

Water today, water tomorrow

The form of the price control for monopoly water and sewerage services in England and Wales – a discussion paper



About this document

This document considers the different forms of price control that we could set for monopoly water and sewerage services in England and Wales.

It explores:

- why we use price controls;
- what is meant by the ‘form’ of the price control;
- the current form of our price control;
- why we are looking at the form of the price control now; and
- different forms of control and the issues that relate to water and sewerage services.

It also explores issues around the choice of the control for the different parts of water and sewerage delivery.

The thinking in this document has been informed by:

- roundtable discussions with members of our [future regulation advisory panel](#);
- comments from stakeholders, including those we received at our sustainable water event in March 2010 and future price limits workshop in July 2010; and
- a report on the [form of control and the relationship between regulated and unregulated business](#) that we commissioned from Frontier Economics.

This is one of a series of detailed discussion papers exploring a specific aspect of price setting that we are considering as part of our review of price controls.

In [‘Beyond limits – how should prices for monopoly water and sewerage services be controlled?’](#), which we published in July 2010, we explained how and why we are reviewing the way we set price controls.

The aim of these early discussion papers is to obtain stakeholders’ views and to inform more specific debate on approaches and tools as the project progresses. They are not intended as a definitive statement of our views or as a formal consultation. Details of how to engage in the discussion are set out in chapter 7.

We will use the feedback we receive to the issues we discuss in this document, and others, to inform our overall approach to price setting. We will formally consult on our price setting methodology, based on the approach we adopt, in 2012.

Contents

1.	Introduction	3
2.	What is meant by the form of the price control?	7
3.	What is the current form of price control?	9
4.	Why use price controls?	11
5.	Why are we considering the form of the price control now?	15
6.	Different forms of control – issues relating to the water and sewerage sectors	23
7,	Next steps	38

1. Introduction

Most people in England and Wales receive their water services from one of 22 licensed regional monopoly suppliers and their sewerage services from one of 10 licensed regional monopoly suppliers. Only very large business customers are able to choose their supplier.

Since the water and sewerage sectors were privatised in 1989, it has been our role to regulate the monopoly companies. We have a duty to protect consumers' interests while ensuring efficient companies can carry out and finance their functions.

One of the ways we deliver our duties is to review and set price limits on the basis of an investment and service package that customers receive from their water company. We currently carry out a review of price limits every five years. We completed the last review in November 2009, which covers the period between 2010 and 2015.

Since privatisation, our approach to setting price limits has worked well. It has delivered substantial benefits to both consumers and the environment. For example:

- there is higher environmental compliance, with 98.6% of bathing waters meeting the required standards;
- consumers have access to excellent drinking water, with 99.95% compliance with tough EU standards; and
- by driving out inefficiencies a litre of tap water delivered and taken away costs less than half a penny.

To achieve this, the companies have invested about £90 billion (in today's prices) over the past 21 years – requiring frequent access to a range of financial markets.

But, as we discussed in more detail in '[Delivering sustainable water – Ofwat's strategy](#)', which we published in March 2010, the companies now face a set of very different challenges, including:

- a changing and unpredictable climate;
- population growth, particularly in the south-east of England where water is already scarce;
- economic uncertainty and the consequent affordability issues this raises;
- rising environmental standards, including implementing the EU Water Framework Directive; and
- rising consumer expectations from an increasingly sophisticated customer base.

These challenges are different in nature, scale and complexity from those of the past. They will make delivering sustainable water and sewerage services increasingly challenging. As a result, they may require a different set of responses and fresh approaches from the wider water and sewerage sectors.

We want to build upon the successes of the strong and stable regulatory environment that we have developed over the past 21 years. So, among other things, we will continue to:

- protect consumers' interests, keeping them at the heart of what we do;
- develop long-term approaches to environmental planning to ensure sustainable water and sewerage services now and for the future; and
- provide the regulatory stability necessary for efficient water companies to attract investment from competitive financial markets.

To deliver this, we are exploring through our future regulation programme the part we can play in helping the companies overcome the challenges they face. This includes the way we set price limits, which we are considering as part of our future price limits project.

We want to set price limits that will help us to achieve our vision of sustainable water, allowing us to meet our needs for water and sewerage services while enabling future generations to meet their own needs.

More specifically, we want the way we set price limits to:

- ensure that the best use is made of resources (including water that is discharged into the environment, as well as taken from it);
- ensure that investment takes place at the right price, in the right place at the right time;
- allow the use of regulated markets to enable better choices;
- encourage the companies to understand what their customers want and need over the long term, and respond to them;
- encourage the companies to innovate;
- reveal information that will help us to regulate better and help the companies to manage their businesses in the most efficient way; and
- comply with the five principles of better regulation – accountability, consistency, proportionality, transparency and targeting.

The most fundamental aspect of setting a price control is deciding on the form of that control. This must meet our aims and objectives – which we set out in [‘Beyond limits – how should prices for monopoly water and sewerage services be controlled?’](#).

This discussion paper explores:

- why we use price controls;
- what is meant by the ‘form’ of price control;
- the current form of our price control;
- why we are looking at the form of price control now; and
- different forms of control and the issues that relate to water and sewerage services.

It builds on the [report we commissioned from Frontier Economics](#), which sets out the different options for the form of control, and the advantages and disadvantages of each.

In this document, we also consider issues around the choice of the control for the different parts of water and sewerage service delivery, and the broad characteristics of the retail, upstream and distribution parts of the value chain. This includes:

- the collection, storage and treatment of water – and the treatment and disposal of sewage and sludge (‘upstream’ services);
- the transport of water and wastewater through a network of water supply pipes and sewers (‘distribution’ services); and
- the sale of water, sewerage or water and sewerage services to customers (‘retail’ services).

We welcome your views on any of the issues discussed in this paper.

How the form of the price control links with other areas of the future price limits project

There are very close links between the form of the price control and the other issues we are considering in our future price limits project.

- **Risk.** The form of the price control is itself a means by which risk is allocated. For example, in an RPI-X price cap the incentive for companies to outperform and not to underperform comes from them bearing the risk of out- or underperformance for the period of the control.
- **Incentives.** As with risk, the form of the price control itself creates incentives. As noted above, RPI-X price caps create incentives for outperformance and the revealing of information to the regulator about the efficient costs of operating a business.
- **Regulated and unregulated business.** Decisions on whether and when to subject services to price control regulation will affect the scope of the price control. The approach taken to revenues, costs and profits as between regulated and unregulated business may affect the form of the price control.
- **Outcomes, outputs or inputs.** When price limits are set, regulators need to be clear about what those prices are for – that is, what levels of service and other outcomes or outputs the companies need to deliver. The price limit may itself be used as a mechanism for incentivising the companies to deliver those outcomes or outputs.
- **Cost assessment and cost recovery.** A price control allows a regulated company to recover the revenues it needs to provide its regulated services efficiently from its customers. In setting price limits, the regulator assesses of what the efficient costs of providing those services will be. The regulator also takes a view on how those costs should be recovered from customers, including the degree of protection the control will provide against the stranding of assets.

We also recognise the effect on the form of the price control that our work on other projects may have, including regulatory compliance, future water charging and market reform.

2. What is meant by the form of the price control?

1. The form of the price control refers to the high-level structure we adopt for price limits. It involves a number of different elements covering not only what is controlled and how that is achieved, but also:
 - what period the control covers:
 - how it is expressed; and
 - the links between price and inputs, outputs and outcomes.

The form of the price control

What is controlled

- For example, is this prices (and at what level of aggregation) or revenues? How, if at all, are these weighted?

