

Our work in regulating the Scottish water industry:
The scope for operating cost efficiency

volume **4**

**WATER INDUSTRY
COMMISSIONER
FOR SCOTLAND**

Contents

Contents	
Foreword	Page 01
Executive summary	Page 03
Section 1	
Incentive based regulation	Page 24
Chapter 1 Introduction	Page 24
Chapter 2 An introduction to costs, levels of service and benchmarking	Page 26
Chapter 3 Types of regulatory frameworks	Page 33
Chapter 4 RPI-X incentive framework and benefit sharing	Page 40
Section 2	
Understanding today's operating costs	Page 53
Chapter 5 What is operating expenditure and why it is important?	Page 53
Chapter 6 Establishing a baseline for operating costs	Page 57
Section 3	
How we ensure comparisons are objective	Page 66
Chapter 7 Ensuring like-for-like comparisons of efficiency	Page 66
Chapter 8 Ofwat's approach to assessing operating cost efficiency	Page 71
Chapter 9 An alternative method to assessing operating cost efficiency	Page 82
Chapter 10 Ensuring modelled results are objective and fair	Page 90
Section 4	
Understanding future operating costs	Page 102
Chapter 11 The scope and timeframe for improvement	Page 102
Chapter 12 New operating expenditure	Page 111
Chapter 13 Public private partnership financing (PPP)	Page 116
Section 5	
How we propose to set targets	Page 122
Chapter 14 Setting the allowed level of operating costs	Page 122
Chapter 15 Regulating levels of service	Page 130
Chapter 16 Monitoring operating expenditure and levels of service	Page 136

Foreword

I am committed to the Better Regulation Task Force principles of transparency, accountability, consistency, proportionality and targeting. In the previous volume of our proposed methodology for the *Strategic Review of Charges 2006-10*, I set out a new approach to price setting. The use of a Regulatory Capital Value will facilitate comparison of the financial sustainability of the water industry in Scotland with that of the industry south of the border. It will also highlight the direct impact that the level of operating costs incurred by Scottish Water will have on customers' bills. In this volume, we explain how we propose to scrutinise these costs to ensure that they are no higher than they need to be.

I had also planned to outline our proposed approach to establishing the scope for efficiency in the delivery of the capital programme in this volume. Unfortunately, there are still a number of outstanding issues concerning the definition and delivery of the *Quality and Standards II* capital programme. I have concluded, reluctantly, that it would not be in the customer interest to publish our proposals for determining the scope for capital efficiency until these issues are resolved. I have extended the deadline for responses to the issues raised in this current volume to 5 November 2004.

In the *Strategic Review of Charges 2002-06*, I set challenging but achievable efficiency targets for operating costs and capital expenditure. In 2003, I welcomed the solid start made by Scottish Water in improving its operating cost efficiency, but cautioned that more still needed to be done. I am pleased to say that Scottish Water appears to be rising to the challenge and it is likely that it will achieve the target of reducing operating costs to £265 million on a like-for-like basis by the end of the current regulatory control period. This will represent a reduction of some £145 million in real terms over four years. This improvement in Scottish Water's efficiency is to be welcomed; as a result, customers' bills will be some 15% less [more than £40 less for the average household] than they would otherwise have been.

It is, however, important to put this undoubted success in its proper context. In last year's Costs and Performance

Report, we explained that if Scottish Water achieved the target for reducing operating costs, and the companies south of the border did not outperform the targets set by Ofwat, then operating cost inefficiency would still cost the average household some £23 per year, or around 8% of its annual bill.

Companies also have an incentive to outperform the targets set by Ofwat in order to reward their shareholders. The efficiency gap is therefore likely to grow unless we set further targets. In August this year, Ofwat published its draft determination of prices for the companies south of the border. This draft determination takes account of the expected performance of the companies. Ofwat expects the average company to continue to improve at a rate of around 3% a year. This clearly implies that Scottish Water still has considerable scope to improve its operating cost efficiency. I do not believe that customers ought to have to pay the cost of such inefficiency.

In this volume we explain in detail how we propose to assess the scope for efficiency in Scottish Water's operating costs. We propose to develop the comparisons that we have used during the last four years, using the Ofwat econometric models and an independent alternative model.

I am aware that some commentators have expressed reservations about our use of the econometric models developed by Ofwat. They assert that Scottish Water faces unique challenges and that the models do not take account of these. In this volume we have outlined how we propose to review and, if appropriate, take any such factors into account in our assessment of the scope for efficiency.

This volume also addresses important issues about levels of customer service. I am keen to understand whether stakeholders believe that we should set targets for the level of service that should be provided to customers, as well as the efficiency targets.

My focus at this Strategic Review of Charges is to ensure that I establish a robust and transparent process

and set prices that are no higher than necessary. I appreciate the need to explain clearly what my Office is doing, and that is why I am keen to facilitate debate about the challenges facing the water industry in Scotland and my proposals for the coming review. As part of that commitment, this volume explains in detail how to use the econometric models and where to find the input information. I have also arranged a number of stakeholder information days, and would encourage all interested parties to use these opportunities to have their say or to ask questions. These views will help to inform the Strategic Review of Charges and we will take full account of representations that are made to us in setting an efficiency target for operating expenditure for Scottish Water.

A handwritten signature in black ink, appearing to read 'Alan D A Sutherland'.

Alan D A Sutherland
Water Industry Commissioner for Scotland
October 2004

Executive summary

Introduction

The role of this Office, as economic regulator, is to set a regulatory framework that provides incentives to Scottish Water to achieve efficiencies and improve customer service.

This is the fourth volume in a series of documents which explain and seek views on our proposed approach to the *Strategic Review of Charges 2006-10*.

In this volume we discuss:

- how the regulatory regime can create incentives to improve performance;
- how we propose to decide on the level of operating costs that Scottish Water should be allowed to incur; and
- how best to ensure that customers receive an appropriate level of service.

We have identified a number of questions for consultation. These questions are set out at the end of the relevant chapters and are reproduced under chapter headings at the end of this Executive Summary. All responses to this consultation should be received by 5 November 2004. These should be sent to :

Katherine Russell
Water Industry Commissioner for Scotland
Ochil House
Springkerse Business Park
Stirling FK7 7XE

or by email to :

SRCmethodology@watercommissioner.co.uk

We will publish a summary of responses, and our conclusions, on our website www.watercommissioner.co.uk on 19 November 2004.

We had planned to include our proposed method for assessing the scope for operating cost and capital expenditure efficiency in this volume. Unfortunately, there are a number of issues that are still outstanding in defining the current *Quality and Standards II* capital programme. With some reluctance we have therefore

delayed finalising our approach to assessing the scope for capital expenditure efficiency until we have a fully defined capital programme for *Quality and Standards II*. This area of work will now be covered in a fifth volume. We will extend the date for responses to the questions for consultation that are set out in Volume 5.

Incentive based regulation

Regulation seeks to limit the power of a natural monopoly and ensure that it acts in the customer interest. Regulation ensures that the monopoly:

- restrains prices, by setting price or revenue limits; and delivers acceptable levels of customer service.

Common forms of regulation

There are five main regulatory models:

- **Cost-of-service regulation:** in this model the regulator sets the return that can be earned on investment by companies. This enables a company to recoup, at a set rate, the costs and investments that it has put in to provide the services. There is no incentive for a company to minimise prices or to delay investment for as long as possible.
- **Price cap regulation:** price cap regulation (RPI-X) sets the maximum prices that companies can charge for their services for a period of years. This provides an incentive to a company to improve its efficiency. This is because it has to drive down costs in order to maximise profits.
- **Yardstick regulation:** yardstick regulation involves comparing the performance of a company with that of other companies in the same industry. The regulator uses these comparisons to set targets for other companies in the industry. Yardstick regulation is usually used in conjunction with either price cap or rate of return regulation.
- **Performance based regulation:** performance based regulation relies on establishing a reliable link between the profits of the regulated company and the performance measures set by the regulator. Price increases could be delayed or fines become payable if the company does not achieve the defined

performance targets. The company therefore has a strong incentive to meet the targets set.

- **Franchise regulation:** under franchise regulation, the regulator invites companies to bid for the right to provide services to the public. The company that offers the best price-quality package wins the bid and will contract to provide the services at a certain price and to a defined quality standard.

We believe that price cap regulation is the most applicable to the current position of the water industry in Scotland. The RPI-X approach is widely used in the regulation of utilities in the UK. Using this approach in Scotland will allow more direct comparison with the industry in England and Wales. This is important as it is through benchmarking the performance of Scottish Water with other water companies that we can determine the extent of efficiencies that are possible.

Providing incentives through regulation

In the context of regulated utilities, incentive regulation has been defined as “the use of rewards and penalties to induce the utility to achieve desired goals where the utility is afforded some discretion in achieving goals¹.” In the case of the water industry, the “desired goals” would include:

- keeping prices to customers as low as possible;
- meeting environmental and water quality objectives;
- delivering the required investment programme;
- maintaining the long-term sustainability of the industry; and
- meeting customer service targets.

As part of its 2004 price review², Ofwat listed the general criteria that it considered should apply for incentive mechanisms. Ofwat stated that the mechanism should:

- be in the long-term interests of customers;
- offer meaningful and worthwhile rewards for genuine outperformance;
- offer adequate penalties for underperformance;
- provide timely rewards and penalties;
- stimulate continuous improvements;
- be known in advance;
- be straightforward in concept;
- follow simple rules;
- be simple to apply; and
- avoid retrospective changes.

We believe that these criteria are as relevant to the public sector as to the private sector water industry. Our proposed use of the RPI-X mechanism would seem to be consistent with these criteria.

¹ Lewis, Tracy and Chris Garmon, *‘Fundamentals of incentive regulation’*: PURC/World Bank International Training Program on Utility Regulation and Strategy, June 1997.

² Ofwat, *‘A further consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of regulatory expectations’*, June 2003.

Table 1: Criteria for an effective framework for incentives

Criteria	How well does RPI-X fit the criteria?
In long-term interests of customers	Good. It is widely agreed that RPI-X works well in incentivising firms to improve efficiency in operation and investment. There are risks that firms may seek to cut corners in service delivery, but proper scrutiny from regulators and customer committees should reduce this risk.
Meaningful and worthwhile rewards for genuine outperformance	Good. Regulated companies in the UK have improved their efficiency. This suggests that regulated firms believe the benefits to be worthwhile. The context of 'rewards' for a public sector company may be different.
Adequate penalties for underperformance	We are not aware of any evidence showing the penalties for underperformance to be inadequate.
Timely rewards and penalties	Acceptable. A regulatory period of four to five years ensures that the incentive framework can reward (or penalise) managers who are responsible for outperformance (or underperformance). The period is not so long that there is an inordinate delay in transferring the benefit to customers.
Stimulate continuous improvements	Good. This can be further enhanced by implementing a rolling incentive mechanism.
Known in advance	Good. The targets for the regulatory period are set out in advance. The mechanism is well understood by all stakeholders.
Straightforward in concept	Good. The concept is relatively straightforward. Companies are motivated to meet and beat the targets set by the regulator.
Simple rules	Acceptable. In its initial form, simplicity was one of the merits of the framework. However, the rules have inevitably become increasingly complicated.
Simple to apply	Acceptable. No new information, which is not already collected either during the initial price-setting or through ongoing monitoring, is required. The rules are well documented.
Avoid retrospective changes	The incentive framework relies on consistency and transparency. These are two of the Better Regulation Task Force Principles that we have adopted.

Some commentators have suggested that RPI-X promotes short-term planning by utilities instead of encouraging the long-term investment planning that could sustain efficiency improvements and would be more beneficial to customers. We agree that there is a risk that regulated companies are likely to maximize their short-term performance. It would be desirable to ensure that regulated companies planned for the long term. We consider that transparent and consistent regulation are likely to be at least as important as other potential regulatory actions.

Our view is that there needs to be a balance between short-term and long-term pressures. It is important to both customers and to the service provider that we are clear about the long-term prospects for prices. It is equally important, however, that there is a current pressure to deliver value for money to customers. On balance, we believe that RPI-X does work in the

customer interest. If the regulator monitors service levels and asset condition and performance effectively, he can reduce the risk that a company seeks short-term benefits and stores up problems for the future. Regulatory consistency and transparency are essential, but so too is the strength of the regulatory framework. The regulated company must believe that the regulator can and will apply incentives or penalties.

In order to improve the transparency and consistency of the framework, we would also propose to introduce a rolling incentive mechanism. In its 1999 price review, Ofwat proposed a rolling incentive mechanism, which it believed would strengthen incentives for the companies. The mechanism allows companies to keep the benefit of outperformance of targets for a full five-year period, irrespective of when the savings are made. It is only after a period of five years that the benefit of any outperformance is passed to customers.

Employee incentives

It is important that the benefits of any outperformance encouraged by RPI-X regulation are shared appropriately between the various stakeholders. The periodic setting of prices will ensure that customers benefit in the medium term. There does, however, have to be appropriate incentives for Scottish Water's employees to outperform the regulatory targets.

The nature and scope of incentives for management and employees is clearly outside our remit. However, the potential benefits to customers of improved and sustained performance are important considerations for this office. From a customer perspective, we believe that incentives should be designed to encourage exceptional performance and should be consistent with the regulatory settlement. Management bonuses should also be seen to reflect improvements in the value for money that is achieved for customers.

Under RPI-X regulation, Scottish Water could be permitted to retain the benefits of outperformance of regulatory targets. It is important that this incentive is in the customer interest. We therefore propose to protect this interest by introducing the right to retain the benefits of outperformance on the condition that the Board

agrees to publish, in advance, the incentive framework for managers. The Board would also be required to ensure that achieving regulatory targets is a clear and discrete element of the framework.

This is not without precedent in quasi-public, regulated organisations. Two examples of other benefit sharing schemes indicate the scope of what is possible.

Glas Cymru³: the remuneration of Glas Cymru's executive directors is designed in such a way that a high proportion of the maximum potential pay is linked directly to company performance. Half of the maximum bonus is based on financial performance (measured by growth in financial reserves) and the other half is based on how well the company delivers services to customers.

Network Rail Limited⁴: Network Rail's Management Incentive Plan (MIP) is designed to: "create the potential to reward outstanding performance based on individual contribution and the overall success of Network Rail in meeting the objectives of the Business Plan."⁵

Setting the allowed level of operating costs

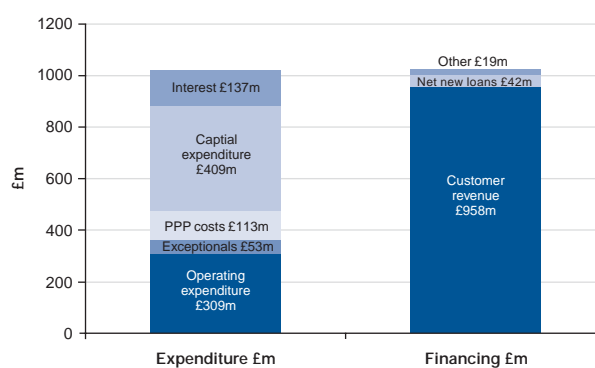
Operating expenditure comprises day-to-day running costs such as employment costs, electricity, materials, hired and contracted costs, local authority rates, insurance, software licences and vehicle running costs. Bad debt is also regarded as a running cost.

We do not include the following in operating costs:

- maintenance of the asset base;
- depreciation;
- infrastructure renewals charge;
- costs of Public Private Partnership (PPP) schemes;
- interest payments; and
- taxation.
- the costs of abnormal pension contributions;
- redundancy payments;
- rates rebates; and
- unusual weather conditions.

Operating expenditure accounts for some 30% of revenue. This is illustrated in Figure 1, which shows that in 2003-04, Scottish Water's operating expenditure was £309 million.

Figure 1: Scottish Water expenditure and funding 2003-04



We collect information about the operating costs incurred by the water and sewerage service undertakers in the UK using a consistent breakdown of operating expenditure. This facilitates comparisons with other water and sewerage companies.

Underlying operating expenditure

In order to ensure that our comparisons are objective and fair, we exclude one-off items of expenditure that can affect reported operating expenditure. Examples would include:

- the costs of abnormal pension contributions;
- redundancy payments;
- rates rebates; and
- unusual weather conditions.

Base service operating expenditure

The baseline level of operating expenditure is the expenditure incurred in the base year. We will apply

³ Source: Interim statement of Glas Cymru policy for the remuneration of directors, Glas Cymru Cyfyngedig Annual Meeting (2001).

⁴ Source: Management Incentive Plan Statement – 2002-03, Network Rail Limited.

⁵ Ibid.

future efficiency targets to this baseline. We will use the following process to set the baseline level of operating costs for the draft determination:

- We will use the 2003-04 statutory accounts and Annual Return information to establish the total level of Scottish Water's operating expenditure in that year.
- We will identify exceptional and atypical costs and subtract them from total operating expenditure. This will allow us to establish the normal ongoing costs of running the business.
- Finally, we will assess whether there is anything unusual about Scottish Water's cost allocation in 2003-04. We will compare Scottish Water with the companies in England and Wales to ensure that its cost allocation practices are consistent with those in England and Wales. If necessary, we will make appropriate adjustments to Scottish Water's operating expenditure.

We are due to publish the final determinations in November 2005. We will therefore have information for 2004-05 at that stage. We therefore propose to revise our assessment of the baseline using information for 2004-05.

New operating expenditure

Scottish Water incurs 'new' operating expenditure to deliver improvements in:

- environmental standards;
- drinking water standards;
- levels of service to customers; and
- the supply/demand balance.

Such new operating costs are added to the baseline that we described above.

We propose to use the same criteria to assess the level of new operating costs as in the *Strategic Review of Charges 2002-06*. These are as follows:

- Does the expenditure result in a level of service that exceeds the reported norms for England and Wales, or enable significant additional sewage treatment?
- Is the authority required to provide this additional level of service, and for what reason?
- Has the authority carried out a proper assessment of the proposed new operating expenditure, rather than relying on estimates from contractors/manufacturers or on an arbitrary percentage of the capital cost?
- Has the authority demonstrated management challenge and control over the proposed costs?
- Has the authority compared alternative options on a whole life cost basis, within a project appraisal?
- Have full net present value calculations been provided?
- Do the alternative options include different mixes of operating expenditure and capital investment?
- Where appropriate, have single authority solutions been investigated?
- Has the authority quantified potential savings to the baseline operating expenditure, which arise from upgrading works or systems, and offset increases in new operating expenditure?

Like-for-like comparison

In order to make reliable like-for-like comparisons we need to understand the factors that can influence the level of costs incurred by the water and sewerage companies in the UK. These can typically be divided into those that are broadly controllable by management and those that are outside the control of management. These factors are called 'internal' and 'external' respectively.

It is possible to identify a number of external factors that affect the costs of the water and sewerage industry. They include the following:

- difficulty of operating environment (eg population density, topography, types of water source, etc);
- customer mix;
- customer requirements (resolving complaints, etc);
- environmental requirements (eg leakage levels, sewage effluent standards, etc);
- volumes (water consumption, peak use, sewage loads);
- nature of the assets operated and maintained in the short to medium term (size, mix, performance);
- regional variations in charges for local authority rates, water abstraction and sewage discharges;
- regional variations in services such as mains diversions and sewer diversions ('third party' services); and
- regional variations in market rates for salaries, electricity or other costs.

We can also identify a number of factors that are within the control of management. They include the following:

- the organisation's remuneration policy;
- the organisation's policy regarding the use of permanent or temporary employees;
- the organisation's policy regarding purchasing and stocks of materials and consumables;
- the organisation's policy regarding hired and contracted services, for example the use of lawyers and consultants;
- and, in the long term, the nature of the assets operated and maintained (size, mix, performance) – over time, water and sewerage service providers can change the assets that they own and operate, either by building new ones, decommissioning old ones or

making changes to existing assets to modify the way in which they operate.

