

# Towards Water 2020 – policy issues: promoting markets

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## Effective regulation – promoting markets

In the [‘Towards Water 2020 – meeting the challenges for water and wastewater services in England and Wales’](#) paper, we discussed how well functioning markets can play a role in helping the sector to address the challenges it faces by facilitating innovation and the creation of value for the benefit of customers, the environment and investors. In this paper, we discuss how to introduce and improve the functioning of markets in the upstream value chain, in particular for sludge and water resource and how to enable effective co-ordination across the value chain to support the development of markets. We also discuss the role of access pricing in setting appropriate price signals for market participants and how access prices interact with the recovery of cost including the RCV.

The development of more effective markets is an important means to implement our strategy. Pro-market regulation tries to create markets – places for buyers to meet sellers – where they are missing. It also attempts to make buying and selling easier and more worthwhile by improving information that parties’ have and their ability to respond to it, and by creating incentives to respond efficiently. It is important to understand that developing new or more effective markets in the sector is not the same as promoting competition, and that benefits from developing markets do not depend on developing fully competitive markets. Creating new and better markets will help reveal information and enable better decision making; this could include markets with single or few service providers.

As we discuss in [‘Towards Water 2020 – meeting the challenges for water and wastewater services in England and Wales’](#), the Water Act 2014 includes a number of measures to encourage the development of upstream<sup>1</sup> markets in England. This new legislative framework enables new and more flexible arrangements to be put in place that, when brought into force in or after 2019, could address some of the limitations of the current framework.

As we set out in our main ‘challenges’ discussion document, our framework for promoting markets can help to address some of the key questions for our future regulation of the sector.

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<sup>1</sup> The new legislation creates scope for entry in upstream services including water resources and sewerage/sludge disposal. It compliments existing arrangements that allow for competition in network services in the New Appointments or “inset” regime but this is a different model and the legislation does not extend the water and sewerage supply licensing regime into those network assets

## Key questions for our future regulation of the sector

**KQ1** How do we regulate to encourage service providers to discover **new ways of delivering** outcomes to customers, which reduce cost and improve service?

**KQ2** How do we build on the **customer-focused** approach to **the 2014 price review (PR14)** and promote and maintain genuine customer engagement that drives companies' businesses?

**KQ4** How do we encourage service providers to discover and **reveal the efficient cost** of providing services?

**KQ6** How can we maintain investor and customer confidence through the **transition** to any new arrangements?

In line with our vision for Ofwat as a trusted and respected regulator working at the leading edge challenging ourselves and others, we have encouraged a 'market place of ideas' with stakeholders contributing to shaping the regulation of the future. A number of water companies have submitted reports on the future development of the regulatory framework, including issues relating to promoting markets and outcomes. We welcome these contributions and provide links below.

### Marketplace of ideas:

[Potential developments in the commercialisation of the sludge treatment and recycling market, Wessex Water, June 2015](#)

[Reform to access pricing, Severn Trent Water / Oxera, June 2015](#)

[Water 2020 – water resource planning and third party options, South East Water / Frontier Economics, July 2015](#)

[Potential approaches to Access Pricing in the UK Water Sector, Anglian Water, July 2015](#)

[Options for future treatment of the regulated capital value, Severn Trent Water/Oxera, June 2015](#)

[The potential options for Regulatory Capital Value \(RCV\) allocation, South West Water/Frontier Economics, July 2015](#)

[The future of the RCV, Yorkshire Water, July 2015](#)

Any additional papers released by companies will be published on the Water UK website (<http://www.water.org.uk/policy/future-water-sector>).

It is important to recognise that our intention is that this paper opens a discussion with stakeholders about how the water sector could address a number of challenges. With this in mind, we have intentionally discussed a range of possibilities – some that could be implemented in the short term and some that could only be implemented in the long term and are potentially not viable under the current legislative framework. This is important as it will help to reveal a wide spectrum of views about the direction the sector should take. Looking ahead, we will narrow the discussion by focusing on those options that deliver the most for customers while being consistent with existing legislation.

## 1. Creating value through promoting effective markets

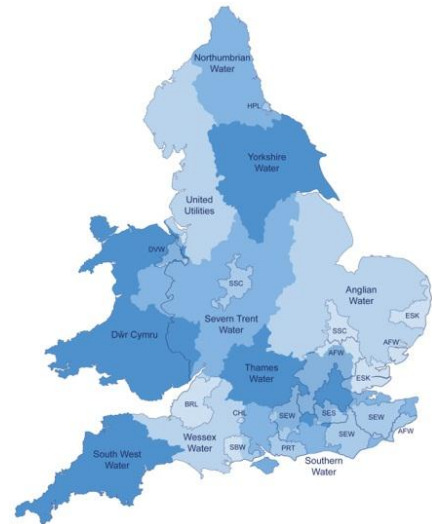
Effective markets could create value for the benefit of customers, the environment and shareholders. In this section we describe the current role of markets in the sector, the impact of the Water Act 2014, and the sections of the value chain where effective markets could have the greatest impact.

### 1.1 The current structure of the water and wastewater sector in England and Wales

A market-based approach to upstream services could encourage innovation and improve allocative efficiency, by revealing important information on the cost of providing services and the value that consumers place upon them.

The water sector in England and Wales currently comprises:

- ten regional monopolies providing both water and wastewater services (WaSCs); and
- a further nine water-only companies (WoCs) with regional monopolies that sit within the areas of the WaSCs (see map below).



At present, non-household customers that are likely to use at least five megalitres (MI)<sup>2</sup> of water a year in England, or 50 MI in Wales, at each premises, can choose their water supplier from a range of new companies. New companies can supply water to eligible customers once they have a licence from us. Under section 17A of the Water Industry Act 1991 (WIA91), we have been authorised to grant two types of water supply licences:

- **Retail licences** to purchase a wholesale supply of water from an appointed water company and use its supply system to deliver water to customers' premises.
- **Combined licences** which, in addition to the retail licence elements, allow the licensee to introduce water into an appointed water company's supply system in connection with the supply of that water.

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<sup>2</sup> One megalitre equals one million litres.

There are currently 12 such water supply licensees.

In addition, under the inset framework set out in section 8 of the WI A91, a new appointment or a variation (NAV)<sup>3</sup> involves one company replacing another as the appointee for a specific geographic area. We may grant a NAV for a water only, sewerage only or water and sewerage company where:

- an area is unserved by an appointed water or sewerage company;
- a large user<sup>4</sup> wishes to change its supplier; or
- with the agreement of the existing appointed supplier.

However, NAVs have had limited impact to date: there are currently 56 NAVs served by 13 providers – five independent businesses and eight incumbent water companies providing service within another incumbent’s area of appointment.

While the regional monopoly structure of the sector is often cited as a deterrent to entering the market, we note that all current appointees are potential new entrants in other regions and the development of competition does not necessarily depend upon new entry from outside the sector.

## 1.2 The Water Act 2014<sup>5</sup>

The Water Act 2014 will enable the development of markets for upstream (non-retail) water and wastewater services in relation to English water companies<sup>6</sup>. When brought into force, the relevant provisions of the Act will:

- enable new entrants to provide new sources of water or wastewater treatment services, with obligations upon incumbents to provide access to their networks, treatment and storage systems;
- make it easier for water companies to buy and sell water and wastewater services from each other;
- enable a framework for owners of small-scale water storage to sell excess water into the public supply; and

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<sup>2</sup> A new appointment occurs when we appoint a company for the first time; and a variation is when an existing appointed company seeks to extend the area to which it provides services.

