

Setting price limits for 2010-15: Framework and approach

Ofwat – **Protecting** consumers, **promoting** value and **safeguarding** the future



Contents

Foreword	2
1. Executive summary	4
2. The framework and process for setting price limits	7
3. The right outcomes for consumers	15
4. Understanding the costs of delivery	31
5. Financial assumptions for setting price limits	42
6. The incentive framework – delivering outputs and reducing costs	57
7. Regulatory impact review	60

Foreword

As we reach the end of the first stage of the 2009 water industry price review, it is clear that the sector – both the industry and regulators – faces a series of new and demanding challenges. Policy makers in the UK and globally are more focused than ever on the value of water and the importance of managing this vital resource. The water sector in England and Wales must maintain a high quality service in the face of increasing consumer expectations, it must continue to develop competition, and take account of the impact of climate change and the demands of a growing population.

Our vision is of a sector made up of sustainable organisations, taking account of their economic, social and environmental impacts, acting to address the key sustainable development challenges ahead, and delivering high quality, good value and safe services to consumers. The 2009 price review methodology we set out in this document contributes to achieving this by building on the firm foundations of the tried and tested approaches we have used in the past, and by building in changes designed to address those challenges. We have taken account of the responses to our 2007 consultation and now provide the water companies in England and Wales with guidance on the price review process and what we expect from them. It does not tell the companies what to include or what not to include in their business plans – these are decisions for each company to make having considered the views of its customers, the requirements of the environmental and quality regulators and its statutory duties.

The water and wastewater sector must continue to innovate and be creative if it is to meet the challenges ahead at a price customers regard as good value for money. Vigorous competition can drive innovation in a dynamic way that regulation never will. We have started a work programme to develop the opportunities for competition and remove barriers to entry into the sector. This work will impact on the sector during and after the coming price review period. The decisions we make in this review will support our aim of promoting competition in consumers' interests.

For water and sewerage companies to meet the challenges of the future and be responsive to changing consumer expectations, they must take ownership of their own long-term plans. Companies have started this process with each one developing and publishing a strategic direction statement. This set out its approach to delivering a sustainable water and sewerage service for its customers in the long term. It is already clear that this innovation was a success – stakeholders clearly found the statements useful and companies have agreed that it has enabled them to put the price review in a longer-term context.

Stakeholders will see some changes in our price review methodology alongside much that is tried and tested. We have sought to simplify the process and drive ownership of company plans by requiring strategic direction statements and cost benefit analysis. We have also decided to use a new form of incentive-based regulation for capital expenditure that encourages each company to submit credible realistic business plans.

We believe the total package that makes up the methodology is the best fit to meet our objective of setting price limits for the period from 2010 to 2015 are at a level that enables efficient companies to ensure the delivery of sustainable, value for money water and wastewater services now and in the future.

A handwritten signature in black ink, appearing to read 'Regina Finn', is centered on a light gray rectangular background.

Regina Finn
Chief Executive

1. Executive summary

In November 2009, we will set limits on the prices that water and sewerage companies in England and Wales can charge their customers during the five-year period 2010-15. The price limits we set will enable an efficient company to deliver the right outcomes at the right time, representing value for money for customers of these monopoly businesses. We will expect each company to deliver a good service to its customers over the five years within the context of its 25-year strategic direction statement.

1.1 Purpose of this document

Our stakeholders have now provided us with their [views](#) on our proposed approach to the next price review. We have considered their [comments](#) and now set out our approach to setting water company price limits in 2009 for the 2010-15 period. We have not restated policy where our approach remains unchanged from earlier price reviews. **Indeed, most of our methodology continues to rest on tried and tested experience from previous reviews.** Nor have we provided detail on how we expect companies to deal with the specific problems facing them. Instead, we present a structure which, when considered alongside our business plan reporting requirements, will allow each company to produce high quality business plans which reflect the views of their customers, and the requirements of the environmental and quality regulators.

We have developed an integrated approach by building on our established and well-understood methodologies. At the same time, conscious of new challenges in the sector, such as climate change, we have sought to identify opportunities to improve. In some areas, we have developed new methodologies and we set these out in this document. In each case, we have considered how the changes contribute to the overall price review process and we are sure that this methodology will enable each company to develop and deliver a strategy that offers fair rewards to investors and deliver a world-class service to customers.

1.2 Objectives of this review

Our role is to protect consumers, promote value and safeguard the future.

We will set price limits that support and encourage a sustainable water and sewerage sector by:

- providing a structure that places responsibility on all stakeholders to contribute to minimising the impact on bills to customers;
- developing incentives for companies to improve efficiency and give consumers value for money;
- taking account of long-term challenges such as climate change adaptation and mitigation;
- financing the functions of efficient and well-managed companies;
- promoting the development of a competitive market.

We remain committed to the better regulation principles of transparency, consistency, accountability, targeting and proportionality.

1.3 Competition

While price cap regulation of the vertically integrated monopoly water companies has delivered significant benefits and efficiency gains over the past 18 years, we think that competition can drive dynamic efficiency and spur innovation in a way that regulation generally cannot. At a time when the sector is facing a range of challenges, including climate change, demographic changes, and environmental concerns, we consider that competition is fundamental as a driver of efficiency, innovation, choice and value. We welcome the recent Government announcement that it is to commission an independent review of competition and innovation in the water industry.

We are promoting the development of [competition](#) in a number of ways and have initiated a range of work streams and consultations, which are available on our website. Until effective competition develops, we still have to set price limits to protect customers of monopoly and dominant companies. We have developed our methodology to mimic the pressures of a competitive market as much as we can. At the same time, we will set price limits that do not form a barrier to future competition.

Each company must take account in its business plan of our initiatives to promote competition, as well as considering the scope for further measures to emerge from the Government's review. Some of our initiatives will take effect during and immediately after this price review period. For example, under our review of competition there has been a positive response to our proposal to develop accounting separation and we are progressing this work stream as a priority. We propose to require each company to identify clearly and report separately on each key area of its business. This will aid transparency, improve cost reflectivity, identify competitive opportunity and make entry to the market simpler. While we will consult on this issue in more detail, it is likely that companies will be required to separate out for accounting purposes their notional retail business, their network business and their production and treatment businesses.

For this price review, we will set a single price limit for each company for each year of the five years from 2010-15. During that period we will develop procedures that take forward our approach to competition and this may lead to us disaggregate these price limits before we set price limits for the subsequent period for subsidiary areas of the businesses.

2. The framework and process for setting price limits

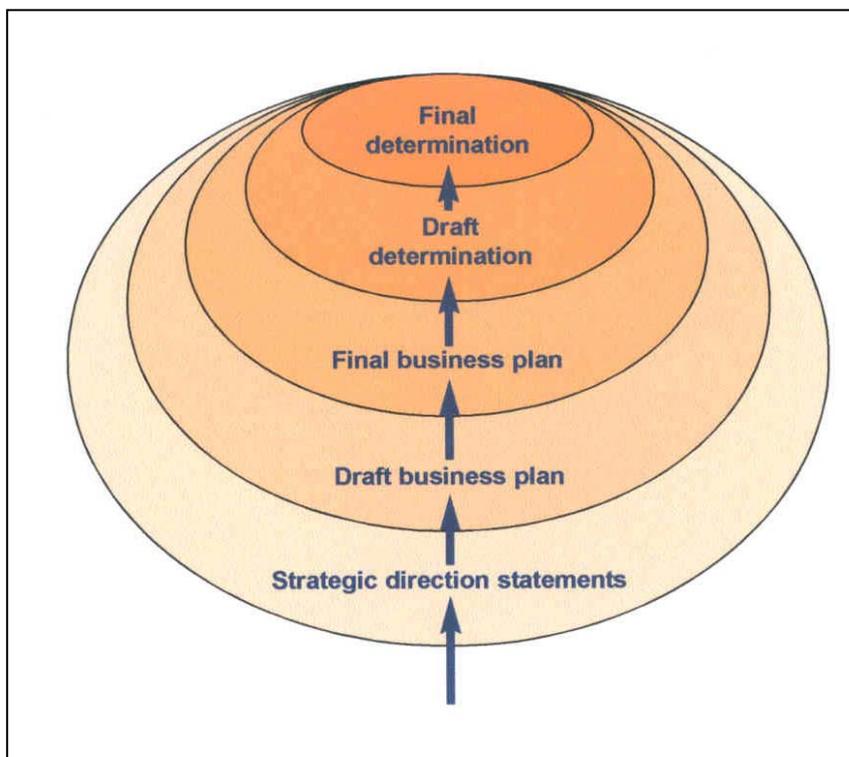
Summary

- We want each company to put its business plan in a long-term context.
- Each company will set out its proposals in a draft and final business plan that we will scrutinise and challenge.
- We will continue to support methodologies that allow consumers to benefit from the inherently low business risk in this industry.
- Setting the optimal price limits in November 2009 will need timely input from all stakeholders.

2.1 The framework for setting price limits

Each company must put consumers at the heart of this price review. Plans to invest to improve service levels and the environment have to take account of the impact on bills to customers. We will challenge each company's plan in order to protect its customers. Figure 1 shows the phases of the price review. This paper moves us in to the key draft business plan phase.

Figure 1 Key stages in the price review process



2.1.1 A long-term framework

Providing water and sewerage services is a long-term business. We want to set price limits that represent the best value for consumers now and in the future. Investment in maintaining and improving these services made in the five years from April 2010 will provide significant benefits to consumers, but will also have an impact on customers' bills for decades to come.

The need for a long-term approach to planning and regulation was a recurrent theme when we consulted (in 2005) on the length of the price review period, our sustainable development duty, and our approach to the [capital maintenance planning common framework](#). It is clear to us that each company's networks and other assets must continue to provide good and reliable services for current and future generations. There are new and emerging challenges, such as climate change, demographic developments, and the development of competition, which will lead to significant changes in some areas in the medium term. In addition, each company must plan to adapt – amending plans in the light of experience and new information.

Respondents to recent consultations have raised issues about the mechanisms to facilitate the investment needed to deliver benefits and value over the long term. We will take an integrated and long-term approach to the way we regulate and we expect each company to do the same as it plans for the future. We published our conclusions on these consultations in [MD219, 'A sustainable water industry – to PR09 and beyond'](#) and have reflected these in our proposed approach to this price review.

An improved focus on long-term planning will deliver significant benefits. It will:

- allow each company to identify its optimal pattern of investment over time, potentially allowing investments in the five years from 2010 that might not have been justified within the strict five-year timescale, or deferring investment that might otherwise have become stranded;
- give each company and its supply chain greater certainty about future activity and workload;
- give companies and key stakeholders confidence that future price limits will support enhancement investment clearly necessary after 2015; and
- establish an environment where innovation can thrive.

We expect each company to set its own strategy and business plan for the five-year period 2010-15 in a long-term context that takes into account consumer needs, carbon impacts, climate change and new environmental and quality requirements, the development of competition, and the interactions between these.

2.1.2 Strategic direction statements

Each company published a [strategic direction statement](#) (SDS) in December 2007. The SDS set out for consumers, regulators and other stakeholders each company's strategy over the long term (25 years) for delivering continuing good value, service and improvements for consumers and the environment. Early in 2008, we met each company to understand its plans and strategy; each company must now develop its draft business plan to sit within and be congruent with the SDS (for submission to Ofwat on 11 August 2008).

2.2 The process for setting price limits

In 2009, we will set annual price limits for each company and standard water and sewerage infrastructure charges for each company for the 2010-15 period. In parallel, we will take forward our strategy to develop competition by requiring accounting separation. We will also, in parallel with PR09 start to develop separate price caps for appropriate parts of the value chain.

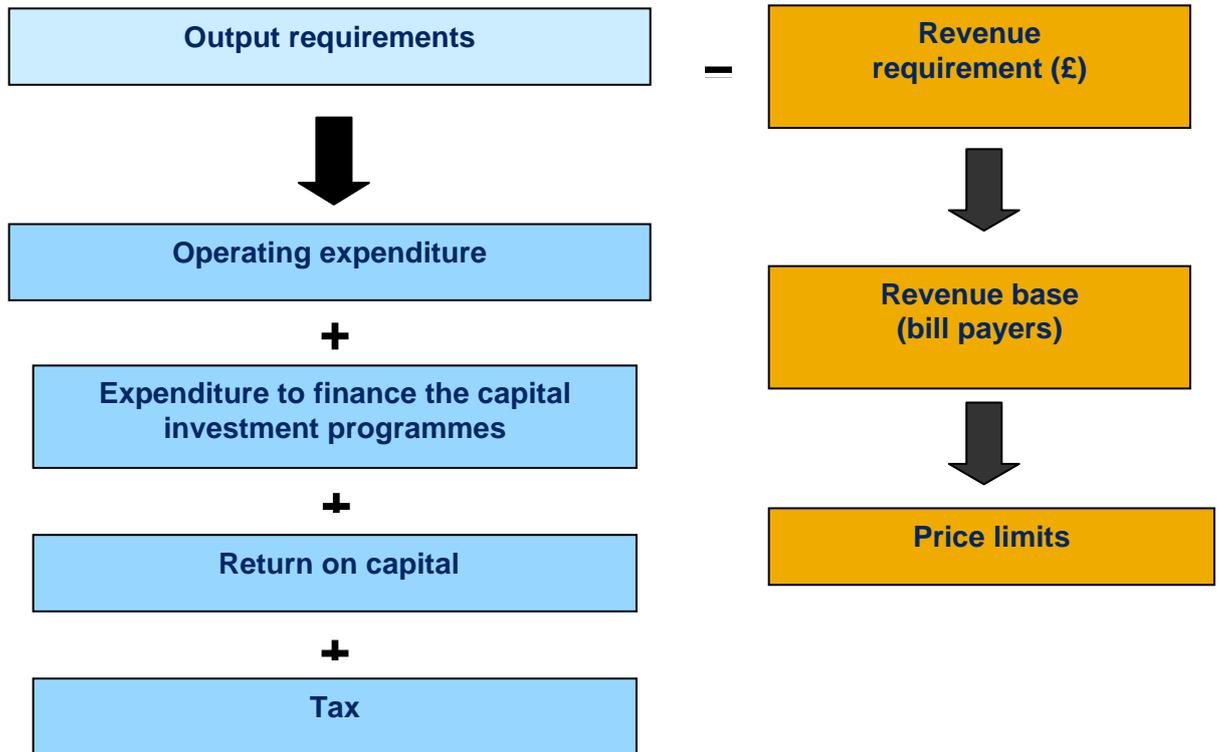
2.2.1 Calculating price limits

Each company needs to collect sufficient revenue from its customers to finance its operating expenditure and its capital investment programme, and to reward outperformance in the previous five-year period. It also needs to continue to finance previous capital investment through the return the company earns on its regulatory capital value (RCV). In addition, like any other company, each water company pays tax. The sum of these costs is the revenue requirement.