How it is controlled

- Are prices capped or set, or is a default tariff used?
- If the control applies to a basket of services, how does the overall control (on the basket as a whole) relate to the prices of individual services within it?
- To what extent are ex ante approaches (such as specifying particular prices or price limits upfront) and ex post approaches (such as requiring compliance with a set of pricing principles) used?
- What use is made of 'pricing rules' (such as non-discrimination obligations)?

The period the control covers

- How often are price controls reviewed?
- Are controls binding across the control period as a whole, or are there annual limits within the control period?
- What provision is made for dealing with companies that recover more or less revenue than they are permitted under the price control?

The link between price and inputs, outputs and/or outcomes

- For example, is the output £X million of expenditure and/or a standard/level of service/quality/serviceability/customer satisfaction?

2. The form of the price control does not cover the method by which the regulator assesses the revenue required to provide the regulated services. Nor does it include the precise way in which the control allows the recovery of that revenue requirement through regulated prices. We are considering both of these issues as part of our ongoing work on cost assessment and cost recovery within our future price limits project.

3. Also, for our purposes, the form of the price control does not include the use of risk mitigation tools or the assessment and recovery of the cost of capital. Again, we will consider these issues in due course as part of our wider future price limits project.
4. Finally, it does not include how the revenue that a company requires to provide regulated services is recovered from its customers through the charges it sets. We are considering this as part of our [future water charging project](#).

3. Why use price controls?

5. In a competitive market, companies must compete with each other to win or retain their customers' business. This drives them to seek:
 - lower cost ways of doing things ('**productive efficiency**');
 - the best way to use scarce resources ('**allocative efficiency**'); and
 - new and better ways of doing things ('**dynamic efficiency**').
6. Competition also drives them to understand and respond to their customers' needs and wants. In the absence of competition, companies do not have the same incentives to be efficient or respond to their customers' needs. Here, it is the economic regulator's role to protect customers by mimicking the effect of competitive pressure, providing the companies with incentives to operate in an efficient and customer-focused manner.
7. As we set out in our [discussion paper on regulated and unregulated business](#), in our view, price control regulation is justified if it is reasonable to expect that:
 - a company has significant market power;
 - in the absence of price controls, the company would use that market power to exploit customers, or use prices in a way that prevents, restricts or distorts competition; and
 - price control regulation would be an effective and proportionate means of addressing this.
8. We would like to see price limits used in a way that encourages markets to develop where this is appropriate. As part of our wider work on market reform, we have highlighted the potential for water trading. We discussed this issue in more detail in '[Harnessing upstream markets – what's to play for?](#)' (March 2010) and '[Valuing water – how upstream markets could deliver for consumers and the environment](#)' (July 2010).
9. We have also noted the potential for developing a retail market in water and sewerage services as set out in the [independent review of competition and innovation in water markets](#) (the 'Cave review').
10. Key decisions on market reform are for the UK Government and Welsh Assembly Government to make. But it is important that we design price controls in a way that allows them to be adapted and, perhaps in some areas ultimately removed, as markets develop.

11. In our discussion paper on the [treatment of regulated and unregulated business](#), we consider in more detail the circumstances in which price control regulation may be appropriate. We also consider the circumstances in which it may be appropriate for us to draw back from controlling prices altogether.

4. What is the current form of price control?

12. To date, we have adopted an ex ante approach to setting price controls. This has involved us specifying upfront what the companies must deliver, and monitoring their compliance with that obligation. We tell the companies that the prices they charge must not exceed a specified amount and they submit data each year (the Principal Statement and the charges scheme) to demonstrate to us that they have complied. Our approach is a variant of RPI-X regulation.

Regulation by price limits

The so-called 'RPI-X' approach to price limit regulation in the UK was originally developed by Professor Stephen Littlechild for application to British Telecom in the early 1980s. It is a means of providing appropriate incentives for regulated companies to achieve efficiencies and to reveal information to the regulator.

Under this approach, the regulator sets a price (or series of prices) for a given period (the 'control period') on the basis of the best information it has about the efficient cost of providing the regulated product.

The regulated company has an incentive to achieve at least the efficiencies anticipated by the regulator because if it fails to do so it will not recover its costs. It also has an incentive to achieve greater efficiencies because it will enjoy additional profits for the remainder of the control period.

At the next price control, the regulator benefits from the information the company has revealed about its efficient costs, takes this into account when it next sets price limits and customers benefit as a result.

This approach provides the companies with incentives to become more efficient and reveals information to the regulator. So, it helps to address the problem of asymmetry of information, which results from the fact that the company will always know more about its costs than the regulator. We consider this in more detail in our [discussion paper on incentives](#).

13. We currently carry out a price review every five years to set limits for the end-retail prices that the companies may charge their customers and the service package that we expect the companies to deliver over the next five years.
14. The price limits reflect what each company needs to charge to provide its services to customers and deliver its obligations. They limit how much revenue a company can raise from the customers of its regulated business.

15. We set price limits for each company by assessing its forecasts of the revenue that it will need to run its business efficiently. We compare this with the revenue the company currently receives. We then calculate the percentage change in revenue needed each year, after allowing for inflation. We set price limits on the basis of:
- prices in the last year of the previous five-year control period;
 - plus RPI (the Retail Price Index), which allows prices to rise (or fall) in line with inflation;
 - minus X, which reflects the efficiencies we expect the companies to achieve over the five-year control period (the combined effect of the RPI adjustment and the gross efficiency adjustment is a real terms efficiency adjustment); and
 - plus Q, which reflects the changes in outputs (or outcomes) we expect the companies to deliver over the five-year control period.
16. We express this simply as $RPI \pm K$, where K (short for K factor) is the price limit that represents the net adjustment, taking into account both expected efficiencies and changes in outputs or outcomes to be delivered.
17. For the companies we regulate, we set price limits for each of the five years of the control period. We apply the price limits to a 'basket' of regulated charges. There are a number of items in this basket. These are:
- unmetered water supply;
 - metered water supply;
 - unmetered sewerage services;
 - metered sewerage services; and
 - receiving, treating and disposing of trade effluent.
18. We calculate increases on a company-by-company basis and base them on a 'weighted average charges increase'. To calculate the average, we weight changes in proportion to the contribution each type of charge makes to the total revenue that the company earns from the basket items in the weighting year.
19. We calculate metered charges by reference to actual consumption in a weighting year (which is two years earlier than the charging year). We calculate changes in unmetered charges by reference to changes in average revenue per chargeable supply calculated on the customer base at the preceding 1 December.

20. There are a number of charges that sit outside the tariff basket. These include prices charged both to large users and for bulk supplies between companies.
21. When we set price limits, we project the revenues that each company receives from these customers to reduce the overall revenue requirement. This enables us to calculate the revenue to be recovered from tariff basket customers and ultimately set price limits. We set out our [treatment of regulated and unregulated business](#) in more detail in a separate discussion paper.
22. Within the annual price limit, the companies can increase or decrease charges for individual basket items by different amounts. For example, a company can increase charges for unmetered sewerage services by a greater percentage than charges for metered sewerage services, as long as this does not breach the overall price cap, and is not unduly discriminatory.
23. Similarly, a company has the option to increase its overall average charge by less (or decrease them by more) than its price limit. If the company does not take the full available increase for any particular year, it can carry forward this unused limit to future years (up to a maximum of three years).
24. We have applied a building block approach to calculating the revenue requirement. This allows a return on the amount of capital invested by equity and debt providers. We have used a number of different mechanisms and tools within our approach to address specific issues or to provide particular incentives. These include:
 - a revenue correction mechanism, which has shifted volume risk from the companies to customers. It removes the scope for a company either to over- or under-recover revenue for tariff basket items relative to the assumptions that we made when we set price limits. We will reduce or increase the revenue requirement for the next review period by the amount of tariff basket revenue that a company over- or under-recovers between 2010 and 2015. In effect, this has moved the control from a price cap towards a revenue cap. It reduces the incentive on the companies to outperform the cap by selling greater volumes of water, and reduces the disincentive on them to encourage water efficiency on the part of their customers;

- introducing the capital expenditure incentive scheme (CIS) to encourage accurate long-term planning¹;
- stipulating minimum, binding targets for service performance, with the potential for financial or legal action if the company fails to comply;
- requiring the companies to compensate customers in the event of service failure;
- using specific financial incentives on top of the revenue requirement, such as the overall performance assessment (OPA) incentive for customer service, and the service incentive mechanism (SIM) that replaces it²; and
- using reputational incentives to encourage improvement in performance by publishing league tables and performance appraisals. We have used these both as part of the OPA and the CIS.