<sup>4</sup> A large user is a customer that uses (or is likely to use) at least 50 million litres of water a year in England or 250 million litres of water a year in Wales.

<sup>5</sup> We discuss the Water Act 2014 as it applied to upstream services. The Act also extends retail competition to all non-household customers in England. We are addressing the work associated with retail competition through our Retail Market Opening programme.

<sup>6</sup> While the reformed framework could also be commenced by the Welsh Government to extend to Welsh water companies, it is our understanding that the Welsh Government has no current plans to do so.

- reform the existing framework for adopting water and wastewater infrastructure laid by developers.

Our development of a regulatory framework for PR19 and beyond will be within the context of all of our statutory duties as well as the guidance that we receive from the UK and Welsh Governments. As such, any differences in government guidance will be reflected in differences in the regulatory frameworks proposed for England and Wales. We also acknowledge the importance of the sector in delivering environmental outcomes and will continue to engage with environmental regulators such as the Environment Agency and Natural Resource Wales and wider stakeholders.

Specifically, the Act includes provisions that will extend the scope of the existing water supply licensing framework.

- **Wholesale only licences.** The combined licence is unbundled such that licences can contain either wholesale authorisations or retail authorisations, or both. Licensees with a 'wholesale authorisation' can introduce water into the supply system of a water undertaker in connection with their own or another licensee's retail authorisation.
- **Ability to introduce water upstream of a water treatment works.** A water supply licensee with a wholesale authorisation will have more options to introduce water for the purpose of supplying premises. Section 2 of the Act extends the scope such that a 'supply system' does not just relate to the mains and pipes of a water undertaker downstream of a water treatment works, but also to treatment works, reservoirs and other water storage facilities.
- **Extension to wastewater.** The licensing framework is extended to cover the provision of wastewater services. Under such sewerage licences, a 'wholesale authorisation' would allow the licensee to remove matter from the system of a sewerage undertaker to treat or dispose of it on behalf of itself or another licensee providing sewerage services corresponding to that disposal. A 'disposal authorisation' allows a licensee to remove matter from the sewerage system of a sewerage undertaker to treat, dispose of or otherwise use it. A 'retail authorisation' allows the licensee to use the sewerage system of a sewerage undertaker for the purposes of providing retail services.

We note that under these provisions (with the exception of disposal authorisations); wholesale entry must be linked to a corresponding retail supply of particular non-household premises. The legal framework envisages bilateral trading to achieve this.



Section 12 of the Act gives the Secretary of State and the Welsh Ministers the power to make regulations and could potentially allow for further developments in upstream competition subject to regulations being drafted by Government.

### **1.3 Developing retail markets**

The Water Act 2014 also enables the creation of a new market that will allow all non-household customers in England to choose their supplier by April 2017.

These changes will, for the first time, allow all business, charity and public sector customers to choose their water supplier – something which 7 out of 10 of these customers have been seeking for some time. This is also expected to bring direct net benefits of about £200 million to customers.

The UK Government established the Open Water programme to implement the new arrangements and Ofwat is supporting that programme primarily through our Retail Market Opening work but there are important linkages with our Water 2020 programme, including:

- our approach to the review of the retail non-household price control in 2017, which we intend to consult on in November, including any consequential impact on price limits in relation to issues such as the UK Governments retail exit regulations; and
- our work setting charges scheme rules, which may need to include some rules specifically in relation to the opening of the non-household retail market.

We also recognise that the Welsh Government has not chosen to extent these arrangements further in Wales and through our Water 2020 programme we will be considering how we continue to regulate non-household retail activities for Welsh customers where they do not have choice, including how we can ensure that the regulation of Welsh companies benefits from any comparative information gained through the experience of companies operating in the competitive market in England.

## 2. Developing upstream markets

In this section, we outline scope to develop markets in the water and wastewater value chain. We consider the scope for developing markets in more detail in relation to the parts of the water and wastewater value chains where we think that introducing markets may provide the greatest benefits. These are:

- sludge treatment and disposal; and
- water resources.

These areas illustrate some of the potential opportunities and issues associated with introducing markets. We note that the new legislative framework could encourage more effective use of markets to enable the creation of value in other parts of the value chain, such as water treatment. We have not ruled out more extensive use of market mechanisms in any area and are open to comments from stakeholders.

Figure 1 below illustrates the different functions within the water and wastewater value chains. The upstream (non-retail) functions are currently operated as regional monopolies with little or no competition from, or trade with, new entrants, be they businesses new to the sector or water companies already operating in other areas.

**Figure 1: the water and wastewater value chains**



We welcome views from stakeholders on the extent to which any of these functions have the potential for more and/or more effective use of markets to create value. We are specifically interested in the extent to which in some parts of the value chain new entrants, including other regional monopolies, could operate along-side and trade with the regional incumbents, as this would inform and facilitate efficient ‘make or buy’ decisions on the part of incumbents and would assist resilience.

### 2.1 Sludge treatment and disposal markets

Sewage sludge is a by-product of the sewage treatment process. But, sludge is also a resource: it can be used as a fuel, or rather to produce biogas as a fuel, to

generate renewable energy, and as a fertiliser replacement. Sludge has value, but is not produced as a commodity – it is not easy for sewage treatment operators to produce more or less sludge depending on demand or availability of treatment and disposal.

We already see markets for other organic waste treatment and disposal. For example, companies bid for the right to take food waste from households or supermarkets and use it to generate energy. So we want to explore if similar mechanisms can be used to drive value creation in sludge treatment and disposal.

The current regulatory framework incorporates sludge as part of the wider wastewater price control, based on the assumption that cost minimisation will be incentivised for sludge as part of integrated network. The development of markets could reveal information on available capacity and costs and allow optimisation between regions, as well as provide incentives to maximise value from sludge.

Past analysis suggests that, on balance, companies have to pay more to dispose of sludge than they recover from selling energy generated from sludge and the fertiliser products<sup>7</sup>. This position has been changing as a result of:

- better technology;
- changes in energy prices; and
- increases in the cost of substitutes, such as fertiliser and energy.

This could lead to sludge treatment providers pay for sludge because of the value they can then realise from it.

Markets for sludge treatment and disposal could lead to greater innovation in treatment processes and a more efficient use of treatment assets. For example, by companies optimising value from sludge by considering treatment options outside their own treatment plants or treating other companies waste. The location of any new treatment plants could be selected to maximise efficiency, for example, by co-locating them with treatment centres for other organic waste to make use of common facilities such as energy generation from biogas, rather than being constrained by company boundaries and internal logistics.