The annual percentage difference between the revenue requirement and the base year revenue expected from customers is the price limit. We check that the outcome of this calculation provides annual price limits that will enable the company to obtain the capital it needs to deliver the improvements required.

We illustrate our broad approach to setting price limits in figure 2 below. It is a simple representation of the financial model that we use to set price limits.

Figure 2 Approach to setting price limits



2.2.2 Calculating and presenting bill impacts

Figure 3 sets out how the key price limit components have contributed to bills since privatisation. By 2009-10, operating costs, at an industry level, will account for some 35% of the average household bill. At privatisation, it was more than 50%. Capital expenditure (as capital charges) accounts for about 28%. Taxation accounts for a further 6%, leaving 30% for the providers of finance – debt and equity investors.

Operating costs are declining as a proportion of bills while capital charges (current cost depreciation and the infrastructure renewals charge) have risen since privatisation because of the significant capital programmes companies have completed. Our approach shares the cost of capital investment across the generations that benefit from the service delivered through that investment. The business taxes that each company paid were negligible until the mid-1990s but have risen steadily since then.

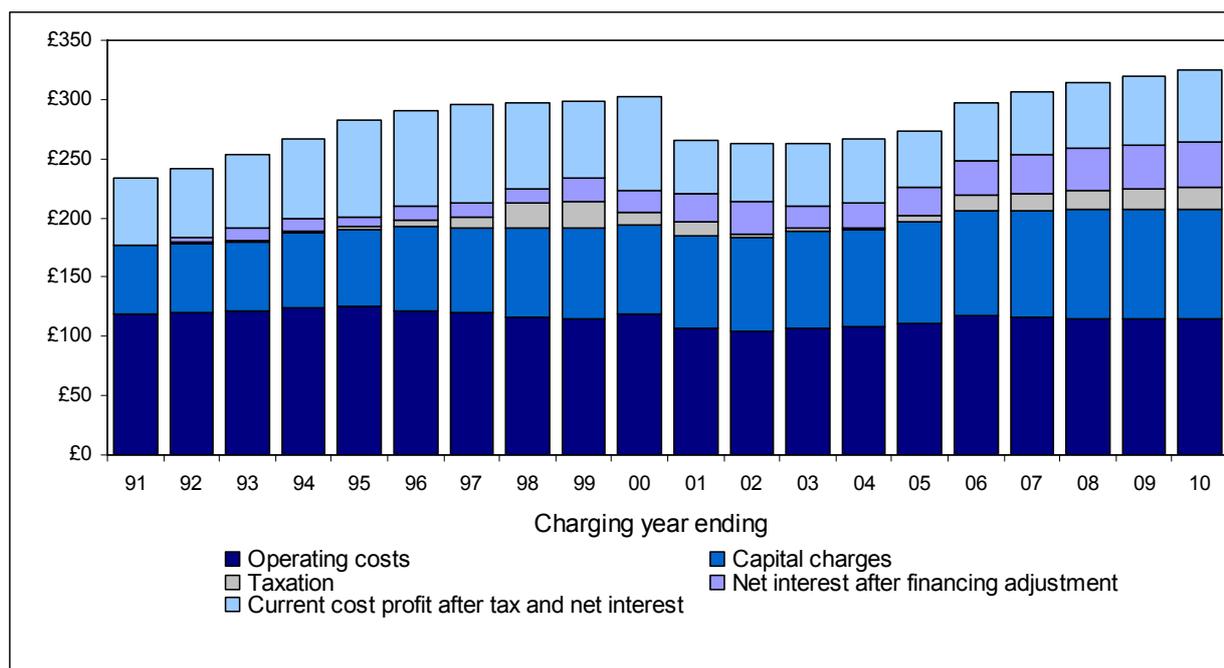
Figure 3 Components of the average household bill 1991-2010 (2007-08 prices)


Table 1 shows the elements that are driving the change in average bills in the period 2005-10.

Table 1 Drivers of change in average bills 2005-10 (2007-08 prices)

		Total (£)	(£)
Average bill in 2004-05		274	
Less	(1) past efficiency savings and outperformance	-3	
Plus	(2) maintaining base services	20	
	Of which: a) changes in revenue		-7
	b) changes in operating costs		11
	c) changes in capital maintenance		8
	d) changes in impact of taxation		6
	e) financing		2
	(3) maintaining and enhancing security of supplies to all consumers	12	
	(4) the impact of improvements in services	36	
	Of which: a) drinking water quality		10
	b) environmental improvements		23
	c) improvements in service performance		3
Less	(5) scope for reduction through future efficiency improvements	-14	
Average bill at 2009-10		325	
Change from end of the last period		51	

2.3 Risk and uncertainty

While this industry deals with issues of great consequence to human health and the environment, its structure and regulatory arrangements combine to present a low overall business risk. Our regulatory approach ensures that consumers benefit from this. Key mechanisms that contribute to and deliver this are:

- five-yearly reviews;
- indexation (RPI and notified index);
- interim determinations (including notified items);
- the 'substantial effect clause';
- logging up and logging down;
- shortfalls; and
- the 'change protocol'.

We will continue with this basic structure. We plan to revise and clarify the change protocol to make sure it is fit for the 2010-15 period.

2.3.1 Notified items

Notified items are items that we identify and exclude (or only partially include) from price limits because of their uncertain nature; their purpose is to help define the business risk at a level that is consistent with our final decisions on the cost of capital. With this in mind, we will only put in place notified items where we see firm and convincing evidence that there are potentially material risks that it would be unreasonable to expect shareholders to deal with. We will not automatically carry forward the existing notified items, as we do not believe there should be an assumption that the same uncertainties automatically exist within each five-year period. We consider that each notified item should address the uncertainties that exist as we next set price limits, not when we last set them. Companies have already begun thinking about these and we expect them to include proposals in their draft business plans. We will make final decisions on notified items as we make draft and final determinations.

2.4 Timetable

To allow each company to issue bills for the 2010-11 charging year we must make our decisions on its price limits by November 2009. The [timetable](#) set out on our website facilitates this. However, achieving this relies on timely decisions and inputs from other stakeholders. Key inputs are each company's draft and final business plans.

The Department for Environment Food and Rural Affairs (Defra) has now issued its water strategy document '[Future Water](#)', its [Statement of Obligations](#) and begun consulting on its [social and environmental guidance](#) to Ofwat. We expect the Welsh Assembly Government to follow suit. Each company can now focus on working with its environmental and quality regulators to produce good quality integrated plans.

2.4.1 Business plans

Information requirements

We are committed to the principles of better regulation and minimising the regulatory burden. However, while the water industry remains a monopoly industry, our duty to regulate in a way that protects consumers is of fundamental importance. We have now concluded our consultation on the information requirements for this price review and we will issue the final information requirements on 30 April 2008.

For the last price review, we required each company to provide two or three versions of its draft business plan. This time we only require one, although we give companies the option of submitting an additional 'better value' draft plan. The reduction in the data provision burden will allow each company to focus on producing a plan that delivers its long-term strategy for its customers.

We will scrutinise and challenge draft and final business plans that each company provides. The company's independent reporter, whose appointment we approve, and where appropriate, the auditor will also scrutinise the plans and provide us with their professional opinions.

Draft business plans

Each company will submit and publish a summary of its draft business plan(s) by 11 August 2008. This should build on the SDS, setting the detailed plan of work for the five-year period 2010-15 in the context of its long-term strategy. Each company must produce a draft business plan that:

- is consistent with its SDS;
- is owned by the company;
- puts in place a package of outputs which will deliver specified statutory outcomes;
- is in line with consumer priorities for service levels and bills;
- optimises and exposes the costs and benefits of the plan at the overall and component level; and
- the company can finance.

Where a company can envisage an alternative approach that offers improved overall value – perhaps by contributing to outcomes in an innovative way, or by delivering an outcome early or taking more time to deliver, it should submit an additional draft

business plan (also in August 2008). We would welcome discussions with any company considering submission of a second draft business plan (and its associated financial model).

We will publish a summary of the draft business plans on 25 September 2008.

Final business plans

Each company will submit and publish its final business plan in April 2009. This will provide the company's final view on its future price limits. We will challenge and scrutinise these plans before we publish draft determinations in July 2009 for comment and final determinations in November 2009.

3. The right outcomes for consumers

Summary

We want each company to put forward service and investment proposals that:

- deliver best value for consumers and the environment over the long term;
- reflect consumer preferences and meet statutory requirements for drinking water and water in the environment; and
- optimise and expose costs and benefits taking full account of social and environmental impacts, including greenhouse gases.

3.1 Introduction

The right service outcome will deliver best value; it will take account of consumers' preferences, and a sustainable long-term approach to delivering services while meeting environmental and water quality standards. Our overall approach to this price review will reflect a clear focus on best value for consumers and the environment over the long term.

3.2 Understanding consumers' preferences

Each company should deliver a service that meets its consumers' preferences. In the absence of competition, consumers cannot demonstrate what they want and are prepared to pay for by choosing between alternative suppliers and alternative packages. Therefore, each company needs to take steps to understand what its consumers want and are prepared to pay for. Also, we need to understand consumers' views on the plans put forward by each company and take account of these views in challenging the proposals that each company puts forward and making our determinations.

3.2.1 Finding out what consumers want

We are working with CCWater, Defra, DWI, Environment Agency, Natural England, Water UK and Welsh Assembly Government on a three-stage consumer consultation process.

Stage 1: Consumer research by each company with input from CCWater, to inform and develop its SDS.

Stage 2: CCWater leads a joint stakeholder regional deliberative consumer research project. Stakeholders will publish the results in the spring of 2008, allowing each company to use them to develop draft business plan proposals.

Stage 3: Once companies have submitted their draft business plans, we will carry out quantitative consumer research working with the other stakeholders. This will explore consumers' views on the value for money, acceptability and affordability of their company's draft business plan proposals.

The stage 3 research will build on the first two stages and will inform companies' final business plans and our decisions on our draft and final determinations. This will be the first chance to get consumers' views on the total package of outputs that each company puts forward and the combined impact on bills. We intend to make the results, which will be statistically robust at company and national level, available in December 2008.

3.3 Sustainability

In line with the Government's vision for Corporate Social Responsibility, we expect each company to take account of its economic, social and environmental impacts, and act to address the key sustainable development challenges based on its core competencies wherever it operates.

In [MD219, 'A sustainable water industry – To PR09 and beyond'](#) we set out our broad approach to sustainable development. This cuts across all aspects of our approach to setting price limits. Each company must address the twin issues of adapting to climate change and mitigating the industry's contribution to climate change by managing greenhouse gases, as well as fostering the sustainable use of raw materials.

3.3.1 Climate change adaptation

The industry is already beginning to address the challenge of adapting to likely new demands imposed by the changing climate while safeguarding service standards.

Long-term asset management planning should take appropriate account of emerging guidance and evidence on the impact of climate change on assets and service delivery. We expect companies to base any climate change related investment proposals on the best available sound science.

The complete 2008 UK climate change impacts programme (UKCIP08) scenario is due for release in November 2008; it will provide an updated set of climate predictions for the United Kingdom. For their business plans, we expect companies to have carried out sufficient climate change sensitivity analysis on investment decisions to identify which projects are likely to be significantly affected by a change of input data from UKCIP08.

While water resource planning guidance already takes account of climate change issues, we will continue to work with stakeholders to develop improved guidance for long-term sewerage planning. Each company should consider the resilience of its critical infrastructure within its plans both in the context of current and future climate. Early in the summer of 2008, we will produce a framework to help companies assess flooding risk and identify cost beneficial measures to improve resilience of critical assets. This guidance should inform business plans.

3.3.2 Management of carbon impacts

The water industry contributes significantly to greenhouse gas emissions in England and Wales. We expect each company to play a full part in mitigating climate change by reducing greenhouse gas emissions. Each company should audit and quantify the greenhouse gas impact of its proposed strategy, and develop a clear analysis of the balance between local environmental quality improvements and the wider impacts of greenhouse gases. The starting point for this work should be the existing UK Water Industry Research (UKWIR) guidance on [quantifying greenhouse gas emissions](#).

Each company should include the 'shadow price of carbon' when carrying out cost benefit analysis (CBA) across its business plan, using the most recent Defra guidance. This will enable the industry to select the best mix of interventions to mitigate the impact of greenhouse gases.

Mitigation strategies should include the development of renewable energy sources. We encourage companies to develop renewable energy sources where these clearly lie within the appointed business activities. It is our view that the generation of renewable energy may be considered as appointed business only in cases where there are natural synergies with the company's core functions (such as combined heat and power at sewage treatment works and hydroelectric schemes on reservoir outlets and overflows) and where they can be shown to be cost beneficial.

In most other cases the generation of renewable energy should be part of non-appointed business activity. Renewable energy is a separate and competitive market with its own regulatory and market support. We do not believe that it is appropriate to provide further support through higher bills for water and sewerage customers. We

will publish further guidance in the summer on the on the regulatory treatment of renewable energy.

3.3.3 Indicators

We will work with the industry to develop an agreed approach to measuring and reporting companies' 'carbon footprint'. This will allow a properly evidenced approach to carbon management in the industry to emerge, with transparency around the carbon implications of investments or changes to service expectations. While the Government plans to introduce incentives to reduce carbon emissions through its Carbon Reduction Commitment, there is no similar scheme for non-CO₂ greenhouse gases. Accordingly, we will consider if there is a role for incentives linked to reducing company production of non-CO₂ greenhouse gases.

3.4 Justifying proposals for service and investment

Each company should use its business plan to present and explain investment plans that are an affordable aggregation of programmes that customers are prepared to pay for. Each company must demonstrate that, in the long-term context, its business plan is the optimal level of investment, with the benefits of each investment proposal exceeding the costs.

