ERNST & YOUNG
Quality In Everything We Do

SEVERN TRENT WATER

Changing course through water trading

How water trading can make a contribution to solving future water scarcity to the benefit of customers and the environment

For further information on this report, please contact:
Dr Tony Ballance
Severn Trent Water
Director, Strategy and Regulation
t: + 44 (0)24 7771 5000
e: tony.ballance@severntrent.co.uk

or
Bill Easton
Ernst & Young
Director, Valuation and Business Modelling
t: + 44 (0)20 7951 2000
e: beaston@uk.ey.com

Severn Trent Water Limited
Severn Trent Water Limited is one of the ten privatised water and sewerage companies in England and Wales. We provide water to 7.7 million people and sewerage services to 8.6 million people in the Midlands and mid-Wales.

Severn Trent Water is a member of the Severn Trent Group of companies.

www.stwater.co.uk

June 2011

Contents

Foreword

We believe that water trading based on a marginal cost for bulk treated water could bring benefits to customers and the environment. This proposal could be tested by creating a simple market mechanism that builds on the existing Water Resources Management Plan process at relatively low cost.

In April 2010, Severn Trent Water published *Changing Course*, a report in which we forecast how the industry may look in 2030 from the point of the view of our customers, the environment and our investors. We questioned whether the industry was sustainable, and made six recommendations for change, which are designed to deliver better outcomes in the future. One of our recommendations was to increase the scope for competition in the sector by developing water trading across the country.

We all recognise the challenges of climate change and population growth, and the pressure they are already placing on our water resources. Over abstraction of water resources and the consequential detrimental impact on the natural environment are a very real risk in some areas of the country. Notwithstanding this we water companies continue to seek to address these pressures by developing new water resources in our appointed areas. In developing our future strategies, we overlook the opportunity of using our existing network of pipes to trade water with companies in other areas of the country.

By working with Ernst & Young we have taken forward our thinking and developed a simple, pragmatic proposal for water trading which builds on the water resources planning processes already being followed by the industry. This approach, by minimising the need for new regulation, administration or legislation, seeks to maximise the net benefits of water trading: a better use of resources nationally; more sustainable abstraction; and if future investment in new resources can be deferred, a lower impact on our carbon emissions and customers' bills.

This approach will take time to develop, but we can start now with a view to making more substantive changes in the next regulatory period (2015-20).

This year, with a Water White Paper expected, we have a very real opportunity to lay the foundations for the industry to evolve in a sustainable way. There is a growing consensus that water trading has a role to play in this sustainable future. Our model is designed to start that process.

A J Ballance

Dr Tony Ballance
Director, Strategy and Regulation
Severn Trent Water

We were delighted to have the opportunity to work with Severn Trent on the development of this pragmatic approach to water trading.

There has already been widespread recognition of the important role that water trading can play in the sustainable development of the industry. However, there has been rather less progress in developing workable arrangements that can allow trading to get underway.

We believe that the proposal in this document has a number of notable strengths. It allows the development of trading to be shaped by the underlying economics of water, rather than a forced regulatory regime; it recognises that the economics of water transportation are such that trading is most likely to start with relatively large, long-duration trades; there are good reasons to believe that the model does not require the creation of a separate system operator or purchasing entity; and it should be possible to implement more quickly and cheaply than the alternatives mooted.

Experience from energy and telecoms shows that once trading starts, the detailed arrangements often change as the practitioners learn and find better ways of executing trades. We fully expect water to follow a similar course, especially once potential reforms to abstraction rights start to come on stream. However, we also believe that it is in the interests of customers, the industry and investors to take pragmatic steps to overcome the current barriers and encourage trading to start as soon as is feasibly possible.

Bill Easton

Bill Easton
Director, Valuation and Business Modelling
Ernst & Young

Our proposal

We have developed a simple, low cost market mechanism to enable water trading. Six changes are required to implement this market mechanism, and we believe there are six advantages to our proposal.

Six changes to develop water trading:

1. Harmonise costs and incentives for buyers and sellers of water, so that both parties have an incentive to trade and neither parties are penalised for undertaking a trade.

2. Improve availability and quality of information to reduce information disparity between parties.

3. Review Water Resource Management Plan processes and mandate that companies are required to consider water trading.

4. Unbundle the current combined supply licence and create a new upstream licence for new entrants.

5. Develop a pricing framework to enable efficient water trading.

6. Develop common operational codes and systems, binding on all market participants, so that all can adequately assess opportunities and risk.

Six advantages are:

1. Scalability
The proposed approach allows for a high level of flexibility, and could deliver benefits in the context of both small and large trading volumes. Moreover, implementing this approach does not preclude the implementation of alternative measures going forward, and so provides real option benefits.

2. Simplicity
The Water Resource Management Plan processes (water companies are required to submit a forecast every five years of future water resource demand and supply availability over 25 years in line with guidance from the Environment Agency) already exists and is accepted by the industry; to alter an existing process tends to be a simpler exercise than introducing a new one.

3. Cost-effectiveness
The proposed approach requires only limited structural or operational changes to the industry, which avoids incurring the costs associated with industry restructuring.

4. Rapid delivery
Under existing primary legislation, the Secretary of State has powers to alter the Water Resource Management Plan process using secondary legislation. This means that changes can be implemented quickly.

5. Financeability
Restructuring of companies is not required, therefore allowing for delivery of water trading without introducing significant additional uncertainty. As such, we would expect that these pragmatic, incremental steps would not materially impact on investors' required returns.

6. Transparency
The approach will allow for gradual resolution of uncertainty regarding the optimal level of water trading. This will in itself provide valuable information to the market about the best approach towards balancing the development of new water resources.

Executive Summary

Our April 2010 report, ***Changing Course: delivering a sustainable future for the water industry in England and Wales*** received wide coverage within the water sector, much of which was supportive. In that report, we set out six recommendations for change to deliver better outcomes for our customers, investors and the environment over the next 20 years. Development of a mechanism for water trading was one of those six recommendations.

In our view, water trading is a sensible market development that has the potential to assist in addressing the environmental challenges of the future. By using the industry's existing network of pipes and some new interconnecting pipes, it is possible to displace water across companies' boundaries from areas of the country where water is available to areas of water scarcity. Trading water in this way has two key potential benefits:

- **for the environment, by allowing scarce resources to be optimised on a national (rather than regional) level; and**
- **for customers, as if trading water allows investment in developing new resources within a region to be deferred, then future upward pressures on bills will be reduced.**

Over the last year, we have continued to advance our thinking on how to make water trading work. This report provides additional detail on how we believe water trading could be developed in order to overcome many of the current barriers to trading and crucially, maximise the net benefits by focusing on economic rather than forced trading and limiting implementation costs. In addition to describing the key principles and features of our proposal, we also explain what could be successfully implemented in the near term and what could be implemented in the longer term.

Understanding the challenges: why only limited water trading takes place today

There is scope for water trading to already take place in the industry, but it is currently constrained by five groups of factors: the nature of the underlying commodity itself; a lack of incentives to buy water; a lack of incentives to sell water; complexity in the process of agreeing a bulk supply; and the lack of a clear pricing model based around marginal cost.

We have considered the best approach to addressing the current barriers to water trading, in a manner that will maximise benefits to customers and the environment.

In the future, it is likely that market developments will reduce the barriers to and enhance the scope for trading. Moreover, as water trading becomes further embedded as an option to help meet increasing water resource demands, we expect that this will be reflected in companies and new entrants making investments in additional 'interconnectors' in the network, further increasing the scope for trading. We would expect that such developments would naturally complement and reinforce the changes we are proposing.

Taking incremental steps to allow water trading to develop

Companies already forecast future water resource demands and availability in 25 year Water Resource Management Plans (WRMPs). These plans are developed using guidance from the Environment Agency, and are approved by the Secretary of State. Our proposal builds on this existing process by requiring companies to widen the scope of options they consider to meet future demand by consulting with neighbouring providers and new entrants when drafting their WRMP. Once the draft plan is published, new entrants may 'bid' into the plan with competitively priced options. The final plan must include only the most economically and environmentally sustainable options based on robust and nationally standardised assessment methodology.

To ensure that the most economic option is chosen, we believe that cross-boundary trades between buyers and sellers should be priced based on marginal cost (including cost of resource and delivery to the buyers network) rather than the average cost approach that is commonly used in the industry. As each water company will still be in control of supplying its customers, regional averaged tariffs should be maintained.

We believe that adapting the existing process of the WRMP in this manner should be sufficient to enable efficient water trading. This should be a pragmatic first step for the industry, as a pilot run for the next WRMP cycle and mandated for the following WRMP cycle.

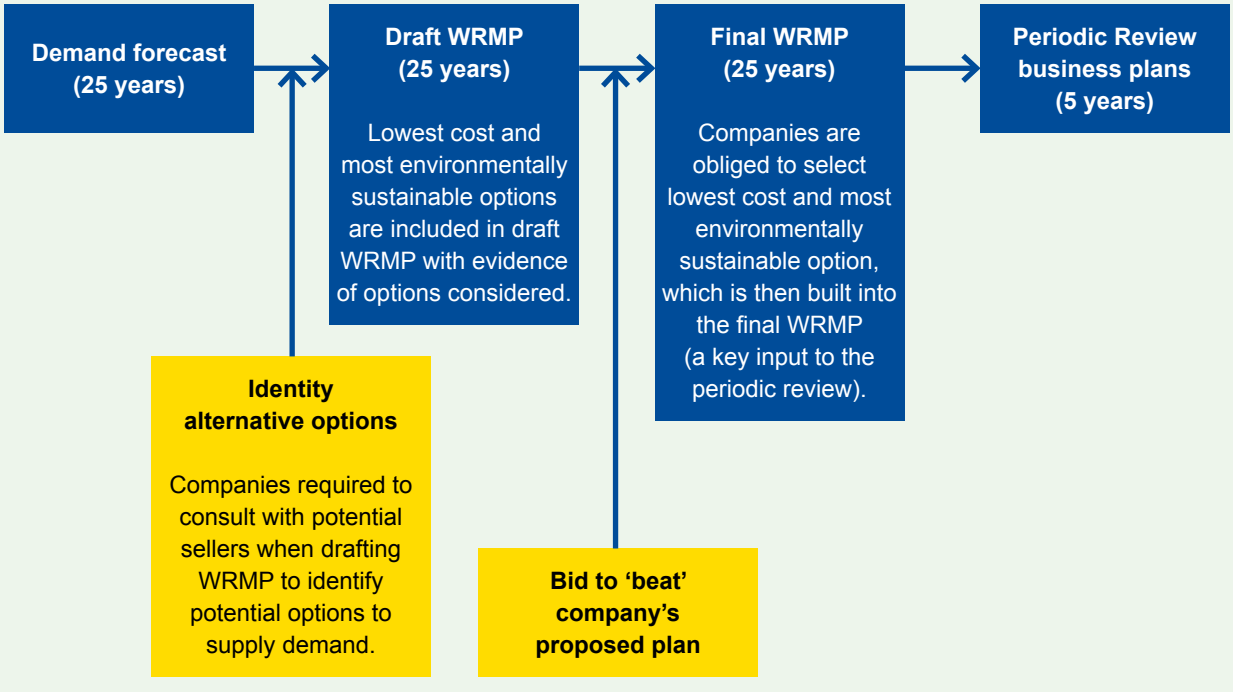
Overview of alternative proposals

There has been a considerable debate over the last three years over the appropriate form of water trading in the UK, and several alternative approaches have been put forward. Three alternative proposals are considered in this Section (put forward by Cave, Stern and Ofwat, respectively). We consider that there is a considerable degree of agreement with our proposal, but recognise some divergence of views.

In developing the detailed elements of our proposal, we have consciously set out to build and expand on the approaches put forward in the context of the current debate.

A key area of debate is the extent to which structural changes should be imposed on the sector. Our view is that these should be kept to a minimum, given the relatively small potential size of the market, and the costly nature of such measures. Instead of requiring an arbitrary level of trading or requiring structural separation, the focus of our proposal is on allowing the underlying economics to uncover the efficient level of trading and additional interconnections between networks.

Figure 1: Enhancements to the current WRMP process



Six changes to develop water trading

Six practical changes would need to take place in order to implement our proposal. Two of these changes would need to be implemented upfront, whilst the remaining changes would develop as the water trading regime matures.
We believe that implementing these changes should be sufficient to stimulate a greater volume of water trading.

In the short term (before 2013), two changes are required:

1. Harmonise costs and incentives for buyers and sellers

At present, the way water trades (or bulk supplies) are treated in Ofwat's price setting process distorts the incentives to trade. Where sellers are regulated water companies, they can only retain the revenue received from the trade for five years.

Moreover, under the current system, the buyer is subject to operating cost efficiency adjustments despite not having ultimate control of the costs.

We propose that the price review process should be amended to remedy these distortions, in order to incentivise companies to pursue efficient water trades as quickly as possible.

2. Create a level playing field by improving information flow and quality

A common barrier to commodity trading is disparity of information between parties. As the market develops there should be information flows both ways, between the buyer and the seller, in order to ensure a level playing field. There should also be a nationally standardised methodology for calculating options in the WRMP and for bids.

In the longer term, four further changes are required:

3. Enact changes to the WRMP process

Changes to the WRMP process would need to be enacted, such that water companies would be explicitly required to consider water trading as an option to meet future demand.

4. Under the Water Supply Licence regime unbundle the current combined Water Supply Licence and create a new upstream only licence for new entrants

An upstream only licence should encourage new companies to enter the market to provide untreated or treated water to a water company based on its supply-demand requirements published in its draft WRMP. The new entrant, or seller, would not directly supply customers, so would not provide retail services. Sellers could also offer demand management/water efficiency measures rather than simply increasing supply.

5. Ofwat to adopt a firm position on certain aspects of the pricing framework

We believe that the our proposal could generate tangible economic benefits. Ofwat should establish a position on how these benefits are distributed in a way that creates desirable incentives to encourage efficient trading.

6. Introduce common operational codes and systems, binding on all market participants.

Creation of a common operational code, governance code, contracts and systems that define the rules of the market for all participants should create a level playing field for all participants. It should also allow participants to assess opportunities and risks for its business. We expect that an industry code will develop in parallel with other aspects of the market framework, and that a balance between the processes embodied in the code and individual contracts respectively will emerge over time. This should help to ensure learning-by-doing efficiencies, and allows for the resolution of uncertainties as these arise.

