond this initiative to identify in detail reforms across all of these areas, nevertheless sustainable water use cannot be taken in isolation from these wider issues. While we believe that our recommendations encompass all abstractors, much of the discussion has focused on public water supply companies, as these constitute a very significant proportion of the challenge.

In response to this challenge, we have attempted to keep a focus on those issues that are central to ensuring environmental water needs are met with the least cost. This has meant, for example, a particular focus on the way in which environmental risks are recognised in the abstraction and regulatory regimes. We have also identified those areas where we believe supportive policy reforms are necessary to create the right conditions for more sustainable approaches. For example, we have noted the importance of developing social tariffs for water customers, and changes to the incentives around operational and capital expenditure in the economic regulatory regime. In these cases, however, it hasn't been the Itchen Initiative's role to develop recommendations in detail. Instead, we have identified the direction of reform that we believe to be required.

One important final point must be made about the scope of this report. Healthy freshwater ecosystems depend on a great deal more than simply adequate flows of water. We can put as much water as we like down a river, but if the quality is poor, the channel is a concrete trapezoidal box and the bed is obscured by contaminated sediment, then we are wasting our efforts. The Itchen Initiative has focused on one part of the overall needs of our freshwater systems: the challenge of water quantity. However, ensuring that investments in restoring and protecting healthy flows of water in our rivers are not to be money wasted will require that the other pressures on our rivers, lakes and wetlands are addressed at the same time. The implementation of the Water Framework Directive provides a wonderful opportunity to take just such an integrated view.

SUMMARY

Coping with water scarcity is recognised as an increasing challenge in England and Wales, threatening both our natural environment and the security of water supply for customers.

The challenge

Maintaining security of water supply represents a significant cost for water customers in the context of increasing concerns over affordability. The challenges associated with water scarcity are projected to increase very substantially over the course of the coming decades. We believe that a new approach is needed: an approach based around flexibility and incentives, and a clearer link between our use of water and the environment that provides it.

Limitations in the current system

Some important steps have already been taken in the direction of smarter water management, for example the development of Catchment Abstraction Management Strategies (CAMS), the initiation of the Restoring Sustainable Abstraction programme and significant progress on demand management in Ofwat's 2009 periodic review of water company business plans (PRO9). These provide the basis on which further reforms can be built. However, there remain a number of important limitations to the current approach:

- There is huge uncertainty over environmental requirements. This uncertainty is inflating costs, hindering longer-term water resources planning, acting as a barrier to water sharing and trading, and acting as a constraint to resolving over-abstraction.
- At the rate of progress possible under the current mechanism for ending existing over-abstraction, it could take between three centuries and two millennia to reach sustainable levels of abstraction across England and Wales.
- In many places, basic environmental protections for rivers against abstraction are not in place. There are currently no incentives for companies and other licence holders to account for environmental impacts of the operation of existing licences, even in cases where such impacts are well recognised.
- Company plans to introduce demand management in areas suffering chronic over-abstraction have been turned down by Ofwat on the (legally justifiable but hydro-ecologically illusory) basis that these areas are in licensed water surplus. Unsustainable licences give the illusion of a healthy water surplus, when in fact rivers are running dry because of over-abstraction. This can result in Ofwat declining company plans to introduce demand management programmes in areas where the highest rates of water use in the country are drying out rivers.
- Current water planning methods significantly disguise the true costs of meeting peak water demand in dry years.
- The majority of water customers do not know or pay for how much water they use, and pay the same amount regardless of whether that water is scarce.
- There remain cultural barriers to the introduction of more widespread demand management.
- Water companies have tended to favour capital-intensive new supply solutions over alternatives such as demand management, trading water with neighbouring companies, and other operational expenditure solutions.

Beyond the average: understanding variability

Understanding variability is central to many of the concepts underpinning 'smarter water management'. A better understanding of the variability in both natural freshwater systems and the way in which people use water will allow us to identify more precise, targeted and cost-effective solutions to reducing environmental impact, reconciling supply and demand under increasing pressure, and maximising the value that we derive from the water that we use.