¹ See section 4.2 of '[Setting price limits for 2010-15: Framework and approach](#)' (March 2008) for an explanation of this mechanism. The CIS and the incentive properties of menu regulation more generally are considered in our [discussion paper on incentives](#).

² Our original approach to the OPA was set out for the 1999 price control in '[Proposed approach to assessing overall service to customers: a technical paper](#)'. Our approach to the SIM was set out in '[Putting water consumers first – how can we challenge monopoly companies to improve?](#)', March 2010.

5. Why are we considering the form of the price control now?

25. In [‘Beyond limits – how should prices for monopoly water and sewerage services be controlled?’](#), we set out the overall aims of our review of the way that we set price controls. Without introducing unnecessary uncertainty, we want a flexible framework for price controls that:
- enables the companies to finance the investment they need to deliver sustainable services;
 - allows other regulatory tools to be developed in the future, such as introducing market mechanisms where they may help to deliver sustainable water; and
 - drives monopoly companies to deliver water and sewerage services efficiently, where ‘efficiently’ means that services should cost no more in social, economic or environmental terms than they need to.
26. As part of our future price limits project, we are considering a number of topics. Each represents part of the price control mechanism that is of critical importance in contributing to the delivery of sustainable water. One of the topics we are exploring is the form of the price control.
27. Because the challenges that the water and sewerage sectors face in the future are very different to those of the past, we must ensure that we use our regulatory tools in ways that encourages the companies to meet those challenges effectively.
28. In our [discussion paper on incentives](#), we considered the importance of making sure that all our incentive tools, including the form of the price control itself, will help us to deliver sustainable water and sewerage services over the long term.
29. In particular, we identified a number of issues that arise in relation to the approach we have used to date. We have grouped these under the following broad headings.
- Applying a single price limit covering the whole water and sewerage value chain.
 - Unintended or undesired consequences.
 - Complexity and the regulatory burden.
 - Length of the control period.
30. We discuss each of these themes in more detail below.

5.1 Applying a single price limit covering the whole water and sewerage value chain

31. We currently apply a single price limit only to the retail prices of water and sewerage services. We do not regulate (on an ex ante basis) prices at other stages of the value chain. We do not regulate prices for water and sewerage services separately.
32. To a large extent, prices have existed only for the provision of water and sewerage services to household and non-household customers. These are subject to the price limits we set.
33. There has been very little pricing of intermediate services higher up the water and sewerage value chains. The areas where this has happened are in trading bulk supplies of water, which accounts for about 8% of water delivered, and transfer prices for services between regulated and unregulated parts of the business.
34. The approach to economic regulation in the water and sewerage sectors is unusual when compared with other utilities in the UK. The table below summarises at a high level the approaches taken across different sectors.

Examples of ex ante price control regulation in the UK

Sector	Wholesale controls?	Retail controls?	Control period	Form of control
Water and sewerage	No	Yes	Five years	RPI+/-K
Telecommunications	Yes – mobile termination; fixed line wholesale products	No	Various	Long run incremental cost (LRIC)
Electricity	Yes – transmission and distribution	No	Five years (soon to be eight years with possible reopener at four years)	RPI-X (soon to be RIIO)
Gas	Yes – transportation and distribution	No	Five years (soon to be eight years with possible reopener at four years)	RPI-X (soon to be RIIO)
Post	Yes – 'headroom requirements' set for pre-sort services and the prices paid by	Yes – for domestic and non-domestic users*	Various (two-year price freeze, followed by three-year control and	RPI-X (for retail)

	customers using Royal Mail's access services		four-year control, and currently under review)	
Rail	Yes – track access charges and station long-term charges	Yes – some rail fares regulated by DfT	Five years for all	RPI-X
Airports	Yes – charges set for aeronautical services at 'designated' airports	No – airports charges are principally to airlines	Five years	RPI-X

* Postcomm is currently consulting on the removal of price controls from certain areas in which it believes Royal Mail faces sufficient competition ('[Laying the foundations for a sustainable postal service, Price control](#)', Postcomm, May 2010)

35. Compared with other sectors, a very high percentage of the water and sewerage value chain is subject to price controls (and very little is contestable). Most of the revenue earned from the companies' regulated activities is subject to the overall price cap (94% of the total regulated turnover of the sectors in 2009-10).
36. This is in stark contrast to the electricity industry, where roughly 17% of the household bill is subject to price controls (2% transmission and 15% distribution) and the gas industry, where roughly 18% of the household bill is subject to price controls (3% transmission and 15% distribution)³.
37. There could be a number of advantages of pursuing different forms of price controls for different stages of the water and sewerage value chain. We have set these out below.

Advantages of having separate price limits for different parts of the water and sewerage value chain

Controls that better reflect the underlying economics of different parts of the value chain

Different parts of the value chain have different economic characteristics. Disaggregated price controls will help us to reflect better these differences in the way we regulate.

We may also have in mind different aims and objectives for a price control for different stages of the value chain. Disaggregated price limits will allow us to consider using different forms of control for different parts of the value chain. They will also allow us to reflect the most appropriate form of control given the economic characteristics of and our aims and objectives for the price control for that particular part of the value chain.

³ Source: '[Updated Household energy bills explained](#)', Factsheet 81, Ofgem, 6 August 2008.

Better information for decision-making	<p>By focusing on end-prices, the current regulatory framework does relatively little to reveal costs at different stages of the value chain. By revealing this information – even within vertically integrated monopoly companies – disaggregated price limits will enable the companies to make more efficient decisions about investment, network optimisation and use of water resources.</p> <p>Revealing that information will also make regulation more effective and transparent. In particular, it should help improve efficiencies in those parts of the value chain, like networks, where there is no competition.</p>
A better environment for the use of market mechanisms	<p>Disaggregated price limits go further than accounting separation in helping to prevent anti-competitive vertical cross-subsidies. They make it harder for the appointed companies to distort the market by shifting costs between different stages of the value chain, for example from competitive (or potentially competitive) to natural monopoly services.</p> <p>Other utility sectors, such as energy, telecommunications and post, have used separate price limits for business units or services to encourage the development of markets.</p> <p>Separate price limits, with accounting separation, mean that transfer prices between the appointed company's businesses are more likely to reflect actual costs. These can then be used to inform fair, reasonable and non-discriminatory prices for providing services to other market participants.</p> <p>Alongside market reform, disaggregated price limits could reduce the extent to which mergers and acquisitions would materially prejudice our ability to protect consumers.</p>

38. Regulatory separation through separate price limits would go beyond accounting separation as different incentives could be used to encourage the companies to focus clearly on how each of their separate business units performs.
39. Co-ordination is needed between different stages of the value chain so that end-customers receive a good quality service at a reasonable cost. This co-ordination currently takes place within the vertically integrated companies with very little visibility of the implicit transactions that take place between the different stages of the value chain. We are carrying out further work to consider these co-ordination issues and the different ways in which they may

be addressed with different degrees of disaggregation (including price limit separation).