In order to achieve these changes, we have developed a set of specific actions, and mapped these to the party or parties that are best placed to carry these out. The water companies, Ofwat, Defra, and the Environment Agency will all have a role to play; even so, under our proposals there is scope for the industry to share and optimise resources on a national scale, without any great changes to legislation and with some simple changes to existing regulatory processes.

We hope this incremental first step is discussed and welcomed by the industry, stakeholders and regulators.

1

The benefits of water trading for customers and the environment

Our April 2010 report '*Changing Course: delivering a sustainable future for the water industry in England and Wales'* was widely received within the water sector. In this report, we set out six recommendations for change to deliver better outcomes for our customers, investors and the environment over the next 20 years. Development of water trading was one of those six recommendations.

In our view, water trading is a sensible market development that has the potential to assist in addressing the environmental challenges of the future such as climate change. We believe a market based framework for trading across water companies' appointed regions would lead to better use of resources nationally. If it provides scope to defer capital investment, it would also help to reduce future upward pressures on customers' bills.

Since the publication of *Changing Course*, further analysis and commentary has been published, including two papers by Ofwat (*'Harnessing upstream markets – what's to play for?'* in April 2010, and *'Valuing water – how upstream markets could deliver for consumers and the environment'* in July 2010), a report on interconnectivity by Defra and Atkins in October 2010, and a joint report *'Trading Theory for Practice'* by Anglian Water, Cambridge Water and Northumbrian Water in November 2010.

This report builds on our initial thinking and recommendations, and takes into account these developments. It sets out a more detailed framework through which water trading could be successfully implemented. Our framework is a simple, low cost approach that builds on existing processes to operationalise water trading in a manner that maximises net benefits for both customers and the environment. It could form part of a long-term strategy to help balance supply and demand in the coming decades.

1.1: Future challenges for the industry

Over the last 20 years, the English and Welsh water sector has delivered for its stakeholders: services have improved; new environmental and drinking water quality standards have been achieved; and efficiency has increased.

While the sector has performed well since 1989, it is now in a very different position from 20 years ago, and the challenges it faces are changing. Without change now, we could face an unsustainable future.

- Debt has increased from zero to around £33bn in 20 years.
- Water bills are becoming less affordable (45% higher in real terms in 2010 than in 1990).
- The scope for further efficiency savings to mitigate bill increases is declining.
- Environmental requirements under European Union (EU) directives are continuing to tighten.
- The industry needs to adapt to the impact of climate change and reduce its carbon footprint to mitigate climate change.

Without change now, we face an unsustainable future:

- A capital programme which could be even larger than that of the last 20 years.
- An unsustainable requirement for an additional £27bn borrowing.
- Customer bills rising by 27% in real terms.
- An increasing carbon footprint.

In *Changing Course*, we recommended six changes to policy, regulation and industry conduct that need to be made in order to address the future challenges the sector faces. Water trading, our second recommended change to policy, focused on the challenge of future water availability, and how a better use of resources nationally could help to ease this pressure. We also proposed that there could be an economic case to trade water.

1.2: Over-abstraction of scarce water resources

The Environment Agency manages abstraction across England and Wales. It has identified that there are significant supply/demand imbalances from one resource zone to another, with most companies forecasting a supply shortage over the next 25 years. Figure 2 (on next page) gives an indication of existing abstraction across England and Wales. In the south and east of England, water deficits are significant and growing as demand for water increases in areas of greatest scarcity, driven by population growth[1], climate change and environmental requirements including those resulting from implementation of the EU Water Framework Directive.

Over abstraction has the potential to cause significant damage to the environment. The World Wide Fund for Nature (WWF) UK[2] estimates that approximately one third to one half of catchments are already at risk from unsustainable abstraction pressures, with 15% classified as over-abstracted (i.e. existing abstraction causes unacceptable damage to the environment at low flows).

The Environment Agency has started a programme of work, Restoring Sustainable Abstraction (RSA), to ensure that the needs of all water users are balanced in a changing environment. The RSA programme is already investigating 320 cases of potential over-abstraction that could impact on important ecological sites. While the Environment Agency aims to rebalance abstraction licences over a 40 year period, there is broad agreement that further action will need to be taken to address water resources imbalances.

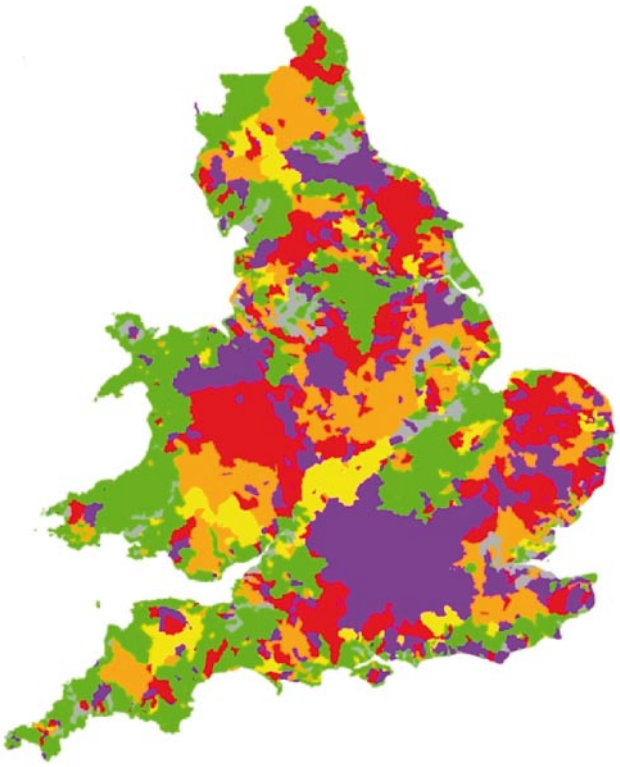
1.3: Revealing a value for water

It is now recognised by much of the industry that the existing arrangements for abstraction charges may not be sustainable. While there are several drivers for keeping abstraction charges at their current level, including keeping customers' bills low, the current policy framework fails to reflect the value of water to society. This is because abstraction prices are based on cost recovery rather than a value of water. By contrast, energy sector policies have sought to use price signals to create incentives for both customers and companies to reduce the usage of scarce resources. For example, the average household pays £5 per year for water abstraction[3] but £84 for tackling carbon emissions associated with their gas and electric service[4].

The rebalancing of abstraction licences under the RSA programme will signal water's scarcity and hence value, i.e. moving from 'cost' of water to 'value' of water. Over time, as the value of abstracting water in stressed areas increases, the scope for trading is likely to increase. Water trading could motivate regional trades and encourage innovative local supplies; as it becomes embedded as an option to help meet increasing water resource demands, we expect that this will be reflected in companies' and new entrants' investment in further 'interconnectors' in the network.

1 South and East of England accounted for 56% of the increase in population in 1970 – 2008, according to the Office of National Statistics, October 2009.
2 *Riverside tales: lessons for water management reform from three English rivers*, WWF-UK, 2010.
3 *June Return 2010*, Ofwat, Table 21. Ofwat service charges shows total abstraction costs of £120m across 23.7 million connected properties.
4 *Household bills explained*, Ofgem, August 2009, based on EU ETS of £24, renewables obligation of £12, CERT of £45 and ESP of £3.

Figure 2: Indication of abstraction across England and Wales, taking account of resource needs in downstream catchments†



Environment Agency

- Full licensed and recent actual flows are more than 10% above the natural. This river may be regulated by reservoir release or be discharge rich.
- New licences can be considered depending on local impacts.

- Full licensed and recent actual flows are greater than the EFI††.
- There is more water than required to meet the needs of the environment.
- New licences can be considered depending on local impacts.

- Full licensed flows are below, but within 10% of the EFI. Recent actual flows are above the EFI.
- No new consumptive licences would be granted without a Hands-off-Flow condition.

- Full licensed flows fall below more than 10% below the EFIs. Recent actual flows are above the EFI.
- No new consumptive licences would be granted. It may also be appropriate to investigate the possibilities for reducing fully licensed risks.

- Recent actual flows are below the EFI.
- This scenario highlights water bodies where flows are below the requirement to meet Good Ecological Status (GES).
- No further consumptive licences should be granted. Investigations to assess the ecological impact of the flow deficit against EFIs should be progressed.

- Recent actual flows are below the EFIs by more than 25% of the natural flow.
- There is further emphasis on these significantly low flows. As for red scenario, no further consumptive licences should be granted and investigations to assess the ecological impact of the flow deficit against EFIs should be progressed.

† *CAMS colours with downstream override at Q95*, Environment Agency, July 2010
†† Ecological Flow Indicator (EFI) – Flow indicator to prevent ecological deterioration of rivers, set in line with new UK standards set by UKTAG.

Anglian Water's report '*A Right to Water*[5]' provides a series of recommendations that policymakers and companies could adopt towards creating a more sustainable water abstraction regime and start to reflect the value of water to society. In addition, Ofwat and the Environment Agency conducted a joint study in 2008/9 on abstraction trading. We consider that the aim of these studies – namely, to remove barriers to trading and reduce complexity in this area – represents a positive step forward for encouraging water trading.

1.4: The economic case for water trading

There is a general consensus[6] that water trading will (at least in theory) bring considerable benefits to customers and the environment. Water trading is based on the premise that water should be moved from areas with surplus water to water stressed areas. Inter-company transfers of bulk treated water could be an economic means to facilitate this: trading will allow investment in more expensive new resource schemes to be deferred, reduce the costs of increasing water supply to adapt to climate change and supply a growing population.

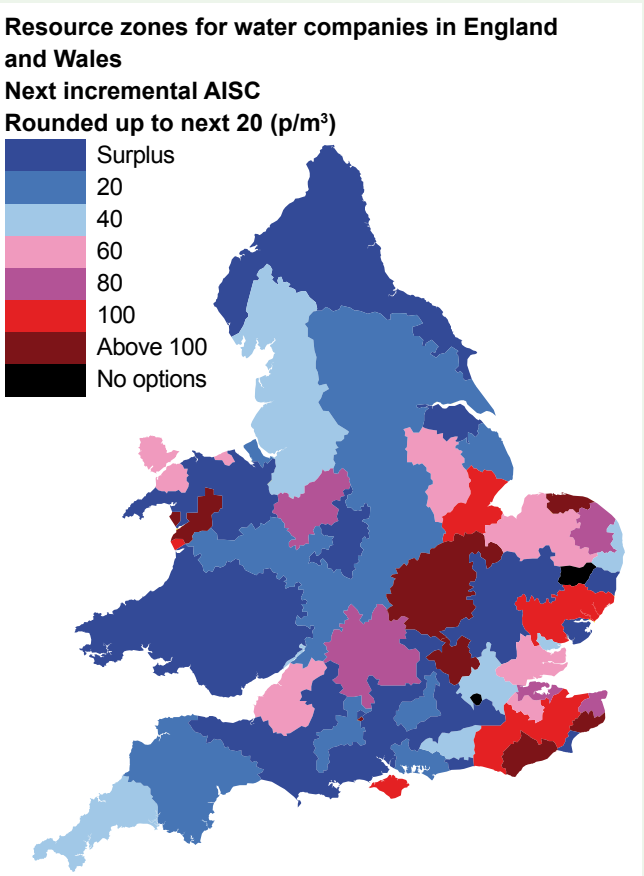
Such an approach could optimise a much greater segment of the value chain than retail competition alone, and could be effective at easing the risk of over-abstraction if taken alongside the Environment Agency's work.

The theoretical benefits of water trading were summarised by Ofwat in March 2010 as follows:

"The main reasons for looking at interconnection are that, first, by interconnecting two zones with different water resource development costs the cheapest water resources across the whole interconnected area can be developed and the water from the cheaper zone exported to the more expensive zone. This could lead to considerable reductions in water development costs and potentially environmental benefits from leaving more water in the environment in water scarce zones. A second reason for looking at interconnection is that by sharing water resources over a larger area the resilience of the water supply in interconnected zones can be increased."[7]

Both the Cave Review and Ofwat's paper in March 2010 suggest that, at least initially, the economic value of water trading will be modest. Ofwat estimated the potential value of incremental water trading, based on a marginal cost differential between different areas. This is illustrated in Figure 3. The relatively modest scope for economic gains from trading has implications for the appropriate market framework used to facilitate trading.

Figure 3: Ofwat's estimates for AISCs in adjacent WRZs to achieve balance in 2035‡



In 2010 Ofwat estimated a net present value (NPV) of £959m efficiency savings available to the water industry in England and Wales by 2035, from 31 different trades of which 14 are within an individual company's area and 17 are between companies‡‡.

This equates to £62m of incremental value per annum. If this was to be split equally between companies and customers, the benefit would be approximately:

- £31m per annum to split between companies
- £1.31 per average household (0.8% of an average water bill)

In 2010 the Environment Agency published the results of modelling that the Water Resources in the South East (WRSE) group had carried out‡‡‡. The findings indicated that optimisation and greater sharing of resources in the south east could lead to savings of approximately £501 million by 2035.

‡ *A study on potential benefits of upstream markets in the water sector in England and Wales*, Ofwat, March 2010.

‡‡ Cave (2009) also undertook a cost benefit analysis on five different scenarios, comparing the NPV of each against a business as usual net present cost. Cave recommended two upstream competition models (1 and 4) with an estimated benefit of £1,700 million over 30 years.

‡‡‡ *Water Resources in the South East Group: Progress towards a shared water resources strategy in the South East of England*, Environment Agency, WRSE, April 2010.

5 *A right to water*, Anglian Water, Feb 2011.

6 *Diverging streams at water suppliers*, Financial Times, May 2010.

7 *A study on potential benefits of upstream markets in the water sector in England and Wales*, Ofwat, 2010, p8.

Our own modelling examined differences in the marginal cost of water across companies, using the Average Incremental Environmental and Social Cost ('AISC'). This is a measure of Long Run Marginal Cost (LRMC) that is currently estimated under the Water Resource Management Plan (WRMP) process (see Annex A for further details). Based on publically available data published in the 2009 WRMPs, Figure 4 opposite outlines the differences in supply curves for a set of adjacent companies[8]. This suggests that there are differences between regions' marginal supply costs that might not be reflected in average cost-based prices; and as such, a move to pricing of new resources based on marginal costs could enable efficient trading.