Calculating relative efficiency

In order to make objective comparisons we need to take proper account of the external factors that influence the level of costs of each company. We use two separate benchmarking models to allow us to assess the relative efficiency of the water and sewerage companies.

The models allow us to compare the actual costs incurred by a water and sewerage company with a predicted level of costs from our benchmarking models. The difference between the predicted and the actual level of costs is an indicator of the relative efficiency of the company. We adjust these results so that the average level of predicted costs is 100. The results for other companies can be adjusted in a similar way. Those with results which are lower than 100 are relatively efficient, while companies with scores higher than 100 are relatively inefficient.

Ofwat's methods of benchmarking

Ofwat uses econometric modelling to establish a relationship between the costs incurred by the companies and a number of cost drivers. These cost drivers take account of both engineering and economics. Ofwat developed these models jointly with Professor Mark Stewart of Warwick Business School in the early 1990s. They have subsequently been updated and improved.

The Competition Commission endorsed the models in August 2000, following a detailed review, and in January 2000 Ofwat's approach earned wide endorsement as an example of best practice from the Performance and Innovation Unit of the UK Government Cabinet Office.

In January 2004, Ofwat published a revised suite of models for comparing operating expenditure. The 2004 models have been re-estimated using 2002-03 information from the companies south of the border and will be used as part of the 2004 price review. There are nine models for operating expenditure⁶:

⁶ There are eight econometric models for assessing capital maintenance efficiency, hence the 17 models referred to by the Performance and Innovation Unit in its report

- water resources and treatment;
- water distribution;
- water power;
- water business activities;
- sewer network;
- large sewage treatment works;
- small sewage treatment works;
- sludge treatment and disposal; and
- sewerage business activities.

The purpose of each model is to establish a relationship between the costs reported by the companies and external cost drivers. The models themselves take different forms. These are summarised in Table 2.

Table 2: Summary of econometric models and explanatory factors

Model	Model type	Explanatory factors
Water resources and treatment	Linear model for unit cost	Population, number of sources, distribution input, proportion of supplies from rivers.
Water distribution	Log unit cost	Population, proportion of total mains length with diameter > 300mm.
Water power	Log linear	Distribution input, average pumping head.
Water business activities	Log linear	Number of billed properties.
Sewer network	Log linear	Sewer length, area, resident population, holiday population.
Large sewage treatment works	Log linear	Total load, use of activated sludge treatment, tight effluent consent for both suspended solids and BOD ₅ .
Small sewage treatment works	Unit cost	Works size, works type, load.
Sludge treatment and disposal	Unit cost	Weights of dry solids, disposal route.
Sewerage business activities	Unit cost	Number of billed properties.

Water resources and treatment

This model predicts the costs associated with water resources, the treatment process and the operating environment.

Table 3: Ofwat's model for water resources and treatment operating expenditure

Water resources and treatment		
Modelled cost:	Resources and treatment functional expenditure (£m) less power expenditure (£m), less Environment Agency charges (£m), divided by resident population (millions)	
Explanatory variables	Coefficient	Standard error
Constant	1.485	1.927
Number of sources divided by distribution input (M/d)	16.770	6.268
Proportion of supplies derived from river sources	5.124	2.449
Statistical indicators:	Number of observations: 22	R ² : 0.274

(Resources and treatment expenditure less Environment Agency charges less power expenditure) / resident population = 1.485 + 16.770 x (number of sources / distribution input) + 5.124 x (proportion of supply from rivers)

Water distribution

At the 1999 price review, Ofwat carried out a thorough review of the potential cost drivers for water distribution. Analysis showed that the length of large diameter mains (300mm diameter or more) was statistically significant. This result is not surprising given that repairs, maintenance and inspection on large mains are likely to incur much greater costs than those on small mains.

Table 4: Ofwat's model for water distribution operating expenditure

Water distribution		
Modelled cost:	Log to base e of ((distribution functional expenditure (£m) less power expenditure (£m), divided by resident population (millions)	
Explanatory variables	Coefficient	Standard error
Constant	-5.203	0.160
Length of main greater than 300mm diameter / total length of main	5.165	1.943
Statistical indicators:	Number of observations: 22	R ² : 0.261

Log to base e of ((distribution functional expenditure less power expenditure) / resident population) = -5.203 + 5.165 x (proportion of large diameter mains)

Water power

This model is based on the physical relationship between the amount of water pumped and the energy required. It incorporates both vertical lift and the energy required to overcome friction in pipes.

Table 5: Ofwat's model for water power operating expenditure

Water power		
Modelled cost:	Log to base e of power expenditure (£m)	
Explanatory variables	Coefficient	Standard error
Constant	-9.081	0.245
Log to base e of (distribution input (Ml/d) x average pumping head)	0.940	0.023
Statistical indicators:	Number of observations: 22	R ² : 0.989

Log to base e of power expenditure = -9.081 + 0.94 x log to base e of (distribution input x average pumping head)

Water business activities

This model relates business activity costs (including customer services, scientific services and the charge for doubtful debts) to the number of billed properties.

Table 6: Ofwat's model for water business activities expenditure

Water business activities		
Modelled cost:	Log to base e of business activities expenditure (£m) plus doubtful debts (£m)	
Explanatory variables	Coefficient	Standard error
Constant	-3.916	0.255
Log to base e of number of billed properties (thousands)	0.949	0.040
Statistical indicators:	Number of observations: 22	R ² : 0.966

Log to base e of (business activities expenditure plus doubtful debts) = -3.916 + 0.949 x log to base e of (number of billed properties)

Sewer network

This model expresses costs per unit length of sewer. It takes into account the amount of sewage being transported through the sewerage system. This is a function of area, since this will affect surface water drainage volumes. Costs associated with remoteness are also a function of area. Sewer network costs are also a function of population since this will impact on sewage volumes. The model also takes account of the higher costs expected in regions with a significant holiday population.

Table 7: Ofwat's model for sewer network operating expenditure

Sewer network		
Modelled cost:	Log to base e of sewer network expenditure (£m) less Environment Agency charges (£m), per kilometre of sewer for each area	
Explanatory variables	Coefficient	Standard error
Constant	-6.515	0.313
Log to base e of area of sewer district per kilometre of sewer	0.179	0.032
Log to base e of residential population per kilometre of sewer	0.432	0.169
Holiday population divided by resident population	0.715	0.501
Statistical indicators:	Number of observations: 64	R ² : 0.457

Log to base e of sewer network expenditure less Environment Agency charges per kilometre of sewer = -6.515 + 0.179 x (log to base e of area of sewer district per kilometre of sewer) + 0.432 x (log to base e of residential population per kilometre of sewer) + 0.715 x (holiday population/resident population)

Large sewage treatment works

The large sewage treatment works model covers those sewage treatment works serving a 'population equivalent' of at least 25,000. Population equivalent is a measure of the amount of sewage treated, both domestic and industrial, expressed in terms of the number of domestic customers required to produce a similar strength and volume of sewage.

Table 8: Ofwat's model for large sewage treatment works operating expenditure

Large sewage treatment works		
Modelled cost:	Log to base e of functional expenditure on sewage treatment at large works (£000) less Environment Agency charges (??£m) and terminal pumping costs	
Explanatory variables	Coefficient	Standard error
Constant	-1.455	0.253
Log to base e of total load ⁷	0.754	0.028
Tight effluent consent for both suspended solids and BOD ₅ ⁸	0.060	0.051
Activated sludge used	0.353	0.054
Statistical indicators:	Number of observations: 369	R ² : 0.715

Log to base e of large sewage treatment works expenditure less Environment Agency charges and terminal pumping costs = -1.455 + 0.754 x (log to base e of total load) + 0.06 if tight effluent consent for both suspended solids and BOD₅ + 0.353 if activated sludge used.

⁷ For the purposes of this model, total load is estimated as population equivalent x 120.

⁸ Tight effluent consent is defined as 30 mg/litre or less suspended solids and 20 mg/litre or less BOD₅.

Small sewage treatment works

This model uses average unit costs across England and Wales.

Table 9: Ofwat's model for small sewage treatment works operating expenditure

Cost of small sewage treatment works										
This is a unit cost model. Each company's average annual expenditure divided by the total load treated at each works is compared with the weighted average industry cost.										
	Weighted average industry unit cost £000s/(kg BOD5/day)									
	Primary	Secondary activated sludge	Secondary biological	Tertiary A1	Tertiary A2	Tertiary B1	Tertiary B2	Sea outfall preliminary	Sea outfall screened	Sea outfall unscreened
Size band 1	0.78	1.04	1.00	1.07	0.72	0.69	0.92	10.89	-	0.32
Size band 2	0.33	0.83	0.59	0.62	0.38	0.49	0.55	-	-	0.05
Size band 3	0.33	0.46	0.31	0.43	0.33	0.30	0.39	0.43	0.04	0.01
Size band 4	0.30	0.21	0.16	0.20	0.29	0.16	0.19	0.01	0.10	0.01
Size band 5	0.24	0.14	0.11	0.14	0.16	0.10	0.12	0.01	-	-
Number of observations: 500										

Sludge treatment and disposal

This model compares the costs of sludge treatment and disposal to the volume treated and the possible methods of disposal. The model uses average unit costs across England and Wales.

Table 10: Ofwat's model for sludge treatment and disposal operating expenditure

Cost of sludge treatment and disposal								
This is a unit cost model. Each company's average annual expenditure is divided by the amount of sludge disposed to each disposal route and this is compared with the weighted average industry cost.								
	Weighted average industry unit cost £000s/(thousand tonnes of dry solids)							
Disposal route	Farmland - untreated	Farmland - conventional	Farmland - advanced	Incineration	Landfill	Composted	Land reclamation	Other
£000/ttds	-	198.2	255.9	161.6	208.6	205.2	140.7	118.4
Number of observations: 80								

Sewerage business activities

This model uses an average unit cost per billed property across England and Wales.

Table 11: Ofwat's model for sewerage business activities operating expenditure

Sewerage business activities	
This is a unit cost model. Each company's average annual business activities expenditure (plus doubtful debts) is divided by the number of billed properties. This is then compared with the weighted average industry cost.	
£/billed property	Weighted average industry unit cost 11.77
Number of observations: 10	

Section 1: Chapter 1

Introduction

We are committed to the principles of the Better Regulation Task Force: transparency, accountability, proportionality, consistency and targeting. Our approach to the second full Strategic Review of Charges, which covers the period 2006-10, takes full account of these principles. It also responds to some of the concerns raised by stakeholders in the last four years.

Our programme of work was described in a recent publication, *Our work in regulating the Scottish water industry: Setting out a clear framework for the Strategic Review of Charges*. In that document we explained that we intended to publish a detailed description of our approach to the next Strategic Review of Charges in a number of volumes. We are keen to understand the views of stakeholders. Each of the volumes that describe our methodology of price setting or calculating the scope for efficiency raises a number of questions for consultation.

- Volume 1 (published on 21 July 2004) outlined our detailed workplan.
- Volume 2 (published on 16 August 2004) described the background and outlined some of the changes in the institutional framework that will impact on the next Review.
- Volume 3 (published on 22 September 2004) explained how we propose to calculate the prices that customers will pay during the next regulatory control period. In particular, it explained our proposal to switch to the regulatory capital value (RCV) method of price setting.

This current volume, Volume 4, was scheduled to include our proposed method for assessing the scope for operating cost and capital expenditure efficiency. Unfortunately, there are a number of issues that are still outstanding in defining the current *Quality and Standards II* capital programme. With some reluctance we have therefore had to delay finalisation of our approach to assessing the scope for capital expenditure efficiency until we have a fully defined capital programme for *Quality and Standards II*. This area of work will now be covered in a fifth volume. We will extend the date for responses to the questions for consultation that are set out in Volume 5.

Volume 4 will now be restricted to describing our approach to assessing the scope for operating cost efficiency. Operating costs comprise a significant part of the customer's bill. In 2001, operating costs accounted for some 45% of a customer's bill. Good progress by Scottish Water in improving its efficiency will have reduced this to below 30% at the start of this regulatory control period.

1.1 Structure of this volume

Volume 4 is presented in five sections.

Section 1 is an introduction to costs, efficiency and establishing appropriate incentives. It comprises four chapters. Chapter 2 is an introduction to costs. It describes the costs that Scottish Water incurs in delivering water and sewerage services. Chapter 3 discusses how we seek to regulate costs and ensure that they are no higher than they need to be. Chapter 4 discusses incentives both for the organisation as a whole and for the senior management. We recognise that incentives are principally a matter for the owner and the Board of Scottish Water, but we believe that there is a legitimate customer interest in ensuring that these incentives are properly linked to the delivery of an improved service to customers.

Section 2 outlines the current position and describes how we set the baseline from which we measure an improvement in efficiency. This section contains two chapters. Chapter 5 explains the nature of operating costs. Chapter 6 describes how we establish the baseline and why this is essential to monitoring performance.

Section 3 describes in detail the process by which we compare the relative costs of Scottish Water with those of the companies south of the border. There are four chapters in this section. Chapter 7 discusses the importance of making like-for-like comparisons. This is fundamental to an objective comparison of costs. In Chapter 8 we outline the approach that is used by the Office of Water Services (Ofwat) to assess the scope for efficiency. This approach is tried and tested and has been endorsed by both the Competition Commission and the Cabinet Office. In Chapter 9, we outline some

alternative methods to assess the scope for efficiency. Chapter 10 is the final chapter in this section. It outlines how we take account of differences between Scotland and the areas covered by other water and sewerage undertakers in the UK.

Section 4 looks forward to the end of the next regulatory period. It considers what the relative performance of Scottish Water and of the companies south of the border is likely to be in 2010. The difference in relative performance will inform the efficiency targets that we set. There are three chapters in this section. In Chapter 11, we assess the scope for improvement in Scottish Water's operating cost efficiency. Chapter 12 explains how we will take account of the operating cost implications of the capital programme. Some of the investment should help to reduce operating costs, while improved treatment of sewage will tend to increase operating costs. It is important that Scottish Water has sufficient revenue to meet any efficient new operating costs that result from the capital programme. In Chapter 13 we discuss how we intend to handle Scottish Water's public/private partnership (PPP) obligations.

Section 5 has three chapters. It describes the setting of targets and the monitoring of operating costs. Chapter 14 explains how we will set targets. This is followed by Chapter 15, in which we seek views from stakeholders on whether we should set targets for the level of service provided by Scottish Water. The final chapter, Chapter 16, discusses how we propose to monitor and report on Scottish Water's performance during the next regulatory control period.

Section 1: Chapter 2

An introduction to costs, levels of service and benchmarking

2.1 Introduction

In Volume 2 we discussed the role of economic regulation, and examined our duty to promote the interests of customers of Scottish Water's core business. We do this by ensuring that customers get the best possible service for the lowest sustainable cost.

In this volume we set out the methodology we propose to use to assess operating costs and levels of service in the *Strategic Review of Charges 2006-10*.

This chapter provides an introduction to costs, levels of service and the role of price control regulation. It covers the following issues:

- How to define costs in order to establish what are Scottish Water's main costs;
- How to define levels of service, and what are the key indicators of good service;
- Costs and price-control regulation: why we are examining Scottish Water's costs; and
- Costs, levels of service and customers: why Scottish Water's customers should be concerned about costs and the service they receive.

2.2 Defining costs

2.2.1 What are Scottish Water's costs?

In 2003-04, Scottish Water spent £1,018 million. This expenditure was largely funded by £958 million of revenue from customers. Other sources of cash included an increase in net borrowing and proceeds from the sale of assets.

Scottish Water's costs can be split into five categories, as shown in Table 2.1.

Table 2.1: Scottish Water's costs¹

Cost category	2003-04	as % of total
Operating expenditure	£306m	30%
Capital expenditure	£389m	38%
Public Private Partnerships	£113m	11%
Exceptional items	£72m	7%
Interest payments	£137m	13%
TOTAL	£1,018m	

We discuss each of these cost categories below.

Operating expenditure

Operating expenditure comprises the costs incurred in the day-to-day running of the business. These costs include:

- staff costs;
- electricity and other utility costs;
- local authority rates and other taxes;
- the cost of billing and serving customers (including bad debt); and
- the cost of buying materials such as chemicals.

A simple analogy would be the costs of running a car. The money that the car owner spends on petrol, oil, insurance, taxes etc would be the operating expenditure for that car.

This volume focuses primarily on how we propose to assess the scope for efficiency in operating expenditure.

Capital expenditure

Capital expenditure is the cost incurred in looking after and improving the assets of the business. Scottish Water has a large number of assets that it uses to provide a water and sewerage service, including:

- water storage facilities;
- water mains;

¹ All costs reported for 2003-04 are from Scottish Water's Annual Report and Accounts 2003-04, 19 August 2004.

- water treatment works;
- sewers;
- sewage treatment works;
- pumping stations;
- offices and depots; and
- vehicles and IT equipment.

All of these assets must be maintained and, when the assets reach the end of their useful life, they must be replaced. Further, new assets are required to either improve or expand the service.

Capital expenditure is generally split into two elements:

- *Capital maintenance expenditure*: costs that are incurred on a day-to-day basis to ensure that assets remain in good enough condition to provide a safe and reliable service; and
- *Capital investment expenditure*: costs that are incurred on a one-off basis to enhance the asset base. Maintaining this enhanced level of service would then be regarded as a capital maintenance cost.

If we consider once again the analogy of running a car, the costs of servicing the car, replacing worn and damaged parts and, eventually, replacing the car would be classed as capital expenditure. The scope for capital expenditure efficiency will be considered in detail in Volume 5 of our methodology.

Public Private Partnerships (PPP)

Public Private Partnerships are a range of business structures and partnership arrangements between the private and public sectors. They are a mechanism to bring private sector involvement into the delivery of public sector services. An example would be where the private sector is contracted to construct and operate new facilities, for which the public sector then pays an annual fee. Delivering services remains the responsibility of the public sector organisation.

Currently, Scottish Water has the following types of PPP:

- Long-term contracts under the Private Finance Initiative (PFI) framework for 21 wastewater treatment plants that treat around half of Scotland's sewage; and
- A joint venture – Scottish Water Solutions – with private utilities and contractors to deliver capital investment.

Scottish Water has nine long-term contracts for sewage treatment services. It pays an annual fee that covers the operating, capital and financing costs of the private company.

To return to the analogy of running a car, the PPP contract would be the equivalent of paying a fee to lease a car over a fixed period where all of the responsibility for maintaining the car (keeping it filled with petrol etc) remains with the leasing company. PPP is considered in detail in Chapter 13.

Exceptional items

Exceptional costs are 'one-off' costs which, by definition, are not expected to recur. In the *Strategic Review of Charges 2002-06*, we recognised that Scottish Water would incur such one-off costs if it was to make the step-function improvement in its operating cost efficiency that customers had the right to expect. We therefore recommended that Scottish Ministers allow £200m to be included in Scottish Water's revenue caps to meet these "one-off" costs. We termed this "spend-to-save".

Our rationale for 'spend to save' was explained in the *Strategic Review of Charges 2002-06*:

"I have also included a very significant allowance within price limits for the cost of:

- achieving an efficient capital programme; and
- making the organisational and business process changes that will ensure that the operational cost efficiency targets are achieved.

The costs of achieving this efficiency have been termed spend to save. I am including spend to save as a discrete category of expenditure up to 2005-06 in order that the spending of these valuable resources can be properly monitored. Spend to save comprises spending of both a capital and an operational nature. I believe that this will be important in securing long-term sustainable annual savings for customers.