40. As a first step, we have said that we will set separate price limits for the retail and wholesale parts of the water and sewerage value chain in 2014-15. We are considering whether and to what extent we should further separate price limits for the wholesale parts of the value chain. Further separation might involve, for example, separate price limits for:
 - water resources;
 - water distribution;
 - sewage transportation;
 - sewage treatment; and
 - sludge treatment and disposal.
41. For the purposes of this discussion paper, we are including all non-retail parts of the water and sewerage value chain in wholesale.
42. We are also considering the extent to which disaggregated price limits within the wholesale business should be binding on the companies. We are aware that the binding nature of a control is not binary. Rather, there are degrees to which a control may be binding.
43. At one end of the spectrum, the wholesale business could be divided into separate services or sets of services each with its own separate and binding price limit, with no overall global limit covering the entire wholesale business. At the other end of the spectrum, the wholesale business could be considered as a single entity with a single overall price limit leaving the company complete freedom about how it prices particular services.
44. Somewhere between these two extremes, there may be sub-limits on prices for individual services or sets of services. These may be set on a self-standing basis or relative to the overall global limit. Also, between the two ends of the spectrum, purely indicative price limits could be set for particular services or sets of services.
45. We are also considering the practicalities of the changes we might wish to make and their implications for timing. It is possible that we will make first step changes for the price review in 2014-15, with further changes being introduced over a longer period.

5.2 Unintended or undesired consequences

46. In our [discussion paper on incentives](#), we note that, among other things, an efficient and effective incentive should minimise unintended or undesired consequences. The form of the price control is in itself a tool that could have unintended or undesired consequences. We need to take this into account when we consider how we set price limits in the future.
47. In discussions with stakeholders, there are two examples of unintended consequences that often arise. These are the effects of the five-yearly control periods and the so-called ‘capex bias’. We discuss each of these in more detail below.

5.2.1 Effects of the length of the control period

48. Many of the incentive properties of an RPI-X price control stem from using a control period, within which the companies enjoy the benefits of any outperformance against the control (and bear the risk associated with underperformance).
49. Some stakeholders, including companies involved in the water and sewerage supply chain, have suggested that the use of control periods also brings with it some undesirable effects.
- They introduce a cyclical nature into the supply chain. This encourages the companies to tender for large capital projects at the same time and on a cycle following the control period. Some stakeholders argue that this leads to a periodic contraction and expansion of the supply chain, rather than a relatively steady state, which causes de-skilling and higher costs.
 - They do not reflect the operational needs of the business, which absent regulation, would use planning cycles that more closely reflected asset lives and lead times (which would vary at different stages of the value chain).
50. These concerns raise questions both of **whether** we should set price limits using a control period at all and, if we should, how long those periods should be.

51. For our most recent price control, we considered specifically the length of the period for which it should apply. We concluded that retaining a five-year period was appropriate when considering the totality of the value chain. As part of our future price limits project, we are considering the most appropriate length for control periods bearing in mind the particular characteristics of different stages of the value chain, and our aims and objectives for the price controls.
52. With a more disaggregated approach, price limits for different parts of the business could apply for different periods. Alternatively, it would be possible to remove the control period, for example, in respect of capital expenditure and include additional capital expenditure in the regulatory capital value (RCV), subject to an efficiency test, on a rolling basis.

5.2.2 The ‘capex bias’

53. In line with our legal duty to secure companies’ ability to finance their functions, including a reasonable rate of return on capital, the RCV-based regulation we have applied to the water and sewerage sectors to date has provided certainty for investors and a relatively low cost of capital. But, it may have led the companies to favour capital solutions at the expense of overall efficiency. This is because:
 - the companies traditionally focus on engineering solutions;
 - the companies have a risk-averse approach, coupled with a view that a greater control over assets means less risk; and
 - investors’ valuations of the companies are based primarily on the RCV.
54. We are carrying out further work to understand the extent to which the companies do in fact favour approaches based on capital expenditure over those based on operating expenditure. If they do, we want to understand the reasons for this and the implications for the way in which we set price limits.

5.3 Complexity and the regulatory burden

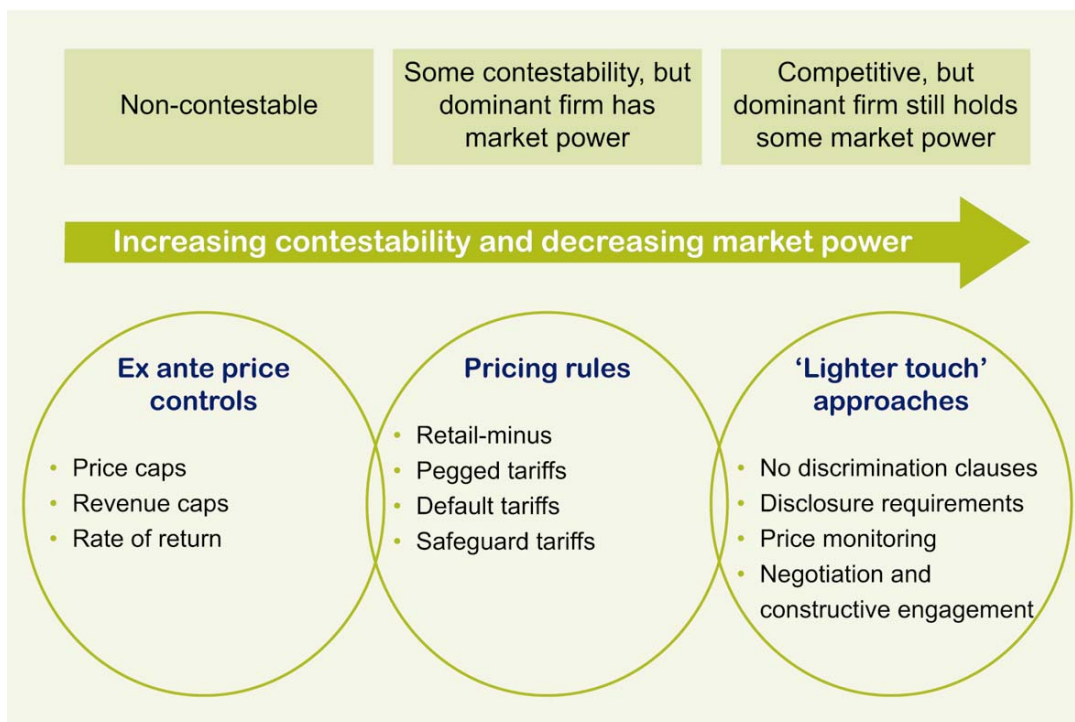
55. As originally designed, RPI-X was a relatively simple form of control. In practice, and as it has been applied by different regulators, it has become more complex over time. New incentive mechanisms have been added and the control has been adapted.

56. Over the years we have added into our price limit framework:
- customer service incentive mechanisms (previously the OPA, and now the SIM);
 - a revenue correction mechanism, designed to insulate the companies from volume risk so as not to disincentivise water efficiency;
 - the CIS, designed to reward the companies for delivering against good quality capital expenditure plans;
 - risk mitigants (including notified items); and
 - logging up and logging down, to allow changes in capital expenditure in one control period to be reflected in adjustments at the next price control review for the next period.
57. Some of these incentive mechanisms are relatively complex. They have also contributed to the time that it takes to complete a price review. Our 2009 price review, for example, took almost three years to complete.
58. The complexity of the current price limit framework could in itself reduce the effectiveness of the mechanisms by making the consequence of different possible behaviours less predictable in advance and less comprehensible to key decision-makers within the companies.
59. We also need to consider whether the different incentives created by these different features of the framework are aligned, or whether some may be inhibiting the efficiency and effectiveness of others. We consider the interactions and trade-offs between different incentives in more detail in our [discussion paper on incentives](#). It also includes an appendix on the different incentive tools that we currently use.
60. There are other aspects of the way in which we regulate – beyond the form of control – that are also complex and add to the regulatory burden. So, we are also considering:
- the way in which we determine the revenue requirement, including our approach to cost assessment and cost recovery, as part of our future price limits project; and
 - our approach to monitoring compliance, including the information we collect and how we use it, as part of our [regulatory compliance project](#).