1.4: Scope and structure

This report provides a detailed description of how a viable approach to water trading could be successfully implemented; it is structured as follows:

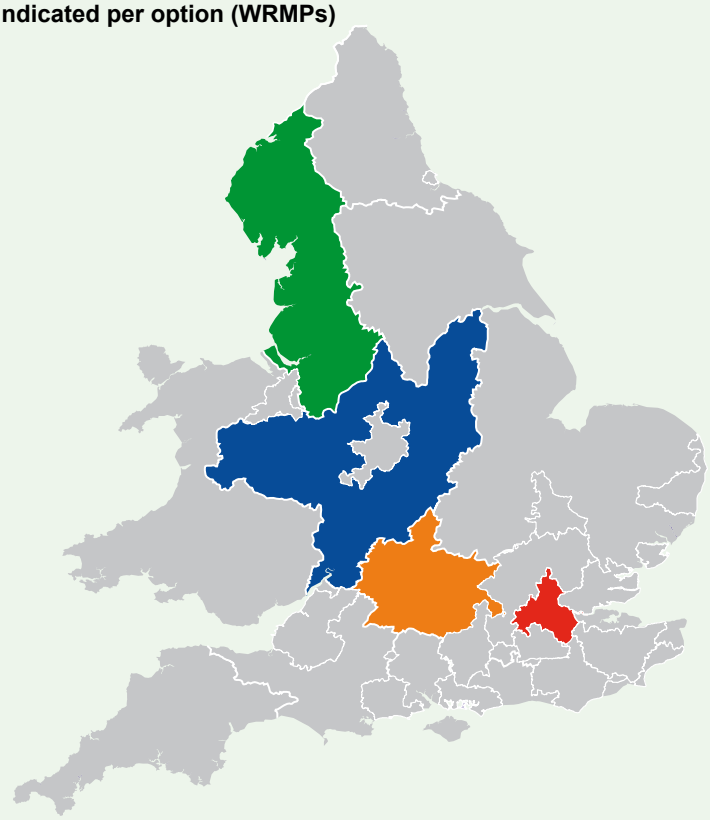
- We begin in Section 2 by discussing the nature of current obstacles to water trading.
- Section 3 then outlines the key features of the proposal and describes how the current obstacles to trading are addressed.
- The proposal is then contrasted with alternative approaches that have been put forward by other industry commentators (notably, Stern, Cave and Ofwat), and areas of agreement and divergence are noted in Section 4.
- Having described the key features of the proposal, Section 5 highlights six changes to the market that would need to accompany the implementation of the framework.
- We conclude in Section 6 by specifying a set of tasks that would need to be undertaken by key market participants.

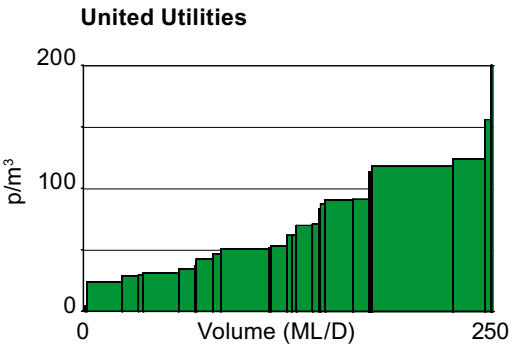
More detailed aspects of the approach are addressed in the Annexes.

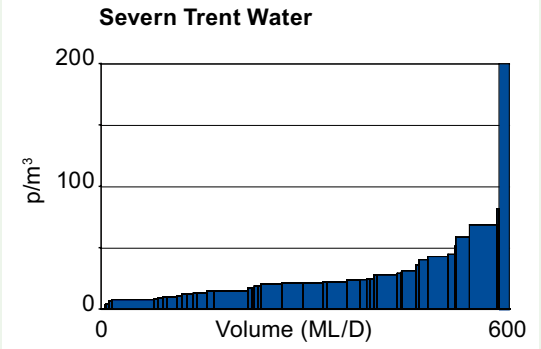
We recognise that abstraction rights are a key determinant of the viability of water trading. We note, however, that the issues associated with reforming the abstraction rights framework (as well as the corresponding international precedents) have been extensively discussed in various other sources; in particular, Anglian Water's *A Right to Water* (2011). In light of this, the focus of this paper is on the changes necessary to stimulate physical water trading, rather than on abstraction rights per se.

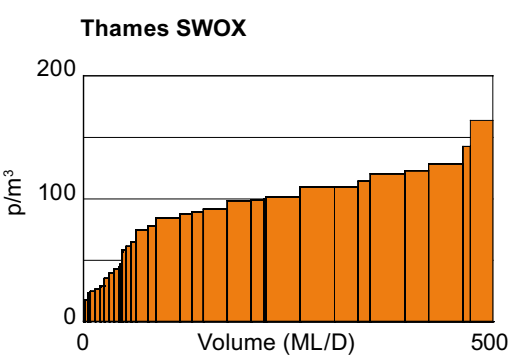
8 Note: certain assumptions have been made to harmonise AISCs across the regions. Nevertheless there remain differences in calculation methodologies of AISCs; the margin of error for each set of schemes differs across companies; and the curves do not factor interconnection costs nor profit margins which would need to be calculated on a case by case basis.

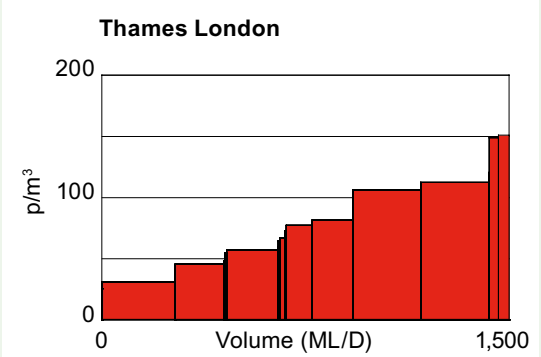
Figure 4: UK water companies' proposed new options to meet demand with AISC (p/m³) indicated per option (WRMPs)











2

Understanding the challenges: why only limited water trading takes place today

Water trading is currently constrained by five factors:

- the underlying characteristics of the commodity;
- weak incentives to buy water;
- weak incentives to sell water;
- complexity; and
- a lack of a pricing model based on marginal cost.

The market framework we propose is explicitly designed to address these issues, in order to maximise the net benefits to consumers and the environment from water trading.

In the future, it is likely that market developments will remove barriers and enhance the scope for trading. Moreover, as water trading becomes further embedded as an option to help meet increasing water resource demands, we expect that this will be reflected in companies' and new entrants investment in further 'interconnectors' in the network, further increasing the scope for trading.

2.1: The characteristics of water as a commodity

The scope for water trading is constrained by the underlying characteristics of the commodity. Specifically, the cost of transporting water represents a substantial proportion of the value of the end product, and is considerably higher on a per unit basis than other tradeable commodities, notably gas. Figure 5 illustrates these differences.

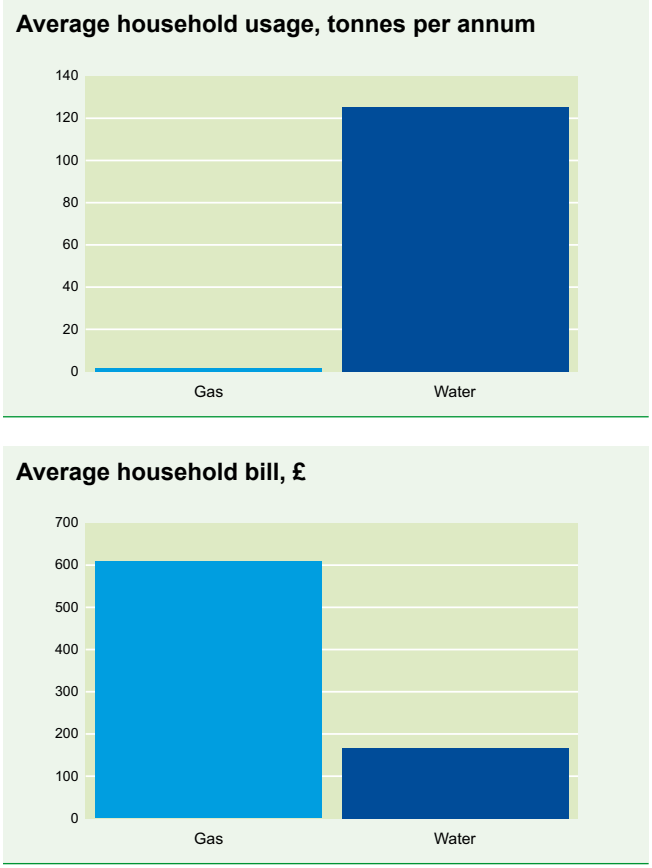
Households use 110 times more mass of water than gas, however, the average household water bill is less than a third of the average household gas bill. Whilst it is economic to move gas through a transmission grid, the cost of transporting water is much higher. This higher cost of transporting water is also borne out by the number of entry points[9]:

- 15 entry points into the gas transmission grid; and
- over 1,685 entry points into the different regional water grids.

The higher costs associated with transporting water mean that there are likely to be fewer opportunities to trade than in the gas industry. The greatest opportunities lie where:

- there are substantial differences in marginal cost;
- there is favourable topography;
- the distances involved are not too great;
- the duration of the trade is sufficiently long to justify the upfront investment; and
- large volumes are being traded (given the fixed costs and scale economies of pipe laying).

Figure 5: Comparison of gas[10] versus water[11] unit costs



9 Entry point numbers for gas are sourced from www.nationalgrid.com/uk/gas/connections and refer to total GB entry points; the corresponding figures for water are sourced from the Environment Agency's National Abstraction Licensing Database, and refer only to England and Wales entry points.

10 *Fact sheet 96: Typical Domestic Energy Consumption Figures*, Ofgem, January 2011.

11 *June Return*, Ofwat, June 2010.

2.2: Regulatory and administrative barriers

Under the current framework for economic regulation, water trading is discouraged by a number of factors:

- **A lack of incentives to sell water.** Where companies do sell water, they may only keep the benefit for a maximum of five years (under the rolling price review process).
- **A lack of incentives to buy water.** Under the current regulatory regime, which rewards capital expenditure, companies are incentivised to balance supply and demand by investing in new resources (which are added to their Regulatory Capital Value (RCV)). Receiving a bulk supply results in increased operating costs, which negatively impact on Ofwat's assessment of a company's operating efficiency.
- **Complexity in the process of agreeing a bulk supply.** For both buying and selling water, negotiating a bulk supply tends to be complex. While Ofwat has powers to determine the terms of bulk supply agreements they have not been used extensively (i.e. since the late 1990s when they were used in the South East).
- **The lack of a clear pricing model based on marginal cost.** Bulk supply prices are largely set in relation to average cost as opposed to marginal cost. This approach disguises where there could be viable economic grounds for trading. Figure 6 gives a stylised example of average versus LRMC based on typical water industry data from published WRMPs.

Figure 6: Difference between average cost and marginal cost

In the water industry, LRMC varies greatly across companies and does not show any clear tendency to co-vary with high water charges or average cost of service. Of the ten companies with lowest average unit cost to customers, seven are in the South East where resources are recognised to be overly stressed (i.e. where LRMC would be expected to be high). As a consequence, a system where parties price water trades at average cost may result in efficient trades failing to materialise.

	Company A		Company B	
Costs	Average cost	Marginal cost	Average cost	Marginal cost
Resources and treatment	11 p	20 p	9 p	55 p
High-level distribution	37 p	5 p	40 p	5 p
Creating a new link	15 p	15 p		
Total	**63 p**	**40 p**	**49 p**	**60 p**

In this example, Company A is clearly able to undertake incremental investment in new resources at lower cost, even after accounting for the incremental costs of distribution and interconnection.

However, the average costs of existing resources and distribution are lower for Company B. Hence, under this scenario, it would not be economic for Company B to accept a water trade from Company A where this trade is priced at Company A's average cost, even though Company A is better placed to undertake the incremental investment.

The Department for Environment, Food and Rural Affairs (Defra) has also explored the barriers and constraints to effective interconnectivity of water supply networks. We believe that there is high degree of similarity between the barriers and constraints we identify and those identified by Defra:

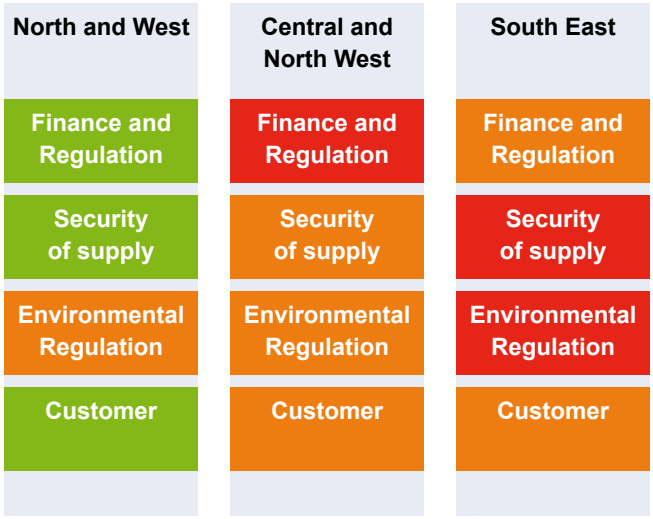
- Finance and regulation.
- Security of supply.
- Environmental regulation.
- Customer perception.

As part of its research, Defra considered how important regional stakeholders perceived the barriers to water trading to be.

Figure 7 illustrates that in the South East (where water scarcity is more prevalent), Security of Supply and Environmental Regulation are perceived to be much more important than in the North, West or Central regions.

Figure 8 (overleaf) explains how Defra propose these barriers could be overcome.

Figure 7: Key barriers and constraints identified by Defra[12]



12 *Assessment of regulatory barriers and constraints to effective interconnectivity of water supplies*, Defra and Atkins Ltd., September 2010.

Figure 8: Four barriers to greater interconnectivity and trading identified by Defra

1. Finance and economic regulation
The way the sector is financed and regulated result in a number of constraints, in particular, the disparity in incentives between the company taking a supply and the company providing a supply. The supplying company can only retain the revenue from the bulk supply for the first five years of operation, while the receiving company would be subject to opex efficiencies, in effect penalised for uncontrollable costs.

Proposed solution
This could be mitigated by allowing capex and opex costs associated with bulk supplies to be taken out of the price review process. A further action for mitigation could be to rebalance opex and capex incentives within the regulatory regime to enable return on investment for new bulk supplies and to remove the opex associated with the new bulk supply from the efficiency assessment.