The Office for Fair Trading (OFT) reviewed the potential for increasing competition in sludge treatment and disposal in September 2011 and found that greater competition could create value. For example, outsourcing sludge treatment to another WaSC could provide significant efficiency gains<sup>8</sup>. Sludge treatment is often centralised with

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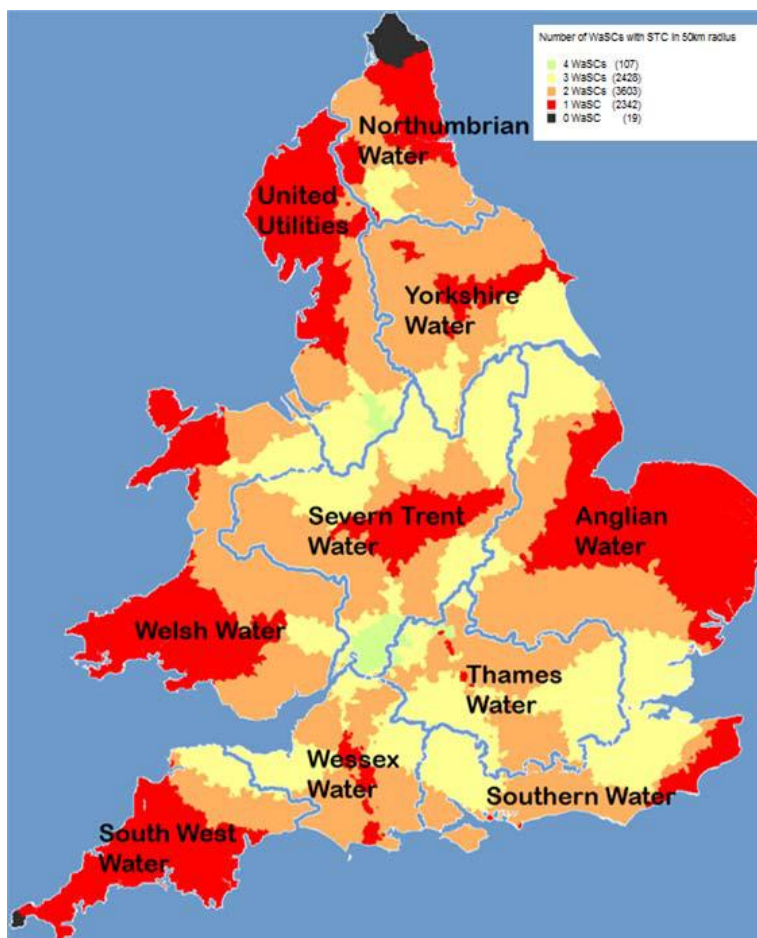
<sup>7</sup> [Competition in upstream sewage and sludge markets](#), Final Report to Ofwat, produced by London Economics, February 2010

<sup>8</sup> [Organic Waste, An OFT Market Study](#), Office of Fair Trading, September 2011.

WaSCs transporting sludge from small sewage treatment works to larger sludge treatment centres by road tanker. There are few fixed costs in transportation and road tankers can be provided in an effective market.

However, transport costs could limit the number of treatment facilities that are accessible at a cost-effective price, particularly in more remote areas of the country. Figure 2 below, from the OFT market study, shows areas where sewage treatment works of one company are within 50km of another company's (or multiple companies') sludge treatment centre. The colours indicate how many WaSCs' sludge treatment centres are within 50km of sewage treatment works, and hence potentially could provide an alternative sludge treatment service. Green areas indicate that four WaSCs' sludge treatment works are within 50 km; yellow - three, orange - two, red - one and black - none.

**Figure 2: Potential overlap in the areas of influence of different WaSCs, applying a 50 km radius**



Source: OFT, September 2011

The OFT market study found some barriers to competition, relating both to environmental regulation (particularly when considering treating sludge along with other organic waste) and economic regulation.

Our approach during PR14 has removed or reduced some of those barriers. For example, our total expenditure (totex) approach has removed any incentive to choose capital investment over operational solutions. But, we need to understand what barriers to effective use of markets remain, so that we can evaluate how and where markets can function better and what we as a regulator need to change.

In moving to a more market-based solution in this area, care would need to be taken with respect to the following issues.

- **How will the value created through markets accrue to customers, investors and others such as the environment?** We would need to ensure, for example, that customers benefit and investors rewarded from the use of spare treatment capacity and value-creating innovation.
- **How can a level-playing field be created?** We would need to consider whether the market development could be distorted by lack of clarity of cost allocation between sludge and other parts of wholesale wastewater value chain.
- **How should regional differences be addressed?** The OFT study found that scope for competition would vary in different parts of the country; it will be important that any new framework protects customers that do not benefit from competition.
- **How should balance of risk and reward adjust to reflect new opportunities and to align incentives of companies, management and investors?** What is the impact on returns for the company receiving and the company providing sludge services? How would an increased role for sludge markets be reflected in the design of the price control?
- **How could we be confident that sufficient sludge treatment and disposal capacity would remain in place to enable WASCs to discharge their licence obligations, in the face of alternative uses for that capacity that may be more lucrative?** What potential exists for contractual arrangements to secure such capacity for WASC use and ensure that sufficient new capacity is created?

## 2.2 Trading water resources

The management of water resources has two main strands:

- abstraction of water from the environment; and
- trading of the water once it has been abstracted.

The impact of trading water resources is not limited to the resources themselves but may impact on the demand for raw water distribution and water treatment. For example, the location and quality of a water resource will impact on demand for treatment and raw water distribution. This means that access prices for other elements of the upstream value chain will be important for realising the full potential for value creation from trading water resources and revealing information on cost to supply.

Our focus in this paper is on water trading: abstraction licence holders selling their water to others. Abstraction reform – to make abstraction licence trading more effective – is outside the scope of this paper and is being led by the Department for Environment, Food and Rural Affairs (Defra)<sup>9</sup>. In our view, properly designed and implemented water trading can bring benefits for consumers and the environment, which any abstraction reform would further.

Water trading is not yet realising its potential. Since privatisation, companies have made significant investments in integrating their own water supply networks within their own company boundaries, but the volume traded between companies has remained fairly constant at about 4–5% of total supplies. Increased water trading could offer significant benefits. For example:

- in March 2010, we identified about £1 billion of potential savings in England and Wales from more water trading compared with the proposals in companies' draft WRMPs<sup>10</sup>; and
- in May 2010, the Environment Agency published work by the Water Resources in the South East (WRSE) group that identified £500 million of potential savings from sharing resources in the south-east of England<sup>11</sup>.

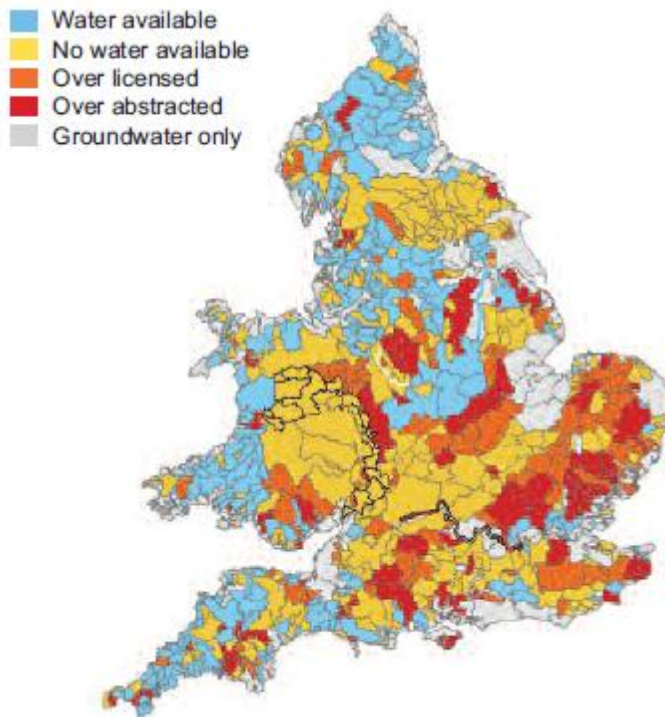
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<sup>9</sup> Defra is preparing to be ready to legislate as early as possible in this Parliament to remain on track to implement abstraction reform in the early 2020s. The last document published was '[Making the most of every drop consultation on reforming the water abstraction management system, Summary of consultation responses](#)', Defra, July 2014.