6. Different forms of control – issues relating to the water and sewerage sectors

61. We commissioned Frontier Economics to identify the different types of control that regulators can use. These can be broadly categorised into one of three groups (as illustrated below), each with different characteristics, strengths and weaknesses. The [Frontier Economics report](#) contains a more detailed explanation of these diagrams.

Price control tools categorised by level and form of competition



Source: Frontier Economics.

Notes:

1. The size of the circles does not reflect the number or effectiveness of options.
2. Each of these regulatory tools may be subject to a time period. This will have greatest significance in relation to price caps and revenue caps, where the length of the control period is linked closely to risk and incentives.

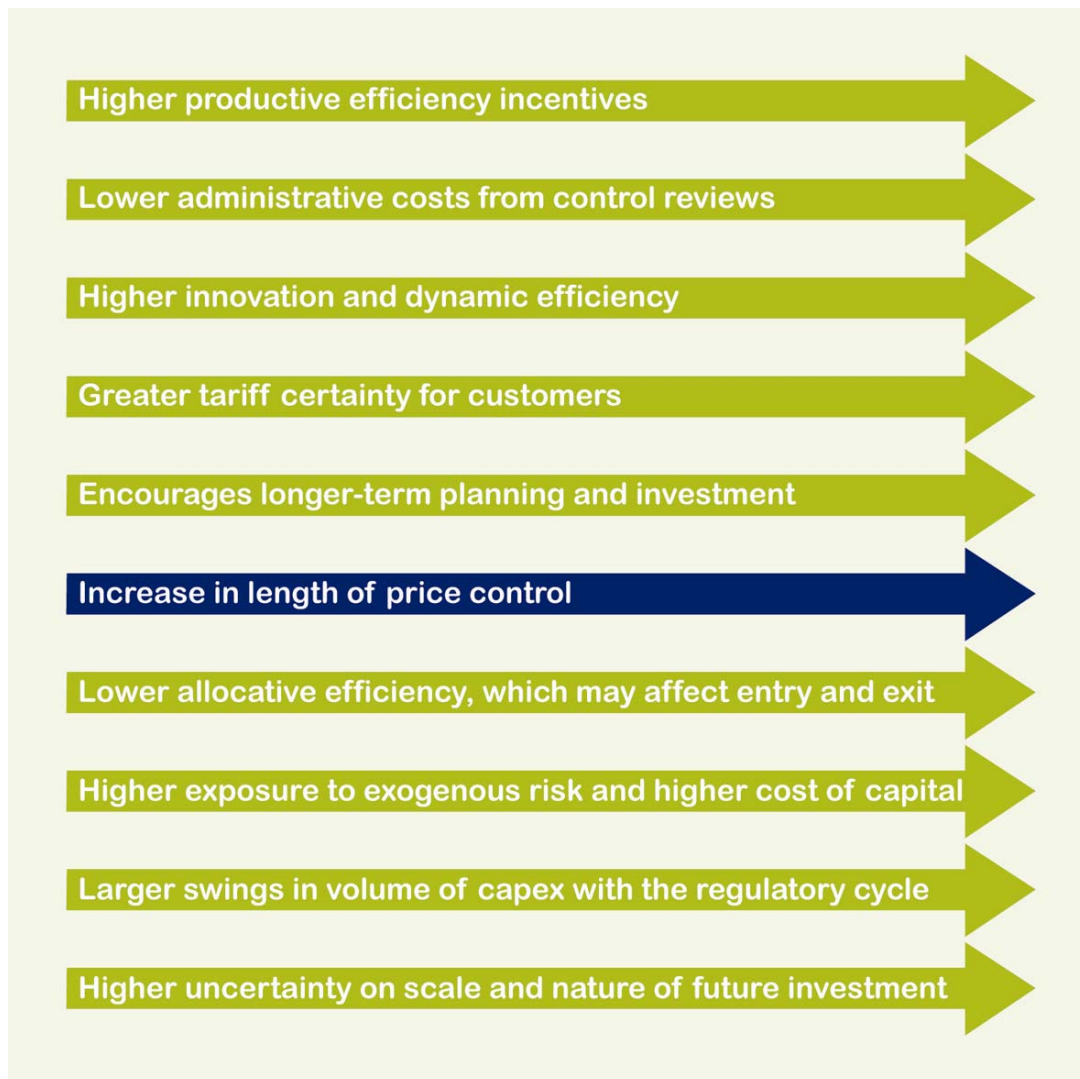
Overall strengths and weaknesses of different forms of control

	Ex ante price controls	Pricing rules	Lighter touch mechanism
Main role of control	Allows the regulated firm to recover revenue equal to the efficient costs incurred in providing the service	Constrains the pricing of existing company where competition is emerging	Used mostly for transitional purposes to help foster competition
Strengths	<ul style="list-style-type: none"> • High level of certainty in addressing excessive pricing concerns • Adaptable • Flexible • Impact on efficiency depends on specifics 	<ul style="list-style-type: none"> • Can prevent excessive and predatory pricing • Strong incentives for productive efficiency • Low regulatory burden 	<ul style="list-style-type: none"> • Reduced risk that regulation will limit innovative outcomes and interactions • Low regulatory burden
Weaknesses	<ul style="list-style-type: none"> • High regulatory burden 	<ul style="list-style-type: none"> • May not lead to allocatively efficient outcomes • Not adaptable • Inflexible – applicable only in certain circumstances 	<ul style="list-style-type: none"> • Some uncertainty for existing companies • Risk that may not address market power concerns

Source: Frontier Economics

62. Frontier Economics also noted that these regulatory tools can be subject to time periods. The length of the control period is particularly important in relation to price and revenue caps, where it is closely linked to the allocation of risk and to incentives. The impact of increasing control periods, is shown in the illustration below.

Impact of the increasing price control length



Source: Frontier Economics.

63. In choosing the most appropriate form of control for the water and sewerage sectors, we need to take particular account of the:
- characteristics of the different stages of the value chain;
 - development of markets;
 - need for a flexible, adaptable approach; and
 - impact on our aims for future price limits overall.
64. In general, the forms of price control that we use will depend on the structure we adopt for price control regulation going forward. We intend that this structure should reflect the different underlying economic characteristics of different stages of the value chain, including:

- the extent to which market mechanisms are appropriate;
- the risk profile; and
- the nature of the investment needs over time.