Each company should carry out an appraisal of the costs and benefits of its proposals using CBA appropriate to the scale and nature of its investment programmes. This is a significant development in our expectations from companies. Using CBA to assess the relative benefits that different approaches and timeframes can deliver will provide a firm basis for consumers to have confidence in the outcomes they are paying for and complements the 25-year time-horizon. This will take into account the need to deliver specific outputs whilst considering sustainability and climate change impacts. It also enables the company to consider the wider impacts of its investment proposals, such as differences in valuations across socio-economic groups (who could have different views on willingness to pay). It is also consistent with adopting a cost benefit objective for long-term asset management planning as envisaged in the capital maintenance planning common framework.

We require CBA on all components of each company's proposed investment programme, irrespective of their legal status. For many companies this can be achieved through a proper application of the capital maintenance common framework, and for supply/demand through the economics of balancing supply and demand approach. We do not expect companies to challenge statutory requirements, but the approach will allow each company to demonstrate that its choice of outputs to achieve

the prescribed outcomes minimises costs and maximises benefit where there is a flexibility within the law to allow this. Furthermore, it will:

- ensure transparency to consumers by showing the benefits alongside the costs of the investment they will have to pay for;
- encourage a greater consideration of low-carbon options through the inclusion of the shadow price of carbon in both capex and opex;
- ensure solutions to all requirements are compared to the benefits allowing companies to challenge and review alternative approaches; and
- enable each company to set its own effective priorities.

Benefits and costs are valued as those perceived by consumers or those quantified as the effects of environmental and social impacts on consumers. The level at which this analysis could be carried out might vary. In some cases, it will be sufficient to review a whole section of work, for example, where a package is essential, non-divisible and is demonstrably both cost effective and cost beneficial. However, where there are discrete components each company will need to assess the costs and benefits for each. In each case, we expect to see evidence of reporter challenge and verification to costs and the application of benefits information.

3.4.1 CBA methodology

Each company will need to develop its own methodology for CBA based on the 'Green Book' principles alongside methods developed for specific purposes. It should demonstrate that its methodologies are robust and have had appropriate academic or technical peer review to provide confidence in the result. In December 2007, we published further guidance on the use of CBA in business plans and we will encourage the development of best practice guidance for specific areas where methodologies are rapidly evolving and/or are contentious. We expect CBA applied to a wide range of potential interventions; this should include cases that contain varying carbon intensities.

UKWIR has commissioned [two reports](#) on the role and application of CBA, including generic guidance. Ofwat and UKWIR also commissioned an overview on '[Lessons from recent assessments of benefits of water service improvements](#)', which is available on our website. Companies should refer to these in conjunction with our CBA guidance to help them assess the robustness of their approach.

3.5 Base service outcomes – maintaining service

Each company must maintain the service standards and the ability of its assets to continue to provide an optimal service into the future. This should include a

consideration of the impact of a changing climate. We will expect each company to present asset management plans that will deliver stable serviceability for all asset groups (above and below ground), and to clarify the targets they propose for each serviceability indicator set out in [RD15/06, 'Assessing serviceability'](#).

A company may make a case for changes to reference levels (based on past performance) for individual serviceability indicators (for example, the number of mains bursts) using CBA. This would mean justifying any change up or down to the targeted performance for an indicator in terms of the associated costs and benefits. This should include the value placed by consumers on relevant service attributes, and any associated social and environmental impacts. This methodology encourages a sustainable approach towards maintaining base service.

3.5.1 Good practice in asset management planning

We expect each company to adopt sound practices in long-term asset management planning in line with the conceptual framework set out in the capital maintenance planning common framework. This requires the use of forward-looking risk-based techniques for asset management planning which rely on the best available data on assets, asset deterioration through time and related service impacts.

Each company should place its asset management planning within an economic framework, and identify an optimised set of interventions targeted on delivering value to consumers. The analysis should take account of a 25-year timeframe, consistent with its SDS. We expect each company to:

- demonstrate that it has considered the probability and service consequences of asset failures;
- use a modelling approach, wherever possible, to reduce sole reliance on expert judgement;
- take account of long-term influences on service and asset performance, such as climate change, making use of the best available evidence;
- consider a wide range of potential interventions to maintain serviceability; and
- demonstrate that its analysis takes account of 'whole life costs', including the cost of carbon, and interactions with operating strategies and investments in service improvements.

We will assess the robustness of each company's asset management plan to maintain serviceability using a scoring system at sub-service level. We will use this assessment to challenge companies' capital maintenance expenditure forecasts before we use them as a component of our capital expenditure incentive scheme baseline. We will publish details of our assessments following draft business plan submissions.

3.5.2 Odour from the sewage treatment process

Each sewerage company must manage its assets to minimise odour nuisance. Defra's '[Code of Practice on Odour Nuisance from Sewage Treatment Works](#)' provides a helpful framework for good operational practices in odour control and a structured approach to further measures to reduce the risk of nuisance from odour at existing sewage works. We expect each sewerage company to demonstrate compliance with the code and to use a CBA approach to support investment proposals.

3.6 Security of supply

We expect each company to put forward clear and sustainable plans for delivering water and wastewater services now and under a changing future climate. The plans should reflect consumer views on the acceptability of hosepipe bans, willingness to pay more to avoid future restrictions, and issues related to foul and surface water flooding.

Each sewerage company should plan to provide the sewerage service over the long term using the framework of the UKWIR report, '[Long-term/least cost planning for wastewater supply demand](#)'. In this way, each company can develop investment strategies at a catchment level that take account of environmental and social costs.

Each company must plan to meet the demand for water in a dry year and in critical periods, subject to occasional restrictions on supply in line with its declared level of service. The statutory water resources management plans (WRMPs) require each company to set out how it will restore and maintain the balance between supply and demand over a 25-year period. WRMPs must be consistent with companies' drought plans. Each company must take account of the impact of changes in water consumption in new developments that result from the '[Code for Sustainable Homes](#)' and in revisions to building regulations.

3.6.1 Water resources

Each company will publish its draft WRMP for consultation in the spring of 2008.

We expect each company to submit a business plan which:

- proposes investment that is consistent with its WRMP (which must incorporate companies' responses to the programme for restoring sustainable abstraction);
- demonstrates that the proposed investment represents the best value optimal solution (including leakage control, water efficiency and tariffs) for balancing

supply and demand using the methodology set out in 'The Economics of Balancing Supply and Demand' (UKWIR/Environment Agency, 2002);

- highlights how the anticipated change in climate has been incorporated within their plans;
- explains, where appropriate, how and why its plan differs from any regionally optimal solutions determined through the work carried out by the Water Resources in the South East Group;
- explains how it has chosen the level of risk assumed in its planning, for example the assumptions and reasoning underpinning its target headroom allowance; and
- provides a bulk supply where this is a feasible and effective solution to a supply/demand deficit for a neighbouring company.

We would welcome proposals from each company to use innovative tariff structures that send more cost-reflective price signals to consumers. We expect each company to explain how it will use price signals to help to manage the demand for water. We will not include enhanced supplies in price limits unless the company can demonstrate that it has also considered demand management options as part of a least cost plan.

Where shared resources are the best value option for consumers and the environment to balance supply and demand, but a company favours, without robust justification, a higher cost alternative, we will set price limits based on the lower cost shared resource solution. It is for shareholders to bear the additional costs of the more expensive solution.

3.6.2 Security of supply index (SoSI)

The SoSI is an indicator of the extent to which a company is able to guarantee to provide its planned level of service in terms of frequency and duration of restrictions on water use that it will impose. A company with the maximum SoSI score of 100 should not need to impose restrictions on use more frequently, on average, than its planned level of service.

The 2004 price review included SoSI outputs for 2010 and we will consider action against any company that fails to achieve these. For most companies this target SoSI was 100 (for either the dry year annual average or critical scenario, or both). When each company prepares its statutory WRMP, it will reassess its supply/demand balance taking account of the latest information and methodologies available. We expect each company to maintain its 2010 SoSI of 100 going forward (or reach 100 if its 2010 target was less than 100). We expect companies to put forward annual SoSI targets in their business plans. We will develop these into binding price review outputs.

3.6.3 Leakage

We expect each company to present plans to manage leakage on a basis that is consistent with water resource plans. During 2007, we worked with stakeholders (Defra, Environment Agency, CCWater and Water UK) on a programme of research in the area of leakage management and target setting in order to improve business planning in this area.

Each business plan should include:

- an analysis of the economic level of leakage at a water resource zone level consistent with RD02/08, 'Leakage methodology review', and the outcome of the Ofwat/Environment Agency study on incorporating environmental and social costs and benefits into the leakage target setting process;
- company and resource zone leakage targets that are consistent with the long-term water resource plan; and
- assumptions on per-capita consumption that are consistent with RD02/08.

Where a company proposes large-scale replacement of water mains primarily to reduce leakage it must justify this using CBA. It should include evidence of the carbon balance of the proposal and other options, and consider the links with its capital maintenance strategy.

Increased levels of metering may make it more difficult for companies to maintain statistically valid unmeasured per capita consumption monitors. However, we still expect each company to maintain its monitors taking account of the outcome of the Ofwat/Environment Agency study on per capita consumption.

Using the 'economic level of leakage' (ELL) as a focus for managing leakage levels has led to significant reductions in leakage over the last ten years. In 2007, we and the Environment Agency completed the first stages of a joint review of this approach. As set out in RD02/08, we are now investigating the feasibility and the costs and benefits of modifying the ELL to incorporate a 'frontier' approach to encourage companies to achieve best practice in leakage control. We will consult on our conclusions and, if possible, incorporate them into the guidance we will issue in October 2008 for leakage target setting for the period beyond 2010.

Some companies have indicated that they believe that their customers are now willing to pay for still lower levels of leakage. In such cases, companies should determine a new ELL by factoring the value of customers' preferences into the ELL calculations included with business plans. Each company must demonstrate that its evidence on willingness to pay is robust and that customers understand the permanent effect of their preferences on their bills.

3.6.4 Metering

We think that metering is the fairest way to charge for water. We said in our recent charging strategy consultation that we support a faster transition to higher levels of meter penetration when it is justified by sound cost benefit analysis (CBA). Companies should consider not only the immediate contribution that meters can make towards balancing supply and demand, but also the wider benefits that they might bring.

Defra recently consulted on metering in areas of serious water stress. Following that consultation, Defra has now directed companies that serve areas designated by the Secretary of State as being seriously water stressed to formulate and include in their WRMP an assessment of the costs and benefits of compulsory metering alongside the costs and benefits of other water supply and demand measures. Companies should make business plan cases for compulsory metering arising from this assessment. All other companies will also need to consider metering when assessing how to meet their supply/demand balance.

Each company must include forecast numbers for both optional and selective (compulsory) metering in its business plans. We will make price limit assumptions that reflect:

- meter location (including consumer preferences and supply pipe leakage effects);
- efficient costs for both optant and selective metering; and
- the impact of each company's metering programme on revenues.

Where a company can make a robust case for 'smart' metering based on full analysis of the costs and benefits, including for example, the use of innovative tariffs or operational efficiencies, we will consider including the installation of smart meters as an output in price limits.

3.6.5 Water efficiency: the role of economic demand management

Each company has a duty to promote the efficient use of water. We therefore expect at least a minimum level of activity, consistent with the guidance within the '[Water efficiency initiatives – good practice register](#)', from each company. The cost of this is already included in current operating expenditure.

Demand management can play an important role in balancing the supply and demand for water. We expect each company to assess the role of economic demand management within its long-term water resources plan. Each company should consider:

- a range of activities including water efficiency, metering and tariffs;
- how these measures complement each other; and
- the impact of such a package of demand management measures on its supply/demand balance.

In assessing the scope for water efficiency measures, each company should take account of the evidence base for large-scale water efficiency that Waterwise is developing as part of its work for the Water Saving Group. Companies should also take account of the relevant social and environmental benefits of water efficiency measures, in the same way that we expect them to take account of such factors in relation to leakage control.

In August 2007, we set [interim voluntary water efficiency output targets](#) for each company for 2008-09 and 2009-10. These will help us to gather evidence on how targets work, and how we can improve them. Following on from this, we will engage with key stakeholders to develop binding water efficiency targets for 2010 onwards.

3.6.6 Sewerage plans

We will work with the Environment Agency to scrutinise companies' sewerage service supply/demand plans, and check that each company's investment proposals in its business plans are consistent with its sewerage service supply/demand plans. Each company must make plans to balance wastewater supply and demand that are properly integrated with their plans for surface water drainage and with sewerage activities related to capital maintenance, quality enhancement and enhanced service levels.

3.6.7 Growth and new development

We will check each company's forecasts of new development against Department for Communities and Local Government (DCLG) forecasts, regional spatial strategies and local area plans. We expect each company to justify all significant differences between its own assumptions and the public forecasts and plans.

Each company must identify a least cost solution to meeting such new demand, taking account of current and forthcoming Government advice on integrated urban drainage, encouraging developers to build homes that use water efficiently and minimise surface water flows.

3.7 Resilience and flood risk

Each company must review how its critical assets are at risk from surface water flooding and how it will meet the challenge of supplying consumers in extreme situations. We expect each company to address this risk in its business plan in line with consumer concerns and the outcomes of the various investigations into the flooding events of 2007. Each company must explain the planning standards it considers appropriate and the underlying evidence for those standards.

Each company should assess the risk to service in its application of common framework principles for asset management. Where a company identifies a need for further investment it should justify this, either as part of a strategy to maintain serviceability or as a specific service enhancement, using CBA.

3.8 Setting the scope of the quality programme

Defra's [Statement of Obligations](#) defines the scope of the quality programme investment. Each company must justify including each project in its quality enhancement programme by putting forward proposals that are consistent with the 25-year time horizon that are demonstrably sustainable, low carbon solutions with benefits that exceed the costs over the long term. Each company should expose approaches that maximise the long-term benefits by delivering integrated outputs including some components delivered earlier (or later) than legally required. Where necessary, these could be set out in an additional draft business plan.

3.8.1 The scope of the quality programme

Each company will work with the DWI, Environment Agency, Natural England, CCWater and other stakeholders to develop a programme of asset improvements that benefits consumers and the environment. Company plans must be consistent with the water strategies and Statements of Obligations published by Defra and expected from the Welsh Assembly Government.

The quality enhancement programme that each company sets out must demonstrate an appropriate balance between consumers paying now or in the future, as well as between the polluter and bill payer.

Every project a company proposes must include:

- measurable defined outputs;
- identified costs that the reporter has challenged and verified;

- a description and monetary quantification of the benefits the project will deliver and an analysis of the costs and benefits;
- a clearly defined timetable and delivery date; and
- defined asset improvements or changes to operational procedures to deliver the output.