<sup>10</sup> '[A study on potential benefits of upstream markets in the water sector in England and Wales](#)', Ofwat, March 2010

In PR14, companies' business plans showed that only a small number of additional trades are planned over the next five years, suggesting that significant further benefits are still available. These benefits arise because both water scarcity and water development costs vary substantially across England and Wales, as illustrated in figures 3 and 4 below, which although dated, are still applicable today.

**Figure 3: Overview of water resources in England Wales<sup>12</sup>**



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<sup>11</sup> 'Water resources in the South East Group – progress towards a shared resource strategy in the South East of England', Environment Agency, May 2010

<sup>12</sup> 'Water resources in England Wales - current state and future pressures', Environment Agency, 2008

Figure 4: Water resource zones incremental costs in England Wales<sup>13</sup>

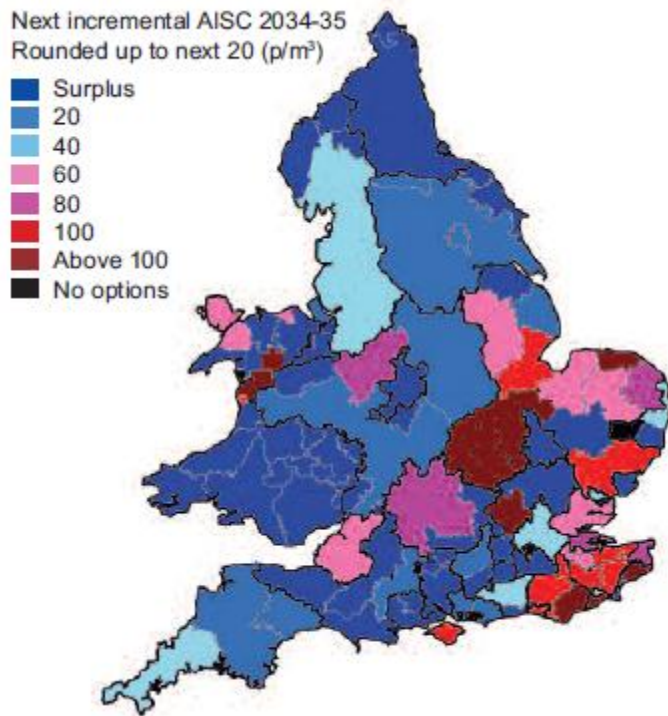


Figure 3 shows that there are some areas of over-abstraction and over-licensing near areas with spare water that could be exported. Figure 4 shows that there are areas with high water resource zone costs near to areas with low water resource zone costs and the potential to develop water resources for export.

We have been working to encourage water trading and steps taken at PR14 include:

- our totex approach, which addressed a perceived bias towards capital expenditure that is, companies investing in their own water resources rather than operational solutions such as trading with other companies; and
- introducing water import and export incentives to actively encourage water trades between companies.

We are also taking steps to ensure that the industry takes account of and addresses environmental concerns that could be raised by increasing water trading. We are working to deliver the abstraction incentive mechanism (AIM) to discourage water companies from abstracting water from environmentally sensitive abstraction sites at times of particular sensitivity, such as when there are low flows. The AIM taskforce

<sup>13</sup> In general water companies select options on least cost principles using the unit Average Incremental Social Cost (AISC) in pence per cubic metre (p/m<sup>3</sup>). [A study on potential benefits of upstream markets in the water sector in England and Wales](#), Ofwat, March 2010



will soon make a proposal on how the AIM should work and companies will soon make a proposal on the sites they would like to apply the AIM to. We plan to consult on the proposals in the autumn.

PR14 is a step in the journey and the new legislative framework set out in the Act could enable new and more flexible arrangements to be put in place.

In the future, water companies may increasingly have to engage with other parties operating in their catchment area that abstract water from or discharge water into the system. Such solutions could reduce the environmental costs of over-abstraction, improve resilience and avoid inefficient capital expenditure, as exemplified by water trading in the Murray-Darling basin, Australia. The Australian experience is also the focus of '[Markets, water shares and drought: Lessons from Australia](#)', (Alice Piure, December 2014), this work was supported by Anglian Water and the Winston Churchill Memorial Trust and explores how the reforms in Australia have affected public water suppliers.

#### Case study: water trading in the Murray-Darling Basin, Australia

The Murray-Darling basin is Australia's largest river system and is its most important area for irrigated agriculture. It has both the lowest and the most variable rainfall of all the world's major river systems. As a result there is a substantial amount (over 20 Gigalitres (GL)) of water storage capacity.



In the 2000's it was found that the river system was over-abstracted to the point where long-term damage was being caused to the environment. Water trading was seen as a way to remedy over-abstraction and allow for a more efficient allocation of water between irrigators. The legal and regulatory system of the Murray–Darling basin was overhauled to facilitate and encourage water trading. Plans were put in place for water rights to be bought by the state from irrigators and returned to the environment.

The trading that has occurred has principally been between water users (not water companies), in particular trading has occurred between competing agricultural users and [estimates](#) suggest that water trading between agricultural users of water had increased the Australian economy (gross domestic product) by around \$220 million in 2008-09. The environment has also benefited through the recovery of water and in Victoria the Victoria Environment Water Holder has been given a budget to buy water on behalf of the environment and trades in water markets to do this. The Murray-Darling Basin Authority [reported](#) that, as of 2011, around 1000GL a year of water has been returned to the environment. This has been done through a mix of buying back water rights from water users and programmes for improving the efficiency of water use and infrastructure.

### Case study: Bournemouth Water and Wessex Water supply agreement

In 2009 Bournemouth Water identified the need for an East/West link main to increase the resilience of its water network, at a cost of around £6 million, which we considered too high. In parallel, Wessex Water needed additional capacity in the Poole area to improve resilience in the event of an unexpected outage, and originally planned to provide this by redeveloping a water treatment works.

Bournemouth and Wessex jointly explored alternative approaches to meet their resilience objectives by maximising the use of existing assets and water resources in the Poole, Bournemouth and Christchurch areas. In 2013, they signed a water supply resilience agreement. This allows the transfer of up to 15 million litres of water a day between Bournemouth's two main sources of water through an under-utilised Wessex main that runs across Bournemouth's area, as well as enabling mutual support in the case of an emergency. The agreement provides a more resilient water service to the customers of both companies, at greatly reduced cost. Bournemouth's investment at under £1 million was around £5 million less than the original projected cost. The project forms part of Wessex's water grid, an eight year plan to improve resilience and meet abstraction licence reductions. Wessex made savings of £34 million through a combination of the trading agreement with Bournemouth and other improvements to the network.

In moving to a more market-based solution in this area, care would need to be taken with respect to the following issues.

- **How should water trading be regulated?** Should the intercompany transfers (for example, interconnectors) be regulated or unregulated? If so, on what basis should they be regulated? What impact would this have on incentives?
- **How should balance of risk and reward align interests of customers, management and investors?** What is the impact on returns for the company receiving and the company providing water? How does water trading interact with the current price control framework?
- **How does water trading help companies meet their security of supply obligations?** How to consistently assess supply reliability between in-company supplies versus procurement of water from other suppliers? How should companies engage with their customers to ensure they understand risk mitigation and associated cost from different supply options?
- **How can water trading help address water scarcity in the environment?** What risks might water trading create, and how can these be managed? How does creating value for water resources impact on wastewater management? What is the impact on downstream abstractors?