65. Our work in this area is ongoing.

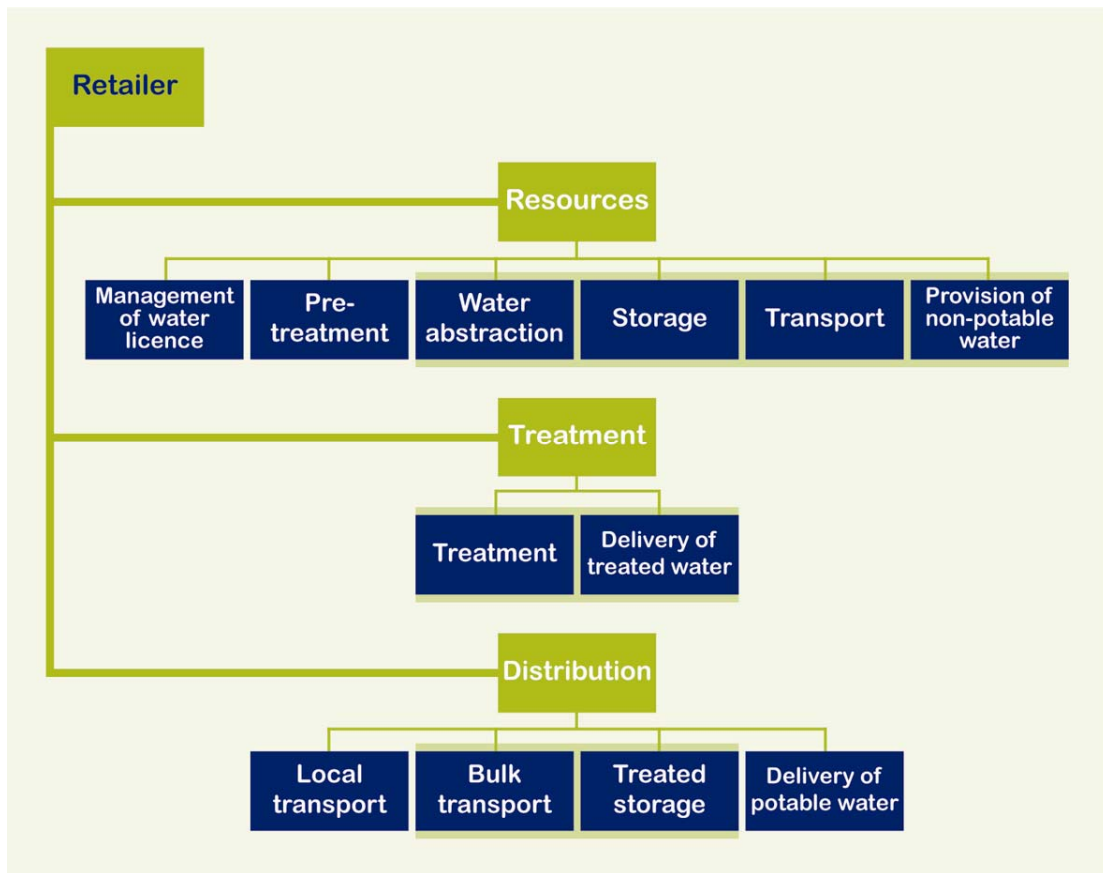
66. For the purposes of this discussion paper, we have split the water and sewerage value chains into three component parts, each of which could be considered a business unit for price control purposes. We have outlined these below.

Component parts of the water and sewerage value chains

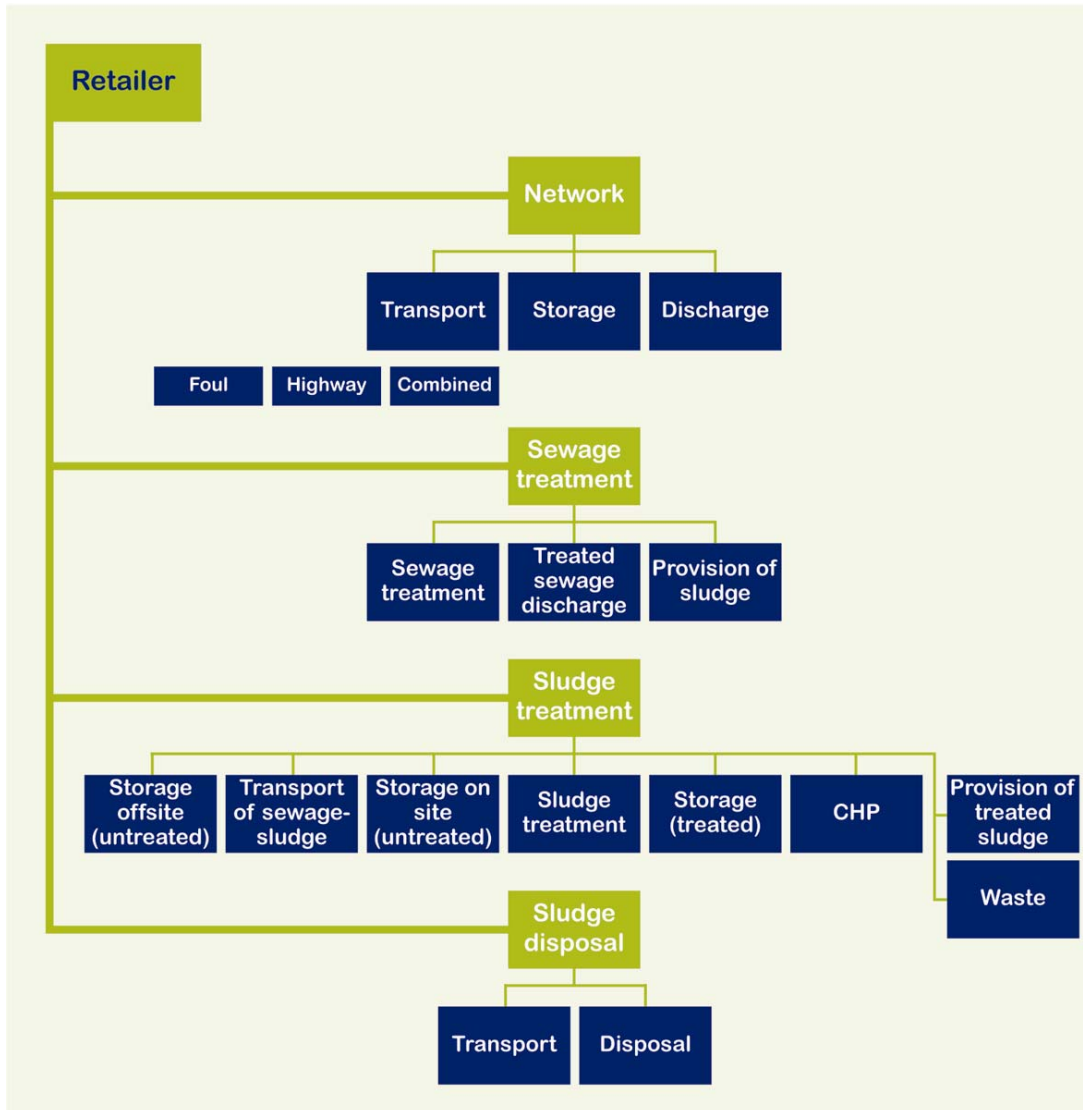
Retail	<p>This involves managing and delivering water and sewerage services to the final customer. It includes:</p> <ul style="list-style-type: none"> • customer sales; • billing; • payment handling; and • providing customer services and liaison.
Upstream	<p>On the on the water supply side, this involves:</p> <ul style="list-style-type: none"> • identifying sources of raw water; • obtaining permission to extract that water; • transferring the water to the treatment works or delivering non-potable water to the end user customer. <p>On the sewerage side, this involves:</p> <ul style="list-style-type: none"> • receiving untreated sewage from the sewage collection system into treatment works; • carrying out treatment processes; • discharging treated wastewater into water courses, and sewage sludge to treatment processes for subsequent treatment procedures; and • disposing the treated sludge in various forms.
Networks	<p>On the water supply side, this involves transporting treated (potable) water from treatment sites to customers' properties and new appointees, including intermediate storage.</p> <p>On the sewerage side, this involves collecting sewage from customers and new appointees, and transporting it to the treatment works.</p>

67. We have based these definitions on the business units we used in the first stage of our accounting separation project. We must stress that we have not yet concluded what business units we should use for the purpose of price controls, or what services should be included within each business unit. We have designed our accounting separation work to keep these options open.
68. The diagrams below set out the different services involved in the water and sewerage value chains.

Water services offered



Sewerage services offered



6.1 Retail

69. Retail services in the water and sewerage sectors are no different in principle from those in other utilities that are already competitive. They are characterised typically by a relatively small and stable investment profile with scope for efficiencies in operational processes. In general, they are not asset heavy. The assets tend to be billing and customer relationship management (CRM) related.