2. Security of supply
Meeting security of supply obligations is a critical issue in companies' decision making processes. It is possible that a company will see an increased risk to security of supply due to lack of direct control over the resource and activities of the supplying company. In addition, the long term uncertainty of water resources in England due to climate change may reduce the deployable output of the source, so that the receiving company will have to develop, or buy, other sources to meet demand.

Proposed solution
Companies' security of supply obligations need to be clarified to confirm where potential business risks from interconnectivity schemes may occur. Ofwat's use of the security of supply index (SOSI) as a potential barrier should also be carefully reviewed.

3. Environmental regulation
Uncertainty surrounding abstraction licences and future reliability of supply is a critical risk to companies. There is a direct link between this uncertainty and a disincentive to resource sharing, as companies' first priority will be to maintain security of supply for their own area. Time limiting of licences will have an impact on the financial viability of a new scheme; companies will only invest if there is a strong indication that they will be able to recoup their investment in infrastructure, i.e. the licence is of sufficient duration.

Proposed solution
Reduce uncertainty with respect to licence reductions through sustainability reductions and other regulatory measures.

Companies in the sector do not have access to transparent information on resource requirements, availability and costs. This makes it difficult to make informed strategy decisions regarding future supply. An additional cost for supplying companies is through the Carbon Reduction Commitment (CRC) burden through regulatory interpretation of pass through; the supplier is effectively subsidising the carbon costs of water demand by the receiving company.

Proposed solution
Better transparency of resource requirements, availability and costs is essential, with a simultaneous review of the CRC guidance and the consequences on supplier companies.

The current abstraction regime does not currently reflect water scarcity in abstraction prices and limits incentives to trade or transfer.

Proposed solution
Develop an approach to scarcity pricing to provide economic incentives to identify where inter-catchment water transfer might provide more efficient options.

4. Customer
There are physical barriers to mixing water from different sources that can affect taste and odour for customers. In addition, there may be a perceived drop in the level of service delivered if customers are aware that the incumbent is issuing a hosepipe ban in area, but is still providing water via a bulk supply out of area.

Proposed solution
Physical barriers could be overcome through adequate planning; the cost of mitigating taste and odour issues should be included in the upfront assessment of cost.

2.3: Summary

The nature of barriers to water trading has been discussed in considerable depth in recent years, and there is a significant degree of consensus amongst industry stakeholders as to what are the current challenges.

In the following Sections, we set out a detailed proposal that explicitly addresses these barriers, as they currently stand.

It is also worth noting that other industry developments (in particular, potential changes to the abstraction regime) may result in the reduction/removal of barriers and an increase in the volume of water trading, even in the absence of a change to the market framework. We would expect that such developments would complement and reinforce the changes we are proposing.

In effect, the available infrastructure at present reflects the current industry requirements and pricing signals. We expect that efficient water trading would facilitate further investment in connections infrastructure and resilience. This may lead to a beneficial cycle, whereby improved infrastructure encourages greater water trading, which in turn increases the economic scope for infrastructure investment.

3

Taking incremental steps to move water trading from theory to practice

We believe that water trading could bring benefits to customers and the environment. However, as the initial scope for water trading may be small, in order to maximise net benefits to customers and the environment, it is important that the first step towards testing and implementing water trading is simple, and low cost.

We have developed proposals that build on the existing process by requiring companies to consult with neighbouring providers and new entrants when drafting their plans. Once the draft plan is published, new entrants may 'bid' into the plan with competitively priced options. The final plan must include only the most economically and environmentally sustainable options based on robust and nationally standardised assessment methodology.

The options that are 'bid' into the plan do not necessarily have to be new resources to increase supply and may be new technologies or products that reduce demand.

Where cross boundary trades are used as an option, they should be priced based on marginal cost (measured using the AISC as currently estimated under the WRMP process) rather than average cost to ensure that the most economic option is chosen. While this principle is incorporated in the proposal, as the market develops the price and cost information is likely to improve.

We believe that initially, adapting the existing process of the WRMP should be sufficient to enable water trading. It may take two cycles of the WRMP to achieve its full potential, however, this should be a pragmatic first step for the industry.

3.1: Incremental steps to remove barriers

Given that the initial size of the market is likely to be small (as outlined in Section 1), it is important that the first step towards testing and implementing water trading is simple, and low cost.

Moreover, given the weak price signals from abstraction charges[13], and limited available infrastructure (as described in Section 2), we are cognisant that only long-duration trades (for example, trades that are amortised over 10 or more years), are likely to be the most economic.

In light of this, we believe that the WRMP (a well established process that already requires companies to forecast supply-demand requirements over a 25-year horizon), is an appropriate platform with which to facilitate water trading.

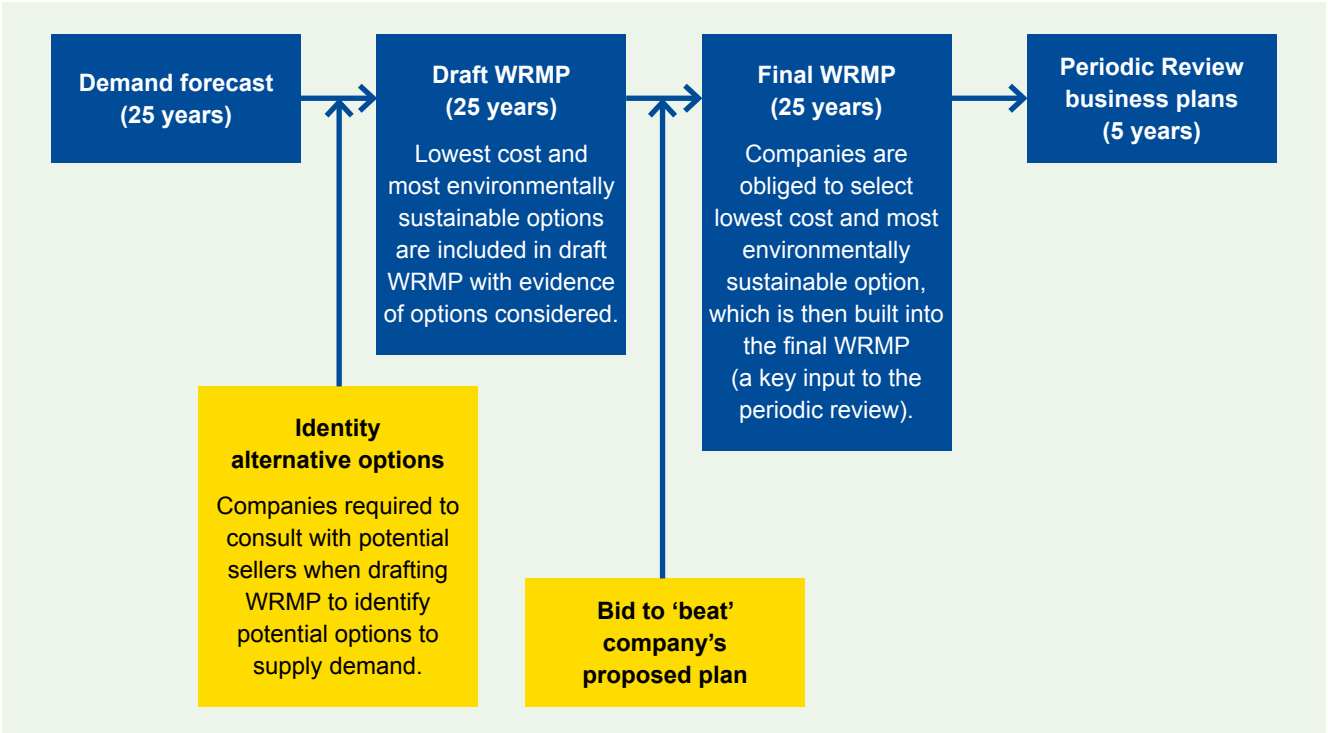
3.1.1: How does it work?

As a first, practical step towards encouraging greater water trading, we focus on bulk trades of water where the purchasing entity (the 'buyer') is a water company[14]. To facilitate such trades, extra steps are built in to the WRMP process, so that water companies are mandated to investigate out of area solutions with neighbouring companies and new entrants ('sellers') before publishing the draft WRMP. Once the draft plan is published, sellers may 'bid' into the plan with competitively priced options.

If the seller is a new entrant, we would expect that they would enter the market via a modified Water Supply Licence (WSL) regime, that allows an entrant to supply water, without providing retail services. Under this scenario, it is possible that a water supply licensee could act as a broker for owners of water that do not wish to become a licensee themselves.

The benchmark for assessing bid prices would be the AISC. The buyer would be required to accept qualifying bids (i.e. those that meet necessary criteria on operational and quality standards) that beat the AISC of their marginal scheme

Figure 9: Summary of our water trading proposal



13 Ofwat's response to: *An Invitation to Shape the Nature of England*, Ofwat, Nov 2010.

14 An alternative to this arrangement would be a situation where the purchasing entity is a retailer or end user, that would be supplied via the local water company's network. This arrangement could be facilitated via an access charging regime, whereby the supplier compensates the water company for the use of the network. We set out our thoughts on access pricing arrangements in Section 4.5.

within the draft WRMP. The seller's AISC bid must be for water delivered to the buyer's network, i.e. include the cost of the interconnector. Sellers could submit a bid for both treated and untreated water, subject to the operational and quality requirements in the WRMP, but the bid price should be on an equivalent basis, outlined in section 3.1.3. This would allow for alternative sources of water via trading in order to satisfy incremental supply-demand requirements under the WRMP. Moreover, given that the AISC effectively creates a 'shadow price' for water resources, these proposals can be implemented prior to reform of the abstraction rights regime.

The options that are 'bid' into the plan do not necessarily have to be new resources; a wide range of options or 'products' could be bid into the WRMP process to promote innovation. While we believe that leakage management and repair should not be an option, as it would require access to the buyers network. Other options could include:

- new resources;
- surplus treated water over and above a company's own demand;
- water storage (above or below ground);
- demand management solutions; and
- water efficiency solutions.

The WRMP has seven stages, outlined in Annex B. Next to each stage we have indicated what additional steps would be required to implement water trading. The steps as numbered are based on the Environment Agency's current process for WRMPs. The annex also considers more detailed issues around how water trades would take place in practice under this approach.

There are specific requirements on different market participants, which are discussed below.

3.1.2: Requirements on the buyer

The buyer would be required to assess all new schemes under standard criteria using common methodologies. As in the current process, companies would have to provide justification for the options chosen.

Buyers would also need to ensure that sellers were provided with sufficient information to submit a valid bid into the WRMP process. This would include:

- maintaining and publishing standardised methods of calculation of the AISC and underlying assumptions published in the WRMP;
- maintaining and publishing standard demand forecast methodologies, which provide sufficient information to allow sellers to make a valid bid;
- providing standard deployable output calculations; and
- providing information on required water quality and security of supply requirements.

3.1.3: Requirements on the seller

We would expect all supplying companies to obtain a licence before any agreement is signed for supplying water. A seller could be an upstream water supply licensee ('WSL'), a neighbouring incumbent or a pre-qualified WSL.

In addition, when bidding into a company's WRMP process, the products should be specified in a standard manner, for example on an 'equivalence of inputs' basis. This would include the following provisions:

- Reliability of supply – based on standardised categories of reliability.
- Quality, for example, chemical characteristics of water at point of entry; in particular, where a company chooses to submit a bid for the supply of untreated water, the seller must make explicit allowances for the costs of treating that water, in order to allow for a comparison on a like-for-like basis to the AISC (which relates to treated water).
- Compliance with DWI potable water standard, where a bid is submitted for potable water.
- Flow of water, both maximum and average flows.
- Ability to deliver SOSI.

In order to allow for an informed selection by the buyer, we would expect that the seller would need to provide certain information relating to the underlying cost components of the bid. For example, sellers could be required to provide separate data on expected interconnection costs. Such information requirements could be enshrined in an industry code, discussed further in Section 5.

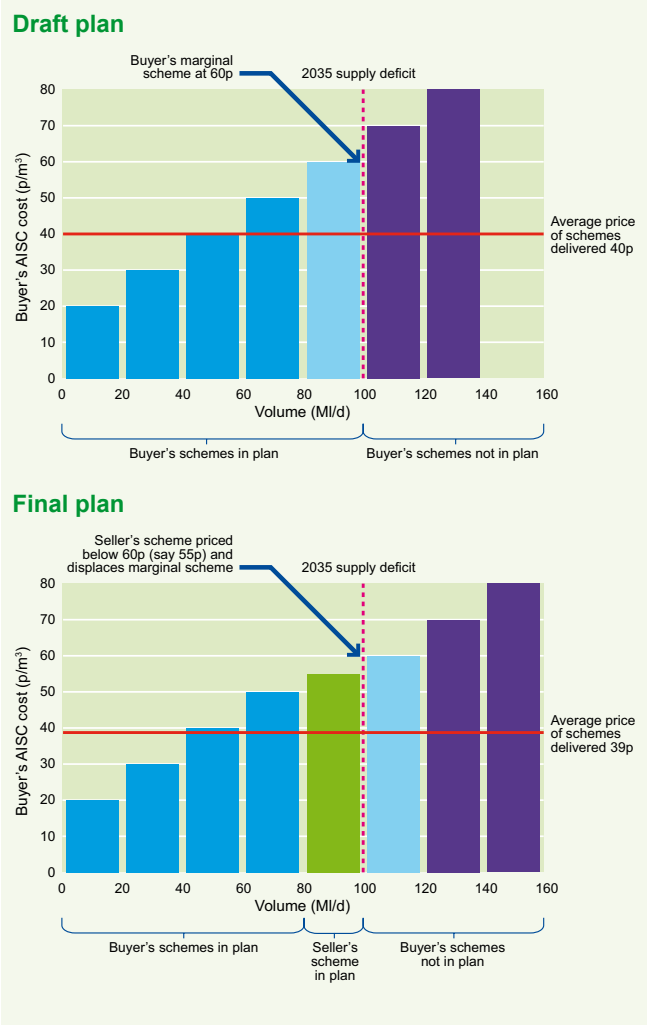
3.1.4: Bid pricing framework

To illustrate how pricing would work, consider the simplified example illustrated in Figure 10. The buyer has a supply deficit of 100Ml/d satisfied by a range of new water resource schemes ranging from 20p/m^3 to 60p/m^3 (the marginal scheme in light blue) in their plan. The average cost of these schemes is 40p/m^3. An entrant has a 20Ml/d water resource costing 20p/m^3, distribution costs of 5p/m^3 and amortised interconnector costs of 15p/m^3, ie 40p/m^3 marginal cost to supply into the buyer's area. In this example, the seller would propose a trade to the buyer priced at any level they choose such that it is lower than the marginal cost of the buyer (60p/m^3) and above the marginal cost to supply (40p/m^3). If the seller bids at 55p/m^3 (green box), the buyer should include the seller's scheme in its plan.