It is important to note that spend to save is additional to any on-going spending within the authorities to achieve efficiency. The spend to save allowance should therefore be used to meet one-off costs of change rather than the continuing costs of performance improvement. As a separate line item in the budget, it will be possible to review the spending of this allowance. The most important issue from a customer perspective, however, is not when or if the allowance is spent, but that it is used effectively and does reduce annual costs in the future. I would expect that the spend to save should have a maximum payback of between two and three years. This would suggest that this spend to save allowance on its own will facilitate savings of between £70 and £100 million per year. This equates to between half and three-quarters of the targeted operating cost efficiency by 2005-06².

We anticipated two main areas where spend to save was likely to accelerate efficiency improvements:

- information technology; and
- voluntary severance.

Table 2.2 shows the £200 million of spend to save that we recommended Ministers allow price limits. We also report on the spend to save costs reported by Scottish Water in the first two years of the regulatory control period.

Table 2.2: Spend to save allowance

	2002-03	2002-03	2003-04	2003-04	2004-05	2005-06
	Strategic Review of Charges 2002-06	Actual	Strategic Review of Charges 2002-06	Actual	Strategic Review of Charges 2002-06	Strategic Review of Charges 2002-06
Operating expenditure	£40m	£25m	£85m	£53m	£25m	£0m
Capital expenditure	£15m	£17m	£35m	£19m	£0m	£0m
Total	£55m	£42m	£120m	£72m	£25m	£0m

Interest payments

Scottish Water's current total borrowing is around £2.2 billion. This borrowing is mainly fixed term, fixed interest rate government loans. Scottish Water pays interest on this debt; interest costs currently account for some 13% of annual expenditure.

We discussed Scottish Water's borrowing in Volume 2, Chapter 7 of our methodology.

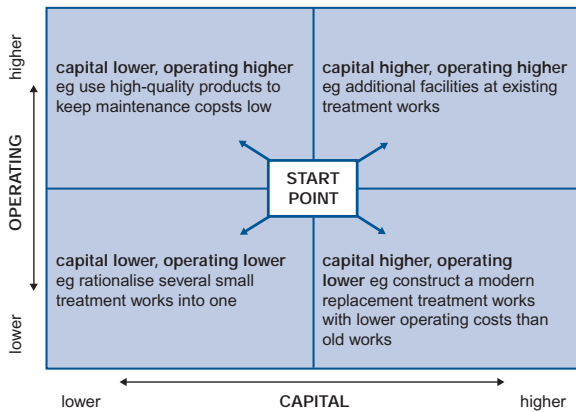
2.2.2 Operating and capital expenditure

Operating and capital expenditure are linked. Consider, for example, the addition of a new treatment process at an existing water treatment works. The new treatment process enhances the asset base, so the costs are capital investment expenditure. Investing in the new process is likely to result in an increase in the running costs of the water treatment works (for example, because of higher electricity or chemical costs). The operating costs of the water business therefore increase as a result of the capital investment.

Capital expenditure could also result in lower operating expenditure. A good example would be the introduction of an IT system that reduces the level of manpower required. The link between capital expenditure and operating costs is illustrated in Figure 2.1.

² *Strategic Review of Charges 2002-06*, p223.

Figure 2.1: Relationship between capital expenditure and operating costs



It can sometimes be difficult to allocate the costs of some activities to either operating or capital expenditure. It could reasonably be argued that some activities relate to maintenance of the asset or part of day-to-day operations. Oiling a pump at a water treatment works would be a good example of this.

We endeavour to define the rules for cost allocation with great care in our annual regulatory returns in order to avoid such potential issues. We have to be confident that Scottish Water has correctly allocated its costs. This is critical to our benchmarking of performance. The Reporter³ plays an important role in verifying that Scottish Water has complied with the definitions of the information required in our regulatory returns.

2.2.3 Accounting costs and actual expenditure

Effective benchmarking requires us to focus on Scottish Water's actual costs in providing a water and sewerage service. We are interested here in what Scottish Water spends each year on operating expenditure, capital expenditure, PPP, exceptional items and interest payments.

These costs will be different from Scottish Water's *accounting* costs. Accounting costs are the costs generally reported by a company in its annual accounts. Accounting costs include non-cash items such as depreciation, amortisation and the infrastructure renewals

charge. The accounting presentation of these costs can make them difficult to reconcile in detail with actual expenditure. We discussed accounting costs in Volume 3.

2.3 Defining levels of service

Effective benchmarking requires us not only to define costs carefully, but also to define the level of service provided to customers.

2.3.1 What are levels of service?

Most customers expect to:

- receive clean drinking water when they turn on their tap;
- see waste water disappear down the drain;
- receive a timely and accurate bill; and
- receive a prompt and reasonable response in the event that the service provided to them does not meet their expectations and as a result they complain.

There are a variety of measures that we can monitor to ensure that customers receive an appropriate level of service.

2.3.2 Measuring levels of service

It is important that we are able to measure levels of service to customers in an objective and consistent way both now and in the future. This requires us to set out in detail the areas of service that we will measure and how they will be measured. We need to ensure that we measure the factors which are important to customers and that customers can understand our analysis of customer service performance.

We monitor three broad aspects of service:

- asset performance measures;
- customer service measures; and

³ See Volume 2, Chapter 15

- public health and environmental performance measures.

Public health and environmental performance measures

Asset performance measures

Asset performance measures cover areas of service that depend on the water supply and sewerage infrastructure. Poor performance in these areas causes inconvenience to customers or damage to property. These measures indicate how reliable the service is. They cover:

- pressure – customers expect their supplier to provide a supply of water at a pressure that is sufficient for their needs;
- planned supply interruptions – customers expect the number of interruptions, the number of properties affected and the duration of the interruption to be as low as possible;
- unplanned supply interruptions – customers expect the number of interruptions, the number of properties affected and the duration of the interruption to be as low as possible;
- sewer flooding – customers expect the number of properties affected and the number of properties at risk to be as low as possible.

Customer service measures

Customer service measures cover areas of service that depend on the management and employees of the organisation and the processes they use. They do not depend on the quality of water mains or treatment plants.

Customer service measures cover:

- billing enquiries – the number of billing enquiries and the speed of response;
- written complaints – the number of written complaints, and the speed and quality of response; and
- telephone contacts – the number of telephone contacts, and the speed and quality of response.

Public health and environmental performance measures cover areas of service that relate to the service provider's ability to comply with the requirements for quality standards. These standards are set by the respective quality regulators, DWQR⁴ and SEPA⁵. These measures include:

- meeting drinking water quality standards;
- complying with abstraction consents for rivers;
- complying with discharge consents at waste water treatment works; and
- the number of pollution incidents.

These measures cover many of the public health and environmental issues that matter most to customers either directly – for example, by measuring drinking water quality – or indirectly – for example, by measuring coastal pollution.

2.3.3 Guaranteed Minimum Standards (GMS)

We agreed the introduction of GMS for the Scottish water industry in October 2000. These are the minimum standards of service that Scottish Water must meet, and which customers have a right to expect. Failure to comply with any of the standards entitles the customer to financial compensation.

The GMS are:

- **planned interruptions** – give 48 hours notice of a planned interruption likely to last more than four hours and restore supply within the stated time;
- **unplanned interruptions** – restore supply within 12 hours of an unplanned interruption (or within 48 hours for a trunk main);

⁴ DWQR – Drinking Water Quality Regulator – www.dwqr.org.uk

⁵ SEPA – Scottish Environment Protection Agency – www.sepa.org.uk

- **following an internal sewer flooding incident** – visit within 3 hours and solve the problem within 8 hours, clean up the mess and refund annual sewerage charge;
- **payment enquiries** – respond to a request to change the method of payment within 5 working days, and to other billing, charging and metering enquiries within 10 working days; and
- **complaints** – respond fully in writing to a written complaint, or to a telephone complaint where a written response is requested, within 10 working days.

Clearly, the GMS do not cover every situation in which poor levels of service arise. We regard Scottish Water's performance with respect to the GMS as important. However, we believe that the broader indicators of service levels described above provide a fuller picture of the service that customers receive.

2.4 Costs and price-control regulation

2.4.1 Why we examine Scottish Water's costs

In May 2004, the Minister for the Environment and Rural Development wrote to ask us to conduct a Strategic Review of Charges covering the period 2006-10. In preparing the Review, the *Water Industry (Scotland) Act 2002* states that as Water Industry Commissioner I should have regard to:

- “(3)
- (a) *the economy, efficiency and effectiveness with which Scottish Water is using its resources in exercising its core functions,*
 - (b) *the likely cost to Scottish Water, for the period of the advice, of exercising the functions specified in subsection (4),*
 - (c) *the likely resources, other than income from charges for goods and services, available to Scottish Water for the period of the advice,*

(d) *any guidance issued to Scottish Water by the Scottish Ministers, and*

(e) *any directions given under section 44 or 56.”*

Our work in scrutinising costs and the levels of service delivered is key to our role in ensuring that customers receive value for money. We believe that our analysis will ensure that we have had regard to *“the economy, efficiency and effectiveness with which Scottish Water is using its resources”*.

In assessing the scope for efficiency, we have to answer two questions:

- (1) How do we have regard to *“the economy, efficiency and effectiveness with which Scottish Water is using its resources”* when providing advice on charges?
- (2) How do we ensure that Scottish Water improves *“the economy, efficiency and effectiveness with which [it uses] its resources”* during the price control period?

Our analysis is in three parts:

- **Is Scottish Water proposing to use its resources effectively?**

In its business plan submission⁶, Scottish Water will propose levels of expenditure for operating costs, capital maintenance, capital investment and PPP over the regulatory control period. This analysis will, in essence, require us to make a judgement about whether Scottish Water is spending enough money (or too little money), on the right things (or on the wrong things) to deliver a good enough (or not good enough) service to its customers.

For example, a new treatment works may be required to meet legislative requirements but the proposed new works may have inadequate capacity or include treatment processes that are not required.

⁶ See Volume 2

Alternatively, the construction may be completed prior to the legislative requirement coming into force, or too late to meet the legislative deadline.

- **Is Scottish Water proposing to use its resources efficiently?**

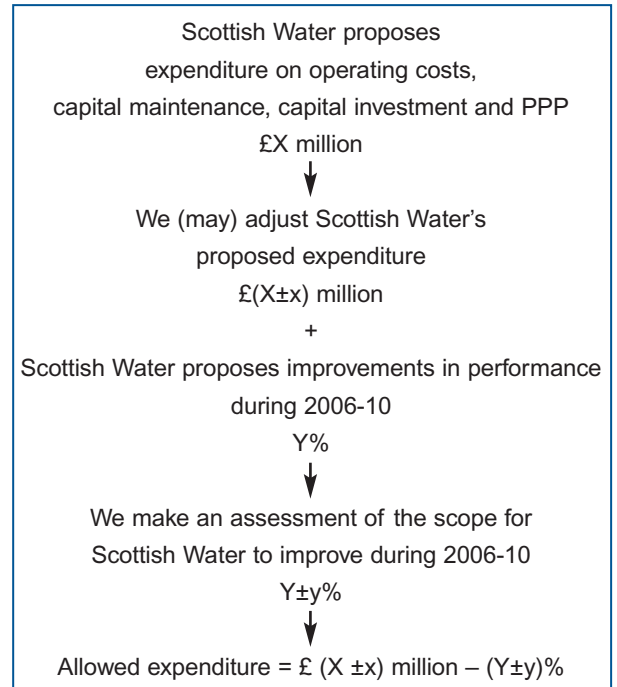
This analysis will require us to make judgements about how well Scottish Water spends its money. For example, we will need to decide whether money needs to be invested (for example, in constructing a new treatment works to meet legislative requirements), and whether or not the proposed cost of constructing the works is correct, too high or too low.

- **Is there scope for Scottish Water to use its resources more efficiently?**

This is the forward-looking part of our analysis. The previous part considered how wisely Scottish Water spends its money now; here we consider how wisely Scottish Water could spend its money in the future. This requires making an assessment not only of the *amount* by which Scottish Water could improve, but also the *rate* at which that improvement can be realised.

This analysis allows us to come to a view on *“the economy, efficiency and effectiveness with which Scottish Water is using its resources”*. This process is summarised in Figure 2.2.

Figure 2.2: How we arrive at allowed expenditure



2.5 Costs, levels of service and customers

Customers deserve value for money. In setting prices we draw robust and objective comparisons with other water and sewerage undertakers. We can set prices such that Scottish Water has to deliver the lowest possible level of costs consistent with a sustainable industry. Our monitoring can help ensure that Scottish Water does not seek to cut corners in the level of service provided to customers.

Customers should therefore be assured that, if Scottish Water performs in line with the targets set by this Office, they will receive value for money.

Section 1: Chapter 3

Types of regulatory frameworks

3.1 Introduction

In Chapter 2 we explained the costs that Scottish Water incurs and the impact of these costs on customers bills. We described what we mean by 'efficient costs' and the importance for customers of making sure that Scottish Water achieves the targets we set for cost reductions.

As the economic regulator of Scottish Water, one of our principal responsibilities is making sure that customers receive value for money. Regulating costs and giving proper incentives to Scottish Water to achieve its efficiency targets therefore lies at the core of our role. It is essential for customers that the regulatory framework in Scotland provides strong incentives to Scottish Water to achieve cost efficiencies and to meet – and even to outperform – the regulatory targets.

In Chapters 3 and 4 we discuss the mechanisms by which regulators can incentivise companies to achieve efficient costs. In this chapter we look first at why regulation is necessary in monopoly businesses and describe the different types of incentive-based regulation that can be used to drive companies to achieve cost efficiencies.

This chapter expands the introduction to regulation that we provided in Chapter 1 of Volume 2. In Chapter 4 we go on to discuss efficiency incentives and how they work in both private and public companies. Chapter 4 also looks at the framework for regulating Scottish Water's costs and the incentives that are in place to ensure that the efficiency targets set in the *Strategic Review of Charges 2006-10* are met.

3.2 The role of regulation in driving efficient costs

We have already highlighted how important it is for customers that Scottish Water becomes more efficient. In most industries, pressure to reduce costs and achieve efficiencies is driven automatically by competition from other providers of the goods or services. Competition not only helps to keep prices down, but also drives improved levels of service. Customers have the choice to buy from other suppliers if they perceive that the

prices and quality of service offered by a company are not right. If a company does not offer its goods or services at the right price and quality, it will not retain its position in the market.

In a number of industries, however, there is only a single provider of goods or services and monopoly power dominates. Many of these monopolies are so-called 'natural monopolies' where it is impractical or uneconomic to duplicate the infrastructure required to deliver the goods or service. Utility network businesses are an example of natural monopolies because it would be both prohibitively expensive and impractical to have more than one network supplying water, gas or electricity services to properties.

In these industries, alternative mechanisms are required to replace competition and ensure that there are incentives for cost efficiencies and service improvements. Otherwise, in order to maximise profits or pursue other management objectives, the natural monopoly may exploit its power over customers by charging an unreasonable price and/or offering poor services.

Control of natural monopolies is usually achieved by some form of regulation that acts as an alternative to a competitive market. The regulator ensures that the monopoly:

- restrains prices, by setting price or revenue limits; and
- delivers acceptable levels of customer service, either by setting appropriate customer service targets, or by monitoring the level of customer service provided.

A principal role of regulation is therefore to act, in the customer's interest, as a surrogate for competition.

Regulation is not a perfect substitute for the market. It does, however, provide customers with significant protection against monopoly power. Introducing competition to limited areas of a monopoly business, where practical and economically justifiable, can bring additional benefits for customers.

In Scotland, Scottish Water is a natural monopoly in the provision of water and wastewater services. The role of

our office, as economic regulator, is to incentivise Scottish Water to achieve efficiencies and improve customer service. At a high level, we do this by setting targets for Scottish Water that are challenging but achievable.

At a more detailed level, various regulatory mechanisms are available to incentivise natural monopolies such as Scottish Water. In the following section, we will briefly explain the most common regulatory frameworks. We will focus on the 'RPI-X' mechanism which is favoured by this Office and most utility regulators. We propose to adopt the RPI-X framework. We will also discuss the advantages and disadvantages of the alternatives that we have considered.

3.3 Providing incentives through regulation

The key attributes of a successful incentivisation mechanism are that it:

- drives management to achieve cost efficiency targets;
- ensures that customer service levels improve at the same time;
- is relatively simple to implement; and
- provides transparency to all stakeholders of a company's performance.

The choice of mechanism that best achieves these objectives may be influenced by the nature of the industry being regulated. For example, applying incentives to management in a public sector industry may be different to incentivising private sector management¹. In considering different approaches, it is important to emphasise that no single model is best for all circumstances.

3.3.1 The most common forms of regulation

There are five main regulatory models:

- cost-of-service regulation;

- price cap regulation;
- yardstick regulation;
- performance based regulation; and
- franchise regulation.

Cost-of-service regulation

In the cost-of-service regulation model, the regulator sets the return that can be earned on investment by companies. This enables a company to recoup, at a set rate, the costs and investments that it has put in to provide the services. The most common form of cost-of-service regulation is 'rate-of-return' regulation. Under the rate-of-return model, details of the company's costs are provided to the regulator and an allowed rate of return is then applied to these costs. Customers then fund the company up to the allowed rate of return.

The main advantage of cost-of-service regulation is that it is a relatively simple process that provides transparency to stakeholders. Regulated companies also have a clear understanding of the return they will earn on their investment. This helps with long-term planning and provides security for investors.

A key disadvantage is that it is very dependent on the information that the company provides on costs. Private, profit maximising companies will naturally seek to inflate the presentation of their costs to the regulator. As the information is asymmetric (in other words, the company will always have access to more detailed information than the regulator), it can be difficult for the regulator to detect inflation of costs. As a result, customers can lose out because the true extent of the cost efficiencies that are available is hidden.

Cost-of-service regulation also provides a strong incentive for companies to over-invest in order to maximise their returns. This can result in 'gold-plating' of investment, where projects and services are provided to a specification that exceeds customers' requirements.

¹ Incentives in public and private companies are discussed in more detail in Chapter 4.

Price cap regulation

In its simplest form, price cap regulation sets the maximum prices that companies can charge for their services for a period of years in advance. This then incentivises companies to improve their efficiency because, in order to maximise profits, they have to drive down costs. If the price cap is set properly, both customers and regulated companies will benefit from the improved efficiency.

One common form of price cap regulation is 'RPI-X'. Under RPI-X, the company is allowed to raise prices in line with the Retail Price Index (RPI) less an efficiency factor, X. This efficiency factor is determined by the regulator. Different industries, and different countries, have their own formulae for calculating the X factor.

Price cap regulation is now used by all UK regulators of privatised public service industries. It is generally considered to be successful in encouraging companies to improve their efficiency. A detailed description of the features of the form of price cap regulation used in UK utility industries is provided below.

The main advantages of price cap regulation are the relative simplicity of the approach and the strong incentives provided to management to introduce cost efficiencies in order to increase profits. Management are given a free hand to determine how these efficiencies are best delivered; this encourages innovation and the introduction of new practices.

One disadvantage of the RPI-X approach is the potential incentive to focus on short-term gain rather than long-term sustainability of the industry. For example, when investing in new projects a short life solution with low up-front costs may be favoured over a long-life solution with high up-front costs but lower whole-life costs. The choice of regulatory period over which prices are set is important in this regard. Longer regulatory periods can help to encourage greater focus on long-term solutions.

Yardstick regulation

Yardstick regulation (sometimes called comparative regulation) is usually used in conjunction with other regulatory mechanisms such as rate-of-return and price cap regulation. Yardstick regulation involves comparing the performance of a company with that of other companies within the same industry. Through these comparisons, the regulator is essentially aiming to simulate a competitive environment. The best-performing company provides a benchmark of best practice for the industry and the regulator can set targets accordingly.