### 3. Supporting effective markets

The way that we regulate the sector will affect how effectively markets will operate. In this section we explore the key issues we need to consider to ensure that the regulatory regime supports effective markets. These focus on promoting effective co-ordination, access pricing and approach to cost recovery and to the RCV.

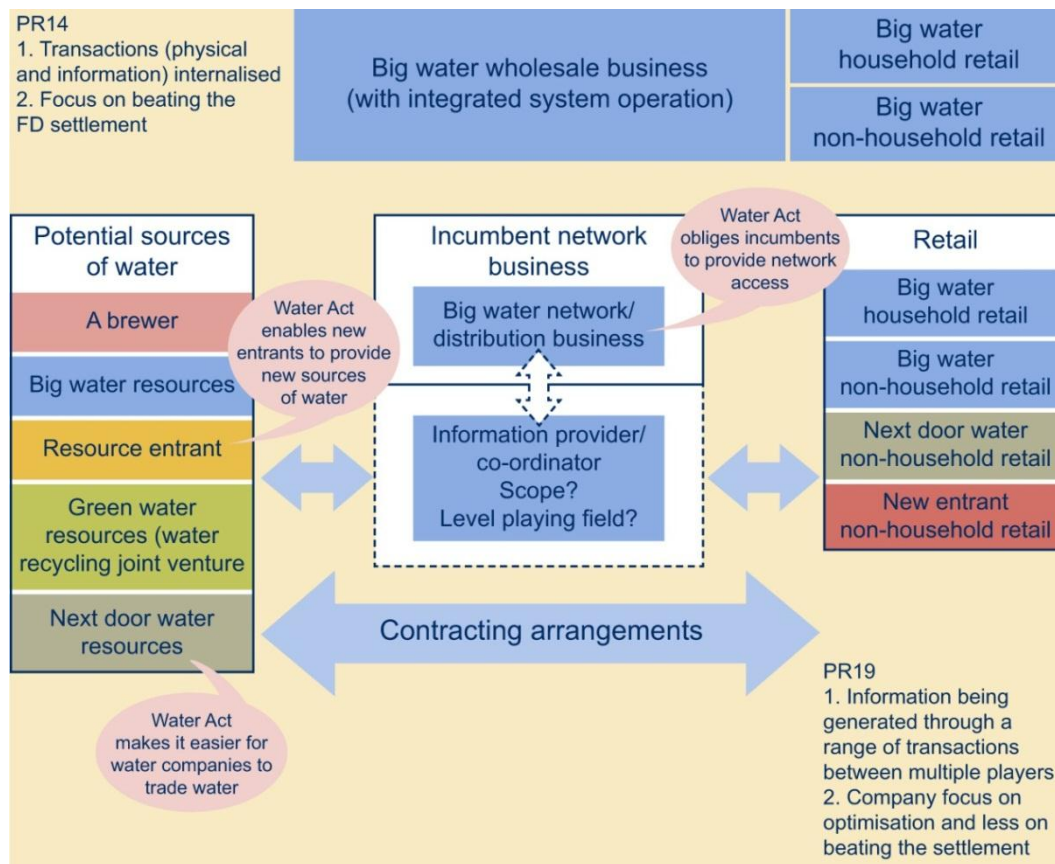
#### 3.1 Ensuring effective and transparent coordination

The Act provides new tools and opportunities to enable multiple service providers across upstream elements of the value chain. Figure 5 illustrates the potential interaction of different parties in the event that market-based arrangements play a part in the allocation and provision of raw water resources.

The effectiveness of these potential market arrangements will depend on the quality of interaction across parties. This represents a coordination problem, which can take a number of forms:

- **Vertical.** How do you get the water from where it is, treat it, and get it to where it is needed?
- **Horizontal.** What is the geographic area (eg local/regional etc) over which you optimise use of water resources?
- **Inter-temporal.** How do you manage decisions about maintenance or replacement – and how do you manage short term system operation?
- **Cross-sectorial.** How do you manage the links between the water sector and other infrastructure sectors, especially in the context of resilience? and
- **Environmental.** How do you manage the links to the wider environment, for example at the catchment level?

**Figure 5: The potential interaction of different parties in a market for water resources<sup>14</sup>**



Any market arrangement based on access agreements will also depend on all resource providers being able to get fair, reasonable and non-discriminatory access to networks. An appropriate access pricing framework is one element of this (as discussed below), but upstream entrants will also want to know they will be treated fairly in terms of system operations.

We are considering how these system coordination issues could be best addressed, acknowledging that this is not a decision for Ofwat alone. There are a variety of tools that currently exist, such as Environment Agency’s WRMP process, and potential new tools, such as distinct system operators for companies or regions. Other alternatives might include enhancing or combining elements of the existing

<sup>14</sup> Details of the arrangements will need to comply with the legislative and licensing framework, as it is implemented.

arrangements. A system operator is one – and only one – possible way of solving these problems. A system operator could capture some or all of the following functions:

- Daily operation of the network.
- Monitoring water quality in the network.
- Scheduling network maintenance.
- Planning long-term network development.
- Managing new connections to the network.
- Administering water companies' access to the network.

A system operator role could range from (thin) provision of information on operations to facilitating a response to this information and (thick) to enabling or procuring the response.

Companies currently provide systems operations in their own areas, both in terms of short term optimisation of supply and network management and medium to long term planning of supply/demand balance. The move to an outcomes and totex approach in PR14 has encouraged companies to take a wider view of their role and undertake catchment management in order to maximise benefits for their customers.

In order to encourage the provision of water resources by third parties onto incumbent networks, it will be necessary to ensure a level playing field between incumbent and third party provision. There are a number of approaches to providing a level playing field such as market codes and provisions that separate the running of the system operator from the rest of an appointee's activities.

A system operator does not have to be limited to network operations. For example, Dieter Helm has proposed a "catchment system operator" which would manage the water environment at a catchment level. Already a number of companies, including Severn Trent Water, South West Water and Wessex Water are developing catchment approaches which involve informal co-ordination of activities.

As part of the business plans for PR14 companies provided information on their approach to network management. We will consider this information, and whether to implement the proposed network management incentive from PR14 as part of our work on system coordination to encourage the development of well-functioning markets by providing a level playing field to new service providers..

A system operator could also be regional in scope (for example, in the south east of England) rather than tied to company boundaries. Through its work on Water Resources East Anglia (WREA), Anglian Water is an example of this as it involves the company in effect taking a role as a system operator for the region.

#### **Regional system co-ordination: Water Resources East Anglia (WREA)**

The WREA project represents a collaboration between water companies in East Anglia (Affinity Water, Anglian Water, Cambridge Water, Essex & Suffolk Water, and Severn Trent Water) the Environment Agency, Natural England and others to develop a long-term water resource strategy for the Anglian region.

Anglian Water's work on WREA takes place in the context of both market reform (abstraction and upstream) and the trend to manage water in a more holistic way, as evidenced by river basin management planning and the Water Framework Directive.

The company secured funding at PR14 to develop its understanding of and approach to multi-sector planning. As a result it is now beginning project-specific work in earnest. The ambition is to develop a regional water resources strategy which may lead to proposals to plan, fund, deliver and maintain – in partnership – a new large-scale water resource of one sort or another, or to support further changes to the efficient use of existing resources.