In many water supply areas, the costs of ensuring security of supply are driven in large part by peak water demand in dry summers. The construction of expensive, new infrastructure may not be the most cost-effective response to rare episodes of shortfall. Rough, back-of-the-envelope calculations suggest that in some cases the true cost of providing the water to run a sprinkler for an hour under peak conditions in dry years might be as much as £50. A series of alternative responses may be more attractive, including targeted demand management, tailored tariff setting, sharing of water between companies, spot trading arrangements, interruptible supply tariffs for bulk water users and, generally, solutions with low capital costs and high, but infrequently incurred, operating costs.

A significant proportion of peak water demand is driven by outdoor water use, implying a very significant cross-subsidy from less affluent to more affluent homes under current water supply tariffs. In the absence of smart meters and tariffs, this cross-subsidy cannot be addressed.

Given the spare capacity that exists in company supply systems most of the time, significant scope exists for water companies to modify the operation of their existing systems to reduce environmental risk. No incentives currently exist to encourage companies to factor environmental risk into the way in they operate their systems, with minimising operating costs being the chief driver of operating practice between (infrequent) times of shortage.

Modelling work undertaken by this Initiative on the Dart and the Itchen has demonstrated the potential for reductions in environmental impact through flexible network operations based on environmental risk and the use of variable abstraction quantities tied to the prevailing flow or level. While this modelling work is only preliminary, it indicates that some reductions in environmentally damaging abstraction may be achievable through either or both of these mechanisms, at low cost.

On this basis, we identify two major opportunities that can be realised through a move to a smarter water management system:

1. Innovative and flexible approaches to ending damaging abstraction have the potential to deliver environmental benefits at significantly lower cost than the approaches currently adopted.
2. A range of flexible solutions to reconciling supply and demand remain available and under-utilised, due to a range of regulatory, methodological and cultural barriers.

Realising these benefits will require reforms to our water management regulations and incentives so that environmental values and risks are better and more accurately reflected; signals over scarcity and the value of water are given to abstractors and water users; and, regulatory and planning biases towards fixed, capital intensive solutions are removed. We set out overleaf the recommendations that are required to achieve these reforms.

- 1 **Abstraction licences should permit different volumes of abstraction at different levels of water scarcity, with increasing restrictions on water withdrawals as river and groundwater levels decrease. More widespread use should be made of 'security of supply' licences to be used only under certain conditions.** The levels of these 'smart' restrictions will need to vary in different systems, depending on the nature of environmental risks. Smarter approaches using hands-off flows and seasonally varying limits on abstraction quantities are already in use in a number of places across England and Wales, and some water resources systems have operating rules involving flow-related variable abstraction permissions. However, there is significant opportunity to bring these approaches into the mainstream, implementing smarter conditions on the majority of licences.
- 2 **Incentive mechanisms need to be developed to indicate where abstraction of water is subject to higher environmental risk, in particular to influence the day to day operational decisions of water abstractors.** One of the key opportunities to emerge from the discussions undertaken through the Itchen Initiative is the potential for significant, low-cost environmental improvements through changes to the operational procedures of abstractors and water companies. This may not always require changes to licences. The development of a mechanism to signal these opportunities is a high priority for achieving cost-effective environmental improvements. A number of mechanisms could achieve this objective, for example the use of price signals or the development of a mechanism through the price review process.
- 3 **The existing CAMS process should be developed to establish long-term, catchment-based abstraction targets in time for these to be incorporated in planning ahead of the next periodic review in 2014. Scientific assessments of abstraction risks and targets should be separated from decisions over licence changes and compensation.** There is an urgent need for clarity over future environmental limits on abstraction to enable long-term planning and a smooth transition to sustainable abstraction. Such an approach to a broader assessment of damaging abstraction should reflect differing levels of risk, rather than simply identifying sustainable or unsustainable abstraction. This would enable a more sophisticated investment response in the context of inevitable uncertainty. It would also provide companies and other regulators with a basis on which to develop more flexible, operationally-based responses. The process of establishing clear, national environmental objectives for abstraction is likely to require increased resources for the Environment Agency during the transition, which could be funded by a temporary increase in the abstraction charge.
- 4 **An incentivised, step-wise approach should be developed to end current damaging abstractions.** Given the very high total costs that are potentially involved in addressing the legacy of historical licences, it is essential that the costs associated with the transition from unsustainable to sustainable abstraction are minimised. This requires a process that is incentivised, long-term, broad-scale and smart. A number of mechanisms are possible and, in particular, Ofwat needs to consider these as part of developing its approach to the 2014 price review.
- 5 **The government should set out a strategy to implement near-universal smart water metering by 2020, coupled with a national policy on social tariffs. Smarter tariffs that better reflect scarcity and the marginal cost of providing water should also be developed.** Evidence suggests that households with meters reduce consumption by 10% to 15%, with up to 30% reduction in peak week water use. The information a smart meter provides makes a vital contribution