Customers benefit as they pay 5p/m^3 less for the marginal scheme which reduces the average cost of resources from 40p/m^3 to 39p/m^3. The seller benefits as it create 15p/m^3 profit (55p/m^3 – 40p/m^3). Although the buyer's marginal scheme (light blue box) is no longer in the plan, the buyer still benefits as it is able to keep bills lower for its customers than they would otherwise be. Section 3.1.5 below covers how regulatory cost recovery and incentives could be structured such that the buyer is not penalised for accepting the seller's scheme. The issue of how rents from these trades are allocated is discussed further in section 5.5.2.

Where a seller is a regulated water company that is developing new resources or creating new links which are unrelated to supply for its existing customers, this should be outside the regulated business and without prices being capped by regulation. This would provide incentives to develop new resources and links. The capital and operating costs of developing new connections and supplying water should be fully renumerated from profits. The limited availability of low-cost supplies make it unlikely that unregulated prices would result in excessive profits. We believe that under this arrangement customers would be fully protected, and in any event, general competition law would prevent exploitation of any market dominance.

Figure 10: Illustrative example of bidding



15 *Future price limits – a preliminary model: informal consultation*, Ofwat, April 2011

3.1.5: Cost recovery and incentives

We are seeking to replace an administrative system for water resource planning with one in which there are incentives both on the buyer and the seller to find the lowest cost (social and economic) way of balancing supply and demand. Our proposals would provide such incentives and enable customers to benefit from lower costs. This would include the following provisions:

Incentives for the buyer

- The buyer would build the new supply into the business plan for the price review. The regulatory framework would need to provide the same confidence about future inclusion of the costs in price limits as it would have from its own resource development, which would be added to the RCV.
- If there continues to be a comparative efficiency approach to efficiency assessment, the bias against operating cost solutions must be removed, either through a total expenditure approach to efficiency assessment, or through removing bulk supply costs from the efficiency assessment.
- In order to ensure that there is no incentive for a potential buyer to understate costs of its own resources, the buyer should bear a greater proportion of the cost of any overspend on its own resource development than is currently the case.

Incentives for the seller

- Where a seller is a regulated water company using resources used by or being developed for its own customers this should be part of the regulated business. Pricing for the resources should be based on the resource price sub-cap which Ofwat is proposing to introduce as part of its *Future Price Limits* proposals[15]. We believe that resource prices should be based on LRMC and set by resource zone, with the overall cap based on a weighted average of these zonal LRMCs.
- Long-term contracts would provide certainty about earning a return on any investment whether the seller is a regulated water company or a licensee, and therefore provide an incentive to develop links. There would need to be provision within the contracts for variation to reflect changes in operating costs, for example, due to changes in energy prices, just as there would be if a buyer were developing its own resources.

3.1.6: Legislative changes

To implement this proposal, the Secretary of State has the power to alter the WRMP process, under existing primary legislation. The Environment Agency would then need to enact any changes to the process following secondary legislation from Defra.

The existing Catchment Abstraction Management Strategy (CAMS) could be used to manage the risk associated with securing abstraction licences; options in areas with water available should be considered as a low risk option, while options in areas with no licence available (i.e. that rely on an abstraction licence trade) should be considered as medium risk, and options in over abstracted areas should be considered as high risk.

Ofwat will need to work with Defra in redefining the timeline for the WRMP to ensure that both draft and final WRMPs can feed into the price review process in a timely fashion. This will likely require the WRMP process starting 4-6 months earlier than is currently the case and where necessary compressing the timeline for some stages.

Figure 11 on the next page illustrates the revisions to the current WRMP process.

Figure 11: Summary of our water trading proposal.

Environment Agency water resources planning guideline		New steps
Pre-draft plan consultation	1. Water companies to prepare for consultation 2. Water companies consult pre draft plan s37A(8)	
Preparation of draft plan	3. Water companies to produce a draft plan s37A(1) in line with s37A(3) including any directions from SoS/ WAG about what it shall address s37A(7)	**(NEW)** Environment Agency to allow companies to include uncertainties around long term unsustainable abstractions to make WRMPs more realistic and to reveal solutions to long term over-abstraction. **(NEW)** Requirement upon companies to consult with neighbouring water suppliers (companies and new entrants) when assessing options for draft WRMP to identify potential new supplies (note – this already exists to some extent as companies have to satisfy the Environment Agency that they have explored bulk supply opportunities with neighbouring companies. The change is that this becomes mandated).
National security and commercial confidentiality process s37B(2)	4. Submission of draft plans to SoS/ WAG under s37B(1)(3) 5. Plans checked for information contrary to national security and SoS/WAG sends notice to person whose information is included in plan if considered to be commercially confidential s37B(2)(3) 6. Water company directed to remove any information considered contrary to national security before publication s37B(10)(b) 7. SoS/WAG notifies water companies of his commercial confidentiality decision based on objections received s37B(2)	
Publish draft plan	8. Water companies publish draft plans in any way prescribed under s37B(3)(a) and send to persons as may be described under s37B(4)	
Representations on draft plans 37B(3&4)	9. Period of representation to SoS/ WAG s37B(3)(b)(ii) 10. SoS/WAG to receive and forward representations to water companies s37B(4)	**(NEW)** Other suppliers of water, whether new entrants or incumbents may create a business case for a different option. **(NEW)** Other suppliers of water, whether new entrants or companies may 'bid' for opportunity to supply.
Amendments to plan (as directed by SoS/WAG)	11. Assessment of representations in prescribed way by water companies according to regulations under s37B(5) 12. Possible hearing on plans according to regulations under s37B(6)(a) and follow LGA '72 unless prescribed s37B(6)(b)	**(NEW)** Regulations to include method for assessing potential 'bid' options, including criteria for decision process. **(NEW)** Company models the other suppliers' alternative supply options to assess whether they achieve the deployable output benefits required when operating in conjunction with the company's existing supply network. **(NEW)** If the company accepts alternative schemes then must re-consult on the revised draft WRMP to ensure public/stakeholder engagement on the revised strategy. **(NEW)** Companies must also publicly respond to any bidders with decision on the bid and reasoning why.
	13. SoS/WAG may direct companies on final plans as necessary s37B(7) 14. Water company may object to direction regarding commercial confidentiality issues s37B(9)(a) 15. SoS/WAG to confirm/issue new direction S37B(9) 16. Water companies to prepare final plans 17. Check plans against SoS/WAG direction	**(NEW)** Companies may need to defend decision on any bids, particularly if the new option bid by the seller is more economical than that put forward by the company. The company is obliged to choose the most economical/ sustainable sources of water to meet forecast demand.
Publish final plan	18. Water companies to publish final plans in prescribed way 37B(8); 5 year cycle starts subject to s37A(6)(a) and (b)	**(NEW)** Ofwat is currently not obliged to include in price limits the costs of delivering the schemes included in the final WRMP. We propose that Ofwat be obliged to include the scope of schemes agreed in the final WRMP in price limits, although it has discretion to challenge the costs of those schemes. **(NEW)** Companies will seek funding for new investment bids in the same manner as other investment.

SoS – Secretary of State
WAG – Welsh Assembly Government

3.2: How current barriers can be addressed

As discussed in Section 2, the underlying economic characteristics of water are such that it will always be difficult and costly to trade (at least under current technology). Nevertheless, the steps we have proposed directly address elements of the remaining barriers to water trading.

- **Regulation.** Remedy regulatory barriers by: requiring that the cost of the relevant schemes to be taken into account under the buyer's price review process, alongside other investment; and support opex/capex harmonisation to avoid short-term treatment of operating costs in the price review process.
- **Price signals.** Strengthening weak price signals and making more transparent by mandating a move from average to marginal pricing (via the AISC) of schemes in the WRMP.
- **Infrastructure.** Overcome the limitations of current infrastructure to deliver efficient water trading by incentivising investment in interconnectors through the WRMP bid process, where this is both economic and environmentally optimal.

3.3: Summary

These proposals will take time to develop, but we can start now with a view to making substantive changes in the next regulatory period (2015-20).

Adapting the existing process of the WRMP over the next two regulatory cycles should be sufficient to enable water trading. This should be a pragmatic first step for the industry that has the potential for further development as the market evolves.

This approach is consistent with the experience of introducing trading-type arrangements in other sectors. In the telecommunications sector, for example, interconnection between networks was initially introduced on the basis of commercial negotiations between operators covering technical, operational and financial arrangements. Over time, as the volume and complexity of trade has grown, so more regulation has been introduced, but an initial light touch was critical in allowing trading to start and in encouraging the industry to work through practical challenges. Figure 12 summarises the six key advantages of our proposals.

Figure 12: The steps we have proposed are explicitly designed to remedy the barriers discussed in Section 2, and have six key advantages that may deliver net benefits for customers and the environment.

1. Scalability
The proposed approach allows for a high level of flexibility, and could deliver benefits in the context of both small and large trading volumes. Moreover, implementing this approach does not preclude the implementation of alternative measures going forward, and so provides real option benefits.

2. Simplicity
The WRMP process already exists and is accepted by the industry; to alter an existing process tends to be a simpler exercise than introducing a new one.

3. Cost-effectiveness
The proposed approach requires only limited structural or operational changes to the industry, which avoids incurring the costs associated with industry restructuring.

4. Rapid delivery
Under existing primary legislation, the Secretary of State has existing powers to alter the WRMP process using secondary legislation. This means that process changes can be implemented quickly.

5. Financeability
Restructuring of companies is not required, therefore allowing for delivery of water trading without introducing significant additional uncertainty. As such, we would expect that these pragmatic, incremental steps would not materially impact on investors' required returns.

6. Transparency
The approach will allow for gradual resolution of uncertainty regarding the optimal level of water trading. This will in itself provide valuable information to the market about the best approach towards balancing the development of new water resources.

4

Overview of other proposals

There has been a considerable debate over the last three years about the appropriate form of water trading in the UK, and several alternative approaches have been put forward. Three variants are considered in this Section (put forward by Cave, Stern and Ofwat).

In developing the detailed elements of our proposal, we have consciously set out to build and expand on the approaches put forward in the context of the current debate. We therefore consider that there is a considerable degree of agreement, but also divergences of views on certain issues.

A key area of debate is the extent to which structural changes should be imposed on the sector. Our view is that these should be kept to a minimum, given the relatively small potential size of the market, and the costly nature of such measures.

4.1: Overview of alternative approaches

A number of approaches for encouraging greater water trading have been proposed. In this Section, we focus on three approaches, put forward by Cave, Stern, and Ofwat. The key features of these proposals are summarised in Figure 13 below.

Figure 13: Key features of alternative proposals

Proposal 1: Cave Review (2009)

- Retail separation for statutory undertakers.
- Unbundling of current combined licence and introduction of a new upstream licence under the WSL regime.
- Mandating the publication of water and waste water supply costs at a water resource zone level and transport costs across region.
- Replacement of the cost principle with ex-ante access pricing framework based on full economic costs (for supplies to incumbents only).
- Replacement of the cost principle with ex-ante pricing framework based on long run avoidable costs (for supplies to retailers or large customers).
- Introduction of national standard codes.

Proposal 2: Jon Stern (2009)

- Separation of business activities – both legal and/or ownership.
- Network owners must not have any ownership over the water transported.
- Competitive markets are likely to require a greater degree of storage 'close-to-market'.
- Water quality must be sufficient to allow blending of different sources.

Proposal 3: Ofwat (2010)

- Creation of separate upstream water supply licences.
- Revision of the cost principle with a new access price regime.
- Improve abstraction trading.
- Potential inclusion of an obligation upon incumbent water companies to purchase lowest economic resources.
- Creation of functionally separate system operators†.

†In Ofwat's latest *Future Price Limits* preliminary model it does not propose functional separation of the system operator.

4.2: Areas of agreement

There is agreement on a range of issues both between the three approaches outlined in Figure 13, and between our proposed approach. In particular, our proposal agrees with Cave, Stern, and Ofwat that the following features would need to be present in any potential market framework:

- Provisions to ensure water trading shall not infringe on water quality standards/requirements.
- Standardisation and the development of industry codes of practice to reduce uncertainty and facilitate streamlined trading processes.
- Improved dissemination of information.
- Revision of the cost principle to ensure that efficient and economical trades take place (although there is still divergence on the most appropriate replacement for this principle).
- Amendment of the existing regulatory system to incentivise or require water companies to consider out-of-area solutions.

4.3: Areas of difference

The consensus outlined above already goes a considerable way towards the creation of a set of common principles that should underpin a water trading framework. However, there remain areas of divergence, which relate in particular to the extent to which structural changes should be imposed on the industry.

The three approaches outlined in Figure 13 each propose structural changes of varying complexity. We examine the rationale and potential drawbacks of these proposed changes below. The proposals are discussed in order of increasing 'severity' of structural changes.

- **Independent procurement entity** (Cave). ***Rationale:*** takes into account potential cross-border solutions when investigating new resources. ***Drawbacks:*** complexity of definitions of required role; issues relating to transfer of responsibilities; potential cost of setting up and running the procurement entity.
- **Functionally separate system operator** (Ofwat). ***Rationale:*** this proposal is motivated by the need to ensure non-discriminatory treatment of suppliers into the distribution network; it has been partly influenced by comparisons with similar arrangements in the energy sector. ***Drawbacks:*** it is not entirely clear whether the energy sector arrangements are applicable to the water sector. Given the modest anticipated trading volumes, we are not convinced that such an arrangement constitutes a necessary initial step and other means exist of providing the desired protection to upstream suppliers. It should be noted that in Ofwat's preliminary model for *Future Price Limits* (April 2011) it has not proposed forced functional separation of the system operator for the next price review.
- **Management and/or business separation of supply business** (Stern). ***Rationale:*** potentially provides commercial (rather than merely regulatory) incentives on network businesses to procure water resources from the most economic source. ***Drawbacks:*** increases in the cost of capital (associated with splitting the RCV between upstream resources and downstream businesses); lost economies of scope; and whether this would, in practice, substantially improve incentives relative to our approach.