In the short-term, WREA will examine the case for a step change in demand management. From a water company perspective, this could include significant leakage reduction and improved water use efficiency (both commercial and domestic customers). What's different about WREA is that it will also consider the benefits of demand management in other sectors, including agriculture.

Some of the co-ordination issues discussed here are within our remit as the economic regulator and sectoral competition authority but we recognise that some are not. There are also a number of different ways to address these co-ordination issues. Any solutions will need much more definition and further engagement and discussions with other parties, before they can be defined. Some solutions may be deliverable with our existing regulatory tools. Others could only be implemented in the long term and are potentially not viable under the current legislative framework. This is important as it will help to reveal a wide spectrum of views about the direction the sector should take. Looking ahead we will focus on those options that deliver the most for customers whilst being consistent with existing legislation. In particular, in

developing our ideas in this area, care needs to be taken with respect to the following issues.

- **What role could system operation functions play in enabling the creation of value through water trading? Under what conditions would they more effectively create value? How would this value accrue to customers and to investors? How would the environment benefit?**
- **Who should perform the different functions of a system operator? Which should fall to water companies? How should these functions be performed to enable a level playing field?**
- **How should we best ensure that a water company's system operation functions are transparent? And to what extent should they be incentivised? And if so, how?**
- **What system operation functions would be best performed by others (not water companies)? Why? To what extent would water trading depend on the effective performance of these functions?**
- **Which system operation functions should be performed at a 'thin' level (eg through provision of information) and which at a 'thicker' level (eg through specification and procurement)?**
- **Which system operation functions should be best performed at which geographic level (eg catchment, regional, national)?**

### **3.2 Charging and access pricing**

The setting of charges plays an important role in well-functioning markets, providing price signals to buyers and sellers. Access prices are prices that service providers pay for access to an incumbent's facilities that are required to provide services to end users. For example, a new raw water service provider is likely to need access to a treatment facility and the distribution network operated by the incumbent monopoly.

The extension of upstream markets, as envisaged by the Water Act 2014, would require effective access prices to encourage efficient entry and allow new entrants to compete on a level playing field.

Access prices have two key roles to play:

- providing price signals to enable efficient entry; and
- enabling the incumbent to recover its efficiently incurred costs.

Both of these roles are vital to the overall success of well-functioning markets. Providing efficient price signals helps to ensure that new entry into the sector benefits customers by minimising the total cost of providing service and maximising benefits of additional resilience. Allowing the recovery of efficiently incurred costs ensure that the incumbent is properly compensated for providing services and ensure longer term financial sustainability.

In order for prices to set efficient price signals, it is the structure of prices that is important so that prices reflect the incremental costs of providing service. While the recovery of efficiently incurred costs, requires the incumbent revenues to fully reflect the total cost of providing service ie average revenue needs to equal average cost. This means that it is possible set access price signals and ensure that price controls allow for recovery of efficient average cost.

### 3.2.1 Provisions of the Water Act 2014

In the past, prices that monopoly companies could charge for access to their infrastructure were based on the 'Costs Principle' (see box below) set out in section 66E of the Water Industry Act 1991. But the 'Costs Principle' has been widely criticised as being anticompetitive and for giving little incentive to monopoly water companies to become more efficient. The Water Act provides for removal of the 'Costs Principle' from legislation and in its place gives Ofwat the ability to issue new charging rules<sup>15</sup>.

As discussed in our [meeting the challenges paper](#), the Water Act 2014 will amend the Water Industry Act 1991 to allow Ofwat to set charging rules,

#### The Costs Principle

Historically, the Costs Principle has been interpreted as requiring monopoly companies to charge access prices based on 'retail minus' approach as given by the formula:

Access price = retail charge + any additional expense reasonably incurred in providing access – ARROW costs

Where, **ARROW costs** are costs that the water company providing the access will no longer face as a consequence of providing access, namely costs that can be **A**voided or **R**educed; or any amount that is **R**ecoverable in some **O**ther **W**ay (other than from other customers).

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<sup>15</sup> In its draft charging guidance Defra has set out that, for now, the cost principle should still apply in instances to upstream entry. We understand that this reflects the need for development of the overall market design and commencement of the relevant provisions for upstream entry.



including for access, which could:

- specify the types of charges that may be imposed (or principles for determining the types of charges); and
- the amount (or the maximum amount) or methods / principles for determining such amounts, of any type of charge.

In making charging rules we will have to have regard to the relevant charging guidance from the Secretary of State and Welsh Ministers.

### 3.2.2 Developing access pricing

The access pricing rules we develop will promote charges that reflect the incremental costs of providing the services concerned. In developing these rules there are a number of issues we will need to consider.

- **Possible approaches to pricing:** an important distinction is between approaches that set access prices based on some notion of avoided costs (such as 'retail minus' as shown in the box above) and approaches that set access prices based on the costs of providing the service (for example, the long run average incremental costs of the infrastructure provided plus a share of shared costs - 'cost plus').
- **Which costs to consider:** whether prices are based on avoided costs or on the cost incurred in providing the service, we need to consider an appropriate concept of cost for the development of effective access prices. For a discussion of this see our 2013 discussion paper '[Future access pricing in the water sector](#)'.
- **Reflecting localised costs:** we will also have to consider the extent to which access pricing reflects localised costs. Cost reflectivity is an important principle of efficient pricing. Cost reflective prices provide signals that allow competitors to make efficient entry decisions. Given the localised nature of costs in water and wastewater networks, it is likely that efficient access prices will have to reflect the efficient localised costs of providing services in a particular area. This would incentivise entry at the most efficient locations for the system. It is important to note that cost reflective pricing require a sufficiently good understanding of costs and cost drivers, which requires further work in this sector. Further, it is important to note that cost reflective access prices need not result in the regional de-averaging of end- customer bills. This is because companies' end household charges will still be regulated and services to households will still be provided by a monopoly, so that we can ensure that averaging of customer bills remains in place.

- **Interaction with the approach to the RCV:** as discussed below, there is a link between our approach to access pricing and whether to allocate the regulatory capital value (RCV) to specific wholesale services. We will need to consider this link when developing our charging rules and the feasibility of a cost-plus approach given the significant RCV discount when compared to the cost of replacing assets with those of similar capabilities.
- **Level of prescription within rules:** it will also be necessary for us to consider how prescriptive our access pricing rules should be.

### 3.3 Approach to the RCV in promoting markets

#### 3.3.1 What is the RCV and why is it important?

A company's regulatory capital value (RCV) is the capital base used in setting price limits. It represents the notional value of companies at privatisation (based on their market capitalisation 200 days after privatisation), increased by their capital investments (up to 2015) and RPI measured inflation, and decreased in line with the depreciation of their assets. However, RCVs do not relate to any specific assets. At PR14, Ofwat allowed a return on companies' RCVs separately for wholesale water and wastewater services.

The value of replacing assets with those of similar capabilities is reflected by modern equivalent asset values (MEAVs), which can be identified for each asset. As part of PR09 we required all companies to carry out a full revaluation of their assets and the calculation of MEAVs as a basis for calculating current cost depreciation, which was used in setting price controls<sup>16</sup>, however we acknowledge that further work may be required on these valuations if they are used for a different purpose. Companies' total MEAV is significantly higher than their RCV. The total industry's RCV is about 12% of the total net MEAV. This reflects the floatation valuation of the companies being significantly less than the MEAV when the industry was privatised – the so called "RCV discount".