We expect companies not to look to the mechanisms such as the change protocol and notified items, put in place to manage future uncertainty, as a way of deferring difficult decisions. Each company should take responsibility for producing a business plan that is the best solution to the problem of satisfying requirements to produce strategic outcomes and meet consumer aspirations.

3.8.2 The Water Framework Directive (WFD)

While the Secretary of State cannot confirm the programme of measures in each river basin district plan until December 2009 (which is after we will have set price limits) companies are playing an active role in the river basin district liaison panels and are aware of the significant water management issues in their supply areas. Ministers will also issue guidance relating to nationally relevant cost-effective measures towards achieving the environmental objectives of the Directive in summer 2008. Accordingly, we expect each company to consider WFD requirements alongside its other investment proposals in the draft business plan. Each company should discuss the requirements of the WFD with the Environment Agency and other stakeholders.

We expect each company to:

- adopt a practical approach to the timely delivery meeting environmental objectives;
- make sure that all the improvements it identifies offer value for money;
- incorporate a reasonable approach to risk;
- accept responsibility for delivering a fair proportion of the schemes needed to address the WFD in line with the 'polluter pays principle';
- use the first round of river basin planning to carry out investigations to gather data to justify further investment;
- adopt a realistic timetable to achieve WFD objectives over three river basin plan periods to 2027 at the overall least cost, having regard to the grounds for exemptions in timescale and alternative environmental objectives;
- consider innovative solutions and pilot projects where appropriate; and
- incorporate the principles of sustainable development, including carbon impact, in its proposals.

We will develop our change protocol to make sure it offers an effective route for companies to amend assumptions on achieving uncertain outcomes where better

information arises after companies have submitted business plans and we have set price limits. However, the change protocol is not a tool to use to avoid making decisions about an uncertain future – but one to encourage a proportionate and risk-based approach to business planning.

3.8.3 Investment in catchment management

There are a number of issues relating to catchment management:

- **Land owned by water companies**

The regulated business should own land only if it is necessary to achieve the aims of the business. We expect companies whose regulated businesses own land to demonstrate why this is necessary and to make sure that any associated revenues (for example from rents) are maximised and form part of the regulated income stream. Price limits already include sufficient expenditure for companies to manage their land in a responsible and sustainable way meeting all the requirements of current legislation. We would only expect to see proposals from companies for new investment in their own land where these are necessary to deal with new obligations.

- **Securing drinking water quality**

Companies are free currently to spend on catchment management schemes to secure raw water quality where they believe this is an effective and efficient approach. Some companies do this already, both on their own and third party land, and we expect that this will continue. The WFD requires that member states ensure protection for water bodies to avoid deterioration in raw water quality, and to do so in line with the 'polluter pays principle'. Some private agreements between water companies and landowners where water companies fund or carry out work to address declining raw water quality may not be consistent with this aim and may do nothing to make the polluter pay. Accordingly, for us to consider proposals for new investment in order to reverse declining raw water quality companies should have:

- identified the source of pollution;
- initiated action to remove the source of the pollution;
- a detailed plan for addressing the declining raw water quality;
- support from the DWI for its proposed solution and confirmation that DWI is content with the associated risk profile; and
- justified its proposals with cost benefit analysis.

- **Downstream of consented discharges**

We have considered the position of a company working in the catchment downstream of its own consented discharge. We would encourage each company to share its experience of working in the upstream catchment where possible, but we cannot see a formal role for sewerage companies to take responsibility for river quality beyond the discharge consent parameters.

3.8.4 Improvements to drinking water quality obligations

The DWI has now published Amended Drinking Water Regulations taking effect from December 2007. We do not anticipate further changes to regulations or specific standards and parameters relating to drinking water quality during the period 2010-15. This means that the drinking water improvement programme will be limited to those instances where either raw water quality has deteriorated significantly or lead levels at consumers' taps makes further work necessary.

We do not expect to make specific additional provision in price limits under the quality enhancement category for any company to maintain or regain compliance with its current drinking water quality obligations. Where DWI gives technical support for companies to carry out work on assets to reduce the risk of non-compliance each company should address this when making capital maintenance plans. Similarly, initiatives such as the [Distribution Operation and Maintenance Strategies \(DOMS\)](#) and [Drinking Water Safety Plans](#) are important procedures to cover when identifying and justifying asset maintenance programmes. The balance between risk and investment is central to asset management plans.

3.9 Sewer flooding

While sewer flooding only affects a very small proportion of consumers, it is one of the worst service failures that consumers can experience. However, all sewerage systems can flood during extreme weather or combinations of circumstances. The challenge for each company is to balance the risk of sewer flooding against the costs involved.

By 2010, each company will have made major reductions to the numbers of properties exposed to the risk of sewer flooding caused by hydraulic incapacity. Each company must maintain this improved service level in the period from 2010 by addressing newly emerging sewer flooding problems through its maintenance programmes and investing to cater for growth in usage.

3.9.1 Sewer flooding enhancements

Each company should use CBA to support any proposals for further reductions in the risk of sewer flooding. Where it is not cost-beneficial to offer permanent hydraulic solutions to the risk of flooding we will expect each company to identify appropriate and acceptable mitigation measures. We will expect each company to use robust analytical techniques informed by clear empirical evidence and engagement with consumers, to make sure that the improvements delivered are those that consumers value most.

3.10 Other service enhancements

Where there is a clear need to improve consumer service, each company can include service enhancement proposals in its business plans. These should demonstrate:

- the need for improvement;
- consumer support for the improvement as demonstrated by willingness to pay;
- an indication of the priority consumers attach to it;
- evidence that the proposed solution is cost beneficial; and
- clear and measurable outputs.

4. Understanding the costs of delivery

Summary

We will set capital expenditure assumptions using a new 'capital expenditure incentive scheme' (CIS), based on the menu regulation proposals included in our consultation.

We will continue to set operating expenditure assumptions using our established regulatory methods, with appropriate refinements and updating.

In addition, we will take account of investments that span price limit periods through committing to an 'overlap' programme.

4.1 Approach to delivery costs when setting price limits

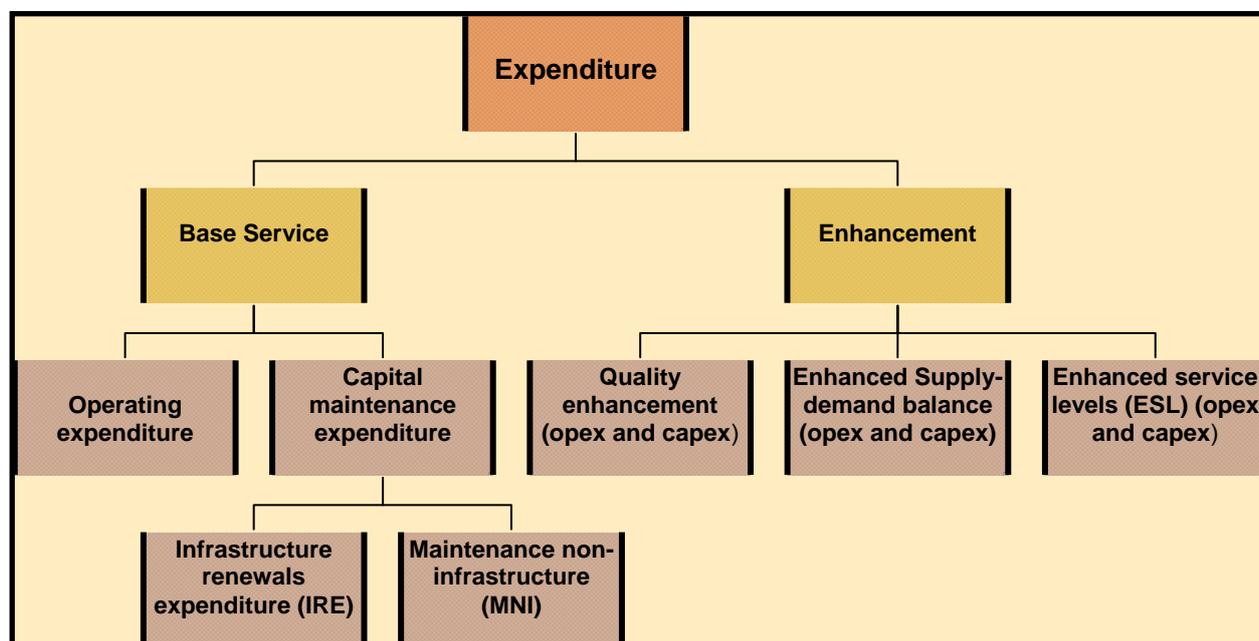
In this chapter, we set out our approach to identifying the expenditure required to deliver service outcomes. For capital expenditure we confirm that will use a new 'capital expenditure (capex) incentive scheme' (CIS) to set expenditure assumptions and associated rewards for outperformance. This is based closely on the 'menu regulation' proposals we set out in our consultation. We see greatest benefits in adopting this new approach for capital expenditure (both maintenance and enhancement) since this is where the information asymmetry, and hence benefits of new incentives, are greatest.

For operating expenditure, we will use an evolution of our previous approach to assessing expenditure needs for PR09.

We believe this combination of approaches will enable us to set price limits that deliver best value for consumers. The new CIS will improve incentives for companies to submit realistic business plans, with consequent benefits for consumers. A similar approach may be feasible in future for operating expenditure, but for PR09 we believe it is appropriate to refine and improve on our PR04 approaches.

4.1.1 Expenditure categories

Figure 4 Ofwat expenditure categories



We will set price limits using the information that each company provides in its business plans and the June returns. Figure 4 above shows how we differentiate between costs for delivering and maintaining the existing level of service (termed 'base service') and meeting new needs or delivering improvements to service (known as 'enhancement'). We divide both categories further.

- Base expenditure, which comprises operating expenditure and capital maintenance expenditure – we further divide the latter into [infrastructure renewals \(IRE\)](#) and ['maintenance non-infrastructure' \(MNI\)](#).
- Enhancement investment is categorised as 'quality', 'supply/demand balance' or 'enhanced service levels'.

We will set expenditure assumptions and outperformance incentives for capital expenditure using CIS. In doing this, we will derive our baseline estimates of total capital expenditure requirements (base plus enhancement categories) at service level (that is, a figure for total water service or total sewerage service capital expenditure).

There may be a case for adopting a different approach to investment relating to very large, discrete, long-term capital projects with different risk profiles. We are currently aware of only one project, the Thames Tideway, that meets these criteria.

Our assumptions for base capital expenditure (IRE and MNI) will also feed into our approach on accounting charges, as set out in chapter 5.

4.2 The new capital expenditure (capex) incentive scheme (CIS)

The CIS is a development of the menu regulation proposals that we consulted on as our preferred approach. The key benefit of adopting CIS is that it strengthens the incentives for each company to submit realistic business plans, providing an improved information base that enables us to deliver better value for consumers.

The CIS also retains strong incentives for each company to contain costs and outperform the regulatory settlement, once price limits have been set, with the greatest rewards available for the leading companies. It will also deliver other benefits – each company will have greater accountability for its decisions and can begin simplification in some areas (for example, retiring capital maintenance econometrics).

4.2.1 How the CIS works

Under the CIS, each company recovers its actual expenditure plus or minus rewards or penalties that depend on the expenditure forecast it chooses and how actual expenditure compares to forecast. This involves us in:

- deciding a 'baseline' level of expenditure for each company;
- comparing a company's forecast to the baseline and using this to calculate an expenditure allowance for setting prices for the first five years;
- providing an incentive for further outperformance which declines as the ratio of a company's forecast to baseline increases;
- calculating ex-post rewards/penalties as the difference between the expenditure allowance and actual outturn expenditure multiplied by the incentive rate, plus an additional element structured to ensure that a company secures the greatest benefit from submitting business plan forecasts that are realistic and aligned with the expected outturn level of costs; and
- making an ex-post reconciliation between the expenditure allowance used to set prices and actual expenditure plus or minus any rewards or penalties. This amount is then carried forward for price setting for the next five-year period.

The CIS allows for symmetric treatment of capex (over- and under-spends). This means a company can choose to spend more than either the baseline we set or the capital expenditure allowance included in price limits. We will reflect this expenditure in the regulatory capital value (RCV) of the business following the next price review, but at the cost of lower outperformance incentives and reduced returns within the price limit period (through the CIS rewards/penalty structure).

A symmetric approach to capital expenditure could increase the risk that, at the margin, a company will opt to maximise the size of its RCV through choice of a higher rewards and penalties combination. We will make sure that the CIS rewards/penalties provide sufficient disincentives to contain any tendency to incur capital investment unnecessarily.

Finally, and all things being equal, the symmetry of our approach to capex under- and over-spends may reduce risk and hence the cost of capital. This would then translate into lower prices to customers at the outset, although overall the impact on customers would be neutral as they now carry the risk of higher than anticipated capital expenditure.

4.2.2 Using the CIS for PR09

We set out below how we will use the CIS for PR09. We have developed this, using the comments made in consultation responses, to strengthen the incentive on each company to develop and submit realistic business plans. The key change from the approach we set out in [PR09/02](#) is that each company's position in the CIS 'matrix' will be determined by its final business plan expenditure figures. This means that each company will need to submit a business plan to which it is fully committed, and which represent its best estimate of expenditure needs.

In PR09/02, we proposed using draft business plans to set the menu and draft baselines, then using the final business plan to arrive at the final baselines. Each company would make an initial menu choice before our draft determinations and a final choice after.

We have now decided on a process where a company has less scope to rethink once it has submitted its final business plan. While we will accept new evidence through representations following draft determinations to take account of significant changes of output/scope both in the baseline and in its capex forecasts, we will not allow a company to submit wholesale changes to its plans.

The three stages are as follows:

- **The draft baseline**

In December 2008, we will publish an incentive matrix and draft baseline based on the draft business plan. In addition, we will publish the outputs package on which we have set the baseline. We will publish a publicly available summary of this, as well as writing individually to each company with a short report explaining the initial judgements we have made in setting the draft baseline.