A key advantage offered by yardstick regulation is that the problem of asymmetry of information between the company and the regulator can be significantly reduced. This is because regulators can obtain standard information submissions from a number of different companies and, by analysing this information, can develop a clearer picture of costs and performance.

The main disadvantage can be the complexity of carrying out performance comparisons between companies and the associated requirement to obtain large amounts of information to support the analysis. The method is also very dependent on comparator companies being available, and this can be a problem when industry structures change, for example through mergers and acquisitions.

Performance based regulation

Under performance based regulation, a set of performance measures are used to incentivise the regulated company. Generally, this involves linking the profits of the regulated company to performance measures in such a way that its profits are only permitted to increase if it achieves the defined performance targets. The company therefore has a strong incentive to meet the targets set.

The main advantage of this type of regulation is that the performance of the company can be incentivised across a wide range of measures. As well as efficient cost targets, areas such as customer service performance, environmental impact and safety performance can also be targeted.

The main disadvantage of performance based regulation is that, to be effective, the performance measures have to be defined and measured in an objective and very accurate way. In practice, it can be difficult to define a set of measures that do not give conflicting or undesirable incentives. The measures also need to be entirely within the company's control. In service industries such as utilities this can be difficult to achieve due to the presence of multiple stakeholders who can influence the outcome of performance measures. In the water industry, for example, in addition to customers, stakeholders include local and national government, environmental regulators and water quality regulators.

Franchise regulation

Under franchise regulation, the regulator invites companies to bid for the right to provide services to the public. The company that offers the best price-quality package wins the bid and will contract to provide the services at a certain price and to a defined quality standard.

The main advantage of franchise regulation is that it brings together the benefits of competition with the economies of scale associated with natural monopolies. It is relatively straightforward to implement and there is no requirement for a large amount of information analysis by the regulator: the bidding process identifies the best price-quality package for customers.

Potential disadvantages of franchise regulation include the complexity of identifying the best price-quality combination, establishing the contract for the provision of services, ensuring incentives are maintained during the transition between service providers, and potential difficulties in attracting new bidders at the contract renewal stage.

The incentive qualities of RPI-X seem most appropriate to the current relative efficiency position of the water industry in Scotland.

Regulatory mechanisms used by utility regulators in the UK

In the UK, the RPI-X form of price-cap regulation is used by the utility regulators to set price limits for companies.

It is generally agreed that the RPI-X approach, combined with comparative (or yardstick) regulation to assist with target setting, is successful in encouraging utilities to pursue continuous efficiency enhancement and keep prices down. For instance, in the electricity distribution market in the UK, since privatisation of the industry in 1991, operating costs of the electricity distribution network operators have fallen by more than 30% in real terms².

*The National Audit Office (NAO) 'Pipe and Wires'*³ report looked at the risks of the RPI-X approach as applied by Ofwat, Ofgem and Ofwat. The NAO concluded that the three regulators, using RPI-X regulation, had been successful in encouraging companies to deliver the required investment in networks while also driving improvements in efficiency. The benefits of these efficiency improvements had been passed on to customers.

Because of its extensive application in the UK, the RPI-X approach is widely understood by regulators, regulated companies and financial institutions. Using RPI-X regulation in Scotland will allow more direct comparison with the industry in England and Wales. This is important as it is through benchmarking the performance of Scottish Water with other water companies that we can determine the extent of efficiencies that are possible.

In the following section, we describe the RPI-X approach in more detail.

3.3.2 RPI –X regulation

The mechanism for driving cost efficiencies through RPI-X regulation essentially involves setting a limit on prices that companies can charge to customers, then

² Ofgem, 'Electricity Distribution Price Control Review Update', October 2003.

³ National Audit Office, 'Pipes and Wires', 10 April 2002.

allowing the companies to devise how to deliver the service at least cost while meeting customer service targets.

The utility is allowed to increase its price every year by X points less than the RPI in the previous year. As explained later, in certain industries such as the water industry in England and Wales, X can be negative which makes the annual price increment above RPI. For example: in the draft determination of price limits for the 2005-10 regulatory control period, Ofwat allowed each company to raise its prices above the expected rate of inflation.

Developed by Professor Stephen Littlechild, the RPI-X methodology was introduced in the early 1980s to regulate the newly privatised British Telecom. Professor Littlechild argued that a price cap would provide desirable incentives for regulated firms to achieve and improve operational efficiency while reducing the information burden of regulation.

RPI-X has subsequently been used in regulating all other privatised utilities in the UK: the gas industry in 1986, the airports (BAA) in 1987, the water industry in 1989, the electricity industry in 1991 and the railway industry in the mid 1990s.

The RPI-X mechanism can be divided into the following key elements:

1. The regulator, based on the companies' business plans and an assessment of the company's performance against other benchmark companies, establishes the required revenue. As a key principle, the required revenue should be sufficient to enable the company to finance its operations in each year of the regulatory period; in other words, the company must have sufficient funds to deliver its operational services, its investment programme and the required level of customer service. In establishing the required revenue, the regulator will take account of factors such as:

- the degree of efficiency improvement that is achievable (from consideration of the benchmarked level of efficiency and an achievable rate of catch-up);
- the return on capital which investors in the industry would expect;
- tax obligations which the company will incur; and
- other factors which influence costs, eg changes in pension funding requirements.

2. Based on the required revenue and the estimated revenue base (for example the projected number of customers), a price cap can be established.

Rather than being applied to all of the individual services provided by the company, the price cap is usually applied to a weighted average of the price increase of all of the regulated services. This avoids the complexity of trying to set a price limit for all the individual services. We outlined the setting of tariffs, and our proposed use of tariff baskets, in Volume 3, Chapter 12.

If the regulated company faces competition in certain elements of its service, for example in providing new connections to the network, then prices for those elements are not subject to price cap regulation and these services are excluded from the calculation of required revenue.

3.3.3 Use of RPI-X regulation in the water industry in England & Wales

To illustrate how a price cap is set under the RPI-X framework, it is useful to analyse Ofwat's RPI-X formula⁴.

In its 1999 periodic review, Ofwat set out its price cap formula as follows:

Price cap = RPI – (P₀ + X + Q ± V ± S) where:

⁴ Sources: Ofwat, MD 124, *Letters to all managing directors of water and sewerage companies and water only companies*, February 1997; Ofwat, *The proposed framework and approach to the 1999 periodic review: A consultation paper*, June 1997; and Ofwat, *Setting price limits for water and sewerage services: The framework and business planning process for the 1999 periodic review*, February 1998.

P_o represents past outperformance of the target by the company and the 'one-off' cost reduction to be transferred to customers in the first year of the following period. It reflects the difference between the actual operating and capital expenditure achieved by the company and the regulatory targets set in the previous period. By deducting the outperformance from RPI in the price cap, Ofwat transfers the current period outperformance to customers in the coming period. This P_o element also reflects the voluntary benefit sharing schemes implemented by some companies.

X is the expected future efficiency gains after the first year of the period. To determine the scope of future efficiency gains, Ofwat examines:

- the past achievements of the company;
- the achievements of other water companies;
- achievements of other utilities and the wider economy; and
- the company's current progress in reaching its efficiency objectives.

For example, high levels of leakage is considered as a measure of inefficiency. A company should demonstrate to Ofwat its knowledge of its economic level of leakage and its progress on working towards the new leakage targets. By assessing the company's current progress, Ofwat will set new leakage targets for the company.

Comparisons between company performances are made using 'econometric analysis'. This detailed method of analysis compares different companies' costs across a wide range of activities. We will return to these activities in Chapter 8.

As past achievements are considered when X is set, P_o and X are interrelated. Companies that have achieved greater efficiencies than anticipated at the last review will have a relatively higher P_o adjustment than those which did not. However, future targets for efficiency will

be set relative to the achievements of the most efficient companies. This implies that the future X factors will be commensurately higher for the relatively inefficient companies than for the efficient ones.

Q represents the expenditure needed for the companies to meet their water quality and environmental obligations enforced by the Drinking Water Inspectorate (DWI) and the Environment Agency, the drinking water quality and environmental regulators respectively. Where companies have failed to deliver the outputs specified in previous periods, adjustments are made to ensure that companies do not gain financially.

V represents enhancements to the security of supply associated with maintaining a balance between water supply and demand. In the 1994 price review, Ofwat argued that expenditure to maintain the balance between supply and demand should not be built into the price cap formula due to its relatively insignificant impact on price. However, the hot and dry summer in 1995 raised discussion on the need to widen the margin between supply and demand to increase the security of supply. Some companies have incurred significant expenditure on increasing supply security. Consequently, an additional component V was built into the formula in the 1999 review. This V element can be negative where companies sell surplus water resources to neighbouring companies.

S represents the allowance made for improvements to service levels such as water pressure and call centre performance, which have measurable outputs and defined delivery times.

For simplification, the components $P_o + X + Q \pm V \pm S$ are summed up to a single factor called 'K'. In publications and publicity materials, companies often refer to the K factor as the adjustment made to the average bill after inflation has been taken into account.

Ofwat proposes to use the same RPI-X formula in the 2004 periodic review.

3.4 Summary

Regulation acts as a surrogate for competition in monopoly businesses. The regulatory mechanism plays a fundamental role in driving cost efficiencies in regulated companies. It achieves this by incentivising management to drive down costs while maintaining standards of service.

There are a number of regulatory mechanisms. In the utility industries in the UK, price cap regulation based on the RPI-X approach is the mechanism favoured by regulators. It has already proved very successful in encouraging utilities to pursue continuous efficiency enhancement and keep prices down.

In the next chapter we look in detail at how incentives work and the difference between incentives in the public and private sectors. In particular, we examine the effectiveness of the RPI-X approach and its application in the Scottish water industry.

3.5 Question for consultation

1. Do stakeholders agree that the RPI-X framework is appropriate to the regulation of Scottish Water? If not, what alternative would you suggest and why?

Section 1: Chapter 4

RPI-X incentive framework and benefit sharing

In this chapter we outline how the incentive framework of RPI-X works and the benefits it brings to customers. We examine the effectiveness of RPI-X (price cap) regulation in providing incentives to monopoly businesses in the private and public sector. In particular, we seek views on whether the incentive framework should be applied to Scottish Water.

4.1 Important attributes of efficiency incentives

Incentives are used to encourage desirable behaviours and/or discourage undesirable behaviours. In the context of regulated utilities, incentive regulation has been defined as the “use of rewards and penalties to induce the utility to achieve desired goals where the utility is afforded some discretion in achieving goals.” (Lewis and Garmon (1997)¹). In the case of the water industry, the “desired goals” would include:

- keeping prices to customers as low as possible;
- meeting environmental and water quality objectives;
- delivering the required investment programme;
- maintaining the long-term sustainability of the industry; and
- meeting customer service targets.

As we discussed in Chapter 3, there are a number of regulatory mechanisms which have the potential to achieve these high level objectives. It is, of course, important that the regulatory framework meets the wider requirements of customers and industry stakeholders. As part of its 2004 price review², Ofwat listed the general criteria that it considered should apply for incentive mechanisms. Ofwat stated that the mechanism should:

- be in the long-term interests of customers;
- offer meaningful and worthwhile rewards for genuine outperformance;

- offer adequate penalties for underperformance;
- provide timely rewards and penalties;
- stimulate continuous improvements;
- be known in advance;
- be straightforward in concept;
- follow simple rules;
- be simple to apply; and
- avoid retrospective changes.

We believe that these criteria are as relevant to the public sector as to the private sector water industry. Later in this chapter we discuss how incentives for public sector companies may need to differ from those used in the private sector.

4.2 Incentives and price-cap RPI-X regulation for utilities

In the previous chapter we explained that we propose to follow the other UK economic regulators and use RPI-X regulation to incentivise companies to improve efficiency. We now consider:

- how RPI-X regulation incentivises companies; and
- the extent to which RPI-X regulation, applied to utilities, meets the criteria outlined above for good incentive mechanisms.

4.2.1 How RPI-X incentivises companies

Under the RPI-X framework, companies benefit when they perform better than the efficiency targets set by the regulator. They are able to take advantage of the difference between the cost target the regulator has set and the cost level that they are able to achieve. The

¹ Lewis, Tracy and Chris Garmon, 'Fundamentals of incentive regulation.' PURC/World Bank International Training Program on Utility Regulation and Strategy, June 1997.

² Ofwat, 'A further consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of regulatory expectations', June 2003.

company therefore has an incentive to reduce costs to the lowest sustainable level. This is because the outperformance of the regulatory target (the resources allowed, less the resources actually used to deliver the required level of service) can be redirected to other company initiatives. In the private sector, this could take the form of additional shareholder returns. In the public sector, these additional resources could finance non-core activities or additional investment in improving customer service.

Customers benefit in the medium to long term because the regulator is able to set prices at a lower level in future regulatory control periods to reflect the lower costs of the regulated organisation. In the next regulatory control period, the regulated company will have to work harder to outperform the target. Similarly, there are strong incentives not to exceed regulatory targets as prices to customers are capped and any shortfall in funding has to be met by the owners of the company.

Broadly speaking, cost reductions can be achieved from:

- operating expenditure savings through more effective management; and
- more prudent and efficient capital investment.

Operating expenditure

In setting a target for operating expenditure, the regulator takes into account the revenue required to finance the company's ongoing operations. This assessment is based on factors such as:

- the company's business plan, which is submitted as part of the regulatory process;
- the degree of efficiency improvement that is achievable (from consideration of the benchmarked level of efficiency and an achievable rate of catch-up);
- tax obligations which the company will incur;

- the impact of the capital investment programme on operating costs;
- other factors which influence operating costs, such as new health and safety legislation.

There is a risk that a company might seek to save money by offering an inferior service: for example by repairing leaks more slowly or providing a lower standard of water treatment or by allowing more frequent failures of environmental standards. Regulators therefore monitor and report on the levels of service provided to ensure that the cost savings being made by the company are sustainable and will benefit customers. We made it clear in the *Strategic Review of Charges 2002-06* that an 'efficiency' means providing the same service for less money.

Customers' interests in Scotland are safeguarded through scrutiny by this Office of the nature of any efficiencies made by Scottish Water, along with close monitoring by the Drinking Water Quality Regulator (DWQR) and the Scottish Environment Protection Agency (SEPA) of Scottish Water's performance in meeting water quality and environmental standards. The Water Customer Consultation Panels also monitor customer service issues.

As prices are reset at the beginning of each regulatory control period, this creates a new incentive to improve efficiency further. Only such an improvement in efficiency will ensure that the allowed rate of return is exceeded or, in the public sector, that funds are available for non-core initiatives or to improve customer service further. The incentive to improve efficiency is a major benefit of RPI-X regulation.

There are, however, potential flaws in the RPI-X mechanism. For example, in its report *'Information and incentives project: Incentive schemes – initial thoughts'*³, Ofgem stated that companies' behaviour seemed to be affected by the timing of the price control reviews. They believed that companies advanced operating cost savings and delayed capital expenditure within a regulatory period. Ofgem also suggested that

³ Ofgem, *'Information and incentives project: Incentive schemes – initial thoughts'*, January 2001.

companies did not have an ongoing incentive, once regulatory targets had been met, to achieve further cost savings and service level improvements.

Regulators such as Ofwat and Ofgem have therefore introduced a 'rolling incentive mechanism' to encourage companies to continue to improve performance. We discuss "rolling incentives" in more detail later in this Chapter.

A second issue with the RPI-X incentive is that the scope for efficiency improvement will reduce over time. As the scope for efficiency reduces, the incentive effect of RPI-X regulation will also reduce. This is because the potential benefit of outperformance is small, relative to the difficulty of achieving that outperformance. Later in this Chapter we outline how Ofwat has proposed to maintain the incentive properties of RPI-X when the scope for significant improvement in efficiency has reduced.

Capital expenditure

Water companies have continuing large investment programmes. The incentive to improve the efficiency of capital investment is therefore just as important as reducing operating costs. RPI-X creates an incentive to improve the efficiency of capital investment by allowing an increased cash return on the regulated capital value (RCV). The concept of regulatory capital value was discussed in Section 3 Chapter 5.

i) Cash return on RCV

This is the cash return allowed on the RCV of the companies' regulated assets.

In its business plan, the company outlines its planned capital expenditure. The regulator evaluates the plan and estimates the annual amount of capital expenditure required to meet the service levels that the company is required to deliver. In the water industry these would include meeting the standards for customer service, water quality improvements and environmental legislation.

The other element of the cash return on the RCV is the allowed rate of return. This is fixed by the regulator after he has taken account of the likely efficient financing costs of the regulated organisation.

With both the rate of return on capital and the annual capital expenditure fixed by the regulator, the annual return on capital is therefore also fixed.

If the company can invest more efficiently, it can retain the value of the difference during the regulatory control period between the actual capital expenditure and that allowed by the regulator. This creates a strong incentive for the company to deliver its capital programme as efficiently as possible.

ii) Impacts on operational costs

Capital expenditure can also reduce operational costs. For example, operating cost savings will come from replacing a worn-out pump that requires a lot of manual intervention with a modern unit that requires little maintenance.

This is a further incentive for companies to manage their capital investment in such a way that overall costs are reduced.

iii) Cap on the capital expenditure that can be included in the RCV

A potential issue with the calculation of the cash return on the RCV is that it could provide an incentive for a regulated organisation to invest inefficiently. Ofwat responded to this risk in the 1999 periodic review by placing a cap on the capital expenditure that could be included in the RCV during the regulatory control period.

There is a risk that such a cap could cause companies to defer essential capital investment. This could put customer service levels at risk. Ofwat is refining the rule⁴ and has proposed that the amount of capital expenditure that can be excluded from RCV should be capped at 10% of regulatory revenue. This is known as the 'service-capping rule'. Any over-investment beyond the 10% threshold would earn the normal rate of return.

⁴ Ofwat, 'A further consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of regulatory expectations', June 2003.

4.2.2 An assessment of RPI-X against the general criteria of incentives

It is useful to compare the RPI-X mechanism against the criteria that we set for an effective incentive framework.

Table 4.1: Criteria for an effective framework for incentives

Criteria	How well does RPI-X fit the criteria?
In long-term interests of customers	Good. It is widely agreed that RPI-X works well in incentivising firms to improve efficiency in operation and investment. There are risks that firms may seek to cut corners in service delivery, but proper scrutiny from regulators and customer committees should reduce this risk.
Meaningful and worthwhile rewards for genuine outperformance	Good. Regulated companies in the UK have improved their efficiency. This suggests that regulated firms believe the benefits to be worthwhile. The context of 'rewards' for a public sector company may be different. We discuss this in Section 3.5.
Adequate penalties for underperformance	We are not aware of any evidence showing the penalties for underperformance to be inadequate.
Timely rewards and penalties	Acceptable. A regulatory period of four to five years ensures that the incentive framework can reward (or penalise) managers who are responsible for outperformance (or underperformance). The period is not so long that there is an inordinate delay in transferring the benefit to customers.
Stimulate continuous improvements	Good. This can be further enhanced by implementing a rolling incentive mechanism.
Known in advance	Good. The targets for the regulatory period are set out in advance. The mechanism is well understood by all stakeholders.
Straightforward in concept	Good. The concept is relatively straightforward. Companies are motivated to meet and beat the targets set by the regulator.
Simple rules	Acceptable. In its initial form, simplicity was one of the merits of the framework. However, the rules have inevitably become increasingly complicated.
Simple to apply	Acceptable. No new information, which is not already collected either during the initial price-setting or through ongoing monitoring, is required. The rules are well documented.
Avoid retrospective changes	The incentive framework relies on consistency and transparency. These are two of the Better Regulation Task Force Principles that we have adopted.