#### 3.3.2 Access prices and the RCV

As stated above, the fact that the RCV does not reflect (and is significantly less than) the estimated cost of replacing assets with those of similar capabilities, creates a potential tension between maintaining predictability for investors, protecting customers and enabling efficient entry.

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<sup>16</sup> [Future water and sewerage charges 2010-15: Final determinations](#) pg. 116

Setting access prices without directly considering companies' RCVs, could, in the future, create a risk of companies either over or under-recovering contributions to their overall allowed return from the relevant wholesale services. To ensure that individual wholesale charges are consistent with the revenue requirement, the RCV-based return could be 'allocated' to regulated charges for different services, which in aggregate equate to a company's total revenue requirement. However, there is a risk of asset stranding associated with the allocation of a proportion of the RCV to potentially competitive services, which is of concern to investors (but also to customers, inasmuch that if companies are compensated for stranded asset risk, there could be duplicative costs to be borne by bill payers).

Furthermore, if access prices are based on a return on the RCV, there is the potential for charges to be set below the efficient level due to the RCV discount (the consequence of this might be that efficient competition does not occur, or is above or below its "efficient" level).

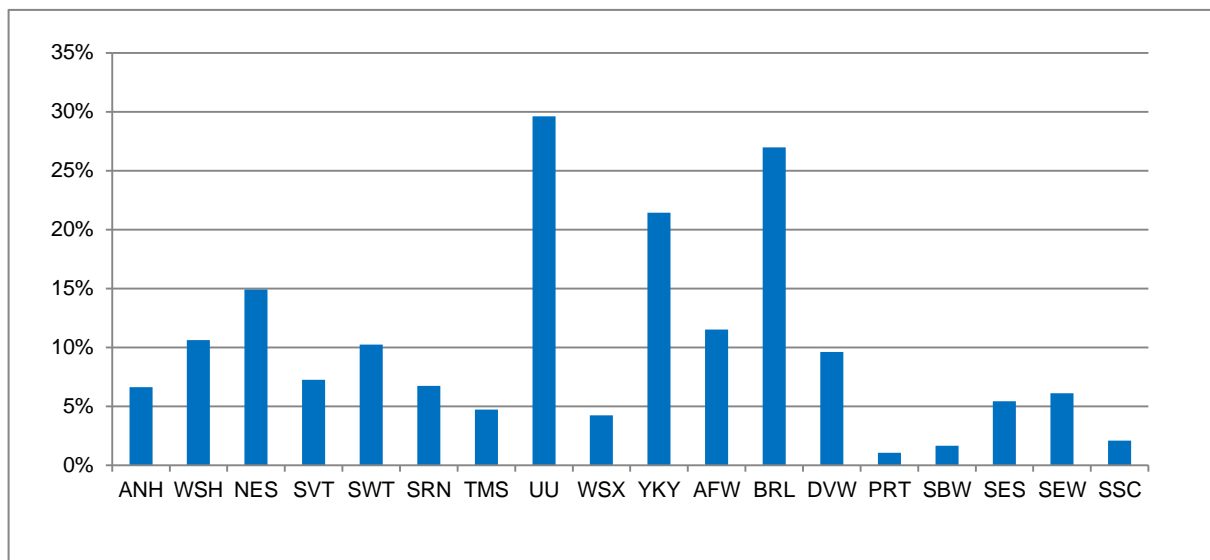
Reflecting the potential issues and tensions identified above, we note that the setting of access prices to facilitate efficient competition does not, in of itself, necessitate an allocation of the RCV. For example, we could set access prices based on a forward looking long run incremental cost, or current cost including return on the MEAV, or some other measure of costs. We could then set a separate overall revenue cap encompassing some or all of these parts of the value chain (and including monopolistic elements) based on a return on the RCV. This would allow cost reflective charges for contestable parts of the value chain, but ensure that customers were appropriately protected.

We would however need to satisfy ourselves that such an approach was feasible (for example in terms of the level of constraint that the RCV based cap would place on access prices) and desirable (for example in terms of the incentives it placed on charges for different parts of the value chain). Equally, there are other possibilities that we may consider.

We also note the broader role of access prices in promoting development of markets, revealing information and the potential role that the approach to the RCV including any allocation to businesses within the wholesale value chain could play in providing information. For example, in PR14, binding price controls were set for wholesale water and wastewater, although both businesses are currently monopolies. We will therefore need to consider whether we set binding wholesale price controls, alongside other options such as accounting separation, approach to cost assessment and non-binding controls and if so, how we might allocate the RCV, even where these controls were still for monopoly services.

Company discussion papers on access pricing and the RCV have identified costing approaches based on MEAVs as a means of ensuring that access prices provide efficient entry signals. In principle, MEAVs should provide an indication of the value of assets for setting efficient price signals. If we use MEAV values for setting access, we will need confidence in the underlying MEAV values. In practice further work may be required on the 2009 valuations of companies' MEAVs. We are aware that there are substantial differences in MEAV values between companies for the same services, as shown in figure 6 below, and if MEAV values are going to be used as the basis for RCV allocation or access charging it will be important that these differences are valid and can be justified.

**Figure 6: Water resources MEAV/total water MEAV ratio**



### 3.3.3 Our commitment to protect the 2015 RCV

In our November 2011 document<sup>17</sup> we committed to protect the 2015 RCV and made a distinction between the RCV at 2015 and the RCV after 2015.

In our May 2012, Future Price Limits Summary document<sup>18</sup>, we confirmed that:

**‘The RCV has been an important tool in assuring investors in the water and sewerage sectors that past investment will be remunerated through price limits. We have committed to**

<sup>17</sup> [Future Price Limits – a consultation on the framework](#), Ofwat, November 2011.

<sup>18</sup> [Future Price Limits – A Summary](#), Ofwat, May 2012, [Appendix 7: Cost assessment, cost recovery and the RCV](#).

**protecting the RCV as at March 2015, the end of the current price control’.**

During the 2015-20 period the RCV will increase by a proportion of total expenditure and reduce to reflect “RCV run-off” or regulatory depreciation. We consider that our commitment to protecting the 2015 RCV refers to the net 2015 RCV, taking account of RCV run-off. This is consistent with the approach that we took at PR14, where we separately identified the 2015 RCV in our analysis and financial modelling.

**3.3.4 Approach to the post 2015 RCV**

We consider that the RCV will continue to play an important role in the sector in the future, reflecting the importance of continuing investment in the sector and the role of economic regulation. Consistent with our vision for Ofwat as a trusted and respected regulator working at the leading edge and challenging ourselves and others, we recognise the importance of transparency and predictability of the regulatory regime. This means that it is important that existing regulatory commitments continue to be delivered and that we carefully consider how the regulatory regime evolves in order to maintain trust and confidence. This is not just about investors interests – the existing regulatory regime includes the use of the RCV commitment has helped to provide a highly regarded regulatory environment for investment , which has meant a lower cost of capital and hence lower bills for customers.

Our principle of transparency and predictability does not mean nothing will ever change, and to maintain and build trust and confidence the sector and the regulatory regime needs to evolve in the face of the challenges and opportunities it now faces. And we are keen to learn from and build on our experience in PR14 to ensure that we have a regulatory regime that delivers most effectively and efficiently against our statutory duties and our strategy.