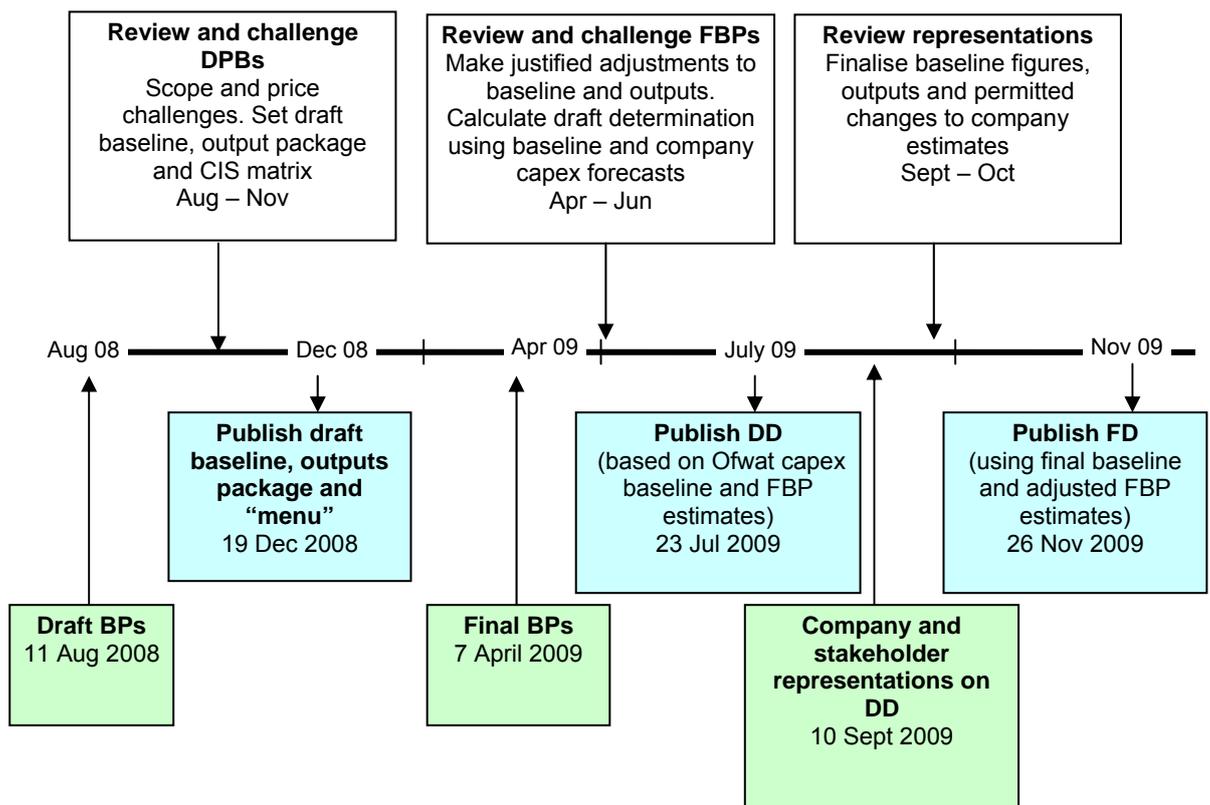
- **The final baseline**

We will review final business plans and allow justified changes to the baseline, either because of new information, a misunderstanding of the draft business plan or a change to the outputs package. We will publish the revised baseline at the same time as the draft determination. We will identify each company’s position in the CIS by comparing its final business plan capital expenditure forecast to our baseline. This will then be an input to the draft determination.

- **After draft determinations**

Companies can submit representations and new evidence following draft determinations (for example, to take account of significant changes of output/scope), but we will not allow wholesale changes or rebidding.

Figure 5 The capex incentive scheme process



4.2.3 Calibrating the CIS

We recognise that the setting of the baseline is central to the CIS, and the overall calibration of incentives. In PR09/02, we set out an incentive matrix where a company would earn the cost of capital if it were aligned with the baseline. We also said that the baseline expenditure should represent a reasonable 'central estimate' of the expenditure needed to deliver a best value set of outputs, while taking a balanced view of risk. We still consider that this is the most appropriate approach for us to adopt in structuring the CIS. Because we would expect to see companies' business plans distributed either side of the baseline we set, for an efficient company the baseline could be higher than its business plan. This is a key difference to the approach that Ofgem adopted for gas and electricity distribution price reviews.

If we set a baseline higher than a company's forecast of expenditure, it implies that this is a leading company with a challenging business plan, and as a result enhanced incentives. It does not mean that we would be encouraging the company to spend more than it needed.

We will publish final details of the incentive parameters in December 2008, when we have seen draft business plans. We will seek to ensure that there are strong incentives for companies to submit realistic and challenging business plans, without diluting incentives for all companies, and especially leading companies, to continue to seek further outperformance during the price limit period.

4.2.4 Setting the baseline (our view of capital expenditure)

We will set a capital expenditure baseline for each company for each service (water or sewerage) aggregating separately derived components for capital maintenance and enhancement.

For all cost categories we will adopt common principles, as set out in the table below. Where we find material elements of business plans that are poorly evidenced, we may also make use of targeted independent scrutiny to inform the assumptions included in the baseline. This will further strengthen incentives for companies to produce realistic estimates and evidence.

Table 2 Central estimates

A central estimate represents:	How we will derive a central estimate
A balanced representative view of efficiency	We will use the cost base comparative tool to challenge the pricing of forecast expenditure. We will adjust expenditure forecasts to an achievable level of efficiency for a middle ranking company. We will base this on a median or representative level of current efficiency, as evidenced through the cost base submissions, adjusted for the future efficiency that could be expected from an average performing company. In adjusting for efficiency we will also take account of evidence on the consistency between cost base and business plan cost estimates.
A balanced view of risk	We will review the approach each company has taken on risk, in planning investment in both base service and enhancement. We will apply challenges where appropriate.
A well evidenced forecast expenditure which relates to justified outputs	All outputs must be justified using CBA, sound asset management planning, with expenditure justified and related to outputs. We will use the capital estimating scorecard to guide challenges to poorly evidenced cost estimates.

For capital maintenance, we will review the evidence put forward in draft and final business plans.

- We will seek to understand historic levels of expenditure (as evidenced over a seven-year period) and related serviceability trends. Historic expenditure will not, however, be treated as a ‘guaranteed amount’ that will be rolled forward. Each company will still need to make the asset management case for all future expenditure.
- We will review the quality of the asset management planning and evidence that each company has used to justify future expenditure levels, making use of common framework principles. The asset management plan assessment process will inform our analysis. We will expect strong evidence for large deviations from past levels of expenditure.
- We will use other evidence where relevant, for example drawn from the asset inventory submissions or cost comparisons, to inform our judgements.

For capital enhancement, we will base the enhancement capital expenditure baseline on each company’s business plans challenged for scope (using CBA and other relevant tests) and cost (using cost base and a new capital estimating scorecard assessment, as set out below).

4.2.5 Capital estimating scorecard

We will expect each company to set out its approach to forecasting capital expenditure within its business plan commentary. We have developed a more structured approach to help our understanding and ability to challenge each company's projections of capital expenditure costs and timing. We will introduce a new capital estimating scorecard assessment to reveal the robustness of project specific estimates and to demonstrate the link between project specific estimate robustness and the company's overall approach. We have based the scorecard criteria on the recommendations set out in '[Development of capital expenditure estimating assessment](#)' (a report we commissioned from Faithful and Gould, July 2007). Each company must reveal the robustness of its expenditure projections by:

- identifying the sample of single projects (or group of similar combined projects) that represent major projects (by value) and/or projects that typically represent the robustness of the capital cost estimates. The sample may be altered (as a result of company choice, reporter or Ofwat challenge) at final business plan stage to achieve a representative sample;
- assessing its estimates against a set of criteria that reflect best practice principles in cost estimating using a scorecard approach. The scorecard will take into account project management, scope definition, approach to risk and value, robustness of cost and management and systems;
- showing that its strategic policies and approach to forecasting capital expenditure are evident at a project specific level; and
- demonstrating its ability to deliver the capital programme in line with the projected profile.

We will use this understanding of certainty and robustness of the business plan cost estimates to focus our challenges of both the costs and profile at sub-programme/driver level included in each business plan. We will use the scorecard results in combination with other information (such as CBA, application of the common framework, and the water resource plans) to make reasoned challenges to cost estimates not supported by robust evidence.

4.3 Managing investment cycles

We have observed an investment roller-coaster effect that has consistently seen investment at its lowest levels in the early years of each five-year price review period. There are two principal causes of this:

- companies are reluctant to commit to capital schemes until price limits have been set; and

- improvement programmes generally have entailed projects that must start and finish within the five-year regulatory period.

We introduced the ‘early start programme’ for the PR04 to address the first point. The programme has not worked. The identified early programmes were generally no quicker to start than those included in price limits in the normal way. We will not use this approach again. Instead, we believe the CIS and CBA together will improve each company’s confidence that their business plans will be reflected in final determinations.

We will address the second point by allowing each company to set out an ‘overlap’ programme for enhancement projects that start in AMP5 (that is 2010-15) and finish in AMP6. The programme will be available to individual projects with measurable outputs, milestones and specified delivery dates that are part of a phased “evenflow” programme of work – in other words, we would not expect to see a peak of starts at the end of AMP5. We will challenge the projections in the same way as we do for proposals affecting the immediate price review period. Once we have accepted an ‘overlap’ programme we will allow for the capital expenditure required in AMP5 and carry forward the expenditure assumptions for the overlap to the following price review, provided there are no material changes to the required outputs. The return on capital will of course reflect the extant rate of return at the time.

In this way, each company can identify its optimal pattern of investment over time. Extending time horizons beyond the immediate five-year period will give each company and its supply chain greater certainty about future activity and workload. It will also give each company and key stakeholders confidence that future price limits will support enhancement investment to complete projects started in AMP5.

While there will not be an early start programme there may be occasion when it is desirable or necessary to begin investment before 2010, on a project for which there is no current provision in price limits, to meet a completion date after 2010. We expect few such changes to companies’ current enhancement programmes, but when any arise they may be administered using the AMP4 change protocol.

Generally, we expect each company to manage the profile and timing of capital investment so that they avoid inefficient disruptions to the flow of work to suppliers. We will challenge investment proposals that are not consistent with an efficient rate of investment. If a company does not deliver its outputs when expected, we will take shortfall action to remove all benefit from the delay.

4.4 Operating expenditure and efficiency

Our approach to operating expenditure and efficiency has worked well for consumers. It is highly transparent and offers clear incentives for each company to outperform by improving efficiency, all to the benefit of consumers. We have considered the use of menu regulation in this area and have concluded that the potential benefits are not sufficient to justify moving from the successful operating expenditure approach at this time. We will develop and evolve the 2004 approach, focusing on a specific, comparative and targeted challenge to the business plan costs combined with company-specific efficiency assumptions based on our econometric models and strategic studies.

4.4.1 Operating expenditure

We will refine our 2004 approach for assessing operating expenditure. The conceptual approach will be the same, based on outturn expenditure in the base year, for base service operating expenditure, and more specific assessments for enhancement operating expenditure. We will also continue to use the 2004 approach to transfer pricing adjustments, where required.

4.4.2 Pensions

In 2004, we made a specific allowance to deal with the impact of a general decline in the stock market on water company pension schemes. We intended our approach, which dealt with pension fund deficits and future contributions, to remove the need for us to take specific pensions related action at future price reviews. We are still satisfied that this remains the case and we expect that the base year expenditure will reflect this specific allowance.

Our methodology will accommodate the advance lump sum payments to cover the five-year period made by some companies and the change in reporting requirements brought about by the adoption of FRS17.

4.4.3 Energy costs

The water industry is a large user of electricity and energy costs form a significant proportion of water companies' operating costs. In 2004, we made a specific allowance for increases in wholesale energy costs. This was based both on evidence the companies provided and an assessment of future market prices. We also took account of the impact of the rise in energy costs on RPI. It is too early to say whether we will need to make an additional allowance for energy costs above that already included in companies' base operating costs. Each company should use its draft business plan to set out its views on this issue.

4.4.4 Future operating expenditure efficiency

For operating expenditure, we will continue to approach the issue of future efficiency in the water industry in a structured way broadly along the lines followed in 2004. Again, we will use the concepts of:

- general efficiency (the prospect for the industry as a whole to become more efficient);
- catch-up efficiency (the company-specific efficiency assumption); and
- continuing efficiency (the assumption on how much all companies can improve).

Our decisions on both the company-specific and continuing efficiency assumptions used in price limits will be consistent with our assessment of 'general' efficiency.

We will commission a study on the scope for future efficiency later this spring. We will use the results from this study to inform our decisions on the scope for future efficiency

4.4.5 Operating expenditure efficiency analysis

Our approach to base operating efficiency assumptions will focus on the relative efficiency approach using the current suite of econometric models. We will continue to refine our econometric modelling. More specifically, we will improve our approach to the use of special factors, and make best use of time series data.

At the same time, we are reviewing and updating the econometric models. We will continue to:

- use the criteria for selecting the benchmark company set out in our [evidence to the Competition Commission](#) in January 2007;
- allow each company to submit new claims for special factors;
- continue to expect each company to catch-up 60% of the difference from the benchmark company over five years;
- make an adjustment as we did at PR04 to residuals to take some account of the potential for errors;
- ensure that catch-up and continuing efficiency are consistent with the overall scope for efficiency;
- use the fourth year (2008-09) of the price review as the base year for efficiency and future expenditure; and
- look closely at the make up of base year costs to make sure that they are representative of the true level of annual activity.

5. Financial assumptions for setting price limits

Summary

- We are clear that decisions on financing the regulated business are for each company.
- We explain the assumptions we will make when carrying out financial modelling of price limits.
- Our decision making will focus on creating a financial environment that offers the best outcome for customers of the monopoly businesses.

5.1 Setting the price limit revenue requirement

This section sets out and explains our approach to setting the price limit revenue requirement.

5.1.1 Capital charges

Customers pay for capital expenditure over the lifetime of the assets it finances. Bills to customers include:

- a current cost depreciation charge (CCD) for above-ground assets such as treatment works; and
- an infrastructure renewals charge (IRC) for underground assets, such as pipes, which form part of either the water or sewerage networks.

Together these are referred to as 'capital charges'. In addition price limits will include a return on the capital invested.

5.1.2 Current cost depreciation

For PR09, we will consider depreciation:

- on assets existing at 31 March 2008; and
- on expenditure after 31 March 2008.

Each company must carry out a full asset revaluation (on a modern equivalent asset basis). Each company should calculate its projected CCD on base assets on this revaluation. We will check whether each company's projections are reasonable by:

- comparing the forecast proportions with the actual proportions that each company reports in its June return. We do not expect significant variations in the mix of assets year on year; and
- confirming that the mix of new assets reflects the asset base being replaced. We will use the asset inventory information which each company will submit with its business plan to do this.