4.4: Our view on structural measures

The incremental steps we have proposed should begin to reveal economically efficient trades. However, at least initially, we do not believe that water trading is likely to take place in sufficient quantities to justify the costs associated with structural measures. We believe that such measures would take more time to implement, be costlier and involve greater risk than our proposed approach.

In particular, we believe that it may be risky to attempt to impose structural measures before the dynamics of the water trading market are adequately understood. As observed in Section 3.3, precedent from other sectors (particularly the telecommunications sector) suggests that a 'light touch' approach is likely to be more prudent in the near-term, as it allows for the identification and management of practical challenges.

Overall, given the uncertainty relating to the size of the market, the potential costs of separation, and the aforementioned issues with the abstraction regime, we consider that a market-led approach to water trading should be pursued, and that a 'forced' structural change should be avoided. Moreover, under a market-led approach, the industry may consider separation even in the absence of regulatory intervention, should this be revealed as the economically efficient solution.

4.5: Our view on access pricing regimes

All of the approaches set out in Figure 13 consider an arrangement where upstream suppliers sell directly to retailers and/or end users via the local water company's network. The upstream suppliers compensate the network owner through an access charge[16]. The incremental steps presented in Section 3 do not consider how such an arrangement would function in practice, as an access charge is not necessary based on our proposal of bidding in to companies' WRMPs with an equivalent marginal price.

While, we support the notion of access pricing in principle, and do not consider that such a system would be incompatible with the steps we have proposed, we do not support developing access pricing as a first step.

There are a number of practical issues that would need to be resolved before an access pricing system could be implemented. For example, if new upstream suppliers were to displace existing water resources, a question would arise relating to the treatment of stranded assets. Moreover, in contrast to the steps that we have proposed, such a system would be likely to require vertical separation of water companies, in order to ensure non-discriminatory treatment of upstream suppliers, which would result in considerable costs being incurred (as discussed in Section 4.4).

Overall, whilst we consider that the creation of an access price regime is possible, we believe that the overriding priority should be to encourage greater water trading in a manner that is cost effective and can deliver immediate results. Our proposal is better able to meet these criteria, and should be given priority over the creation of an access price regime.

16 For example, Ofwat has considered an access pricing arrangement whereby suppliers pay an access charge based on wholesale prices minus the marginal cost of new resources.

5

Six changes to develop water trading

Having outlined the key features of our proposals, we now discuss the practical changes that would need to take place in order to implement it. Two of these changes would need to be implemented upfront, whilst we envisage that the remaining changes could emerge as the water trading regime develops. We believe that implementing these changes should be sufficient to stimulate a greater volume of water trading.

In the short term (before 2013), two changes are required:
1. Harmonise costs and incentives for buyers and sellers.
2. Create a level playing field by improving information flow and quality.

In the longer term, four further changes are required:
3. Enact changes to the WRMP process.
4. Unbundle the current combined supply licence and create a new upstream licence for companies wishing to introduce raw or treated water into an incumbent's network.
5. Ofwat to adopt a firm position on certain aspects of the pricing framework
6. Introduce common operational codes and systems, binding on all market participants.

5.1: Harmonise Ofwat's approach towards costs and incentives in price review

At present, the way water trades (or bulk supplies) are treated in Ofwat's price review process distorts the incentives to trade. Where sellers are regulated water companies, they can only retain the revenue received from the trade for five years.

Moreover, under the current system, the buyer is subject to operating cost efficiency adjustments despite not having ultimate control of the costs.

We set out in Section 3.1.5 changes which would create:

- Incentives for the buyer by:
  - removing distortions in comparative efficiency assessment;
  - ensuring confidence in future price-setting provision for trading; and
- Incentives for the seller by:
  - removing development of new resources and links from regulation;
  - ensuring confidence that investment in new supplies will earn a return through long-term contracts.

We also note that security of supply rules may need to be amended in order to provide comfort that sellers or buyers would not be penalised under these rules for engaging in efficient trades. These amendments would need to ensure clarity over security of supply liability and that the seller's out-of-area customers are not supplied at the expense of in-area customers. Similar concerns were noted in Ofwat's *Future Price Limits* consultation document[17].

We propose that these changes should be implemented early in the process to incentivise companies to pursue efficient water trades as quickly as possible.

5.2: Create a level playing field by improving information flow and quality

A common barrier to commodity trading is disparity of information between parties. As the market develops there should be information flows both ways, between the buyer and the seller. To create a level playing field, we believe the following points should be considered:

- All parties should create consistent data sets based on standardised methods of calculation, particularly for marginal costs and underlying assumptions published in the WRMP.
- All parties should have standard demand forecast methodologies and should provide sufficient information to allow sellers to make a valid bid.
- Sellers must provide a breakdown of their bid price in terms of the underlying costs, notwithstanding that the seller's price would not be capped under the proposed framework. We believe it will be for Ofwat to specify what information should be disclosed, although the water companies will have a role in developing these requirements.
- All parties should be obliged to share information on the network, particularly if better information becomes available to either the buyer or the seller.
- Companies should maintain the model that will be used to assess conjunctive[18] deployable output benefits, and should publish the methodology used as well as any updates to and outputs of the model. Potential sellers will need to provide information for use in that modelling.
- Standard least cost planning methodologies would need to be used by all parties. Currently the best practice EBSD approach[19] allows flexibility in which method of calculation to use.

5.3: Enact changes to the WRMP process

The changes to the WRMP process outlined in Figure 11 would need to be enacted, such that companies would be explicitly required to consider water trading.

In current guidance from the Environment Agency, companies are required to include a complete and exhaustive list of all technically feasible options that could be used to address the planning problem. While this implies that out of area bulk supply opportunities with neighbouring companies can be included, there is currently no explicit requirement for companies to consider water trading as an option to ensure supplies in the future. These changes should be enacted, to ensure that companies are required to consider trading as an option from the outset.

17 *Future price limits – a preliminary model: informal consultation*, Ofwat, April 2011, p40.

18 Conjunctive use refers to management of mixing surface and ground waters to optimise yields over the year in reaction to antecedent weather and demand patterns. For example, in the early stages of low rainfall, a company may choose to preserve its surface water storage through utilising groundwater sources.

19 EBSD refers to Economics of Balancing Supply and Demand.

5.4: Unbundle the current combined WSL and create a new upstream only licence for new entrants

An upstream licence should enable new entrants to provide untreated or treated water into companies' networks. If the licence is modular with sections that can be turned on or off, then sellers could also offer demand management/ water efficiency measures by activating a part of the upstream licence.

Utilising the existing process of the WSL regime with its financial and governance checks should provide protection to companies and customers. It may also help ensure that all bids satisfy necessary criteria on operational and quality standards.

Only existing or prequalified licensees (who could obtain a licence within a set period of time) through the existing WSL process should be allowed to bid into the WRMP process. The existing WRMP includes consultation with WSL licensees operating within a company's area. The process should also ensure that the risk of failure on the part of new entrants is managed appropriately, and that existing quality arrangements are not compromised.

5.5: Ofwat to adopt a firm position on certain aspects of the pricing framework

In Section 3, we outlined the headline principles of a market framework that should enable efficient and economic inter-regional trades to take place. This Section highlights selected features of the market framework on which Ofwat would need to develop a position, in order to provide clarity and certainty to market participants.

5.5.1: Differential charging

Under the proposed framework, efficient cross-boundary trades will only take place if the trade is priced below the buyer's marginal cost. Where the seller is itself a water company, its customer charges will typically be based on average costs. This could potentially result in the seller charging higher prices to its own (in-area) customers than it charges the buyer.

Where the seller is also a water company, there may be a tension between encouraging efficient water trading and ensuring non-discriminatory treatment of customers. We believe that Ofwat and the companies would need to agree a firm position on the appropriate balance to be struck between these two objectives.

5.5.2: Allocation of rents

It was suggested in Section 3 that the bid prices should not be directly price controlled, in order to ensure that sellers would be able to recover their investment and earn a reasonable rate of return. One implication of this proposal is that the seller may be able to capture a proportion of the difference between the buyer's AISC, and its own marginal cost. This can be seen as a regional value transfer from the buyer's customers to the seller's customers and investors.

5.6: Introduce national common codes and systems, binding on all market participants

The creation of a common operational code, contracts and systems that define the rules of the market for all participants should create a level playing field. It should also allow buyers and sellers to assess opportunities and risks for their business. We expect that an industry code will develop in parallel with other aspects of the market framework, and that a balance between the processes embodied in the code and individual contracts respectively will emerge over time. This should help to ensure learning-by-doing efficiencies, and allows for the resolution of uncertainties as these arise.

Requirement for an operational/network code

The energy and gas markets are supported by an underlying network code. If water trading develops then a similar code will be required for this market to cover operational issues arising from physical delivery of water into supply. The code should encompass as many of the required activities as possible, for example:

- Introducing new flows into the system and the changes in pressure associated with the new flow, for example a pressure shock could cause an increase in leakage.
- System notifications and sharing information on balancing requirements, planned/unplanned interruptions to supply.
- Default level of service (over or under performance should be rewarded or penalised as appropriate).
- Quality monitoring and allocation of cost.
- Information requirements for both the buyer and seller so that bids and water supplied meets necessary criteria on cost, operational and quality standards.

Having a 'thick' code (with as many of the requirements as possible set out in the code), leaves little room for dispute between buyers and sellers. This code would also be beneficial to Ofwat in regulating the market, as everyone would understand what the requirements are on them, and in doing so, create a level playing field for new entrants.

Standardised contract

While it may not be practical to have a standardised contract for the industry, there would be benefits in doing so, principally simplicity and a reduction in administrative costs. These benefits, however, could also be realised through having the 'thick' operational code described above and 'thin' contracts.

This would mean that only the real issues that are site specific/company specific are left to be included in bilateral agreements, for example, parties involved, location of connection, payment, any specific operational issue relating to the supply, and the duration of the supply[20].

Ideally the contract would be:

- Modular in form so that different parts of the common contract could apply based on the situation. For example, if the agreement is short or long term (i.e. up to 20 years) then the contract is likely to require different clauses.
- Bilateral between buyer and seller.
- Capacity contract with options on volume.

As with any service that a company contracts out, the overall price risk for the WRMP sits with the buyer. We envisage that the process would be reviewed through price review every five years. Notwithstanding this, the seller should expect the same certainty provided on the return as there is to the buyer through the RCV. The new entrant should also be allowed fixed cost and return recovery, and escalation factors should be defined into the contract, for example, energy pumping costs.

5.7: Summary

We believe that the changes described above would be effective in encouraging increased water trading. The initial changes proposed should be sufficient to ensure that market participants are appropriately incentivised to commence investigation and implementation of the most efficient and economical trades. As trading becomes more widespread, we believe that additional, organic changes to the market framework will aid the development of the water trading market and reveal additional opportunities.

20 If a new abstraction is required, it would be time limited; this should be considered when the terms of the contract are agreed.

6

Next steps for policy makers, regulators and companies

In order to achieve the changes necessary to implement water trading, we have developed a set of specific actions, and mapped these to the party or parties that are best placed to carry these out.

Required change	Specific action	Owner	Possible timeline
General	Make a policy commitment to a simple, low cost approach to trading that maximises net benefits to customers and the environment.	Defra	By Dec 2011
	Develop an industry forum to facilitate dialogue between water companies, the Environment Agency and other stakeholders directed towards the development of the building blocks of water trading.	Ofwat	By Dec 2011
1) Harmonise costs and incentives	Oblige Ofwat to include the scope of schemes agreed in the final WRMP in price limits, although Ofwat will retain discretion to challenge costs of those schemes.	Defra	By year-end 2012
	Harmonise the treatment of opex and capex associated with bulk supplies in the price setting process.	Ofwat	
	Create incentives for companies who trade (both buyer and sellers).	Ofwat	
2) Improve availability, quality and flow of information	Develop a standard AISC calculation methodology, building on the work being carried out by the Water Resources in the South East[21] group.	Water companies	By year-end 2012 (likely to be further iterations before 'live' WRMP)
	Prepare required information for dissemination in the Draft WRMP publication phase.	Water companies	By year end 2017
	Require companies to publicly respond to any sellers at the same time as responding to interested parties to the consultation.	Defra	Between 2012 and 2013
	Align the WRMP process and Price Review cycle for all companies.	Environment Agency and Ofwat	2015 onwards
	Ensure that the most up-to-date CAMS data is available to all market participants, so that they can propose options that have a level of certainty around water and licence availability.	Environment Agency	By year-end 2014
3) Enact changes to current WRMP process	Require the Environment Agency to review the WRMP process.	Defra	By year-end 2012
	Mandate undertakers to consult with neighbouring water suppliers (incumbents, existing water supply licensees and new entrants) when assessing options for draft WRMP to identify potential new supplies.	Defra	By year-end 2017
	Review the WRMP process and enact subsequent changes mandated by the Secretary of State.	Environment Agency	
	Include water trading as a viable option to meet future supply/demand requirements. Companies may voluntarily trial some aspects of the WRMP by 2014, in parallel with existing process.	Water companies	Voluntarily trial some aspects (in parallel with existing process) by 2013/14. Fully engage by 2017
4) Unbundle current combined supply licence	Primary legislation to be put forward.	Defra	Before start of AMP 6
	Licence unbundling to be implemented.	Ofwat	At start of AMP 6
5) Further develop and articulate a bid price framework	Mandate the development of a standard methodology for assessing all bid options.	Defra	Before start of 'live' WRMP
	Develop a fair and transparent pricing framework for the market, underpinned by the use of marginal costs.	Ofwat	Before start of 'live' WRMP
	Revise methodologies for assessing and proposing options for WRMPs in line with standardised methods produced by Defra and Environment Agency.	Water companies	Over the course of the live WRMP
6) Develop common operational codes and systems	Respond to new requirements of WRMP process.	Water companies	As needed going forward
	Consult with industry and further develop its WRMP guidance to include robust, nationally standardised methodologies for assessing options.	Environment Agency	
	Expand scope on planned work on common operational codes and contracts to include water trading.	Ofwat	

21 Specifically, WRSE's work-in-progress modelling on optimisation of resources and associated calculations.

While the first two changes to the WRMP process could be initiated in the current regulatory period (2010-15), further changes for developing water trading beyond the WRMP process may take longer to implement (2015-20 or beyond). All require a co-ordinated approach from water companies and regulators, and one which is underpinned by a firm policy commitment from Defra.

We envisage that the next WRMP round would serve as a wholly voluntary trial run; in parallel with existing process, companies could voluntarily bid into the process, thereby highlighting key challenges and revealing potential solutions. The subsequent round would then be treated as a 'live' process, with the rules being formally defined and implemented.