- to smarter demand management and, supported by development of social tariffs, can help address current affordability issues. Better signalling through smarter tariffs of the high cost (financial and environmental) of providing water to meet peak demand during dry periods will further reduce demand and remove the existing cross-subsidies from low 'peak' water users to (typically more affluent) high 'peak' water users, while providing the choice to those who do wish to pay a high cost to use water under these circumstances.
- 6 **Companies should develop a more targeted approach to demand management. Ofwat should reform its water efficiency target to support this, and agree a mechanism to allow cold water efficiency to be delivered through the Green Deal.** Targeted demand management can achieve more significant impacts by focusing both on those times when water is scarce and those users who offer the greatest scope for saving.
 - 7 **Companies should develop smarter demand responses to below average rainfall and peak demand.** While water companies already make use of responsive demand management during and in anticipation of droughts, there are significant opportunities to extend (non-mandatory) management of demand in periods of below average rainfall in normal years, dry years and peak demand periods. There is also scope to target better and enhance demand-side responses during drought events.
 - 8 **Ofwat should change regulatory incentives to mitigate against bias towards capital-intensive solutions.** It is likely that the water companies' bias towards capital expenditure arises in part as a consequence of incentives in the price regulation regime. But there may also be important cultural drivers. As part of its current review of regulation, Ofwat should identify ways to mitigate companies' bias towards capital-intensive supply-side solutions. One approach would be for Ofwat to capitalise a fixed percentage of certain costs across both capital and operational expenditure in the Regulatory Capital Value, so that incentives would be equalised between capital and operational solutions.
 - 9 **Reforms should be introduced to provide incentives to increase innovation in the water sector and to encourage the identification of a greater diversity of approaches to matching supply and demand.** A number of reviews, including that by Professor Martin Cave, have identified lack of innovation as a challenge for the water sector. In this context, innovation need not be confined to technical improvements that allow the same activities (for example leakage repair) to be delivered at a cheaper cost; it also encompasses new ways of meeting objectives, including approaches requiring more cooperation between companies. A number of market and regulatory mechanisms have been proposed that are designed to stimulate innovation and the development of alternative approaches. The chief challenge appears to lie in innovation (adoption and take-up of new ideas and technologies) rather than in invention (the development of new ideas and technologies).
 - 10 **Reforms to the water resources planning process should be introduced to provide greater transparency and consistency over costs and options, and to ensure that environmental values are better recognised.** Water resource planning provides the basis by which options are identified and investments are selected. There are significant opportunities to improve the transparency and consistency of the current approach. Taken together, we believe that they would provide a fairer treatment of demand-side measures; remove the potential for bias towards over-investment in capital-intensive solutions; factor the environmental value of water into decision-making; and increase the transparency associated with the costs of new investments, and who pays for them.

WWF-UK Freshwater in numbers



THREE

English chalk streams – the Itchen, the Kennet and the upper Lee – where we are working to highlight the pressure on our rivers from abstraction, made worse by increasing demand for water, a growing population and the effects of climate change.

36%

The proportion of people who make the connection between domestic water use and damage to river ecosystems in the UK.



500,000

homes will have water meters fitted by Southern Water by 2015. WWF is working with the water company to help people make the connection between the water they use at home and the water in their local river, with water metering a way to protect rivers and wildlife.

1,500

homes have been made more water efficient as part of Save Water Swindon – a WWF, Thames Water and Waterwise large-scale water efficiency retrofit project.

	<p>Why we are here To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. wwf.org.uk</p>
--	---



The HSBC Climate Partnership is a 5 year global partnership between HSBC, The Climate Group, Earthwatch Institute, The Smithsonian Tropical Research Institute and WWF to reduce the impacts of climate change for people, forests, water and cities.