For future capital expenditure, we will adopt a similar approach to that taken at previous reviews to calculate depreciation. We will apply a standard set of asset lives to all new capital expenditure.

5.1.3 Overall check on the level of depreciation

Our approach to the level of depreciation is the same as used in 2004. For PR09, we will move forward the timeframe and use the 1997-98 asset base in our comparison and compare CCD with MNI expenditure over the period 1997-98 to 2024-25, that is, 28 years. This timescale is consistent with the long-term approach to capital maintenance planning. We will use MNI projections that are consistent with the 'allowed' level of capital expenditure calculated as part of the CIS.

5.1.4 Asset life categories

To calculate CCD on future capital expenditure for price setting purposes, we analyse the capital expenditure that is depreciable using five different asset life categories. We intend to retain the five asset life categories for PR09. We will use the most common asset lives that each company reports in its draft and final business plans.

We will continue to use separate apportionments in asset life categories for expenditure to enhance and grow the asset base and for expenditure to maintain and replace it. For expenditure to enhance and grow the asset base, we will use standard apportionments. However, for those cost drivers where we recognise that the mix of assets for a typical solution is very different from the standard, we will make an adjustment. This approach allows us to continue to make sure that consumers' bills are not unduly influenced by a company's depreciation policies but recognises concerns about company-specific capital programmes.

5.1.5 Infrastructure renewals charge (IRC)

We require each company to adopt infrastructure renewals accounting. This means that the infrastructure network is treated as a single asset system to be maintained in perpetuity. Instead of a depreciation charge, the IRC represents the annualised costs of maintaining the system at its current level of operations. A company's accounting policy for infrastructure renewals should be consistent with the regulatory accounting

guidelines (RAGs). The level of IRC should be broadly constant, in real terms, over the medium- to long-term, assuming that the network systems are in a steady state as regards operational capacity. Over the medium to long term, we expect the IRC and IRE (the expenditure to maintain and replace the network) to be equal. In any given year, the balance sheet reflects the difference between the two as an accrual or prepayment.

5.1.6 Infrastructure renewal expenditure

For PR04, the IRC we allowed in price limits was equal to the average forecast level of expenditure required to maintain the network over a 15-year period from 2000 to 2015. We will retain a 15-year period for PR09. Where a company has demonstrated a medium- to long-term view of IRE (in its calculations of IRC) in its regulatory accounts, then we will calculate the IRC as the average of expenditure for the period from 2010-25. Where a company has not done this, we will continue to use the five years back and ten years forward calculation (2005-20) for PR09. We will use IRE projections that are consistent with the 'allowed' level of capital expenditure calculated as part of the CIS.

5.1.7 Prepayments and accruals

For PR09, each company must demonstrate why we should recognise in price limits IRE incurred over and above our assumptions for the current price-setting period (2005-09) through an increase in the IRC over a ten-year period (2010-20). This should include:

- an updated long-term infrastructure maintenance plan reflecting the need for additional IRE over and above the level we assumed in price limits in 2004;
- evidence in the June return of increased spending on infrastructure renewals. We expect this to reflect a sustained, long-term increase, not a one-off peak in expenditure; and
- evidence of an increase in the IRC in the regulatory accounts indicating a step change in the required level of capital maintenance expenditure. A static IRC would signal that the prepayment is a short-term position that the company expects to reverse in the future.

Where a company has built up an accrual we will explore the reasons for this and challenge the company as to why we should not assume a windout of the accrual. If we do not accept the reasons, we will wind out the accrual over five years. In relation to the 2010-15 period, the adoption of the CIS will mean that we will incorporate over- and under-spends into the RCV through an adjustment to take effect from 1 April 2015. However, we will take into account the effect on the revenue requirement that

arises from these adjustments when we calculate the reward or penalty that we need to apply in the following review period.

5.2 Financing each company's functions

One of our primary duties is to ensure that efficient companies can finance their functions, in particular by securing reasonable returns on their capital.

We continue to interpret this duty as having two strands. First, a company that is efficiently financed and run can deliver its services to consumers earning a return on its capital base (measured by the RCV) at least equal to the cost of capital. Second, a company's revenues, profits and cash flows must allow it to raise finance on reasonable terms and thereby avoid passing undue costs to consumers. The availability, cost and other conditions of financing are directly related to a company's financial position and prospects. Such considerations are often referred to as 'financeability'. We discuss our approach to financeability in section 5.3.

Our October consultation paper detailed our approach to financial issues drawing on the responses to the discussion paper '[Financing Networks](#)' that we issued jointly with Ofgem in 2006. The '[Financing Networks](#)' paper discussed concerns with the way in which the regulatory framework deals with issues linked to risk allocation, investment incentives, gearing and the financing of regulated businesses including a 'split cost of capital'. Our conclusions are in [PR09/03, 'PR09 risk allocation, investment incentives and the financing of regulated businesses'](#) (October 2007), which is published on the [PR09 section](#) of our website.

5.2.1 Overall approach to setting the cost of capital

We will set a single cost of capital for the industry. In doing so, we will review our approach on what might be a sustainable level of gearing for companies as detailed in section 5.2.10.

It is too early to provide definitive data on the cost of capital. However, despite current volatility in the capital markets, the evidence currently suggests a lower cost of capital than our 2004 assumption. We will review all the available market evidence when we make our decision on the cost of capital.

5.2.2 Capital asset pricing model (CAPM) framework for assessing the cost of capital

Assessing the cost of capital is not a mechanical process, and while modern finance theory provides useful tools, many exercises of judgement are necessary. The 2003

[joint regulators' study](#) for PR04 concluded that whilst the CAPM approach had its drawbacks, it was the most robust methodology then available. Since PR04, other regulators, including Ofgem, the CAA and most recently the Competition Commission, continue to recommend and use the CAPM approach at least as a general framework.

We will continue to use the overall CAPM framework. We will as at previous reviews consider a wide range of market evidence and will cross-check against other models. We will set out in our draft determinations how we have reached our conclusions on the cost of capital. This will include the views of our financial advisors.

5.2.3 CAPM and risk

The CAPM approach assesses a company's exposure to systematic risk, that is those (economy-wide) risks that an investor cannot avoid by holding a diverse portfolio of shares. The cost of capital has to compensate for any incremental risk.

Companies have argued that regulation presents asymmetric risks that the CAPM approach does not capture. These include political risk, regulatory uncertainty, the risks associated with delivering very large capital programmes and certain aspects of our price setting methodology. We will not make an explicit allowance for asymmetric risk in our cost of capital assessment because, where this is not mitigated by risk sharing mechanisms, it is taken into account in our overall judgement on the cost of capital.

In arriving at our final assessment of the cost of capital, we will:

- clearly link how we have considered risk in modelled costs (including the interaction with the baseline setting process under the capex incentive scheme) and revenues with the treatment of risk in the cost of capital; and
- consider the risk-sharing mechanisms contained within the regime including any change to the balance of risk and rewards arising from changes to our methodology. These include the capex incentive scheme and the revenue correction mechanism.

5.2.4 Market data

For this review, we will set the cost of capital reflecting the up-to-date market data (but not by mechanistically observing spot rates). We will continue to recognise that the industry may have raised finance efficiently at a different point in the interest rate cycle and that a company raises finance over periods longer than the price control period.

5.2.5 The cost of debt

When we set the cost of debt in 2004, we expected that interest rates would rise from the then ‘abnormally low’ levels. However, immediately after we set prices in 2004 interest rates fell even lower, allowing companies to raise significant amounts of new debt and refinance higher cost debt both at very competitive rates and at levels significantly below our assumption in 2004. In 2004, we placed more emphasis on the longer-term trend in the CAPM parameters than at previous reviews.

The market appetite for long-dated index-linked debt which has developed since 2004 has allowed some companies to access index-linked debt at real interest rates of below 2% locked in for periods of up to 50 years. Whilst these extraordinarily low rates may not always be available, we will consider the evidence this provides for our approach and our assessment of the cost of debt.

There is currently significant volatility in the debt markets and very recently debt premiums have increased significantly. However, the risk-free rates for short-, medium- and long-term debt are much lower than when we set prices in 2004. In combination, the medium and long-term risk free rates and debt premiums remain below our PR04 assumptions; in particular, long-term interest rates are significantly below. Market data continues to point to lower figures for the cost of debt for PR09 2009 than we assumed in 2004, but we will consider all the available market evidence before making our decision on the cost of debt.

5.2.6 Embedded debt

At the time of the price review, a company may have long-dated debt within its debt portfolio that it raised at rates that were efficient when the debt was raised, but is now above current spot rates. This is ‘embedded debt’ to the extent that it is costly to refinance. Equally, a company may have long-dated debt raised at rates significantly below current spot rates, which will inform our assessment of the cost of debt.

Adjustments for embedded debt might be justified if we decided to take account of the lowest yields achieved by companies since the last price review in our cost of debt assessment. We will assess the extent of embedded debt and company representations in light of our overall assessment of the cost of debt and consider whether allowances for specific companies are necessary.

5.2.7 Indexing the cost of capital to a market benchmark

With the Office of Rail Regulation (ORR), we commissioned CEPA to explore the rationale and practicality of indexing the cost of capital (or some component) to a market benchmark. We published its report on our website and we consulted on

options in PR09/03. We believe that indexation of the cost of debt would transfer interest rate risk from companies to customers. We consider that this results in a sub-optimal allocation of risk without offering sufficient benefits to customers. In addition, there are practical difficulties with identifying an appropriate index. We have decided to reject this proposal and continue with the approach whereby the assumed return on capital is fixed for the price limit period.

5.2.8 The cost of equity

Recent water sector transactions have been at significant premiums to the RCV. Since PR04, takeover speculation, driven by pension and infrastructure demand for index-linked income streams, has lifted the share prices of listed water companies to significant premiums against the equity component of RCV. The sector seems to have been relatively resilient to the 'credit crunch', providing further evidence of the strength of demand for these companies.

While recent transactions provide us with market evidence on the current cost of equity, in most cases it relates to equity held in highly geared capital structures.

We will continue to observe the transaction prices paid for any water company acquisitions. We will consider whether the prices paid in recent transactions (and the evidence it provides on the cost of equity) might arise from a short-term 'infrastructure bubble'; or indicate a longer-term downward adjustment in the returns required by investors given the stable and mature regulatory framework.

5.2.9 Equity betas

In CAPM, the equity beta measures a company's exposure to systematic risk. A beta of less than one indicates a company is less risky than the market as a whole. This is where we expect the water companies to sit in the spectrum of risk.

Current market evidence suggests that equity betas in the water sector are very low compared with the market and with historic trends. Reduced regulatory uncertainty is a contributory factor but low equity betas may also be a statistical product of market volatility. In addition, there are some concerns that equity betas do not reflect the complete risk of investing in the water sector.

We used an equity beta of one when presenting our range for the cost of capital in the CAPM framework for PR04. This was consistent with the approach of other regulators, the Competition Commission, and the [advice](#) from Smithers & Co Ltd (2004) which suggested that when equity betas are unstable, regulators might want to give more weight to an expectation of a beta of one in their cost of capital assessments. However, more recent work by Smithers & Co Ltd (2006) for Ofgem

estimates a long-term beta of 0.5 for utilities (albeit with a wide confidence interval); and the report continues to demonstrate the difficulty in assessing a stable beta over the long term.

We will take into account market evidence, including transaction evidence and a longer, lower trend in the risk-free rate, in setting the cost of equity. We will also take account of the approaches other regulators have taken when we conclude on the application of equity betas. We will take account of developments in asset pricing models when we consider the cost of equity.

5.2.10 Capital structure

The gearing level of the water sector has increased substantially from 47% in 2000-01 to 62% in 2006-07 (net debt:RCV). The industry average gearing is likely to be above the 55-65% range assumed in 2004 by the time we set price limits in 2009.

The Financial Services Authority (FSA) has published a [discussion paper](#) on the risks associated with the growth in the private equity market in the UK. The amount of credit that lenders are willing to extend on private equity transactions has risen substantially, and the FSA has put forward its view that developments in the economic and credit cycle mean that the default of a large private equity backed company or a cluster of smaller private equity backed companies seems inevitable. This has been borne out by recent events in the financial markets.

Our relatively conservative approach to gearing when setting past price limits reflects this concern. Each company is free to choose a more highly-g geared structure than we assumed, but this is wholly at its own risk and its investors' risk. The regulatory regime does not provide a 'safety net' for investors. While it does appear that, at least in the short to medium term, some of the new structures have reduced the overall cost of finance, there is still relatively little evidence on the track-record of the more highly-g geared companies operating in a less benign economic environment.

The evidence suggests that water companies under a variety of capital structures can achieve credit ratings comfortably within the investment grade at higher levels of gearing than assumed for PR04. We will work closely with the credit rating agencies with the aim that our assumptions on capital structure are consistent with a credit rating comfortably within the investment grade envelope.

We will set a generic level of gearing for all companies and will consider the market evidence arising from the general upward trend in gearing for the sector when deciding on the appropriate gearing range for this price review.

5.2.11 Treatment of taxation

We will take a company-specific approach to tax at this review in the same manner as we did in 2004. We will also introduce the following refinements.

- **Tax shield on interest**

In calculating tax, we will continue to use the regulated water company's actual level of gearing where it exceeds our gearing assumption underpinning the cost of capital assessment. Where gearing is below that underpinning our cost of capital assumption we will allow tax based on our notional level of gearing. However, market developments lead us to expect that there will be very few companies materially below our gearing assumption. Accordingly, our approach does not appear to restrict unduly capital structure choices evidenced in the market.

Our approach to tax, up to the level of gearing that underpins that cost of capital, is indifferent to whether companies hold all debt at the appointed level or split between appointees and the holding company.

- **Claw back of tax benefits from refinancing**

For PR04, we intended to reduce or eliminate the incentives for a regulated business to increase gearing above that used at the price review in order solely to accrue tax benefits without considering wider issues. However, our approach did not claw back the tax benefits of a company gearing up between price reviews. A company that geared up early on in a five-year period kept the tax benefits of the higher gearing for a longer period.