4.2.3 Issues with RPI-X as an incentive mechanism

There has been widespread scrutiny of RPI-X regulation by academia, industry experts and regulators. Commentators have raised issues regarding the incentives created by RPI-X.

i) Long-term versus short-term incentives

Some academics, for example Dr Dieter Helm⁵, have suggested that RPI-X promotes short-term planning by

utilities instead of encouraging the long-term investment planning that could sustain efficiency improvements and would be more beneficial to customers.

It is true that RPI-X was originally intended to apply to a longer regulatory control period. Longer regulatory control periods would enable companies to plan operations and capital investment on a longer-term perspective.

In practice, forecasts of future operating costs and investment requirements were too high and efficiency targets were set too low. This penalised current customers.

Ofwat has conducted a price review every five years. This has the advantage that operating costs and investment projects can be more carefully scrutinised. Current customers are likely to benefit from lower bills. However, it is possible that the lack of a certain future revenue stream could encourage a company to avoid longer term commitments and seek short-term solutions, which may increase costs over the long term.

This creates a dilemma. Should regulators pursue long-term price stability and transparency to incentivise companies to make long term investments? Or should shorter term targets be set to ensure that the targets remain appropriate and that customers receive maximum benefit from efficiency savings? Would companies make such long-term improvements given the relatively short-term performance horizon of the providers of finance?

Our view is that there needs to be a balance between short and long-term pressures. It is important to both customers and to the service provider that we are clear about the long-term prospects for prices. It is equally important, however, that there is a current pressure to deliver value for money to customers. On balance, we believe that RPI-X does work in the customer interest. If The regulator monitors service levels and asset condition and performance effectively, he can reduce the risk that a company seeks short term benefits and stores up problems for the future.

⁵ Dr Dieter Helm, 'Memorandum on environment, food and rural affairs' submitted to the UK Parliament, 17 October 2003.

ii) Consistency of regulation

In order to work properly, the regulated company must believe that, under the RPI-X mechanism, the company will be allowed to retain the benefits of outperformance. In the early years of RPI-X, there are examples of regulators resetting price caps shortly after they had been agreed. For example, in 1994 Offer (the electricity regulator) revised price caps for the electricity companies within a year of agreeing a five-year revenue settlement. Similarly, Ofwat initiated an interim determination in 1991 which resulted in a reduction in the price caps that the water companies in England and Wales had received at privatisation.

There were good reasons for these changes but such revisions inevitably weakened companies' confidence in regulators' commitment to keeping to the agreed price settlement. This had a negative impact on the incentive to reduce costs.

In recent years, utility regulators in the UK have generally avoided initiating changes to the price settlement in between regulatory reviews. However, requests by companies for interim determinations have increased. Under this process, the company asks the regulator to review the price settlement to take account of specific factors that have changed since the regulator's original assessment. Interim determinations were discussed in Volume 3, Chapter 11.

iii) Conflicting regulatory objectives

Utility companies may be subject to regulation by more than one agency. It is therefore possible that the incentives driven by the economic regulator through the RPI-X mechanism could conflict with the requirements set by other regulatory agencies. This is clearly undesirable for companies and would not benefit customers.

In Scotland there are three main regulatory bodies: this office, covering economic regulation; the DWQR, covering drinking water quality standards; and SEPA, covering environmental standards. Scottish Water's required revenue is affected by both water quality and environmental standards.

In Scotland, the water industry investment programme is defined in the Quality and Standards process. This process is discussed in detail in Volume 5. It involves a collaborative and consultative approach to determining investment priorities, led by the Scottish Executive and involving the three regulators and Scottish Water. The final decision on investment priorities is taken by Scottish Ministers.

The Quality & Standards process therefore ensures that there is a single, common understanding of the objectives of the investment programme.

iv) Requirement to define clear performance measures

RPI-X regulation provides clear financial targets and incentives for companies. Other targets, such as customer service levels and the physical delivery of projects are not, however, defined in the mechanism. To safeguard customers' interests, regulators carefully monitor levels of service and the delivery of investment.

If regulators did not monitor and report on performance, companies might focus on cost reductions and allow the level of service to decline. For example, the Office of the Rail Regulator reacted to concerns about under investment by seeking to define more clearly the outputs that the rail track company was expected to deliver.

Over the next two years, we have begun to report on Scottish Water's performance. This is described in detail in our document 'Our work in regulating the Scottish water industry: Background to and framework for the Strategic Review of Charges 2006-10' published in August 2004. Reporting developments have included:

- the extension of our monitoring role to include an annual return, a set of quarterly reports on areas such as investment delivery and customer performance, and a monthly financial return;
- publication of three regular reports on Scottish Water's performance on costs, investment delivery and customer service levels;
- formal audits of key processes such as investment appraisal and customer complaints handling.

4.3 RPI-X in the Scottish water industry

We have examined both the overall effectiveness of RPI-X regulation and the incentive framework that it creates. RPI-X is mainly used to regulate private sector companies, which are licensed providers of utility services.

Scottish Water is a public sector organisation, which, by statute, has sole responsibility for providing water and wastewater services to customers throughout Scotland.

In this section we examine the differences between incentives in the private and public sectors and consider how best to tailor RPI-X to provide incentives for public sector companies such as Scottish Water.

4.3.1 New Zealand Utilities

It is instructive to look at the experience of public sector utilities in New Zealand.

When giving reasons for the unsatisfactory performance of New Zealand's utilities, Dr Alan Bollard, then chairman of New Zealand Commerce Commission pointed out,

"several reasons have been adduced for the inadequate performance:

- the conflict they (public utilities in New Zealand) faced between various commercial and social objectives;
- an operating environment in which competition was usually lacking;
- access to funding from government sources at favourable rates of interest;
- lack of accountability to, and inadequate monitoring of performance by, government; and
- political inference."⁶

⁶ Alan Bollard, 'Utility regulation of New Zealand' drawn from: M E Beesley (ed), 'Regulating utilities: broadening the debate', IEA Monograph, London: IEA, 1997, Chapter 4.

⁷ "in-the-market" competition exists where there are genuine markets for the separate business activities that are conducted by a water and sewerage undertaker.

4.3.2 Strong Regulatory Framework

We believe that the proposed creation of a Water Industry Commission with powers to determine prices can help address the potential risk identified by Dr Bollard. We would agree that there are four principal risks that need to be addressed if customers are to receive value for money. These are:

- conflicting objectives (commercial, social and political);
- the lack of a hard budgetary constraint;
- lack of accountability/ monitoring; and
- lack of competition.

These risks could apply to most unregulated monopolies, whether they are in the public sector or private sector. However, a strong regulatory regime will minimise these risks from a customer perspective.

- Licence obligations can also clarify the roles and responsibilities of service providers;
- Effective regulation can address the issues of budgetary constraints and accountability/monitoring; and
- Competition can impact on some of the activities of utilities.

There is no doubt that the threat of competition can bring benefit to customers (e.g. in England and Wales some large users have benefited from lower prices. These benefits come at the expense of the shareholder, not other customers because of the possibility that the large user could have found an alternative supplier).

However, most activities in the water and sewerage business are natural monopolies, and the impact of "in-the-market" competition⁷ is likely to be limited. The

pressures of regulatory price settlements are already likely to encourage companies to see best value in service delivery (whether contracted out or not) and in financing. Scottish Water does not face competition for its financing, but a strong regulatory regime would ensure that it faces a similar tight budget constraint to the privatised companies.

It may, however, be instructive to compare Scottish Water and private companies in terms of the first three features.

Table 4.2: Comparison between Scottish Water and private companies

	Private companies	Scottish Water
Clear and well prioritised objectives	Although a private company may have different stakeholders, and the outcomes of its actions may affect many different parties' interests, in principle the owners' interest is paramount, and can often be reduced to a single and measurable objective such as profit and/or share price ⁸ . Key financial parameters such as yield, turnover and profit act both as a measurement of performance and as clear objectives for management to pursue.	As a public sector company, Scottish Water arguably has greater focus placed on its social obligations. It is not clear that these obligations are materially different from those of a licensed water company south of the border. Objectives are set by Ministers at a high level and by the regulators in detail. The introduction of powers of determination for the economic regulator in a policy framework decided by Ministers will be broadly similar to the regulatory structure for the industry in England and Wales.
Accountability/ monitoring	In private companies, managements are accountable to the shareholders through the board. Shareholders are effective in monitoring management – they have a financial interest in the company and the power to dismiss senior management. Debt providers also monitor private companies closely. Investment analysts will also report on the performance of the company. Ofwat, the Environment Agency and the Drinking Water Inspectorate also monitor and report on performance.	Although Scottish Water is ultimately accountable to the Scottish Parliament, an independent Board of Directors has been established. The board includes a majority of non-executive directors. Day-to-day accountability for operations and meeting regulatory targets rests with the board. Scottish Water's performance is monitored by its three regulators (WICS, DWQR and SEPA). These regulators hold the management of Scottish Water accountable for delivery of the agreed cost efficiencies, water quality and environmental standards.
Budgetary constraints	Private sector companies can only access funds if the available rate of return to investors fully reflects the risk.	Scottish Water obtains its funding partly from customers and partly through public borrowing. Scottish Water has access to low-cost debt financing through government loans. It is important that lending is made available on a commercially justifiable basis and is not seen as an 'easy option' to avoid delivering efficiency targets.

To summarise, private companies have well-defined objectives, clear accountability and a focus on managing financial risks. This makes it easier to implement an incentive mechanism.

4.3.3 Summary

There are potential risks in Scottish Water's access to funding. However, the independent board structure and regulatory framework established for Scottish Water help to minimise this risk. The proposals in the Water Services (Scotland) etc. Bill will ensure:

- Scottish Water's objectives are clearly established;
- the management is clearly accountable for delivering these objectives, and
- the funding that is available to deliver the objectives is finite.

4.4 Mechanisms for incentivising outperformance

In our most recent Costs and Performance report, we showed that Scottish Water had improved its operating cost efficiency. However, our analysis⁹ has also shown that there is still a considerable gap between Scottish Water and the companies south of the border.

Introducing the RPI-X framework should accelerate the rate at which Scottish Water makes efficiency improvements. We would also propose to introduce a rolling incentive mechanism because we consider that this could improve the rate at which efficiencies are made.

4.4.1 Rolling incentive mechanisms

In the early years of UK utility regulation, the benefits of outperformance by companies against regulatory targets were transferred to customers at the end of each regulatory period, irrespective of when during that period the outperformance had occurred. This meant

⁸ Avinash Dixit (2000), *Incentives and Organizations in the Public Sector: An Interpretative Review*.

⁹ Costs and performance report 2002-03, November 2003.

that companies had a greater incentive to outperform in the initial years of the five-year review period than in the later years. The more costs that could be saved in earlier years, the more value accrued to the company.

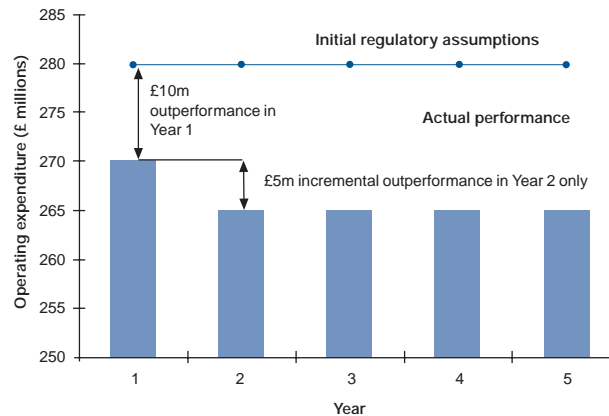
In its 1999 periodic review Ofwat proposed a rolling incentive mechanism, which it believed would strengthen incentives for the companies. The mechanism allows companies to keep the benefit of outperformance of targets for a full five-year period, irrespective of when the savings are made. It is only after a period of five years that the benefit of any outperformance is passed to customers.

There are some differences between Ofwat's rolling incentive mechanism for capital expenditure and the mechanism for operating expenditure. We describe the two mechanisms below.

Operating expenditure

The operating expenditure rolling incentive mechanism rewards year-by-year incremental outperformance (ie additional to any incremental outperformance in the previous year). The company is allowed to benefit from this for five years, irrespective of when the incremental saving is made. Atypical and exceptional costs incurred by the company, such as restructuring costs, are excluded from the calculation of efficiency. The mechanism considers outperformance at a total company level. Figure 4.1 presents a simple illustrative example of the mechanism.

Figure 4.1: Illustrative example of outperformance – operating expenditure



In Figure 4.1, the initial regulatory assumption for annual operating expenditure for Years 1 to 5 (a regulatory period) is £280 million per year. In Year 1, there is an outperformance of £10 million. The company retains this outperformance as a surplus in its accounts, relative to the regulatory settlement, for Years 1 to 5 inclusive¹⁰. In Year 2, the company achieved a further incremental outperformance – relative to what it achieved in 1999 – of £5 million. This incremental amount (£5 million) is also retained by the company, but for the five Years 2 to 6 inclusive. Year 6 falls in the next regulatory period, so Ofwat would recognise an incentive allowance of £5 million in the first year of the next period, when it comes to set prices for Years 6 to 10. In this example, there is no further incremental outperformance after Year 2, so no further incentive allowance is recognised when prices are set for Years 6 to 10.

From this example, we can see that the incremental operating outperformance in any year can be retained for a full five years, either in the form of retained surplus during the same review period or in the form of an incentive allowance that is added to the annual required revenue in the following review period.

For further explanation and more complex examples on the rolling incentive mechanism, please refer to Annex 1 of Ofwat's document 'Periodic review 2004 A further

¹⁰ We have simplified Ofwat's approach for presentational purposes. In practice, performance in Year 0 (the last year of the previous regulatory period) is taken into account, and performance in Year 5 is not. This is because, like other regulators, Ofwat has to carry out its price review before the end of each regulatory period, ie before performance in Year 5 is known.

consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of regulatory expectations’.

Capital expenditure

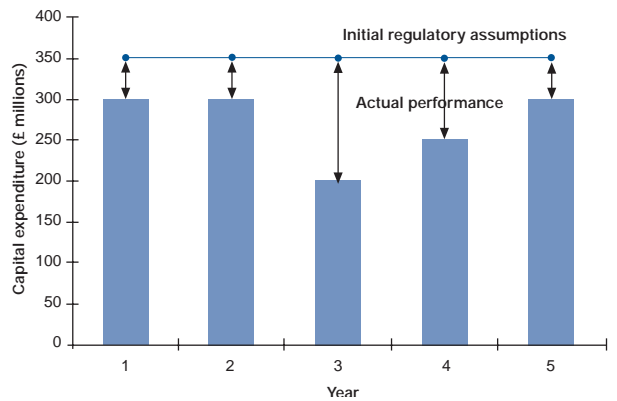
Ofwat’s capital expenditure rolling incentive mechanisms also allows a company to retain the benefit of outperformance against regulatory assumptions for five years, irrespective of when the saving is made. Infrastructure renewals expenditure is, however, excluded. The mechanism calculates outperformance at a service level, looking at water and sewerage services separately.

If there were no rolling incentive mechanism, the aggregate of all annual capital expenditure outperformance would be deducted from the opening RCV balance of the first year of the following review period. This would have resulted in the water companies transferring any outperformance of capital efficiency targets to customers at the start of the next regulatory control period. As with operating expenditure, the rolling incentive mechanism spreads the deduction over five years.

Ofwat calculates the net present value of the five years’ outperformance and make five equal annual reductions. This will avoid fluctuations in the RCV between regulatory reviews.

Figure 4.2 provides another simple example to illustrate the mechanism.

Figure 4.2: Illustrative example of outperformance: capital expenditure



In Figure 4.2, the regulatory assumption of the annual capital expenditure for Years 1 to 5 (the regulatory period) was £350 million per year.

In Year 1, the actual capital expenditure outperformed the regulatory assumption by £50 million. This £50 million outperformance is retained by the company for Years 2 to 5 of the existing regulatory period, and Year 6, the first year of the next price period. However, the company’s RCV will be reduced when prices are set for Years 6 to 10, so that outperformance savings can be passed on to customers. The same mechanism applies to outperformance in Year 2. The company retains the benefit in Years 3 to 7 inclusive, but its RCV will be further reduced when prices are next set. Similarly, outperformance in Years 3 to 5 is retained for five years after the year of outperformance, but the RCV will be reduced.

In order to calculate the amount by which the RCV is reduced, the ‘present value’¹¹ of all of the outperformances carried forward to the next period are calculated and the associated per year deductions are established. This process is illustrated in Table 4.3.

¹¹ The present value is the sum of annual values, where a discount factor is applied cumulatively to each year’s value. For example, if the discount rate is 5%, the present value of £100 in Year 1, £100 in Year 2 and £100 in Year 3 is $£100 + (£100 \times 0.95) + (£100 \times 0.95 \times 0.95) = £285.25$, where 0.95 is the number used to apply the 5% discount.

Table 4.3: Example calculation of capital expenditure outperformance¹² (£ millions)

regulatory expectations' for further explanation and examples.

	Current regulatory period					Following regulatory period				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Initial regulatory assumptions	350	350	350	350	350					
Actual capital expenditure	300	300	200	250	300					
Outperformances per year	50	50	150	100	50					
Outperformance for Year 1	50	50	50	50	50	50				
Outperformance for Year 2		50	50	50	50	50	50			
Outperformance for Year 3			150	150	150	150	150	150		
Outperformance for Year 4				100	100	100	100	100	100	
Outperformance for Year 5					50	50	50	50	50	50
Annual deductions for next regulatory period						400	350	300	150	50
Present value of the annual deductions for the following period at a discount rate of 5%						1,173 ¹³				
Annual deductions to RCV for the following period, which give the equivalent present value of that above ¹⁴						259	259	259	259	259

The outperformance gains retained by the company after the year in which they occur are shown shaded in Table 4.3. The £259 million in the final row of the table is the per annum deduction to the RCV balance.

Annex 2 of the Ofwat document *'Periodic review 2004: A further consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of regulatory expectations'* contains further explanation and examples.

4.4.2 Multipliers

In its June 2003 consultation paper¹⁵, Ofwat proposed an enhancement to its rolling incentive scheme. This involves applying a multiplier to the incentive allowances resulting from outperformance in the current period so that revenue for the next period is further enhanced. This acts as an enhanced incentive for water companies to outperform in the current period. Section 2.2 of Ofwat's document *'Periodic review 2004 A further consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of*

Ofwat proposes to apply a multiplier to the top performing companies in order to encourage greater efficiency in the industry. This should bring benefits to both companies and customers. The regulator has to strike a balance between the incentive to improve efficiency and the shorter term cost to customers. Multipliers also increase the complexity of the RPI-X mechanism and may therefore decrease transparency.

In Scotland, our analysis indicates that the water industry still has some way to go to match the efficiency of its counterparts in England and Wales. The incentives on Scottish Water from regulatory targets based on the RPI-X mechanism are therefore quite strong. We do not, therefore, propose to apply multipliers to any outperformance at this stage. We do, however, intend to put in place the rolling incentive mechanism.

4.5 Employee incentives

We have looked at the incentive properties of RPI-X regulation. To ensure that these incentives are effective, it is important that the resulting benefits are shared

¹² We have simplified Ofwat's approach for presentational purposes. In practice, performance in Year 0 (the last year of the previous regulatory period) is taken into account, and performance in Year 5 is not. This is because, like other regulators, Ofwat has to carry out its price review before the end of each regulatory period, ie before performance in Year 5 is known.

¹³ The present value of the annual deductions is calculated in this example as (in £ millions) $400 + (350 \times 0.95) + (300 \times 0.95 \times 0.95) + (150 \times 0.95 \times 0.95 \times 0.95) + (50 \times 0.95 \times 0.95 \times 0.95 \times 0.95) = 1173$, where 0.95 is used to apply the 5% discount rate.