70. Data from the 2010 June return suggested that, on average, only 0.4% of the net book value of assets (including meters) is accounted for in retail across the water and sewerage sectors. It also seems likely that there may be a relatively high proportion of fixed cost in the retail business (such as billing and CRM systems). This means that economies of scale are potentially achievable not only through increased sales of the same product, but also through the combination of retail activities in relation to different products and services.
71. In the water and sewerage sectors, a high proportion of a retailer's total cost is likely to comprise water and sewerage services bought at the wholesale level (for example, bulk water purchases, treatment and transportation). This has a significant impact on the incentives that the retailer faces.
72. Providing water and sewerage services bought at the wholesale level is likely to be less profitable than providing other services over which it has greater control. So, the retailer will have a strong incentive to sell, say, water efficiency services designed to reduce the overall consumption of water because it will make a relatively high profit margin on such services. It will also reduce the amount of water and sewerage services it will need to buy at the wholesale level, thereby reducing its costs.
73. Data from the 2010 June return suggested that, at an industry level, 14.6% of total operating costs on average are accounted for in retail business (this includes accounting charges – current cost depreciation and bad debt⁴).
74. We should regulate contestable retail markets in a way that facilitates and encourages the development of competition and choice, while continuing to provide adequate protection for customers.
75. In Scotland, business customers have been allowed to choose their water and sewerage retail services provider since 1 April 2008. The Water Industry Commission for Scotland (WICS) uses a default tariff to regulate prices in the contestable part of the retail market. Business Stream, the separated retailer owned by Scottish Water, is required to provide a particular level of service for a particular price, which customers receive and pay unless they choose an alternative tariff or provider.

⁴ If the bad debt charge were excluded this would fall to approximately 10.4%.

76. If the Cave review's recommendations were implemented, the non-household part of the retail market would be contestable in England and Wales. We would continue to regulate prices in the non-contestable parts of the market as household customers would not be able to choose their retailer.
77. Without effective competition, retailers would retain the ability and the incentive to exploit their customers and, especially without the prospect of competition, there would be a strong case for ex ante price control regulation. We could follow a similar approach to regulating contestable parts of the retail market in England and Wales as WICS has followed in Scotland – that is, with a default tariff. Customers remain on the default tariff unless they choose to switch to an alternative.
78. This would have the advantage of protecting customers while allowing competing retailers the freedom to offer alternative tariffs in order to retain and win customers. A default tariff could be transitional, and be discontinued once the market had become effectively competitive. We would also need to ensure customers were protected from mis-selling.
79. Also, if the Cave review's recommendations were implemented, retailers would be legally separated from the networks and upstream parts of the business. Given the very small RCV any separated retail company would be likely to have, we would need to ask whether setting price limits using the 'building block' approach we have used to date would be appropriate.
80. We could consider using a long run incremental cost approach (LRIC) approach, so that the prices in the non-contestable part of the market reflected the incremental cost of providing retail services to that part of the market. But the relatively high proportion of fixed and common costs between contestable and non-contestable parts of the retail market would be likely to mean that the allocation of such costs (for which cost drivers could be hard to identify) would be critical.
81. All things being equal, retail businesses with contestable and non-contestable customers would have the ability and the incentive to leverage their market power in the non-contestable parts of the market into the contestable parts of the market. They may seek to do this by allocating cost inappropriately to the non-contestable part of the market, or by cross-subsidising more generally, allowing them to reduce their prices in the contestable part of the market in order to win and retain business there.

82. The way in which we regulate retail prices and the approach we take to cost allocation would need to guard against this. This might affect whether we choose a single or dual till approach to contestable and non-contestable retail revenues. (We consider this issue in more detail in our [discussion paper on the treatment of regulated and unregulated business](#).) We may also need to act using our powers under the Competition Act 1998.
83. As part of our work on [customer engagement](#), we are examining the scope to increase the potential choice of tariffs for customers in the non-contestable part of the retail market.
84. If the contestable part of the market were sufficiently competitive, we could peg prices in the non-contestable part of the market to those in the contestable part. If we were to do this, we would need to be confident that competition in the contestable part of the market was effective.
85. We would also need to be confident that there would be no advantage in the company raising prices in the contestable part of the market (and losing money there) in order to raise prices in the non-contestable part of the market (where it would gain more).

6.2 Upstream

86. The key characteristic of the upstream elements of the water and sewerage sectors is that it deals with water resources. It procures water resources and discharges water back into the environment following sewage treatment. It also deals with sludge treatment and disposal. The upstream business unit would own abstraction rights. The upstream business could own water storage assets, desalination plants and assets involved in abstraction of water from boreholes and water courses.
87. The diagram on page 28 envisages that the upstream business would own the water and sewage treatment assets. This is in line with our definition of upstream, for the purposes of this paper, as including treatment services for water and sewage.
88. But we note that the upstream business could still provide water, water treatment, sewage treatment and sludge treatment and disposal services without actually owning the assets used in providing them. The assets could be owned in principle by another business unit, which could and lease them to the upstream business. Or they could be owned by the network business, with regulated access to them, enabling upstream businesses to provide services.

89. The asset intensity of the upstream business would depend very much on whether the treatment assets were included in the business unit. Unlike network assets, treatment assets are largely above ground, their lives are shorter and they may take less time to plan and build. Storage assets (such as reservoirs) have both relatively long lives and long lead times.
90. To the extent that the upstream business held assets and had an RCV, we could maintain a building block approach to any price control. The importance of capital cost recovery in the upstream part of the value chain will depend on the asset intensity of the business, asset lives and lead times.
91. In [‘Valuing water – how upstream markets could deliver for consumers and the environment’](#), we set out one possible model for water trading. In our joint project with the Environment Agency, we recommended encouraging abstraction rights trading.
92. If such models were implemented, the resources business would engage in trading. This would determine the value of the water they could provide. If there were trading, it might also be possible for there to be entry into resources markets, so that trading would take place not only between resources businesses of the current water companies, but more widely.
93. In [‘Valuing water’](#), we noted that we could include a water trading incentive mechanism within our price control. This could involve us setting an initial administratively determined notional price to provide an initial basis for trade, and then allowing the companies to keep (a proportion of) the profits they made from trading water.
94. Such an incentive mechanism could operate within an overall ‘wholesale’ price limit or as part of a control on the provision of (raw or treated) water. Our work on water trading is ongoing. If it were implemented, we would need to monitor market developments to ensure that our regulation remained appropriate, encouraging efficient trading while maintaining adequate protection for customers.
95. The area of treating and disposing of sewage and sludge is currently subject to significant change. Opportunities to generate electricity and produce gas from sewage and sludge treatment raise the prospect of additional revenue streams. Other policy instruments designed to promote renewable energy and carbon reduction may influence developments in this part of the value chain. There is also increasing potential to use sludge as a fertiliser, generating further commercial opportunities.

96. These parts of the value chain are already contestable and these changes could make competition increasingly likely. The typically smaller scale and local nature of sewage treatment and sludge treatment and disposal may also increase its contestability (reducing costs of entry). We need to regulate this part of the value chain in a way that facilitates and encourages effective competition, while maintaining adequate protection for customers.
97. The changes in the upstream business may mean that, if we were to apply a price or revenue cap, a relatively short length for the control period (no more than five years) could be desirable. This would allow the cap to take account of:
- market developments;
 - changes in other policy instruments that affect the upstream part of the value chain (for example, subsidies for renewable energy); and
 - changes in technology.
98. If the control periods that applied to an upstream business were shorter than our current five-year limit, we may need fewer provisions for reopening (IDoKs). But we might need to use other tools to deal with some of the downsides of shorter periods, such as rolling efficiency incentives.
99. If the upstream part of the market were contestable, we would need to monitor developments to ensure that our regulation remained appropriate. We may also act using our powers under the Competition Act 1998.