For the 2014 review, we will claw back on a net present value (NPV) neutral basis the tax benefits resulting from a company gearing up during the 2010-15 price review period where:

- there is a one-off step change in gearing resulting from a financial restructuring; and
- subject to passing the above test, interest costs in any subsequent year within the price review period exceed those assumed in setting price limits.

The trigger will capture increases in gearing that result from refinancing or a return of capital to shareholders.

- **Tax losses**

Our analysis of recent June returns has highlighted some instances where companies were surrendering tax losses to group companies and not receiving full payment. This could mean that the tax losses are not available to reduce future price limits. We propose to add back, in the base year, any tax losses surrendered to group companies without full payment since 2005-06.

5.2.12 Small company premium

Some water only companies have used structured finance techniques and special financing vehicles to gain access to bond markets. In our consultation paper, we stated that we doubted the need for a small company premium, but we would review what impact this has on the availability of debt and the cost of debt to such companies.

We also stated that:

- because of the level of corporate activity in the sector, issues arising from market illiquidity and the impact on equity issue costs appear to have diminished;
- we continue to believe that water only companies do not face significantly different operational risk as a whole; and
- the 2006 Smithers report for Ofgem found at best weak statistical evidence for a significant role for the 'size effect' in determining returns when investigating the Fama-French three factor model.

For this price review, we will put the onus on companies to provide evidence to support a premium. In particular, we will require compelling evidence of how the impact of illiquidity in the trading of equity in smaller companies continues to be relevant as all but Dee Valley Water are now unlisted or are listed as part of much larger groups.

5.3 Financeability

We have described financeability in terms of making sure that, if reasonably efficient, a company's revenues, profits and cash flows should allow it to raise finance on reasonable terms in the capital markets. The revenue uplift approach adopted for PR04 has been subject to considerable debate and, in particular, we discussed alternative options in the '[Financing Networks](#)' discussion paper. We believe that it is possible to avoid the need for such revenue uplifts in PR09, while making sure that a company can finance its functions.

5.3.1 Credit quality

It is important for consumers that investors and markets see water companies as good quality credits. We will continue to check cash flow indicators to make sure that an efficient company (using our assumption on appropriate capital structure) can continue to finance its functions and retain stable credit quality. We do not have a prescriptive view of the credit ratings that a company should maintain, as this is for markets and management to determine. But we will want to be sure that credit ratings lie comfortably within the investment grade. In doing so, we will have regard to the market capacity for different types of issuer, the spread between different tranches of investment grade debt, and recent innovations in the debt markets (such as the ability of the sector to issue index-linked debt). However, this does not imply that we will allow revenue uplifts to make sure that this is the case. There are other options and market mechanisms that may partly or completely eliminate the financing constraint.

5.3.2 Options considered in the 'Financing Networks' paper

'Financing Networks' set out a number approaches for addressing financeability that are not mutually exclusive. Each would have differing impacts on consumers' bills and investors' returns. We have decided not to consider further the options of revenue advancement that adopt an accelerated approach to depreciation or allow a nominal cost of capital. The latter would lead to material incremental increases in price limits and the former might prove unsustainable in the longer term.

Options still under consideration include:

- a more flexible approach to financial ratios;
- the use of index-linked debt;
- equity investment; and
- revenue uplift.

5.3.3 A more flexible approach to financial ratios

As with PR04, we will consult with the financial markets to understand what they believe to be the most appropriate package of financial indicators and the level of those indicators. There is some evidence that the range of ratios that the rating agencies consider is narrowing. Whilst we acknowledge there has been some criticism of placing undue reliance on credit ratings, it is not our intention to develop alternative measures of financial capacity because there does not seem to be a sensible alternative. Consequently, we do not anticipate that the package of financial indicators will be significantly different to that considered at PR04. We would expect to use flexibly the levels for specific ratios within the overall package in assessing financeability. We will continue our dialogue with the credit rating agencies in respect

of the smaller companies. The published information does not support a universal view that smaller companies should have higher financial ratios in our financeability assessment.

5.3.4 Index-linked debt

Index-linked debt has a beneficial impact on financeability because price limits are more closely linked to interest payments paid by the appointee. Furthermore, index-linked debt has an interest cost that reflects a real rather than a nominal coupon. However, whilst index-linked debt may help cash flow interest cover ratios in the short term, it does not fundamentally alter the debt position of the company going forward.

Since PR04, companies have raised increasing amounts of index-linked debt, and this is becoming an increasingly important element of companies' debt portfolios. When modelling companies' financial projections we consider there is some merit in assuming a proportion of companies' debt portfolio is index linked.

Companies and investors have supported the view that a market-evidenced assumption would be reasonable. In reaching this assessment, we will take account of market conditions including ramifications for companies' future ability to raise index linked debt.

5.3.5 Equity investment

We consider that equity-based options including the issuance of new equity and retained earnings may be part of the way forward necessary to ease the financing constraint.

Evidence from the United Utilities rights issue and the level of acquisition activity suggests there is appetite within the capital markets for equity investment. We note that the success of such investment depends on a significant number of variables, not least prevailing market conditions, the allowed cost of equity and investors' perception of risk. We also observe that the appetite for equity investment has remained strong throughout recent turbulent market conditions. We continue to see the merits of this approach as a means of easing the financing constraints brought about by the continuing large capital investment programme.

5.3.6 Revenue uplift

It is too early to conclude definitively whether the market mechanisms described above, either individually or in combination, will ease the financing constraint completely, particularly as expected market conditions over the price review period will influence our financial assumptions. Nevertheless, market mechanisms are our

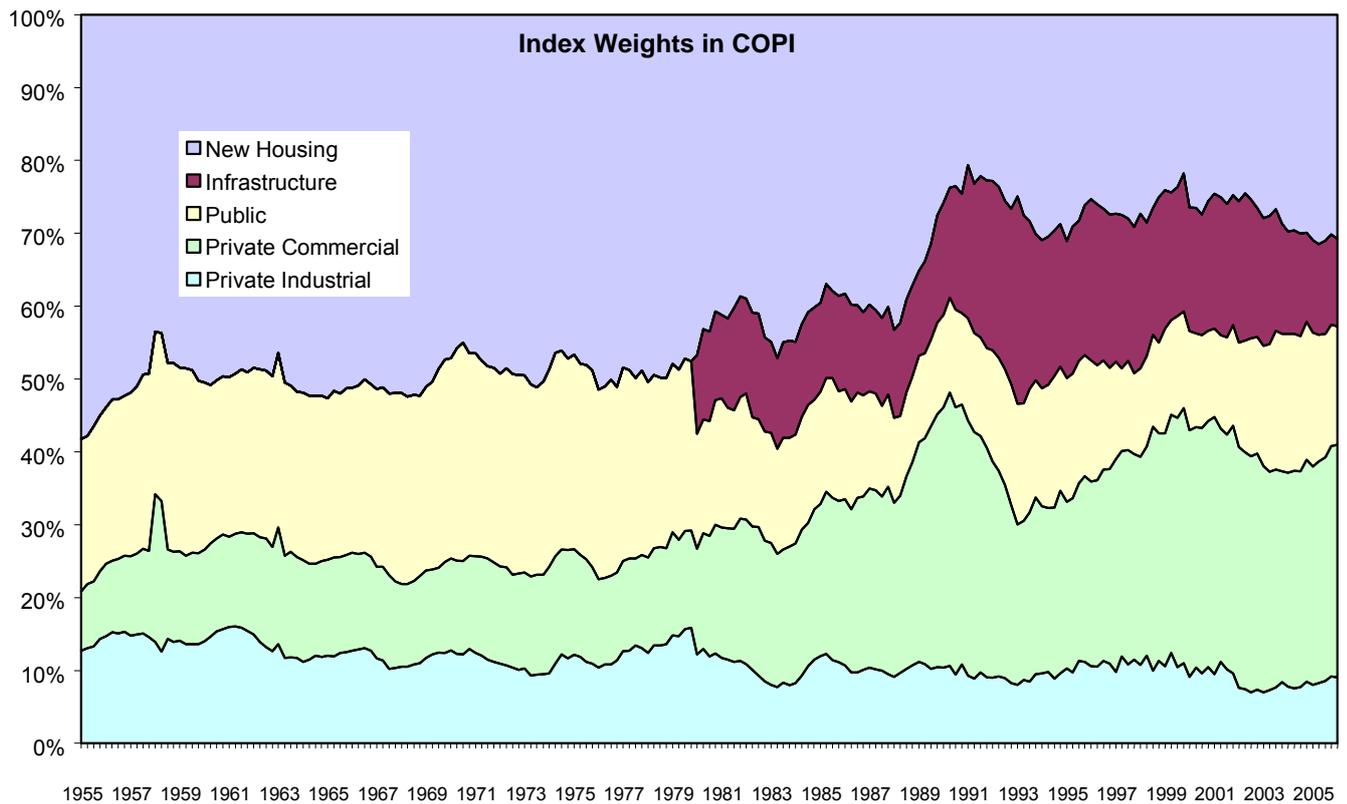
preferred approach and we do not consider at this stage that a revenue uplift would be appropriate. As we have previously indicated, should we consider such an uplift, we would apply it in a NPV-neutral manner.

Each company should consider the market mechanisms discussed above to mitigate any financing constraint in its business plan.

5.4 Notified index

We will adopt the infrastructure output price index as the index of national construction costs at PR09. The infrastructure output price index is one of the six composite sub-indices that make up the construction output price index (COPI). Figure 6 below shows the relative weight of the sub-indices within COPI and the emergence of the infrastructure index.

Figure 6 COPI sub-indices



5.5 Revenue forecasting

Companies have considerable experience of forecasting the variables that impact on revenue and of managing those variables through their day-to-day business. We

would therefore expect realistic forecasts and we will examine each company's forecast of revenues to make sure that this is the case. Accepting a revenue forecast that was too low would lead us to set higher price limits to enable a company to be able to finance its expected costs.

The key revenue forecasting assumptions relate to:

- household property numbers;
- changes in existing metered consumers' demand;
- rates of metering take up and associated use profiles;
- the form of price control; and
- non-tariff basket revenues.

5.5.1 Link with long-term water and sewerage plans

A company must base revenue forecasts on the information in its water resource plans and long-term sewerage plans. We will work alongside the Environment Agency to challenge these plans so that they provide a realistic, affordable and financeable basis for forecasting revenue for use in business planning. In turn, all of these should be consistent with each company's SDS.

Water resource plans are subject to more scrutiny, and we expect that for PR09 water service forecasts will be more robust than any corresponding sewerage forecasts. We will rely primarily on information from water resource plans as a basis for assessing companies' sewerage revenue forecasts.

5.5.2 The form of the price control

In [RD14/07](#), '[Review of form of price control mechanism](#)' (July 2007), we explained our investigation into how we could modify the price control mechanism to improve incentives for the fair sharing of revenue outperformance between a company and its bill payers. We considered the interaction between companies' incentives to maximise revenue and to promote water efficiency and investigated a range of options to share revenue outperformance including using a revenue rather than a price cap.

Having considered the responses to both RD14/07 and the draft methodology paper we have decided to introduce a mechanism that corrects for any revenue over- or under-recovery at each price review in net present value terms (that is, with interest). The first time we will use the mechanism will be at the 2014 price review for the years between 2010 and 2015. The mechanism will remove both the current scope for a company either to outperform or underperform on revenue and the disincentive for a company to promote water efficiency to measured consumers. Correcting at

successive reviews has the same benefits as a revenue cap, but avoids the potential price instability that revenue caps can introduce.

We will also include an adjustment to incentivise a company to maintain accurate billing records. If a company bills more or fewer properties than we expect, we will multiply the property variance by an allowance. We will base the allowance on the costs that we judge an efficient company would incur in maintaining accurate records on billing properties, plus an element to serve as an incentive.

5.5.3 Modelling tariffs and revenue

Our proposal to correct for differences to expected revenue between 2010 and 2015 at the 2014 review has reduced the need for companies to forecast revenue with the level of detail required in 2004. We will produce a model for companies to use to forecast tariff basket revenues. This will forecast future charges that satisfy both the latest expectation of the price limit and the metered/unmetered tariff differential. As a starting point, we will use published information on existing charges rather than increasing the reporting burden on the companies.

5.5.4 Household property numbers

A company must bill all properties that receive a water or sewerage service. We will expect each company to use its business plan to explain fully its approach to billing all properties. Where the company does not provide evidence that it is billing all possible properties, we will adjust the base revenue forecasts as appropriate.

6. The incentive framework – delivering outputs and reducing costs

Summary

- We are committed to rewarding and encouraging outperformance of price limit assumptions.
- We have put in place mechanisms to protect consumers when companies fail to deliver outputs.

We have established an output-focused incentive-based regulatory regime. We have developed an approach that provides incentives for companies to deliver what consumers want and provides rewards where companies outperform our assumptions. At the same time, we take failure to deliver – without any reasonable excuse – very seriously.

This chapter outlines the mechanisms that are currently in place and how we envisage developing these for the period after 2010.

6.1 Defining outputs and assessing delivery

We set out the rules for the current period when we set price limits in 2004. At the same time, we defined the outputs we expected to see and put in place procedures to modify these where necessary. We put in place mechanisms to reward and encourage outperformance. These included the:

- operating expenditure rolling incentive;
- capital expenditure rolling incentive; and
- overall performance assessment (OPA).

There were also clear rules for dealing with failure to deliver:

- logging down;
- shortfalling; and
- financial penalties.

6.1.1 Operating expenditure rolling incentive

We intend to retain the mechanism we introduced at PR99 to reward opex incremental outperformance in the 2005-10 period. At PR04, we introduced an

additional incentive mechanism for the leading companies. We explain the detail of these in PR09/04, 'PR09: the opex incentive allowance and the outperformance multiplier for 2005-10' (October 2007). We will also retain rolling incentives for opex outperformance during the 2010-15 period, and additional incentives for the leading companies.

6.1.2 Rolling incentive mechanism for capital expenditure outperformance

For the 2005-10 period we will use the mechanism put in place at the 2004 review to provide incentives for each company to improve its efficiency and outperform our regulatory assumptions throughout the five-year price setting period. This means we will continue to make lagged adjustments to the RCV during the 2010-15 period to reflect actual expenditure for 2005-10.

Beyond this period, with the adoption of the capex incentive scheme and symmetrical treatment of capital expenditure, the rolling incentive mechanism is no longer required. We will make an adjustment in the first year of the next review period (that is 2015-16) to reflect actual expenditure in the 2010-15 period. We will also then apply a separate financial reconciliation in 2015 to implement the balance of rewards and penalties under the capex incentive scheme.