Conclusion

There is a possibility that without any great changes to legislation and with some simple changes to existing regulatory processes, there is scope for the industry to share and optimise resources on a national scale.

We do not advocate building a national transmission grid (as the supply demand characteristics of the water industry in England and Wales simply does not warrant such large-scale investment), but rather, through small incremental and market led trades, water could be displaced via existing networks to meet local demand. If this means that companies can consequently defer investment in building capital intensive resources, such as new reservoirs or desalination plants, then the upward pressure on customers' bills may be lessened.

The steps outlined above would seem a pragmatic way to test the reality of water trading in a manner that does not impose costs in the industry, is scalable, would be attractive for investors and allows entry by new market participants.

We hope this proposal is discussed and welcomed by the industry, stakeholders and regulators.

A

Annex A: Non-discriminatory pricing and bidding framework

A1: The scope

This annex sets out in further detail the bid framework and resulting pricing mechanics underpinning a water trade.

The key aspects of the bid framework can be summarised as follows:

- The bids are conditional on the buyer's indication of demand and maximum 'willingness to pay'. The 'willingness to pay' is captured using the AISC of the buyer's marginal scheme as published in its draft WRMP.
- The framework is intended to facilitate efficient competition between market participants (sellers – whether a water supply licensee or an existing water company) that are bidding to supply water to a buyer. It is not intended to address the wider issue of regulated access pricing for retail under the WSL regime.
- All bids that beat the AISC are accepted, up to the point where demand meets supply. The benefits accruing to the buyer from accepting lower cost bids should be split between customers and investors.

A2: Buyer willingness to pay

In order to provide potential sellers with sufficient information for them to submit informed bids, buyers must give an indication of their 'willingness to pay' for new water resources. Economically, this is equivalent to the buyer's LRMC of procuring new water resources. The current WRMP provides a readily-available and technically accurate means of measuring the LRMC via the AISC. The AISCs, published in companies' 2009 WRMPs, highlighted that there can be substantial differences in the marginal cost. As such there may be sufficient headroom to enable efficient trading.

When producing a draft WRMP, water undertakers provide the AISC for each option considered, this includes the estimated total capital and operating costs over time (standard period of time based on type and likely life of asset). Under the current WRMP process, the AISC an undertaker publishes is for treated water into the network of the water resource zone. It does not include any further development of that network to accept the water.

Costs might include the following:

- option investigation and feasibility studies;
- design, planning and promotion;
- capital resource costs including breakdown into source works, treatment, pumping stations and service reservoirs;
- capital distribution costs and improvements;
- environmental and social mitigation; and
- ongoing operational costs (including labour) and periodic replacements.

Using publicly available information, such as the AISC, should provide greater credibility and predictability for a water trading market for the following reasons:

- Buyers would have no incentive to understate avoidable cost, as if they understated the costs of new schemes this would lead to under-provision in price limits for the costs of resource development.
- The AISC provides a degree of transparency to the market through published indicators of 'maximum willingness to pay' against which sellers could bid.
- The market would have administrative efficiency and investment stability due to the regulatory five year cycle of the WRMPs and only revised on a five-yearly basis.

A3: Competition between sellers

If there is only a single seller, then the seller would bid just less than the willingness to pay of the buyer. By contrast, under a multi-seller model, such a bid could be (profitably) undercut by a competing supplier. In an example where all sellers have the same costs, the equilibrium bid is equal to the sellers' common LRMC (plus costs of distribution/ interconnection).

Competition between sellers ensures that maximum benefits are passed through to the buyer's customers.

A4: Accepting winning bids

We have created a stylised example (Table 1) to illustrate which schemes would be accepted under the proposed model, and at which price.

Table 1: The basis of charging

Based on AISC over 25 years (p/m^3)	Seller (Water Supply Licensee)	Seller (company)	Buyer
Resources and abstraction cost	20	10	80
Treatment cost	20	30	20
Distribution cost to WRZ (includes interconnection cost)	15	20	0
Operating cost	55	60	100
Margin	25%	20%	0
Bid price	69	72	
Receiving Co saving	31	28	

In this example, the Water Supply Licensee seller has the winning bid as it has offered the lowest cost and greatest saving for the receiving company.

The reasoning is that all schemes are accepted that are priced below the AISC and up to the volume where demand is satisfied. Each accepted scheme is priced at the bid price. This allows cross boundary competition where it is economic and efficient.

In the simple example in Table 1, the seller took sole responsibility for the interconnecting link, and then recovered costs from the buyer. In practice, the buyer may enter into a joint venture with the Water Supply Licensee or supplying company to build the interconnector, or it may even decide to build the interconnecting link as an extension to its network. It is also possible that, as the market develops, a totally separate company enters the market, specialising in building interconnecting links.

The supply of water between parties is likely to be covered by an agreement. This would be expected to contain the terms and conditions of the supply, including details such as:

- breakdown of the charge, i.e. whether or not it consists of fixed and/or variable elements;
- overall length of time for which water will be supplied;
- quality and pressure if applicable;
- whether or not the supply is intermittent; and
- minimum and maximum volumes.

Once the market has developed it is likely that a standard operational code and common agreement will be necessary.

B

Annex B: Overview of our proposal

B1: The scope

Water trading is a sensible market development that has the potential to assist in addressing the environmental challenges of the future such as climate change. We believe a market based framework for trading across water companies' appointed regions would lead to better use of resources nationally. If it provides scope to defer capital investment, it would also help to reduce future upward pressures on customers' bills.

This annex summarises the Who, When, What and How of water trading. Further detail can be found in sections 3 to 6 of the main paper.

B2: Who can be involved in this market?

The proposal builds on the WRMP process, where demand and a maximum willingness to pay is indicated by the draft WRMP. Hence the key market participants are:

- Receiving water company: this is an incumbent, which publishes a WRMP.
- Supplying companies, this could either be:
  - a Water Supply Licensee, i.e. a new entrant (that does not have a Water Supply Licence yet but is pre-qualified to obtain a licence before it supplies water); or
  - it could be another incumbent water company.
- Regulators: Environment Agency and Ofwat.

B3: When

To facilitate water trading, extra steps are built in to the WRMP process, see Table 1. Next to each stage we have indicated what additional steps would be required to implement water trading. The steps as numbered are based on the Environment Agency's current process for WRMPs.

Selling companies may only bid into the WRMP plan once the draft WRMP is published. If successful, this would increase the overall length of time of the WRMP process by 4-6 months as the consultation period must be repeated.

The receiving company will use its WRMP to inform its business plan for the next regulatory price review. Only once Ofwat has issued its final determination on the price review can a binding agreement be signed between the supplying company and the receiving company.

Table 2: Changes to the WRMP process

Duration (months)	Stage of WRMP	Steps required to produce a WRMP with additional steps (highlighted in red) to implement upstream competition to the WRMP process
11	Stage 1: Pre-consultation	**Step 1:** Companies prepare for consultation by notifying stakeholders of intention to publish WRMP and invites potential suppliers to offer schemes for consideration. **Step 2:** Companies consult pre-draft plan (s37A(8)) with: the Environment Agency, Ofwat, the Secretary of State/Welsh Assembly Government (if necessary) and any licensed water supplier which supplies water to premises in the companies' area via the company's supply system. **Step 3:** Companies to produce a draft plan s37A(1) in line with s37A(3) including any directions from Secretary of State/Welsh Assembly Government about what it shall address s37A(7). **(NEW)** Environment Agency to allow companies to include uncertainties around long term un-sustainable abstractions to make WRMPs more realistic and to reveal solutions to long term over-abstraction. **(NEW)** Requirement upon companies to consult with neighbouring water suppliers (incumbents and new entrants) when assessing options for draft WRMP to identify potential new supplies (note – this already exists to some extent as companies have to satisfy the Environment Agency that they have explored bulk supply opportunities with neighbouring companies. The change is that this becomes mandated). **Step 4:** Company shall submit draft plan to Secretary of State/Welsh Assembly Government under s37B(1)(a). **Step 5-7:** National security and commercial confidentiality process s37B(2): • **Step 5:** Plans checked for information contrary to national security and Secretary of State/Welsh Assembly Government sends notice to person whose information is included in plan if considered to be commercially confidential s37B(2)(a). • **Step 6:** Company directed to remove any information considered contrary to national security before publication s37B(10)(b). • **Step 7:** Secretary of State/Welsh Assembly Government notifies companies of his commercial confidentiality decision based on objections received.
3	Stage 2: Draft plan published and public consultation	**Step 8:** Company publishes a draft plan in any way prescribed under s37B(3)(a) and send to persons prescribed under s37B(3)(c). This should include details of the best estimate of the demand forecast, options considered and preferred options with underlying reason. **Step 9-10:** Public consultation for interested parties to comment on the draft plan. • **Step 9:** Period of representation to Secretary of State/Welsh Assembly Government s37B(3)(b)(ii). • **Step 10:** Secretary of State/Welsh Assembly Government to receive and forward representations to water companies s37B(4). **(NEW)** Other suppliers of water, whether new entrants or another water company may create business case for different option. • Obligation on company to share any information used in assessing options, including criteria for decision process.

3	Stage 3: Submission of representations by consultees	Interested parties now submit representations to the company for consideration before publishing the final WRMP. **(NEW)** Other suppliers of water, whether new entrants or incumbents may 'bid' for opportunity to supply. (Note: It has been assumed that the bidder will have ensured that relevant criteria (set by the company) have been met for the proposed option. If not, for example a new/innovative solution is proposed then the bidder must provide evidence as to why the solution is better/more economical/more environmentally sustainable.) **Step 11:** Companies to assess representations in prescribed way according to regulations under s37B(5). **(NEW)** Regulations to include method for assessing potential 'bid' options, including criteria for decision process.
2-3 months	New stage	**(NEW)** Company models the other suppliers' alternative supply options to assess whether they achieve the deployable output benefits required when operating in conjunction with the company's existing supply network.
2-3 months	New stage	**(NEW)** If company accepts alternative schemes then must re-consult on the revised draft WRMP to ensure public/stakeholder engagement on the revised strategy.
9	Stage 4: Response by water companies	Companies respond to interested parties. **(NEW)** Companies must also publicly respond to any bidders with decision on the bid and reasoning why.
On a case by case basis	Stage 5: Public hearing or inquiry	**Step 12:** If necessary, the WRMP will go through a public hearing or inquiry according to regulations under s37B(6)(a) and follow LGA '72 unless prescribed s37B(6)(b). **(NEW)** Companies may need to defend decision on any bids, particularly if the new option bid by the seller is more economical than that put forward by the company. The company is obliged to choose the most economical / sustainable sources of water to meet forecast demand. **Step 13:** Secretary of State / Welsh Assembly Government may direct companies on final plans as necessary s37B(7). **Step 14:** Companies may object to direction regarding commercial confidentiality issues s37B(9)(a). **Step 15:** Secretary of State / Welsh Assembly Government to confirm current/issue new direction s37B(9).
1	Stage 6: Final plan is published	**Step 16-17:** Companies prepare final WRMP with preferred options and check against Secretary of State/Welsh Assembly Government direction. **Step 18:** Companies publish final WRMP in prescribed way s37B(8); five year cycles starts subject to s37A(6)(a) and (b): The final published WRMP will feed into the price review process so that companies can seek adequate funding for investment. **(NEW)** Ofwat is currently not obliged to include in price limits the costs of delivering the schemes included in the final WRMP. We propose that Ofwat be obliged to include the scope of schemes agreed in the final WRMP in price limits, although it has discretion to challenge the costs of those schemes. **(NEW)** Companies will seek funding for new investment bids in the same manner as other investment.
N/A	Stage 7: Annual review of plan	Companies conduct annual review of plan.

B4: What can be bid?

The benchmark for assessing bid prices would be the AISC of treated water. The buyer would be required to accept qualifying bids (i.e. those that meet necessary criteria on operational and quality standards) that beat the AISC of the buyer's marginal scheme within the draft WRMP. Sellers could submit a bid for both treated and untreated water, subject to the operational and quality requirements in the WRMP and presented at an equivalent treated water AISC (i.e. raw water + treatment costs). This would allow for alternative sources of water via trading in order to satisfy incremental supply-demand requirements under the WRMP. Moreover, given that the AISC effectively creates a 'shadow price' for water resources, these proposals can be implemented prior to reform of the abstraction rights regime.

The options that are 'bid' into the plan do not necessarily have to be new resources; a wide range of options or 'products' could be bid into the WRMP process to promote innovation. We believe that leakage management and repair should not be an option, as it would require access to the buyer's network. Other options could include:

- New sources of raw water.
- Surplus treated water over and above a company's own demand.
- Water storage (above or below ground).
- Demand management solutions.
- Water efficiency solutions.

In addition, when bidding into an undertaker's WRMP process, the products should be specified in a standard manner, for example on an 'equivalence of inputs' basis. This would include the following provisions:

- Reliability of supply – based on standardised categories of reliability.
- Quality, for example chemical characteristics of water at point of entry; in particular, where a company chooses to submit a bid for the supply of untreated water, the seller must make explicit allowances for the costs of treating that water, in order to allow for a comparison on a like-for-like basis to the AISC (which relates to treated water).
- Compliance with DWI potable water standard, where a bid is submitted for potable water.
- Flow of water, both maximum and average flows; and
- Ability to deliver SOSI.

In order to allow for an informed selection by the buyer, we would expect that the seller would need to provide certain information relating to the underlying cost components of the bid. For example, sellers could be required to provide separate data on expected interconnection costs.

See Annex A for more detail on the pricing framework.

B5: The right incentives

We are seeking to replace an administrative system for water resource planning with one in which there are incentives both on the buyer and the seller to find the lowest cost (social and economic) way of balancing supply and demand. Our proposals would provide such incentives and enable customers to benefit from lower costs. This would include the following provisions:

Incentives for the buyer

- The buyer would build the new supply into the business plan for the price review. The regulatory framework would need to provide the same confidence about future inclusion of the costs in price limits as it would have from its own resource development, which would be added to the RCV.
- If there continues to be a comparative efficiency approach to efficiency assessment, the bias against operating cost solutions must be removed, either through a total expenditure approach to efficiency assessment, or through removing bulk supply costs from the efficiency assessment.
- In order to ensure that there is no incentive for a potential buyer to understate costs of its own resources, the buyer should bear a greater proportion of the cost of any overspend on its own resource development than is currently the case.
- There could be some incentive on the buyer to buy lower cost out of area solutions by the buyer keeping a proportion of the gains for a limited period, say ten years.