¹⁴ The annual deductions are derived by calculating the annual figure which, when multiplied by the discount factors for each respective year, sum to 1,173 over the five years.

¹⁵ Ofwat (2003), *'Periodic review 2004 A further consultation on incentive mechanisms: Rewarding future outperformance and handling underperformance of regulatory expectations'*.

appropriately between the various stakeholders: in particular, the company and its employees. The customer will benefit from the additional efficiency that RPI-X regulation should encourage.

4.5.1 Benefit sharing between Scottish Water and its employees

*"[Employees'] incentive schemes are far less widespread in public sector companies than in the private sector."*¹⁶ Performance-related incentives appear to be more problematic to apply in the public sector than in the private sector. In part this is due to factors such as the difficulty of defining and measuring outputs, and the political scrutiny that service provision in the public sector undergoes.

However, Scottish Water's performance is being compared with companies in the private sector and customers should be able to receive at least equivalent value for money. It therefore seems appropriate, and beneficial for customers, for senior management and employees to be incentivised to achieve efficiencies. The nature and scope of incentives for management and employees is clearly outside our remit. However, the potential benefits to customers are important considerations for this Office.

In the last Strategic Review of Charges, we made the following recommendation¹⁷:

"To establish clear and public criteria for the payment of incentives to executive directors. These criteria should be based on overall achievement, within the proposed revenue cap, of the required environmental and public health compliance targets and customer service standards"

In more recent publications¹⁸ we have again stressed the importance of clearer and more public criteria for incentives paid to management. We noted that there is

increasing pressure to bring transparency to this area. From a customer perspective, we believe that incentives should be designed to encourage exceptional performance and that management bonuses should be seen to reflect improvements in the value for money that is achieved for customers.

If Scottish Water is to be permitted to retain the benefits of outperformance of regulatory targets, we believe that it would be appropriate to insist on management and employee incentives that are clearly linked to performance against regulatory targets. We would therefore propose to protect the customer interest by introducing the right to retain the benefits of outperformance on the condition that the Board agrees to publish, in advance, the incentive framework for managers and to ensure that achievement of regulatory targets are a clear and discrete element of the framework.

This is not without precedent in quasi-public, regulated organisations. Two examples of other benefit sharing schemes indicate the scope of what is possible.

*Glas Cymru*¹⁹

Glas Cymru is a 'not-for-profit' company that owns Dwr Cymru Welsh Water. The board of Glas Cymru has stated its intention to:

*"implement a remuneration policy for executive directors which will create strong incentives to deliver benefits to water and wastewater customers."*²⁰

Glas Cymru's executive directors' remuneration is designed in such a way that a high proportion of the maximum potential pay is linked directly to company performance. Half of the maximum bonus is based on financial performance (measured by growth in financial reserves) and the other half is based on how well the company delivers services to customers.

¹⁶ Simon Burgess and Paul Metcalfe (November 1999), *The use of incentive schemes in the public and private sectors: Evidence from British establishments*, University of Bristol.

¹⁷ *Strategic Review of Charges 2002-06 Executive Summary*, Page 3 section c) Key Recommendations.

¹⁸ *Costs and Performance Report 2002-03*, Chapter 9, Section 9.2 Page 35.

¹⁹ Source: Interim statement of Glas Cymru policy for the remuneration of directors, Glas Cymru Cyfyngedig Annual Meeting (2001).

²⁰ Ibid.

The company believes that growth in financial reserves can best capture improved performance and efficiency. Since the main use of reserves will be to deliver lower bills to the customer, this is a direct and simple way of aligning the interests of directors and managers with those of customers.

The company's performance in improving service to customers and the environment is established using the overall service performance assessment that Ofwat publishes each year for all water companies.

*Network Rail Limited*²¹

Network Rail's Management Incentive Plan (MIP) is designed to:

*"create the potential to reward outstanding performance based on individual contribution and the overall success of Network Rail in meeting the objectives of the Business Plan."*²²

In its MIP statement, all evaluation criteria and their weightings are clearly defined and specified.

The plan has two elements: business performance and personal performance. Each provides half of the potential incentive payment. The business and personal performance measures relate directly to the objectives set out by the regulator in the company's licence. Business performance measures include public performance, passenger capability, freight capability, financial efficiency and asset stewardship. Personal performance measures refer to employee engagement, departmental objectives, financial measures and individual assignments. Each of these aspects are defined and the weighting specified in the MIP statement.

No bonus is payable if Network Rail fails to reach the minimum performance level under the business performance plan. Moreover, the incentive payment may be reduced if safety targets are not met.

Glas Cymru and Network Rail are just two examples of quasi-public organisations that provide incentive payments to senior management. Both schemes have common features.

- Transparent guidelines or rules are published – each organisation's plan is set out in a public statement;
- The schemes use objective performance measures – Glas Cymru bases its performance measures on Ofwat's published figures, while Network Rail sets out its objectives and measurements clearly in its statement; and
- Performance objectives are aligned with the objectives of each of the organisations.

4.6 Summary

In this chapter we have discussed the incentive properties of RPI-X regulation.

For the incentive framework to be effective, the management of the regulated company must share in the benefits. This is best achieved in a public sector, or not-for profit, model by ensuring transparency of the incentive mechanism, setting objective targets and aligning these targets with the overall interests of customers.

4.7 Questions for consultation

1. Assuming that an RCV approach is applied in Scotland in the Strategic Review of Charges 2006-10, is a cap required on the capital expenditure to be included in the RCV?
2. If so, should we implement a service-capping rule, similar to the one implemented by Ofwat in England and Wales ?
3. Does the RPI-X mechanism provide appropriate incentives for Scottish Water?

²¹ Source: Management Incentive Plan Statement – 2002-03, Network Rail Limited.

²² Ibid.

4. Are there any significant differences between private and public companies which we have not taken into account in this analysis?
5. Does our assessment of the importance of benefit sharing in incentivising Scottish Water to achieve efficiencies appear reasonable?
6. What level of transparency is appropriate for management bonuses in a public sector organisation?
7. Should management bonuses for Scottish Water be aligned with independently assessed regulatory and customer service targets?

Section 2: Chapter 5

What is operating expenditure and why it is important?

5.1 Introduction

In Volume 3 we explained that operating expenditure is one of the key components in calculating Scottish Water's revenue requirement. It is important that we scrutinise Scottish Water's costs in this area very carefully. This will ensure that customers' bills are no higher than they need to be.

Operating expenditure comprises day-to-day running costs and accounts for some 30% of revenue. This is illustrated in Figure 5.1.

Figure 5.1: Scottish Water expenditure and funding 2003-04

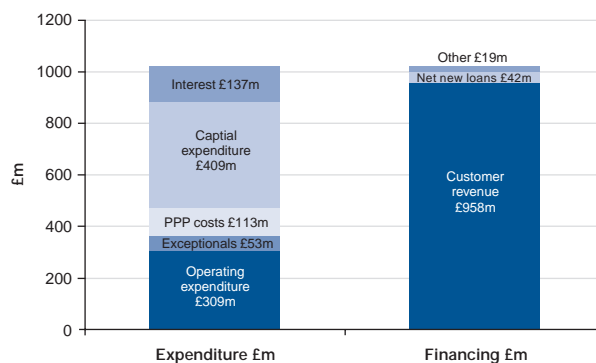


Figure 5.1 shows that in 2003-04, Scottish Water's operating expenditure was £309 million. This equates to £145 per connected property. In promoting the interests of customers of the core business, we rigorously examine Scottish Water's operating expenditure and set efficiency targets. The purpose in setting such targets is to lessen the burden on customers and to ensure that Scottish Water's charges are no more than sufficient to provide the service that customers expect.

This chapter expands on Chapter 2 and sets out exactly what we mean by operating expenditure. We also explain the factors that influence operating costs. We distinguish between external factors – which it may not be possible for managers to control – and internal factors. We provide examples of both. The chapter then briefly discusses factors that drive changes in operating expenditure. These are mainly the increased costs related to meeting new standards of service, which are offset by efficiency gains.

In Chapter 6 we examine how we propose to establish a baseline for Scottish Water's operating expenditure for the *Strategic Review of Charges 2006-10*.

5.2 Definition of operating expenditure

5.2.1 Components of operating expenditure

Operating expenditure comprises day-to-day running costs. It does not include capital investment or financing costs. Operating expenditure therefore includes employment costs, electricity, materials, hired and contracted costs, local authority rates, insurance, software licences, vehicle running costs, etc. Bad debt is also regarded as a running cost.

Our definition of operating expenditure is narrower than that employed in statutory accounts. We exclude the following items from our analysis of operating expenditure:

- Maintenance of the asset base – such expenditure is classed as capital maintenance and is regarded as investment;
- Depreciation – this is an accounting charge reflecting the use of non-infrastructure (above-ground) assets. The amount of this charge depends on the application of accounting policies. It does not necessarily reflect the organisation's spending on replacing non-infrastructure assets;
- Infrastructure Renewals Charge – this is an accounting charge reflecting the use of infrastructure (below-ground) assets. As with depreciation, the size of this charge depends on the application of accounting policies. It does not necessarily reflect the organisation's spending on maintaining infrastructure assets;
- Costs of Public Private Partnership (PPP) schemes – such costs are determined by contracts between Scottish Water and external parties. They comprise both day-to-day running costs and financing costs;
- Interest payments – such expenditure is regarded as a financing cost; and

- Taxation – the amount of taxation paid is determined by Inland Revenue. Scottish Water does not currently pay corporation tax.

We collect information about the operating costs incurred by the water and sewerage service undertakers in the UK. Our information requirement uses a consistent breakdown of operating expenditure. This facilitates comparisons with other water and sewerage companies and allows us to analyse costs. The consistency of our Regulatory Return with that used by Ofwat allows us to make robust comparisons. As a result, we do not have to make many adjustments to the reported information in order to benchmark performance. This is further discussed in Chapter 6.

The June Return¹ from Scottish Water allows us to analyse operating costs by both function and activity. Our Return defines these functions and activities in the same way as Ofwat's equivalent Return. The analysis of expenditure by function provides information about what it costs to provide a particular service. The analysis by activity shows the cost of each activity comprising a service.

The breakdown by function is shown below:

- Water service:
 - Water resources and treatment
 - Water distribution
 - Business activities.
- Sewerage service:
 - Sewer network
 - Sewage treatment
 - Sludge treatment and disposal
 - Business activities.

The breakdown by activity is as follows:

- Direct costs:
 - Employment
 - Power
 - Hired/contracted services

- Agencies
- Materials and consumables
- Charges levied by environment regulator
- Bulk water imports
- Other.

- General and support

- Business expenditure:
 - Customer services
 - Scientific services
 - Local authority rates
 - Doubtful debts
 - Exceptional items
 - Third party services
 - Other.

5.2.2 Underlying operating expenditure

One-off items of expenditure, which are unlikely to be repeated on a regular basis, can affect reported operating expenditure. Examples would include

- the costs of abnormal pension contributions;
- redundancy payments;
- rates rebates; and
- unusual weather conditions.

Such one-off items of expenditure are usually classified in one of two ways:

- Exceptional items – defined in Financial Reporting Standard 3 (FRS 3) and reported in statutory accounts; or
- Atypical costs – one-off costs that are not covered by FRS 3, but which do have a material impact on reported costs in the financial year.

Our analysis of Scottish Water's operating expenditure endeavours to be as accurate and fair as possible.

¹ The June Return is an annual information submission that we receive from Scottish Water. It contains information about all aspects of Scottish Water's business and is the most comprehensive information submission that we collect. The Return is described in more detail in Volume 1, Chapter 3 of our Methodology.

Assessment of Scottish Water's relative efficiency (ie Scottish Water's efficiency when compared to the companies in England and Wales) in operating expenditure therefore takes into account reported one-off costs. Comparisons could obviously be affected by both Scottish Water's one-off costs and those of the privatised companies.

5.2.3 Base service operating expenditure

There are many factors that could justify an increase in operating costs. These include:

- better standards of customer service;
- growth in the customer base;
- growth in customer demand; and
- more sophisticated and effective processes for treating drinking water or sewage effluent.

We make adjustments to ensure that such factors are taken into account before comparing trends in operating expenditure. The pace of improvement required, and the resulting cost increase, may vary from region to region, or over time.

We therefore require Scottish Water to report two operating expenditure figures: one for base service, and one for total operating expenditure². Base service expenditure comprises the cost that is incurred simply to maintain a constant level of service from some agreed starting point.

Total operating expenditure includes both the operating costs relating to maintaining the base service and the net additional running costs associated with improvements. It is possible to compare the underlying trends in operating expenditure more fairly if new net additional costs are reported separately.

5.3 Factors that influence the level of operating expenditure

There are several important factors that can influence operating expenditure in the water industry. We can categorise these factors as 'external' or 'internal'. We term those factors over which water and sewerage service providers have little or no control as external. Internal factors are those that we consider to be under the control of the management of the organisation. In order to gain a true picture of the relative efficiency of organisations, it is important to take proper account of both sets of factors. For example, it would be unfair to deem that an organisation was inefficient if higher reported costs were purely a function of external factors. This requires us to take account of external factors in our efficiency analysis. We only compare performance on those factors that management are able to control.

It is possible to identify a number of external factors that affect the costs of the water and sewerage industry. They include the following:

- Difficulty of operating environment (population distribution and density, topography and terrain, water availability and types of source, coastal or inland character, etc);
- Customer mix (domestic, non-domestic, metered, unmeasured, large/small industrial user);
- Customer requirements (resolving complaints, etc);
- Environmental requirements (leakage levels and targets, restrictions on water resource use, sewage effluent standards, etc);
- Volumes (water consumption, peak use, sewage loads);
- Nature of the assets operated and maintained (size, mix, performance). Water and sewerage assets tend to have long lives and changes to the inherited asset base take time;

² The companies in England and Wales also report two operating expenditure figures.

- Regional variations in charges for local authority rates, water abstraction and sewage discharges;
- Regional variations in services such as mains diversions and sewer diversions ('third party' services); and
- Regional variations in market rates for salaries, electricity or other costs.

In addition, it is possible to identify a number of internal factors that affect the costs of the water and sewerage industry. They include the following:

- The remuneration policy of an organisation, for example salaries, bonus schemes, health care etc;
- An organisation's policy regarding the use of permanent or temporary employees – the former will incur recruitment costs, while the latter could incur fees payable to an agency;
- An organisation's policy regarding the purchasing and stocks of materials and consumables;
- An organisation's policy regarding hired and contracted services, for example, the use of lawyers and consultants; and
- The nature of the assets operated and maintained (size, mix, performance). Over time, water and sewerage service providers can change the assets that they own and operate, either by building new ones, decommissioning old ones or making changes to existing assets to modify the way in which they operate.

We consider external cost drivers to be outside significant management control in the short term, for an efficiently run business. However, poor management can mean that charges incurred for local authority rates or electricity, for example, are higher than they need to be, or that insufficient attention is paid by managers to limiting the impact on costs of their operating environment.

The approach to comparisons with other water and sewerage companies is therefore to determine, by

detailed analysis of the available information, the way in which the external factors listed above influence actual operating expenditure for Scottish Water. The models that we use are described in more detail in Chapters 8 and 9, but essentially they estimate the effect on costs of the operating environment, 'customer base' and assets and volumes. We exclude costs that may be affected by regional distortions such as local authority rates.

Our aim is to normalise costs across Scottish Water and its comparators, so that the variations that remain are likely to be associated with differences in efficiency. Comparisons of normalised operating expenditure allow us to make a fair assessment of Scottish Water's relative efficiency.

5.4 Factors that drive changes in operating expenditure

Any change in operating expenditure will impact on customers' bills. This would include, for example:

- New operating expenditure – investment in improving customer service in higher treatment standards etc. is likely to increase operating expenditure;
- Changes in the wider economy can impact on operating costs such as power costs and pension costs;
- Specific costs incurred by Scottish Water, for example increased insurance premiums would impact on operating costs; and
- Efficiency savings in operating expenditure will reduce customers' charges relative to the level that they would otherwise have been.

5.5 Summary

Operating expenditure has a considerable direct impact on customers' charges. As a result, we have to scrutinise Scottish Water's costs in this area very carefully. Chapters 8 to 14 explain how we establish the scope for efficiency and set appropriate targets.

Section 4: Chapter 6

Establishing a baseline for operating costs

6.1 Introduction

This chapter reviews how operating expenditure in the Scottish water industry has changed since the *Strategic Review of Charges 2002-06*. It outlines how we propose to establish a baseline level for operating expenditure at the start of the next regulatory control period.

We set efficiency targets at the *Strategic Review of Charges 2002-06* to ensure that we kept increases in customers' bills to a minimum. Significant efficiency savings have been achieved. However, we believe that there is still significant scope for further savings in the next review period 2006-2010. In this chapter we set out how we propose to set the baseline to which we will apply future operating cost efficiency targets. This is important, because it forms the basis against which we will monitor Scottish Water's progress during the regulatory control period. A shared understanding of the assumptions that underpin the efficiency target will minimise uncertainty in the measurement of progress towards the targets.

In this chapter we examine recent movements in Scottish Water's operating expenditure relative to the targets we set in the *Strategic Review of Charges 2002-06*. We discuss the adjustments that we make to the reported costs, so that we can compare performance on a like-for-like basis. In particular, we set out the criteria that we propose to use to assess adjustments. We then describe the framework and process that we will follow to establish the baseline. At the end of the chapter we briefly review the potential changes in ongoing operating costs that could affect Scottish Water's baseline, for example increased pension contributions.

6.2 Scottish Water's operating expenditure

In 2003-04, Scottish Water's operating expenditure (excluding payments to Public Private Partnerships (PPPs)) totalled £362.1 million¹. This is broken down in Table 6.1².

¹ PPP costs are payments to the consortia that operate sewage treatment works under the Private Finance Initiative. We will discuss these costs in more detail in Chapter 12.

² Numbers may not add due to rounding.

³The discussions with Scottish Water led to an agreement called the 'Ten Principles'. Volume 1, Chapter 5 of our Methodology provides a full description.

Table 6.1: Breakdown of Scottish Water's operating expenditure in 2003-04

	Operating expenditure £m
Water service:	
Resources and treatment	42.7
Distribution	58.6
Business activities	26.4
Local authority rates	16.1
Doubtful debts	17.8
Exceptionals	31.7
Third party services	16.6
Total water service operating expenditure	209.7
Sewerage service:	
Sewer network	37.1
Sewage treatment	31.6
Sludge treatment and disposal	11.7
Business activities	17.2
Local authority rates	9.4
Doubtful debts	20.5
Exceptionals	21.2
Third party services	3.8
Total sewerage service operating expenditure	152.4
Total Scottish Water operating expenditure	362.1

As we explained in the previous chapter, we removed one-off exceptional costs. This gives an initial estimate of the underlying operating costs. This amounts to £309.2 million in 2003-04 (£362.1m - £21.2m - £31.7m). We also need to adjust this initial estimate to correct for any unusual factors that may exist. We discuss these adjustments later in the chapter.

Has Scottish Water met its efficiency targets for operating expenditure?

The efficiency targets that we set at the *Strategic Review of Charges 2002-06* were phased over the period up to March 2006. In the last year of the review period, 2005-06, we set a target that operating expenditure should be reduced to £258.4 million. Following representations from Scottish Water³, we concluded that the targeted level of baseline operating costs for 2005-06 should be increased by £6.6m to take account of the following:

- A worse than expected performance in 2001-02 by the three predecessor authorities. We made an allowance of £4m for this factor;
- A different legal definition of sewers in Scotland than in England and Wales. We made an allowance of £2m for this factor; and
- Inflation on the above two factors amounted to an additional £0.6m.