6.1.3 The overall performance assessment

Our current incentive mechanisms include a performance-related adjustment to prices. A company that scores well in the overall performance assessment (OPA) can charge its customers slightly more, and those with poorer performance must charge slightly less. OPA-related price limit adjustments will relate to performance during the five years 2004-05 to 2008-09. The range of potential price adjustments will be a one-off adjustment of between +0.5% to -1.0%.

As at PR04, we will use both comparative and absolute assessments of company performance. We will use the percentage of maximum achievable score to take account of company's absolute performance. We will use a graduated range of adjustments.

We will strengthen our comparative assessment of company performance. We will consider the range of company performance before making final decisions but are likely to apply appropriate rewards or penalties where companies fall within the following bands:

- >1 standard deviation above/below mean;
- <1 but >0.5 standard deviation above/below mean; and
- within 0.5 standard deviation of mean.

This comparative assessment is likely to compare water only companies against other water only companies and water and sewerage companies against other water and sewerage companies. We will not make artificial distinctions between companies where there is no real difference in performance.

We will take account of company-specific circumstances when making price adjustments. Where a company's overall performance has been significantly adversely affected by one element of the assessment, we will consider carefully whether an adjustment is reasonable.

As we move into the next price review period, we are reviewing the purpose and nature of the OPA and how it interacts with other incentive mechanisms in delivering our strategic objectives.

6.1.4 Addressing failure to deliver

Consumers expect each company to deliver all the outputs associated with price limits. Where an output included is not delivered because it is no longer required or for reasons outside a company's control, we will 'log down' associated capital expenditure.

Where a company has no legitimate excuse for failing to deliver an output, we will shortfall that company (that is, make a financial adjustment to remove all benefit from the associated price limit allowance). We will also consider the nature of the undelivered output when deciding on additional measures – which could include a requirement to deliver at shareholder expense, or a financial penalty under our existing powers.

Further detail on our approach to shortfall adjustments in the four areas of major capital investment – capital maintenance, supply/demand balance, quality enhancement and enhanced service levels is set out in PR09/06.

7. Regulatory impact review

Summary

- We are committed to the better regulation principles.
- Our PR09 methodology balances the need to regulate this monopoly industry in the interests of customers with the administrative burden imposed on the companies by our approach.
- As we progress the development of competition in the sector, we will keep the need for regulation under review and withdraw unnecessary regulation.

We regulate a monopoly industry supplying an essential service to virtually all of the population in England and Wales. One of the most important ways that we protect customers of the industry is by setting new price limits every five years. This process is complex and information intensive – but the balance between regulatory burden and the customer interest is clear to us and we will take whatever steps we believe are necessary – after consulting widely where appropriate – to establish procedures and collect enough information to satisfy us that we are putting customers first.

Our draft methodology paper included proposals for incremental change to our price review process. In each case we believed that the options contributed to better regulation.

Some of these, such as the CIS are significant changes to our approach to a key price review area. Others such as the requirement to conduct cost benefit analysis on investment proposals push the industry to adopt best practice. But in every case there are clear benefits for customers. The table below summarises the differences between the CIS and the alternative put forward in our draft methodology paper.

Key item	PR04/evolution	Capex incentive scheme
Incentives to reveal realistic forecasts	Limited incentives. Companies have an incentive to produce conservative forecasts.	Improved – provided a robust baseline can be set.
Outperformance incentives	Strong incentives – with multiplier for frontier companies (reliant on comparative tools to identify these).	No change – Incentive gearing varies – most efficient companies have strongest incentives, but all gain from delivering outperformance.
Reducing the regulatory burden – simplification	Likely to require more information.	Marginal benefits – only difference (at PR09) is less econometrics. Future benefits possible, but still requires robust methods to set baseline.
Control for companies	Companies can only accept or reject determination at end of process Within the period, companies can choose to spend more than assumed, but are likely to have to write this off.	Marginal increase in control. Companies have some influence over the determination. Penalty for overspend is lower, allowing companies to manage unforeseen but necessary expenditure needs.
Choice of risk/reward	Companies have little choice.	Companies have more scope to exercise choice due to symmetrical treatment of capex.
Accountability for delivery	Companies accountable for required outputs, but Ofwat decides expenditure level.	Marginal improvement – companies less able to argue that 'Ofwat does not allow funding'.
Company ownership of business plans	Ownership of plans may be diluted by their use as funding 'bids'.	Improvement – Incentive to reveal realistic expenditure forecasts strengthens company commitment to their business plans.
Prices for customers	Regulator takes most of the responsibility for containing prices to customers.	Improved – Incentives for companies to contain business plan proposals (provided baseline is robust). Customers carry risk of financing overspends, but should be offset by impact on cost of capital.
Service risk for customers	Companies must manage risk, but cap on overspends may encourage delay or deferral of necessary expenditure.	Marginal reduction in service risks, if companies are less tempted to delay or defer expenditure.

We have considered comments on our other proposals and assessed the impact of the new policies we will introduce at this price review against the five principles of better regulation: transparency, consistency, accountability, targeting and proportionality. The table below summarises these.

New PR09 policy	Transparency	Consistency	Accountability	Targeting	Proportionality
Competition (1.3)	We have signalled clearly that the introduction of competition is a very high priority and that the PR09 process will support this.	Our PR09 methodology is consistent with our statements and publications on the development of competition in the water industry.	Competition will improve the accountability between companies and their customers.	It is our aim to target our regulation only on areas where markets will not operate to protect customers.	Because we will put our effort into progressively introducing competition we will gather evidence on benefits as we go and our approach will ensure that effort is proportionate to benefits.
Longer-term approach (2.1.2)	The introduction of the SDS has increased transparency.	The SDS is consistent with our emphasis on the need for each company to take ownership of its future direction.	The SDS exposes the strategy of each company to its stakeholders at an early stage – improving accountability	The SDS targets a shortcoming in previous reviews – the long term vision was not evident in previous business plans.	The requirement for companies to review and present their strategies is clearly proportional to the challenges facing this sector and indeed reflects sound business practice.
Additional draft business plan option (2.4.1)	Each company will publish a summary of draft business plan(s). The option to produce a second draft business plan improves transparency around possible alternative approaches.	Option available to all companies.	The option for a draft business plan improves accountability of companies and standard setters by allowing exposure of alternatives which deserve wider consideration.	We are not requiring all companies to provide a second draft business plan – the option allows a targeted approach where the issues justify a second plan.	Company discretion – only necessary where there is a clear benefit for customers. Overall business plan burden less than in 2004.
Customer research (3.2.1)	Each company has developed its SDS reflecting its own	The joint research projects will provide company specific results	The strategy for consumer research will ensure planning and	Research will cover the views of both bill payers and non-bill payers.	Carrying out joint research and synchronising the 3

Setting price limits for 2010-15: Framework and approach

	research. We will publish the results of stakeholder research into consumers' views.	on a consistent basis.	decisions are informed by consumers' views thus making decision makers accountable to customers.		stages of work avoids duplication of effort and ensures value is added.
Climate change adaptation (3.3.1)	We expect each company to ensure that the risk associated with a changing climate is managed in an appropriate manner.	This is consistent with our expectation that the industry will deliver its functions now and in the future.	Both the SDSs and business plans will outline each company's priorities, exposing its intentions in this area, thus increasing stakeholder accountability.	Each company should target the correct processes ensuring appropriate climate change adaptation options are considered.	CBA will help each company plan effectively for a changing climate, helping to maximise the benefits to consumers now and in the long term.
Carbon impacts (3.3.2/3)	Each company must demonstrate that it has taken account of carbon costs when planning and making investment decisions.	This is consistent with wider Government policies and consumer expectations.	Improves accountability of each company to its stakeholders.	Focuses each company's attention on all the issues ensuring the right choices are made.	Climate change mitigation through reduction of emissions will potentially have significant long-term outcomes and requires appropriate current action.
CBA on all investment (3.4.1)	Allows customers to see what they are getting for their bills and why.	Consistent with long term focus and greater company ownership of their plans.	Ensures accountability of companies and regulators to justify bills to consumers.	Targets the whole plan with no greater emphasis on any service areas.	The cost of undertaking CBA is small compared to the scale of the investment decisions.
Resilience and flood risk (3.7)	Our approach increases transparency as we expect each company to specify (and justify) their plans for increasing resilience.	Our methodology will help companies to become more consistent in their handling of this area.	Highlighting this issue increases each company's accountability to its customers.	This is an important area which we are targeting, in the context of climate change and recent customer experience of the effects of flooding.	There is no increased regulatory burden attached to this issue aside from necessary effort spent including this issue in business plans.
Catchment	Our approach to funding	Our approach treats all	Our approach does not	Offers a direct route to	Our approach is designed

Setting price limits for 2010-15: Framework and approach

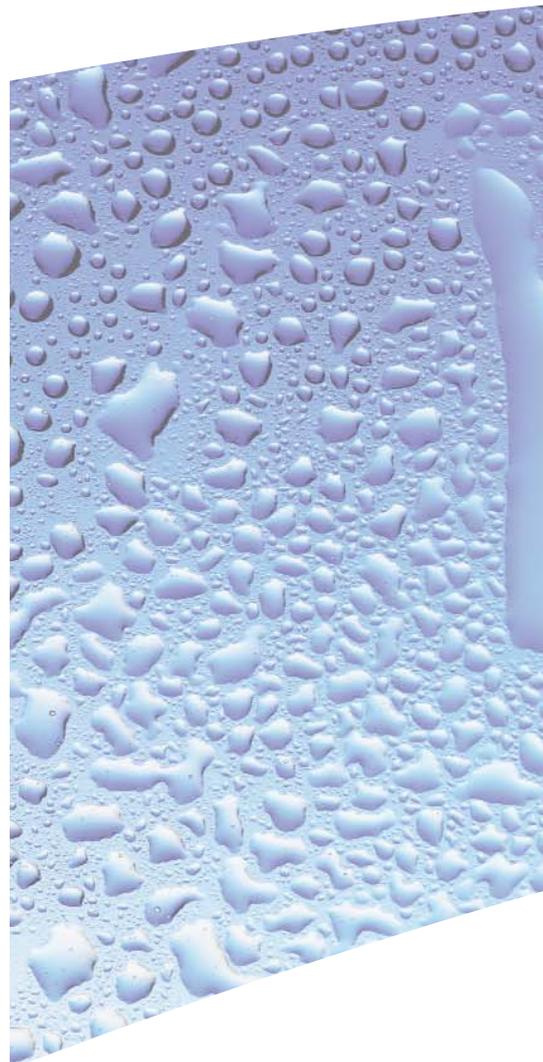
management (3.8.3)	investment in catchment management to address declining raw water quality ensures greater transparency about sources of pollution and the acceptability of proposed solutions.	companies consistently and does not favour those who own land over those own do not.	reduce accountability under the 'polluter pays principle'.	deal with the immediate problem while making sure that cause of the problem is also addressed.	to ensure that water consumers pay a proportionate amount to address declining raw water quality in line with the 'polluter pays principle'.
Capex planning incentive (4.2)	The CIS will improve incentives for each company to present realistic information in its business plans.	The approach is consistent with a longer term focus and greater company ownership of their plans.	The CIS will improve company accountability to stakeholders for delivery of key outcomes.	The new incentive structure is targeted on capital expenditure, where information asymmetry is greatest.	We will ensure that the structure of rewards and penalties is proportionate, and consistent with our overall approach to business risk.
Planned overlap (4.3)	Each company can better identify its optimal pattern of investment over time.	Approach is consistent with encouraging companies to take a longer term view of their investment proposals.	The removal of some regulatory constraints makes each company more accountable for its own expenditure profile.	Overlap programme specifically designed to address the inefficiencies caused by roller-coaster pattern of investment in water industry.	The planned overlap is a proportional regulatory approach to this problem it deals with the regulatory constraints without attempting to distort the workings of the competitive market for goods and services.
Capital estimating scorecard (4.2.5)	The tool will ensure that each company exposes the evidence which underlies capital cost estimates.	The structured approach will ensure that our cost challenges are applied consistently.	The tool will make each company more accountable for the bill implications of its investment proposals.	We will target the approach on representative sample of capital projects.	The burden of this requirement is small when compared to the size of the capital investment programme and the potential for lower bills. Furthermore, each company should already

Setting price limits for 2010-15: Framework and approach

					have evidence to support their cost estimates.
Tax losses (5.2.11)	Improves visibility of benefits accruing from company approach to tax.	This policy is consistent with our approach to companies trading at arm's length with other companies within their group structure.	Increases corporate accountability.	This policy is only targeted at the minority of companies that surrender tax losses to other group companies at less than full value.	The new policy is not burdensome and only applies where a company might have taken benefits from the core business without sharing them with its customers.
Financeability (5.3)	Market mechanisms are our preferred approach and offer a transparent approach to addressing financing constraint.	We will apply the same overall approach to each company This is consistent will our overall approach in financing assumptions.	This change does not impact on accountability.	The adoption of market mechanisms is reflective of the steps that companies have taken to address financing constraints.	In the event that revenue uplifts are required to ensure financeability we will implement them in a net present value neutral manner.
Notified index (5.4)	The infrastructure output index (IOPI) is one of the sub-indices that make up the all new construction output price index (COPI).	The infrastructure index is more closely aligned with the impacts faced by the industry.	The OPI series is published by BERR (formerly DTi) as an officially produced national statistic – there remains a clear link from this to the changes in price limits and bills to customers.	The IOPI sub-index is more reflective [than COPI] of water industry capital price inflation.	There is no change to the regulatory burden.
Revenue correction mechanism (5.5.2)	The mechanism is more transparent to customers than the current system. The basic approach is clear and easy for companies to understand.	We will apply the same approach to all companies, and we will treat revenue over- and under-recovery symmetrically.	This proposal improves the clarity of the link between water supplied and the bills to customers, making each company more accountable to its	The proposal provides an effective means to deliver two objectives – to remove the disincentive for a company to promote water efficiency, and to ensure that a company	The proposal provides a solution to two material issues. We made it after carefully considering a range of possible options. Moreover, the proposal actually reduces the

Setting price limits for 2010-15: Framework and approach

			customers for revenue related changes in bills.	does not over-recover revenue from customers. We will put in place a correction mechanism to deal with a possible side effect on a company's incentives to bill all properties.	regulatory burden by enabling us to reduce our information requirements.
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