Incentives for the seller

- Where a seller is a regulated water company using resources used by or being developed for its own customers this should be part of the regulated business. Pricing for the resources should be based on the resource price sub-cap which Ofwat is proposing to introduce as part of its *Future Price Limits* proposals[22]. We believe that resource prices should be based on LRMC and set by resource zone, with the overall cap based on a weighted average of these zonal LRMCs.
- Long-term contracts would provide certainty about earning a return on any investment and therefore provide an incentive to develop links. There would need to be provision within the contracts for variation to reflect changes in operating costs, for example due to changes in energy prices, just as there would be if a buyer were developing its own resources.

B6: Changes required to implement

In the short term (before 2013), two changes are required:

1. Harmonise costs and incentives for buyers and sellers.
2. Create a level playing field by improving information flow and quality.

In the longer term, four further changes are required:

3. Enact changes to the WRMP process.
4. Unbundle the current combined supply licence and create a new upstream licence for companies wishing to introduce raw or treated water into an incumbent's network.
5. Ofwat to adopt a firm position on certain aspects of the pricing framework.
6. Introduce common operational codes and systems, binding on all market participants.

22 *Future price limits – a preliminary model: informal consultation*, Ofwat, April 2011

B7: Next steps for policy makers and companies

Required change	Specific action	Owner	Possible timeline
General	Make a policy commitment to a simple, low cost approach to trading that maximises net benefits to customers and the environment.	Defra	By Dec 2011
	Develop an industry forum to facilitate dialogue between water companies, the Environment Agency and other stakeholders directed towards the development of the building blocks of water trading.	Ofwat	By Dec 2011
1) Harmonise costs and incentives	Oblige Ofwat to include the scope of schemes agreed in the final WRMP in price limits, although Ofwat will retain discretion to challenge costs of those schemes.	Defra	By year-end 2012
	Harmonise the treatment of opex and capex associated with bulk supplies in the price setting process.	Ofwat	
	Create incentives for companies who trade (both buyer and sellers).	Ofwat	
2) Improve availability, quality and flow of information	Develop a standard AISC calculation methodology, building on the work being carried out by the Water Resources in the South East[23] group.	Water companies	By year-end 2012 (likely to be further iterations before 'live' WRMP)
	Prepare required information for dissemination in the Draft WRMP publication phase.	Water companies	By year end 2017
	Require companies to publicly respond to any sellers at the same time as responding to interested parties to the consultation.	Defra	Between 2012 and 2013
	Align the WRMP process and Price Review cycle for all companies.	Environment Agency and Ofwat	2015 onwards
	Ensure that the most up-to-date CAMS data is available to all market participants, so that they can propose options that have a level of certainty around water and licence availability.	Environment Agency	By year-end 2014
3) Enact changes to current WRMP process	Require the Environment Agency to review the WRMP process.	Defra	By year-end 2012
	Mandate undertakers to consult with neighbouring water suppliers (incumbents, existing water supply licensees and new entrants) when assessing options for draft WRMP to identify potential new supplies.	Defra	By year-end 2017
	Review the WRMP process and enact subsequent changes mandated by the Secretary of State.	Environment Agency	
	Include water trading as a viable option to meet future supply/demand requirements. Companies may voluntarily trial some aspects of the WRMP by 2014, in parallel with existing process.	Water companies	Voluntarily trial some aspects (in parallel with existing process) by 2013/14. Fully engage by 2017
4) Unbundle current combined supply licence	Primary legislation to be put forward.	Defra	Before start of AMP 6
	Licence unbundling to be implemented.	Ofwat	At start of AMP 6
5) Further develop and articulate a bid price framework	Mandate the development of a standard methodology for assessing all bid options.	Defra	Before start of 'live' WRMP
	Develop a fair and transparent pricing framework for the market, underpinned by the use of marginal costs.	Ofwat	Before start of 'live' WRMP
	Revise methodologies for assessing and proposing options for WRMPs in line with standardised methods produced by Defra and Environment Agency.	Water companies	Over the course of the live WRMP
6) Develop common operational codes and systems	Respond to new requirements of WRMP process.	Water companies	As needed going forward
	Consult with industry and further develop its WRMP guidance to include robust, nationally standardised methodologies for assessing options.	Environment Agency	
	Expand scope on planned work on common operational codes and contracts to include water trading.	Ofwat	

23 Specifically, WRSE's work-in-progress modelling on optimisation of resources and associated calculations.

While the first two changes to the WRMP process could be initiated in the current regulatory period (2010-15), further changes for developing water trading beyond the WRMP process may take longer to implement (2015-20 or beyond). All require a co-ordinated approach from water companies and regulators, and one which is underpinned by a firm policy commitment from Defra.

We envisage that the next WRMP round would serve as a trial run; companies could voluntarily bid into the process, thereby highlighting key challenges and revealing potential solutions. The subsequent round would then be treated as a 'live' process, with the rules being formally defined and implemented.

Glossary

Term	Definition
Abstraction licences	Applies to anyone wishing to remove or abstract more than 20 cubic metres of water a day from either a surface source (for example river, stream or canal) or from an underground source.
Abstraction prices	Annual charge paid to the Environment Agency based on the amount of water authorised in the abstraction licence.
Abstraction regime	The Environment Agency is responsible for managing water resources in England and Wales to protect both water supplies and the environment. It manages this through a licensing regime.
Access charge/price	The charge issued by the undertaker to access its network. There are three types of access that may be sought: 1. 'Wholesale access' under section 66A of the WIA91. This section obliges a water undertaker to provide a water supplier with a supply of water in order that the supplier may retail that supply to one of its customers. In this case the customer's premises would be within the undertaker's geographic area and the supply would be of wholesale water only, it would not allow the supplier to physically 'access' the undertaker's network in any way. 2. 'Primary carriage' access under section 66B of the WIA91, which provides for a water undertaker to allow a supplier to introduce its own water to the undertaker's network and use that network to transport the water to the supplier's customer. 3. 'Secondary carriage access' under section 66C of the WIA91 provides for a water undertaker to allow a supplier to arrange for a second water undertaker to supply the supplier with water and then to use the first undertaker's network to supply that water to its customers. The second two of these three bases involve what is generally referred to as 'common carriage'.
AISC	Average Incremental, Social and environmental Cost of a scheme is calculated by dividing the net present value of scheme costs by its discounted contribution to balancing supply and demand.
AMP	Asset Management Plan. An appointed water company's detailed description of its investment plans for its underground assets, such as supply pipes, water mains and sewers. AMP1 covered plans for underground assets taken into account at privatisation in 1989 from 1990-95. The subsequent planning periods are AMP2 for 1995-2000, AMP3 for 2000-05, AMP4 for 2005-10 and AMP5 for 2010-15. AMP is often used as a shorthand name for the companies' business plans.
Asset base	A water undertaker's fixed assets.
Bulk supply	Supplies of treated or untreated water traded between individual appointed water companies. These supplies are often traded under long-term contracts and on non-standard terms. Ofwat has powers, if certain conditions are met, to determine the terms of such supplies if so requested.
CAMS	Catchment Abstraction Management Strategies. The CAMS set out how the Environment Agency will manage the water resources of a catchment and contribute to implementing the WFD.
Capital programme	Planned construction work by appointed water companies to build new assets, or replace or renovate existing assets, such as sewage treatment works and water mains.
CRC	Carbon Reduction Commitment. The CRC Energy Efficiency Scheme is a mandatory scheme to improve energy efficiency and therefore cut CO2 emissions in large public and private sector organisations.
Conjunctive use	The coordinated use of surface water and ground water resources.
Cross-boundary trades	A bulk supply of water from one water undertaker to another.
Defra	Department of Environment Food and Rural Affairs.
Demand forecast	Expected volume of water required at a point in the future.

Demand management	The implementation of policies or measures which serve to control or influence the consumption of water.
DO	Deployable Output. The output of a commissioned source or group of sources, or of bulk supply, as constrained by: - environment; - licence, if applicable; - pumping plant and/or well/aquifer properties; - raw water mains and/or aquifers; - transfer and/or output main; - treatment; and - water quality.
DWI	Drinking Water Inspectorate.
EA	Environment Agency.
EBSD	Economics of Balancing Supply and Demand. Guidance published by the Environment Agency and UKWIR for stages to be followed by a water resources planner in order to develop a supply-demand balance plan.
EFI	Ecological Flow Indicator. Flow Indicator used by the Environment Agency to prevent ecological deterioration of rivers. Set in line with new UK standards from UKTAG.
In area	Within a water undertaker's boundary.
Interconnectors	Any new infrastructure required to create a link between the supplier of water and the buying company's network.
LGA '72	Local Government Act 1972.
LRMC	Long run marginal cost.
Market based framework	A process, whether legal or regulatory, for supporting competition within a defined market.
Ml/d	Megalitre per day = one million litres per day.
Ofwat	The Water Services Regulation Authority. The Water Services Regulation Authority was created by the Water Act 2003. It replaced the Director General of Water Services as the economic regulator of the water industry in England and Wales. The organisation continues to be known as 'Ofwat'.
Out of area	Outside a water undertaker's boundary.
Participants	Companies, whether water undertakers or new entrants who are participating in the market.
Price review process	The process of re-setting appointed water companies' price limits. The first review took place in 1994, and the price limits took effect from 1 April 1995. A second review was carried out in 1999, and set revised price limits from 1 April 2000. The third review took place in 2004 and set prices for the period 2005-10. The fourth review took place in 2009 and set prices for the period 2010-15. Price limits are currently set every five years. Also known as a 'periodic review' and 'price control process'.
Primary legislation	Also known as an act of Parliament, is legislation made by the legislative branch of Government. This contrasts with secondary legislation.
RBMP	River Basin Management Plan.
RCV	Regulatory Capital Value.
RSA	Restoring Sustainable Abstraction. A programme of work that identifies, investigates and solves environmental risks or problems caused by unsustainable licensed water abstraction throughout England and Wales.
S37	Section 37 of the Water Industry Act.
Secondary legislation	Secondary (or delegated) legislation must be authorised by primary legislation, and conforms to boundaries the primary legislation has laid down.
SoS	Secretary of State.

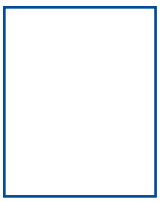
SOSI	Security of Supply Index. Ofwat assesses each appointed water company's ability to supply customers in dry years without imposing demand restrictions such as hosepipe bans. Companies with higher index score bands have better security of supply.
Shadow price	The true economic price of an activity: the opportunity cost. Shadow prices can be calculated for those goods and services that do not have a market price, perhaps because they are set by Government. Shadow pricing is often used in cost-benefit analysis, where the whole purpose of the analysis is to capture all the variables involved in a decision, not merely those for which market prices exist.
STW	Severn Trent Water.
Supply curves	A graph showing the supplied volume of a product that would be available at different costs.
WAG	Welsh Assembly Government. The National Assembly for Wales consists of 60 Members elected across Wales. Executive powers are exercised by the Welsh Assembly Government.
Water Act 2003	This Act came into force in February 2003 to: - reform the abstraction licensing regime and regulatory arrangements; - introduce a framework for self-lay; and - extend opportunities for competition to large non-household customers.
Water bodies	A manageable unit of surface water, being the whole (or part) of a stream, river or canal, lake or reservoir, transitional water (estuary) or stretch of coastal water. A 'body of groundwater' is a distinct volume of underground water within an aquifer.
Water UK	An organisation that represents all UK water and wastewater service suppliers at national and European level. It provides a framework for the water industry to engage with government, regulators, stakeholder organisations and the public.
WFD	Water Framework Directive. A European Directive to provide a co-ordinated approach to water management within the European Union (EU) by bringing together strands of EU water policy under one piece of framework legislation. Member States must produce plans for river basin management districts that set out a programme of measures aimed at protecting bodies of surface and groundwater. Each plan must include economic analyses of water use and move towards full cost recovery in water pricing.
WIA '91	Water Industry Act 1991. This Act (as amended) sets out how the water companies are appointed and regulated, and the powers of the regulator.
WIA '99	This Act amended the Water Industry Act 1991 to provide new entitlements for water consumers, particularly household customers. It introduced a prohibition on the disconnection of the water supply to homes for non-payment and gave many water consumers new rights to opt for a water meter without having to pay an initial charge.
WRMP	Water Resource Management Plan. A water company's 25-year strategic plan for meeting supply and demand requirements. Water companies have produced and submitted Water Resource Management Plans in 1999, 2004 and 2009. Initially plans were submitted on a voluntary basis, however, it is now a statutory duty for water undertakers to prepare, consult, publish and maintain a water resource management plan under new sections of the Water Industry Act 1991, brought in by the Water Act 2003.
WRSE	Water Resources in the South East group was set up to explore opportunities for existing and new water resources to be shared in the most efficient and effective way whilst maintaining security of supply, protecting the environment and minimising costs to customers.
WRZ	Water Resource Zones. The largest possible zone in which all water resources, excluding external transfers, can be shared. Hence, it is the zone in which all customers experience the same risk of supply failure from a resource shortfall.
WSL	Water Supply Licence. Introduced by the Water Act 2003. A licence granted to a company giving it the retail authorisation, or both the retail authorisation and the supplementary authorisation.

Undertaker	The term used to describe the regulated water only and water and sewerage companies who supply water and sewerage services to consumers in England and Wales. Also known as a ‘regulated company’ or ‘appointed water company’.
UKWIR	United Kingdom Water Industry Research. An organisation set up by the UK water industry in 1993 to provide a framework for the procurement of a common research programme for UK water operators on ‘one voice’ issues. UKWIR comprises 24 appointed water and sewerage companies in England and Wales, Scotland and Northern Ireland. UKWIR’s objectives are to: - identify research requirements to meet the water industry’s strategic business needs; - procure the research competitively; - work with the water industry’s regulators; - provide value for money for the contributors; and - transfer the research outputs to contributors.

Severn Trent Water Ltd
Severn Trent Centre
2 St. John's Street
Coventry
CV1 2LZ
www.stwater.co.uk

SEVERN TRENT WATER

The paper in this document is made from 50 per cent recycled waste pulp and 50 per cent pulp from managed forests. This is a combination of Totally Chlorine Free and Elemental Chlorine Free. The inks are vegetable oil-based and contain resins from plants/trees.



recycle
When you have finished with this report please recycle it

WM 2010/11.559