The targeted levels of operating expenditure under the Strategic Review and the revised targets are set out in Table 6.2⁴:

Table 6.2: Strategic Review 2001 baseline and target levels of operating expenditure, and revised targets.

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Strategic Review of Charges 2002-06 baseline	£365.8m	-	-	-	-	-
Strategic Review of Charges 2002-06 targets	-	£360.5m	£304.3m	£277.1m	£265.9m	£258.4m
Revised targets	-	-	-	-	-	£265.0m

Scottish Water has made significant reductions in operating expenditure. We propose to judge Scottish Water on its achievement of the £265m operating cost target that was agreed for 2005-06. At the current time we believe that it is likely that this target will be achieved. Scottish Water's operating expenditure performance is shown in Table 6.3:

Table 6.3: Comparison of Scottish Water's reported and adjusted operating expenditure⁵

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Scottish Water's reported operating expenditure	£365.8m	£357.1m	£330.8m	£309.2m	n/a	n/a
Scottish Water's adjusted operating expenditure	£365.8m	£380.5m	£351.2m	£323.0m ⁶	n/a	n/a

⁴ For 2000-01 and 2001-02 the figures represent the consolidated operating expenditure of the three predecessor authorities.

⁵ For 2000-01 and 2001-02 the figures represent the consolidated operating expenditure of the three predecessor authorities.

⁶ The adjusted figure for 2003-04 is only a preliminary estimate.

In Table 6.3 we show Scottish Water's reported operating expenditure. We also show Scottish Water's adjusted operating expenditure. This reflects adjustments that we have made to monitor Scottish Water's progress (on a like-for like basis) towards its targets. The adjusted operating expenditure should be compared with the Review targets.

Scottish Water has not so far met the efficiency targets that we set; this means that Scottish Water has had to borrow more (than would otherwise have been required) to cover this extra expenditure. Customers will ultimately pay for this extra borrowing through charges. However, Scottish Water has not delivered as much capital investment as we had assumed in the early years of this Review period. Extra borrowing (beyond the level allowed in the Review) has not yet been necessary to compensate for the extra operating costs incurred.

6.3 Adjustments to operating expenditure

Each year we make adjustments to Scottish Water's reported expenditure to ensure that we can compare it to the *Strategic Review of Charges 2002-06* baseline. We believe that this is the only fair way to monitor Scottish Water's progress towards the efficiency targets.

The adjustments that we make generally fall into the following categories:

- Correcting for the merger of the three predecessor authorities

The calculated targets in the *Strategic Review of Charges 2002-06* used the year 2000-01 as the baseline. The operating costs reported in that year were those of the three authorities prior to the formation of Scottish Water in April 2002. Our targets did not take account of any changes in the way that costs would be reported as a result of the merger. The main difference relates to inter-authority trading. The three authorities had various commercial dealings with each other. The most important was a bulk supply of water from the East of Scotland Water

Authority to the West of Scotland Water Authority. The West of Scotland Water Authority paid East of Scotland Water Authority £7.1m in 2000-01. The merger means that neither the revenue nor the cost of this arrangement is now included in reported costs. However, this cost was included in the baseline. In order to compare like with like, we adjust Scottish Water's reported operating expenditure to include the cost of inter-authority trading.

In 2002-03, we made an upward adjustment of £6.4m to Scottish Water's reported expenditure. (The adjustment in 2002-03 is lower than the actual cost in 2000-01 because we assumed that the cost of the bulk supply would have been reduced in line with the efficiency targets.)

- Unwinding artificial changes in expenditure

An 'artificial' change in expenditure is one that has no impact on the cash that has actually been spent, but does affect the way that the expenditure is reported. For example, at the time that the efficiency targets were set, we did not know how the former authorities' accounting practices in 2000-01 might change in 2001-02, nor the changes that Scottish Water might introduce from 2002-03. Our analysis has shown that the increase in the capitalisation of operating expenditure appeared to result from changes in accounting policy. The West of Scotland Authority first introduced these changes, but Scottish Water has continued this policy. Reallocating costs from operating to capital expenditure is not a true efficiency saving. This is because the money is still being spent, albeit under a different expenditure category. We could increase the capital efficiency targets to compensate, but this would reduce the transparency of our monitoring.

For 2001-02 and 2002-03, we made upward adjustments of £8.1 million and £12.7 million respectively to the three authorities' and Scottish Water's reported operating expenditure. The adjustments unwound the reported increases in capitalisation, relative to the 2000-01 baseline.

- Adjusting for atypical costs (or savings)

These are costs (or savings) that are one-off in nature, but which are not classed as exceptional under accounting standards. Examples include the cost of dealing with unusual operating circumstances. Examples would include the foot and mouth outbreak, or savings resulting from pension holidays. Such atypical costs (or savings) increase (or reduce) the normal ongoing operational costs of an organisation. We believe therefore that it would not be fair to include them in our analysis of Scottish Water's performance. This is fully consistent with the approach taken by Ofwat, which also excludes atypical costs (and savings) that have been incurred by the water and sewerage companies in England and Wales. However, the onus is on the water and sewerage service providers to identify any such atypical costs (or savings) in their annual information submissions, Scottish Water reported no atypical costs requiring adjustment in 2002-03.

- Adjusting for new non-core activities

The targets we set in the *Strategic Review of Charges 2002-06* covered all of the operating costs of the three former water authorities' in 2000-01. These included the cost of activities such as farming and consultancy services that are not part of the statutory core business of water and sewerage provision. As part of the 'Ten Principles'⁷ we have agreed with Scottish Water that we would continue to include the costs of these activities in monitoring progress towards targets. However, from 2003-04 we exclude the costs of any new non-core activities.

6.3.1 The purpose of making adjustments to reported costs

Each of these types of adjustment is designed to ensure that our comparisons between Scottish Water's actual performance and the Strategic Review targets are made on a like for like basis. We believe that adjusting actual performance ensures that our performance monitoring is more transparent. The alternative would be to adjust the

⁷ The Ten Principles are discussed in Volume 1, Chapter 5 of our Methodology.

targets each year in order that the targets were on a wholly comparable basis to the reported expenditure. Our view is that this would not be a practical or meaningful exercise because it would mean that the targets change each year. Customers only benefit from genuine efficiency savings and we believe that monitoring Scottish Water's progress needs to be as straightforward as possible. A constant set of targets is, in our judgement, the only way to ensure that benefits are delivered and seen to be delivered.

6.3.2 Criteria for making adjustments

In our annual *Costs and Performance Report* we set out the criteria against which we assess the reported operating expenditure. The tests that we use are:

- Do forecast outturns of all components show consistency with the reported year to date figures and trends?
- Can movements in the provision for bad debt be fully explained (since a reduction in the provision could artificially reduce costs)?
- Is new operating expenditure consistent with measures taken to improve service, and additions/enhancements to the authority's operational assets?
- Are PPP costs correctly allocated, and within the limits agreed in the Strategic Review?
- Is the declared level of own work capitalised consistent with changes in the amount of capital investment?
- Is spend-to-save expenditure within the limits set by the Scottish Executive, and properly justified?
- Are accounting items, exceptional items and non-recurring costs correctly allocated and explained?
- Do any changes in the allocation of core and non-core business costs affect the interpretation of trends in baseline operating cost?

- Do any other relevant changes in accounting policy affect the interpretation of trends in baseline operating cost?

In the event that a reported costs component appears to be inconsistent with these tests or is otherwise not explained it may be necessary to adjust the calculation of operating expenditure.

In 2002-03 we made two additional small adjustments: £1.3m of staff costs had been allocated to exceptionals (item 7 on the above list) and PPP costs (item 4 on the above list). We added these adjustments back to Scottish Water's reported operating expenditure.

6.3.3 The impact of adjustments to costs

These adjustments account for the difference between Scottish Water's reported expenditure and the adjusted level of operating expenditure that we use for monitoring progress towards efficiency targets. This is illustrated in Table 6.4.

Table 6.4: Summary of our adjustments to Scottish Water's reported operating expenditure in 2002-03

	£ millions
Scottish Water's reported operating expenditure	330.8
Plus inter-authority trading costs	6.4
Plus capitalisation adjustment	12.7
Plus staff costs reallocation	1.3
Scottish Water's adjusted operating expenditure	351.2

6.3.4 The approach of other regulators

Other regulators of utilities make similar adjustments to reported costs of regulated companies. Recently, both Ofwat and Ofgem have made adjustments to companies' reported costs.

In 2002-03, Ofwat adjusted the reported costs of seven companies to correct the allocation of leakage expenditure and ensure like-for-like comparison across the companies. Ofwat's adjustment to Thames Water's reported operating costs was almost £49m. Ofwat had made clear⁸ that it expected companies to allocate

⁸ Ofwat set out its approach to leakage expenditure in *Setting water and sewerage price limits 2005-10: Framework and approach*, published in March 2003.

leakage expenditure in a specific way and made corrections where this guidance had not been followed. Ofwat does not publish the criteria that it uses to make adjustments to companies' costs. The existence of regulatory accounts reduces the likelihood that changes in accounting policy need to be reversed. However, Ofwat will still make any adjustments that it considers necessary to ensure like for like comparisons.

In June 2004 Ofgem published its draft proposals for price limits for the electricity distribution companies. These proposals included a list of the adjustments that Ofgem had made to operating costs for the purposes of like for like comparisons⁹ (these adjustments included correcting for differences in capitalisation of costs). Ofgem only identified the differences in companies' costs after they had received the information. They have asked some companies to resubmit the information. Ofgem is now considering whether to define their information collection more tightly.

6.3.5 Future developments

We have had extensive discussions with both Scottish Water and the Scottish Executive regarding the adjustments that we make to operating expenditure. Both have raised concerns about the extent of our adjustments. We continue to believe that the interests of customers are best served by ensuring that year-on-year comparisons are on a like-for-like basis and that Scottish Water makes genuine efficiency savings. The planned introduction of regulatory accounts (discussed in Volume 3, Chapter 6 of our Methodology) should significantly reduce the need for such adjustments to Scottish Water's reported costs. Until we have fully introduced regulatory accounts we propose to continue to make such adjustments as we believe to be necessary to monitor Scottish Water's performance against targets on a like for like basis.

6.4 Establishing a baseline for Scottish Water

We need to establish a baseline level of operating expenditure for Scottish Water. We will apply future

efficiency targets to this baseline. We will monitor Scottish Water efficiency performance relative to this baseline during the next regulatory control period. It is important to define clearly the baseline and the assumptions that underpin it.

6.4.1 Establishing the base year

The baseline level of operating expenditure is the expenditure incurred in the base year. There is one base year for each regulatory control period. In the previous Strategic Review we used 2000-01 as the base year. Performance in the base year is the starting point against which future performance will be measured. For that reason, the base year should be one that is relatively stable. We would therefore not suggest using 2002-03 as a base year because it was the first year after the merger of the three authorities.

We believe that there are two options for establishing the base year for operating expenditure:

- Continue to use the year 2000-01. This was the base year for the last Strategic Review. To use 2000-01 as the base year we would have to separate out new operating expenditure; or
- Use 2003-04 as the base year for the draft determinations (due to be published in June 2005) and 2004-05 as the base year for the final determination (due to be published in November 2005).

The disadvantages of the first option are obvious. The Scottish water industry has moved on since the *Strategic Review of Charges 2002-06*. The three authorities have merged to form Scottish Water and the corporation has made significant progress in consolidating all aspects of the business, including accounting practices. There is also no need for the baseline for 2006-10 to take into account adjustments such as inter-authority trading.

There is also no need for us to adjust capitalisation back to 2000-01 levels because Scottish Water consistently

⁹ Ofgem, *Electricity Distribution Price Control Review – Initial Proposals*, June 2004.

applies its capitalisation policy and it is within the range observed in the companies in England and Wales. Reducing the number of adjustments simplifies setting a baseline for operating expenditure.

The choice of base years for the second option is limited because we will only have reported information up to 2003-04 when we issue the draft determination in spring 2005. By the time of the final determination we will also have 2004-05 information.

There is a disadvantage to the second option. When we monitor Scottish Water's progress towards its efficiency targets up to March 2006, we will continue to make such adjustments as we believe to be necessary. However, these adjustments will have no bearing on the baseline for operating expenditure that we will establish for the next regulatory control period. This is likely to mean that there will be difference between the operating expenditure figure that we use for monitoring purposes and that we regard as the baseline for operating expenditure. For example, in 2005-06 Scottish Water is targeted to achieve operating expenditure of £265m after adjustments. This is likely to mean that Scottish Water's reported operating expenditure would be somewhat lower than this level. We will endeavour to be clear when we are using the baseline for operating expenditure and when we are using the adjusted operating expenditure for the purposes of like for like comparisons.

We propose to use 2003-04 as the baseline for operating expenditure. We believe that this would lead to a simpler, more transparent monitoring process after April 2006.

6.4.2 Establishing baseline operating expenditure for 2006-2010

We propose to establish the baseline level for operating expenditure:

- We will use the 2003-04 statutory accounts and June Return information to establish the total level of Scottish Water's operating expenditure in that year.

- We will identify exceptional and atypical costs and subtract them from total operating expenditure. This will allow us to establish the normal ongoing costs of running the business.

- Finally, we will assess whether there is anything unusual about Scottish Water's cost allocation in 2003-04. We will compare Scottish Water with the companies in England and Wales to ensure that its cost allocation practices are consistent with those in England and Wales. If necessary, we will make appropriate adjustments to Scottish Water's operating expenditure.

This adjusted total operating expenditure will form the baseline for our draft determination.

We are due to publish the final determinations in November 2005. We will therefore have information for 2004-05. We propose to revise our assessment of the baseline using information for 2004-05.

6.4.3 Projecting 2005-06 operating expenditure

The final year of the current regulatory control period is actually 2005-06. We will therefore have to project Scottish Water's operating expenditure in that year. We need to do this in order to apply the efficiency targets from April 2006 onwards. Scottish Water is targeted to achieve operating expenditure of £265m after adjustments. Our baseline will not include adjustments. Ideally, we would use 2005-06 reported costs but we will not have final information regarding performance in 2005-06 until after the new price limits have been set.

There are a number of ways in which we could project 2005-06 costs. We ought, however, to bear the following issues in mind.

First, in the last Strategic Review of Charges we set targets for Scottish Water. We believe that there needs to be consistency between reviews. Our projections for 2005-06 need to be consistent with the targets that we set.

However, we need to balance this need for consistency and take account of Scottish Water's performance. We need to be sure that we have no reason to believe that Scottish Water's actual performance will be materially different from the agreed target.

If Scottish Water fell short of target it would be faced with a higher starting point than we assumed in the determination. This could mean that the targets were more difficult than they appeared. This could have a demotivating effect on Scottish Water.

If Scottish Water beats its 2005-06 target, then it could face an easier efficiency target than we had intended.

There appears to be five options for projecting 2005-06 expenditure. These are:

- Option 1

Assume a flat level of expenditure in 2004-05 and 2005-06 (in real terms, ie with inflation stripped out of the figures).

Effectively, we would be assuming that the baseline level of operating expenditure does not change over the two years and the efficiency targets would apply from that level. Scottish Water has an efficiency target to 2005-06 and it would be very likely that its performance in 2005-06 would be better than 2004-05. Reported operating expenditure would therefore be lower than we had assumed. This would give Scottish Water an opportunity to get ahead of the efficiency targets that we set in the review for 2006-2010.

- Option 2

Assume that Scottish Water meets its targeted operating expenditure level in 2005-06.

This would require us to project likely adjustments for 2005-06, so that we can reconcile the target (£265 million) with Scottish Water's accounting costs. The most significant adjustment that is likely to be made in 2005-06 is for inter-authority trading. There may also

be an adjustment to correct the reported level of capitalisation. In the *Strategic Review of Charges 2002-06* we estimated that inter-authority trading would be worth £5.7m in 2005-06. This means that if Scottish Water achieved operating expenditure of £259.3m in 2005-06, this unadjusted figure would be consistent with £265m after adjustments (assuming no other adjustments are necessary). We could, therefore, assume an upper limit on operating expenditure of £259.3m in 2005-06. Our view on the total level of adjustments that may be necessary could be informed by Scottish Water's business plan submissions, which will include its projections for 2005-06.

- Option 3

Assume that Scottish Water fails to meet its targeted operating expenditure.

This would entail a number of assumptions regarding the amount by which Scottish Water's expenditure exceeds the target. This would be difficult to predict. At the current time, we believe that such an outcome is highly unlikely.

- Option 4

Assume that Scottish Water beats its targeted operating expenditure.

We would need to consider how this outperformance should be shared with customers. It would also entail making an assumption about the extent of the outperformance.

- Option 5

Use Scottish Water's forecast expenditure from its Business Plan submission¹⁰.

This has the advantage that the forecast will have been made by Scottish Water. However, if Scottish Water forecast that its costs exceeded the target level of operating expenditure in 2005-06 (£265m after

¹⁰ The draft Business Plan is due to be submitted in October 2004, with the final Business Plan being submitted in April 2005.

adjustments), we would have to consider whether we could reasonably use this projection. We believe that we have to be consistent and that it would be inappropriate to change the agreed targets.

6.5 Future changes in baseline operating expenditure

We need to consider the potential changes in costs that are outside the control of management that could occur during the regulatory control period. Examples of such changes could include:

- Pensions costs. Many organisations are facing the need for increased pension contributions. This pressure on costs is not confined to Scottish Water, but it could result in an increase in Scottish Water's baseline operating expenditure;
- Non-domestic rates. The basis on which Scottish Water's assets are valued will change in 2005. The impact of this change on the valuation and hence the rates paid is not yet known; and
- Energy costs. Future changes in energy costs, for example as a result of the current Ofgem review of electricity distribution price controls, could affect Scottish Water's costs.

We need to take proper account of such changes in order to ensure that Scottish Water can continue to deliver an appropriate level of service. This does not mean that we will automatically allow each claim for changes in the baseline. We will closely examine any claims by Scottish Water. We will use the following criteria to assess such claims:

- If the future changes are the result of an economy wide factor, will their impact be accounted for in national inflation indices?
- What measures has Scottish Water's management taken to reduce the impact of future increases in baseline operating expenditure?
- Where appropriate, has Scottish Water taken account of external advice in respect of the forecast

changes? For example, when we look at pensions costs, we will expect any forecast changes to be supported by an actuarial valuation.

- Are there any offsetting factors that we believe Scottish Water has failed to take into account?
- What views have been expressed by other utility regulators such as Ofwat and Ofgem in assessing similar claims by the companies that they regulate?

We believe that it is important that Scottish Water presents a robust case for changes to future baseline operating expenditure in its Business Plan.

6.6 Conclusions

We have discussed how we propose to establish a baseline for Scottish Water's operating expenditure for the *Strategic Review of Charges 2006-10*. We have explained we will use the baseline to set efficiency targets in the review. Setting a baseline is not a straightforward process – there are several different approaches that we could take, and we would welcome comments on our proposals. The calculation is not straightforward. It is likely that we will need to make adjustments to reported costs in order to establish an appropriate baseline.

It is worth reiterating that the adjustments described in this chapter allow us to track performance over time and against targets on a like-for-like basis. In later chapters, we discuss adjustments that allow us to compare performance in a given year with that of the companies in England and Wales.

6.7 Questions for consultation

1. When setting operating expenditure efficiency targets, do respondents agree that we should use 2003-04 as a base year for the draft determinations and 2004-05 as a base for the final determinations?
2. We invite comments on the most appropriate figure to use for baseline operating expenditure in 2005-06 and the impact that different assumptions may have.