6.3 Networks

100. For the purposes of this paper, a network business unit could comprise transport of treated water from treatment sites to customer properties and new appointees, including intermediate storage, and collection of sewage from customers and new appointees and transport to treatment works.
101. This would mean that the network business is characterised by the provision of transportation and local distribution services. The network business would be relatively asset intensive. Network assets are typically below ground, with long asset lives and long periods needed for planning and construction. Lack of interconnectedness means that the network businesses would typically include various discrete water and sewerage networks. Including treatment assets in the network business would change the asset mix and the characteristics of that business.

102. In general, the network business appears to be more naturally monopolistic than either the retail or upstream businesses. So, it is likely that it would have both the ability and the incentive to exploit its customers. This means that some form of ex ante price control would probably be necessary.
103. Because the network business is asset intensive, and because asset lives are long, the price control would need to provide some protection for investors against the risk that they would not recover their investment costs (which is what we have done through the RCV since privatisation). There are different ways of providing such protection, and in its [report](#), Frontier Economics discussed the merits of both operating capital maintenance and financial capital maintenance approaches.
104. The nature of the assets in the network business, and the importance of long-term planning in this area, might suggest that a longer control period would be beneficial. In moving to RIIO, Ofgem is moving its network price controls to an eight-year period.
105. Such a move could mean that we need to use tools to deal with some of the potential downsides of longer price control periods. This includes having the ability to re-open price controls using IDoKs and other tools for sharing risk outside the company's control with customers. Ofgem's RIIO has scope for reopening the control in relation to outputs after four years.
106. If markets were to develop upstream, this could potentially change network usage, especially if water resources from different locations and at different times were used than are used now. In principle, this could mean that some assets in the network business are used less or become redundant, posing a risk to the recovery of their costs.
107. But the extent to which this would affect the recovery of the costs associated with those assets is a regulatory decision. It would be possible for the regulator to protect investors from this risk through a network price control. Since privatisation, the RCV has provided investors with protection against the risk that their investment costs would not be recovered.

108. Although the network business is likely to be the most naturally monopolistic, it is not clear that it will or should be entirely free from competitive pressure. It could be argued that, particularly in the face of potentially large investment needs in coming decades, competitive pressure would be a useful tool in ensuring efficient cost. We note, for example, Ofgem's recent competitive tender for providing offshore transmission. The benefit from driving down cost of delivery would need to be weighed against a potentially higher financing cost if competition increased the risk associated with the investment.
109. It would be possible to bring competitive pressure to bear on the construction of (significant) new assets with little impact on the risk profile associated with existing assets. It would also be possible to provide a different level of protection for investors in such assets, again without affecting the risk profile of existing assets.
110. If markets were to develop upstream and in retail, providing wholesale services (including access to treatment and distribution) on fair and reasonable terms would be essential. This raises the question of the relationship between any price control on the network business and the price of particular wholesale services supplied by it.
111. Currently, we have the power to determine access prices (using the costs principle set out in section 66E of the Water Act 2003, and implicitly as part of bulk supply prices determinations under sections 40 and 40A of the Water Industry Act 1991). Given a likely high degree of market power in access services if upstream and retail markets were to develop, ex ante price regulation of specific access service would be desirable. It would be possible to do this within an overall price control on the network business.
112. In the model of water trading we set out in ['Valuing water'](#), we included a functionally separate system operator, which would be responsible for network optimisation, and ensuring fair reasonable and non-discriminatory access to the network. It would need to perform a number of functions, including:
- managing water flows within the distribution network on a day-to-day basis to ensure demands are met, while operating the network cost-effectively;
 - scheduling maintenance to the network;
 - ensuring the efficient development of the water distribution network; and
 - overseeing access.
113. The system operator could also perform important long-term investment, planning and co-ordination functions.

114. A small number of expert operators could perform the system operation function using a computer system and data held by the operator itself and provided by other businesses. The system operator would be small and very asset light. We would need to incentivise it separately to enable and encourage it to perform its functions efficiently.
115. Our work on system operation is ongoing. In particular, we are looking at the experience of the energy sectors in the UK, including setting up, running and incentivising system operation.

6.4 The relationship between different price controls on business units

116. In 2014, we will set a separate price control for retail businesses. If the UK Coalition Government implements the Cave review's recommendations on retail competition, and retailers are legally separated from the wholesale parts of the business, a separate price control for retail businesses would be necessary. Even if this does not happen, we consider that incentivising the retail and wholesale businesses separately would deliver considerable benefits.
117. Exposing the retail activities to separate regulatory treatment would encourage the companies to develop parts of their business with a strong, dedicated customer focus. This part of the business should then negotiate (with its customers' interests at heart) with the wholesale part of the business. This dynamic has been important in the delivery of real benefits for customers from retail competition in Scotland. In this way, we may realise some of those benefits for customers in England and Wales.
118. At the wholesale level, different degrees of disaggregation are possible. For example, we could apply an overall price limit across the wholesale business. We could also apply separate binding controls to small business units (almost at the level of services), such as:
- water resources;
 - sewage treatment;
 - sludge treatment;
 - sludge disposal;
 - raw water transportation;
 - treated water transportation; and
 - sewage transportation.

119. Options in the middle of the spectrum include a binding overall price limit at the wholesale level, with less binding (or purely indicative) limits at the level of business units within the wholesale control.
120. Prices for specific services provided at the wholesale level will be important. If upstream and retail markets are to develop, fair reasonable and non-discriminatory prices for wholesale (including access) services will be critical.
121. But these need not be set within the price limit itself. We have the power to approve company charges schemes, and this gives us the ability to influence how an overall price or revenue control at the level of a business unit translates into prices for specific services.
122. We also have the ability to conduct wholesale price determinations (currently including access prices in accordance with the costs principle set out in section 66E of the Water Act 2003 and bulk prices in accordance with sections 40 and 40A of the Water Industry Act 1991).
123. In our thinking about disaggregation, we must strike the right balance between the need to ensure that the incentives we use at different stages of the value chain reflect the underlying characteristics of those different stages and the need to keep our regulation as simple as possible and the regulatory burden proportionate.

7. Next steps

124. We will continue to consider how we will set future price limits until early 2012. At that point, we will publish a framework document setting out our aims for price limits in 2015-16 and beyond, and the tools and principles we propose to use in setting them.

125. We will consult on this framework document towards the end of 2011. Ahead of that consultation, we will publish further focus reports and discussion papers to inform the debate about particular aspects of price limits. As we develop our thinking, we will consult our advisory panel and meet with key stakeholders. The issues that we expect to consider are set out below.

1. Should we take a more disaggregated approach to setting price limits, with different approaches at different stages of the value chain? If so, what should those different stages of the value chain be? And what approaches should we use where?
2. Where should we make use of global price controls? Where should we make use of sub-controls? How binding should those sub-controls be?
3. Where we set prices for a given period, how long should that period be?
4. What factors should govern the use we make of ex ante price controls, pricing rules and lighter touch approaches? Where should we make use of these different forms of control now? Where might we make use of them in the future?
5. What unintended or undesired consequences are there from our current form of price controls? In particular, what are the effects of the control period? And is there a bias to capital expenditure solutions and if so why?
6. What trade-offs are involved in choosing between different forms of control (or combinations of control)? How should we make those trade-offs?

126. We would very much like to receive contributions on these and other issues. If you would like to contribute to the debate, please contact Carolyn Baker, Future Price Limits Interim Project Manager (carolyn.baker@ofwat.gsi.gov.uk).

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We are responsible for making sure that the water and sewerage sectors in England and Wales provide customers with a good quality and efficient service at a fair price.



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