In terms of the approach to RCV post 2015, we note that we do not face the same issue with attributing a historic single lump of RCV between parts of the wholesale chain. This is because new totex expenditure recovered through adding to the RCV could be attributed to the relevant wholesale services, if we were to set separate binding price controls within the wholesale value chain. We will consider approach to RCV as part of our December consultation including interaction with access pricing and whether binding price controls are required in order to facilitate development of markets and better outcomes and consequently the impact on the RCV.

## 4. Creating value using markets in monopoly parts of the value chain

Some elements of the water and wastewater value chain are less open to alternative providers entering to compete with existing incumbents than others. For example, it is unlikely that any alternative provider would consider replicating the distribution networks incumbents have for delivering water and taking away wastewater. There are large sunk costs associated with these activities and it would not be efficient for much of the distribution network to be duplicated.

However, there may be scope to introduce some element of markets into these parts of the value chain. Alternative providers could be given the opportunity to compete to provide a particular service, for example to provide new water resource capacity, or to provide maintenance. Tendering in this way is often referred to as ‘competition for the market’ and would place additional downward pressure on costs and reveal information on costs and efficiency, creating value. This could result in an alternative to the comparative benchmarking that we have applied at past price reviews. Tendering services in this way could be an important way for companies to provide us with evidence that costs are efficient, even if they were to choose on the basis of the information revealed to provide them in-house.

One recent example of competition for new infrastructure in the sector is the Thames Tideway Tunnel<sup>19</sup>. The Thames Tideway Tunnel is a large, complex investment project to reduce overflows of untreated sewage into the River Thames. The UK Government has endorsed the project as the best value solution to reduce sewage discharges and to meet European legal requirements. This project is the first to be delivered under a new regulatory framework which allows for projects that are “of a size and complexity that threatens the undertaker’s ability to provide services for its customers” to be delivered by infrastructure providers that are:

- appointed by the incumbent undertaker following a competitive procurement; and
- regulated by Ofwat under a project licence.

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<sup>19</sup> We note that there are other models of competition for the market. We are not commenting on the appropriateness of any specific model and instead are simply capturing recent approaches adopted in the UK.

Examples in other sectors include the provision of offshore electricity transmission (as detailed in the box below).

#### **Case study: electricity transmission**

The significant growth in offshore wind farms has led to a need for significant investment in transmission infrastructure to bring the power generated onshore.

The offshore regulatory regime was launched in 2009 and uses competitive tendering for licensing offshore electricity transmission. The regime is flexible, allowing Ofgem to run competitive tenders for projects where:

- offshore transmission owners (OFTOs) design, build, operate and maintain the transmission assets; or
- generators build the transmission assets and then transfer them to OFTOs at construction completion.

Electricity generators are partnered with the most efficient competitive players in the market. This lowers costs and ultimately lowers bills for customers.

In order to achieve Ofgem's objectives and to facilitate coordination between onshore, offshore and cross border electricity transmission networks, Ofgem are extending the competitive tendering process by making arrangements to tender for onshore transmission assets that are new, separable and have a high value.

There already exists scope for 'competition for the market' in providing water and waste water services to new developments. Developers can choose to have on-site infrastructure put in place by the local incumbent water or wastewater provider, they can also elect to put in the infrastructure themselves (or by a contracted third party) and it will be acquired by the local incumbent who will bill end customers.

Also, as discussed in the introduction to this chapter, alternative providers can apply for a New Appointment or Variation (NAV) which will enable them to compete with incumbents to supply new developments or large commercial users with infrastructure. The NAV then also bills the end user, including in the case of housing developers, households, to recover the cost of laying infrastructure. However, NAVs have had limited impact to date: there are currently 56 NAVs served by 13 providers. Eight of those providers are existing incumbents providing services within another incumbent's area of appointment.

We note that while scope for NAVs to compete for the market enables the creation of value, the current approach to regulation of NAVs favours the allocation of the value created to developers, while regulation ensures that customers are no worse off. This is because NAV's compete to provide service to developers, while regulatory framework limits the NAV to charging customers no more than the adjacent incumbent appointee.

#### **NAV's: creating value**

Albion Water is delivering a sustainable, community-wide approach to water and wastewater management in Rissington, Gloucestershire. Recycled wastewater and storm water is used on site to feed a non-potable water network (for example, supplying toilets and for garden irrigation) thereby reducing the demand on drinking water, and community energy provision is planned. This reduces peak and total demand and, because any impacts on the off-site network are significantly reduced, contributes to an improved continuity of service.

Albion's dual supplies reduce customers' bills, and these could fall further as a result of planned local energy and green space management schemes. Improvements to the site's potable water network have already resulted in savings of around one million litres a day and sewer upgrades have reduced incidences of local flooding. Following the installation of food waste macerators, Albion is carrying out trials to assess the scope for nutrient capture and local energy generation. Albion is taking an approach to natural capital that enhances local biodiversity and residents' wellbeing.

There may be further opportunities for competition for new water and wastewater capacity in the coming years with respect to investment on a scale smaller than the Thames Tideway Tunnel.

We will reflect on learnings from Thames Tideway procurement and also consider whether we can learn from approach to procurement of energy networks and consider whether there is scope to apply this more widely to the provision of services to customers. This may require consideration of legal framework that was used for the Thames Tideway Tunnel and whether this is appropriate for facilitating wider use of competition for the market and comparing with the legislative framework that is used for the energy sector. Clearly, consideration of changes to the legislative framework is matter for the Government to consider.

We will also consider the scope for greater use of competition for the market as part of companies demonstrating the efficiency and economy of their business plans.



## 5. Next steps

In this policy paper we have discussed:

- the changes that the Water Act 2014 will introduce;
- the potential for the development of markets in sludge treatment and disposal, and water trading;
- the importance of ensuring effective and transparent coordination;
- the role of charging and access pricing in supporting effective markets;
- potential approaches to the RCV in promoting markets; and
- how markets could be used to add value in the monopoly parts of the value chain.

We welcome your responses to these issues, and the key questions set out at the beginning of this document by 5.00 pm on **10 September 2015**. Appendix 1 explains how to respond.

We will engage further with stakeholders over the summer and early autumn and we hope your response will be only one part of an iterative conversation that has already started with such initiatives as the “[market place of ideas](#)”. A number of water companies have contributed to this and we welcome anyone with an interest to contribute further ideas. We will also carry out a number of workshops and other forms of engagement to build on this paper as well as the wider sector conversation. We cannot make progress alone and need the sector and everyone interested in it to work to consider the way ahead.

In October, we expect the independent “task and finish group” to publish its report on resilience.

In November as part of the Water 2020 programme we will publish:

- our approach to the review of the retail non-household price control in 2017; and
- charges scheme rules.

In December, we then plan to:

- consult on initial proposals for our approach to the regulation of water and wastewater wholesale controls at PR19; and

- publish our final approach to our resilience duty.

## Appendix 1: Responding to this discussion paper

We welcome your responses to this discussion paper by close of business on **10 September 2015**.

You can email your responses to [Water2020@ofwat.gsi.gov.uk](mailto:Water2020@ofwat.gsi.gov.uk) or post them to:

Water 2020  
Ofwat  
21 Bloomsbury Street  
London  
WC1B 3HF

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Printed on 75% minimum de-inked post-consumer waste paper.  
July 2015

ISBN 978-1-910739-10-5

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