3. What factors do stakeholders believe could result in changes in baseline operating expenditure in the period 2006-10?
4. Do stakeholders think that our criteria for assessing Scottish Water's claims for changes in baseline operating expenditure are sufficient?

Section 3: Chapter 7

Ensuring like-for-like comparisons of efficiency

7.1 Introduction

In Chapter 5 we described how we propose to establish a baseline for operating expenditure. In this chapter we describe our approach to comparing Scottish Water's performance with that of other water and sewerage undertakers, and explain the steps we take to ensure that our assessment of Scottish Water's efficiency is fair, accurate and on a like-for-like basis.

We first explain what we mean by efficiency. We then outline the 'top-down' approach that we use in comparing Scottish Water's performance with others. We discuss how we ensure that comparisons of efficiency are undertaken on a like-for-like basis, and in particular the factors that we take into account when making those comparisons. This allows us to assess the 'efficiency gap' between Scottish Water and the companies south of the border.

7.2 What do we mean by efficiency?

Efficiency is often taken to mean cutting the costs of providing a service. This is, however, too simplistic a view because an assessment of efficiency should also consider the service that is actually provided. Water and sewerage undertakers in the UK have to provide the minimum standard of service that is expected by stakeholders. This would include:

- treating drinking water to the minimum standard required by legislation; and
- removing and disposing of effluent in compliance with the minimum standards required by legislation.

An efficient water and sewerage undertaker will carry out the minimum activities necessary to provide the service that is expected, at the lowest cost.

An organisation could be perceived as inefficient for one of two reasons:

- Case A – the organisation carries out more activities than are necessary in order to provide the expected standard of service. Even if the organisation is generally low cost, this would tend to increase the

cost of providing the service. Even if these extra activities raised the standard of service above that which stakeholders expect, we would still consider this to be inefficient.

- Case B – the organisation carries out the minimum activities that are necessary in order to provide the expected standard of service, but at a high cost.

In Case A, the organisation has chosen to provide a higher standard of service than is actually expected. Customers should not be expected to pay for the costs of providing this high standard of service, unless they have previously indicated a willingness to pay for it.

In Case B, the organisation provides the minimum expected service, but at a relatively high cost. Once again, customers should not be expected to pay more as a result of their undertaker's inefficiency.

We monitor Scottish Water's progress towards achieving efficiency. We take account both of costs and of the level of service that is provided to customers. If Scottish Water were to cut costs but at the same time lower the level of service to customers, then we would not regard this as an efficiency. In our view, Scottish Water must *at least* maintain service to customers at the same time as cutting costs. This view of efficiency is consistent with the approach taken by other UK utility regulators.

7.3 Top-down approach to benchmarking

Benchmarking describes objective comparisons of performance across (or within) organisations. It involves comparing the performance of leaders in a particular field of activity with that of other similar organisations.

We use benchmarking techniques to assess Scottish Water's relative efficiency. Essentially, our benchmarking techniques involve high-level comparisons of Scottish Water's performance with that of the companies in England and Wales.

Full details of the benchmarking methods that we propose are provided in Chapters 8 and 9. However, we summarise the key principles of our benchmarking approach below.

The benchmarking that we carry out is quantitative rather than qualitative. In other words, the information that we use to benchmark Scottish Water is numerically based. It is also subject to audit by Reporters and Auditors. If we were presented with robust qualitative information, however, we would take that into account.

We have deliberately chosen to employ a top-down approach to benchmarking. This means that our comparisons with the water and sewerage companies in England and Wales remain at a relatively high level.

Each water and sewerage undertaker has to provide a certain standard of service. We do not manage Scottish Water, and it would not be appropriate for us to define all of the activities required to deliver the appropriate level of service. If we were to adopt a detailed, bottom-up approach to benchmarking, this could result in us benchmarking activities that are not actually necessary for delivering the service. This could obviously yield misleading results in our benchmarking analysis. Moreover, such an approach would be onerous, costly and intrusive. This is exemplified by the fact that Scottish Water identified more than 250 separate activities as part of its recent work on activity-based costing. (Bottom-up benchmarking could, however, be useful to management as a tool for identifying potential sources of efficiency savings.) Our top-down approach breaks down the water and sewerage services into around ten major activities.

We believe that although the approach we employ is top-down, it is sufficiently detailed to take account of the factors that have a material influence on costs. This enables us to reach robust conclusions regarding Scottish Water's relative efficiency.

7.4 Assessing the efficiency gap

We examine Scottish Water's efficiency relative to that of the water and sewerage companies in England and Wales. In doing so, we endeavour to ensure that our comparisons are on a like-for-like basis. Assessing relative efficiency is key to our analysis; it enables us to quantify the cash cost of inefficiency. This is the extra cost that must be borne by customers. We call this

amount the efficiency gap. Each of these terms is discussed in further detail below.

7.4.1 Ensuring like-for-like comparisons

Our approach to ensuring fair, accurate and like-for-like comparisons involves:

- creating a detailed framework for reporting annual regulatory data;
- using only measurable and objective information;
- using clear and consistent definitions;
- establishing a clear process for auditing and reviewing regulatory information;
- using standard benchmarking methods;
- using detailed and objective criteria for adjustments.

Our approach mirrors that which Ofwat adopts. We use information collected by Ofwat from the companies in England and Wales, and collect the same information from Scottish Water using fully consistent definitions. We described the framework for reporting and auditing regulatory information in Volume 2 of our methodology.

We also need to understand the factors that influence operating costs so that we can take appropriate account of them in our comparisons. These are discussed in Chapter 8. We need to be certain that the water and sewerage undertakers all face similar cost factors. By identifying the most important factors, we can also correct for any material differences. This ensures that no undertaker is put at a disadvantage.

Ofwat has made considerable efforts over the past 13 years to identify the cost factors faced by water and sewerage undertakers in the UK. We need to identify whether there are factors that are outside management control that would affect performance. Only by taking account of these factors can we compare the performance of companies south of border with that of Scottish Water.

7.4.2 External and internal cost factors

Water and sewerage companies face a number of factors that can have an impact on their costs. In the previous chapter, we explained that we need to take into account the impact of external factors (those outside management control) when comparing operating costs. We also explained that comparisons should not adjust for internal factors that management can control.

External factors can drive costs in many ways. We provide some examples of external factors, and the way in which they affect costs, below.

Topography

If a water and sewerage undertaker operates in an area in which a number of town and villages are on hills, then it is likely to cost the undertaker a significant amount of money to pump water up the hills to customers' properties. On the other hand, if water sources are all upland and towns and villages are principally in valleys, then the water will not require as much pumping because it will be pulled down to where it is needed by gravity.

Types of source

Some water sources can be more difficult to treat than others. The quality of river water, for example, often fluctuates and can contain large amounts of pesticides and nitrates which have washed off farmland. Such sources are expensive to treat to the standard that is required for drinking water.

Population density and distribution

It can cost more – per unit of water and sewage treated – to serve small concentrations of population than larger ones because they do not benefit from economies of scale in the treatment processes. The costs of serving small communities may be further increased where the communities are isolated, for example because of the staff time spent travelling. Conversely, in some densely populated urban areas costs can increase as a result of

difficulties in carrying out inspections and repairs to underground water mains and sewers. Staff travel times in urban areas may also be significant.

Sewage effluent standards

Standards for sewage effluent are usually set by national or European legislation and are enforced by the environmental regulators¹. Discharges to rivers or designated bathing waters will often have tighter effluent consent standards than other types of discharges. These tighter consents will usually increase the costs of the sewerage service undertaker.

Peak use

A water and sewerage undertaker with a customer base that demands large amounts of water for short periods of time will often have higher costs than an undertaker who faces steady demand. This is because the undertaker needs to have large volumes of water available for use at short notice. This will often entail additional treatment, storage and distribution capacity in order to cope with peak demand.

When we assess the efficiency gap between water and sewerage undertakers we only correct for external factors. For example, when we assess efficiency in power (electricity) expenditure in the water service we take into account the amount of pumping that each undertaker has to undertake. When we examine water resources and treatment expenditure, we take account of the quality of raw water because we recognise that water undertakers in different parts of the country face different circumstances in the availability and sources of water. The same applies to the sewerage service where, for example, we take account of the consent standards imposed by the environmental regulators.

Making comparisons

In order to gain a robust view of Scottish Water's efficiency, we have to ensure that our comparisons with the companies in England and Wales are robust. We have explained how we take account of the external

¹ The Environment Agency (EA) in England and Wales and the Scottish Environment Protection Agency (SEPA) in Scotland.

factors that could influence the costs of the water and sewerage undertakers. We will discuss this further in Chapters 8 to 10.

We collect a significant amount of information that relates to the factors that could influence Scottish Water's costs. Ofwat collects and publishes exactly the same information relating to the water and sewerage undertakers in England and Wales. We are therefore able to assess the materiality of each factor in terms of its impact on costs. In other words, we can assess whether each factor really does have an impact on costs and, if so, to what extent. We use statistical models to assess the significance of each factor. This is discussed in more detail in Chapter 8.

It is possible that some water and sewerage service undertakers will still face factors that are unique to them and which have an impact on their costs. An example of this would be the fact that companies which operate in and around London will face higher salary costs than those which operate elsewhere in the UK. The companies cannot fully control these costs. If Scottish Water faces factors such as this that are outside its control, then it needs to identify the particular factors and present a case to us. If the justification is robust then the factors would be taken into account. This process is set out in detail in Chapter 10.

Water and sewerage service undertakers are likely to face many different factors that could affect their costs. This is especially true of undertakers that cover large geographic areas or have a very mixed customer base. For example, Severn Trent Water's area includes the West Midlands conurbation as well as some rural areas in Wales. This diversity means that the company is likely to face a mixture of high and low cost factors; as a result, the overall effect may be neutral if some of the factors balance out.

In carrying out our analysis of relative efficiency, we make reference to a number of annual reports, published by Ofwat, which relate to the performance of the water and sewerage companies. These reports include rankings of the companies, for example in terms

of efficiency and customer service. They allow us to check that our approach to assessing efficiency is fully consistent.

Once we have adjusted for external factors that are outside the control of management, we can use our comparisons to estimate the extent of excess internal costs and therefore relative efficiency.

7.4.3 Relative efficiency

We believe that our detailed approach to comparing Scottish Water with the companies in England and Wales takes account of the factors that materially influence costs. We are therefore able to reach robust conclusions regarding Scottish Water's relative efficiency.

Relative efficiency is how efficient Scottish Water is in comparison with the companies in England and Wales. We can make comparisons against individual companies or an average company (in either case, we refer to the relevant company as a comparator). For example, in 2002-03 we assessed that Scottish Water's operating expenditure was 159% of what we would expect an organisation with its characteristics to incur. In contrast, the average company in England and Wales incurred operating expenditure of 100% of what was expected. This means that Scottish Water was relatively inefficient. The most efficient company in England and Wales incurred expenditure of 87% of what was expected.

7.4.4 Efficiency gap

By assessing the efficiency gap we quantify the extent of relative inefficiency. We can calculate the size of the efficiency gap, as shown in Table 7.1.

Table 7.1: Calculation of Scottish Water's efficiency gap – 2002-03 example

	Efficiency gap
Scottish Water to average company in England and Wales	$(159-100)/159 = 37.1\%$
Scottish Water to most efficient company in England and Wales	$(159-87)/159 = 45.3\%$

We can also present this efficiency gap in cash terms. This is shown in Table 7.2.

Table 7.2: The efficiency gap in money terms – 2002-03 example

	Scottish Water's 2002-03 operating expenditure ² £m	Benchmark predicted operating expenditure £m	Efficiency gap £m
Scottish Water compared with average company in England and Wales	372.4	234.2	138.2
Scottish Water compared with most efficient company in England and Wales	372.4	203.7	168.7

The efficiency gap represents the amount by which Scottish Water would have to reduce its costs in order to be as efficient as the average or most efficient company. The size of the efficiency gap obviously depends on the relative efficiency of the comparator. The more efficient the comparator, the more the efficiency gap will increase.

In 2002-03, Scottish Water would have had to reduce its operating costs to £234.2 million in order to be as efficient as an average company in England and Wales. However Scottish Water would have had to reduce its operating expenditure to £203.7 million in order to be as efficient as the leading company in England and Wales. This assumes that Scottish Water provides the same level of service as the companies in England and Wales. We will discuss this assumption further in Chapter 14.

7.5 Question for consultation

1. Do respondents agree that our proposed 'top-down' approach to benchmarking will provide the most appropriate method of comparing Scottish Water's performance?

² In our benchmarking for 2002-03, controllable operating expenditure included the estimated running costs of Private Financing Initiative schemes for sewage treatment.

Section 3: Chapter 10

Ensuring modelled results are objective and fair

10.1 Introduction

As Chapters 8 and 9 outlined, we assess Scottish Water's relative operating expenditure performance by benchmarking its performance against that of the companies south of the border. It is vital that we make these comparisons on a like-for-like basis.

Our models cannot take account of all of the factors that influence cost. Some of these factors (ie those that are within the control of management) we consider should be excluded from any comparison. Others may either increase or decrease the level of cost. Such factors may relate to the operating environment or the level of service provided to customers.

We need to take account of all of these differences. For that reason, we ask Scottish Water to draw to our attention all factors (those not included in the models) that influence cost. This should include factors that both increase or decrease cost. We explain this process in detail in this chapter.

Structure of this chapter

Section 10.2 of this chapter:

- examines differences in the levels of service and scope of activities between Scottish Water and the companies in England and Wales, and their impact on operating costs.

In Section 10.3 we:

- discuss how we could account for these differences fairly in our assessments of operating cost efficiency.

In Section 10.4 we:

- examine the wider factors of Scotland's geography and population patterns, and their potential impact on Scottish Water's costs;
- look at how the extent and quality of Scottish Water's assets might influence costs;
- identify issues concerned with the customer base,

public sector ownership and timescales that may be considered to affect costs.

In Section 10.5 we:

- briefly discuss the approach taken by Ofwat and Ofgem to such adjustments;
- set out the criteria that we intend to use for reaching decisions about the nature and extent of adjustments in the Strategic Review;
- review the initial claims put forward by Scottish Water.

10.2 Differences in levels of service and scope of activities

In the *Strategic Review of Charges 2002-06*, we took a conservative approach to determining the relative operating cost efficiency of the three former water authorities. In particular, we did not take full account of differences in the scope of the activities carried out by the undertaker, nor of the levels of service provided to customers. Our targets did not seek to quantify the cost of the extra scope of company activities south of the border or the improved level of service provided to customers.

We adopted this approach partly because the information that was available at that time was limited and partly because we wanted to ensure that the targets for improving efficiency would be achievable.

We now have much better information about Scottish Water's activities and the quality of service it provides. In the light of this, we propose to adjust our approach to target setting in the *Strategic Review of Charges 2006-10*. In order to ensure that we are comparing Scottish Water with the companies south of the border on a fully like-for-like basis in the review, we need to take account of any differences between the approach we take and that which Ofwat adopts.

In England and Wales the companies provide a broadly equivalent service to their customers. The scope of company activities is also comparable. In general, Ofwat does not therefore have to adjust the result of its models

to reflect any differences in the scope of activities or the level of service.

In Scotland, there are considerable differences in both the scope of activities and the level of service provided to customers. These differences matter to customers. This impacts not only the service they receive, but also the price they pay.

In our latest Costs and Performance Report (covering the year 2002-03), we estimated that customers in Scotland pay £1.59 for what would cost £1.00 in England and Wales, not including these differences in scope and the level of service. After these differences are taken into account, customers in Scotland pay £1.86 for what would cost £1.00 in England and Wales. If differences in the level of service and scope of activities are taken into account the efficiency gap is likely to increase significantly.

10.2.1 Differences in scope of activities

The scope of Scottish Water's activities is in large part a function of the history of the water and sewerage industry in Scotland. In essence, the industry differs from that in England and Wales in the following ways:

Activities where the scope of activities in Scotland is greater:

- 'Non-core' activities not required as part of basic service provision are carried out within the one business, whereas in England and Wales they are separate. We are currently working with Scottish Water to separate core and non-core elements of the business. This is discussed in Volume 2, Chapter 11 of our methodology.
- Scottish Water is responsible for lateral sewers (sewer pipes connecting properties to main sewers). Lateral sewers are the responsibility of customers in England and Wales.
- Scottish Water is responsible for public septic tanks in Scotland. These are common in Scotland but very rare in England and Wales.

Activities where the scope of activities in Scotland is less:

- Around one-quarter of all households are metered in England and Wales, compared with around only 0.1% in Scotland.
- Sophisticated water treatment processes to remove agricultural nitrates and pesticides are commonly required in England and Wales. Such processes are rare in Scotland, which is apparently because farming in Scotland is less intensive.
- Companies in England and Wales have to maintain leakage at specified, economic levels. There are currently no leakage targets in Scotland.
- Companies in England and Wales have a legal duty to promote the efficient use of water by customers, whereas there is no such duty in Scotland.

There are other differences that affect the scope of activities, such as major differences in population density and topography. However, we believe that our benchmarking analysis takes account of most, if not all, of such differences.

10.2.2 Differences in levels of service

Companies in England and Wales made sustained progress in improving levels of service to customers and the environment during the 1990s. Scotland has not matched these improvements. There is, therefore, a significant gap in the level of service provided to customers in Scotland relative to that received by customers south of the border.

The main areas where the level of service in Scotland lags behind England and Wales are in terms of the:

- quality of water supplied;
- availability of water;
- water pressure;
- performance of sewage treatment works against environmental standards;

- way in which complaints from customers are handled;
- way in which billing enquiries from customers are handled; and
- way in which domestic customers are billed.

Obviously, it would cost more to deliver the improved level of service that is provided to customers south of the border. In setting efficiency targets we propose to take into account any such differences in the level of service provided when we establish the scope for improvement in efficiency. This will put the onus on Scottish Water to make a claim for new (extra) operating expenditure in order to improve the level of service to customers.

10.3 Issues and options

Taking account of differences in the levels of service that are provided to customers either side of the border is not a straightforward process. The main issues are:

- the lack of reliable information about the cost of achieving a particular level of service; and
- the lack of reliable information about the cost of those activities which are only carried out by the companies south of the border.

In addition, a judgement has to be made about whether the focus should be on costs or on levels of service. For example, should we set targets for levels of service so that, over time, the gap with England and Wales is closed? Or, as we are suggesting, should we set more demanding efficiency targets and require Scottish Water to claim new operating costs relating to improving the level of service?

Our experience of monitoring performance has allowed us to identify a number of possible approaches for the *Strategic Review of Charges 2006-10*, as follows:

1. Use information from the companies south of the border to place a monetary value on the difference in scope of activities and levels of service (the method

we currently use in our annual Costs and Performance Report).

2. Ask Scottish Water to estimate the extra cost of providing both the equivalent scope of activities and level of service to England and Wales.
3. Commission an independent assessment of the extra cost that would be incurred in delivering the additional activities and the improved level of customer service.
4. Extend our models of operating efficiency to factor in variables of scope of activities and levels of service.
5. Ignore these differences in assessing relative efficiency, but make an appropriate adjustment (using information provided by the company, Scottish Water, or an independent source) to the price settlement.
6. Ignore these differences in assessing relative efficiency, but set targets to reduce or remove the differences in scope and levels of service.
7. Provide incentives and scope for Scottish Water to outperform efficiency targets by being selective about differences that we take into account.

We are keen to seek views on how to set targets that take account of differences in scope and levels of service. We discuss each of these options in more detail below.

Option 1: Use company information to place a monetary value on the difference in levels of service and scope of activities.

We use this method in our annual Costs and Performance Report where we assess Scottish Water's relative operating cost efficiency. Information from the companies south of the border allows us to make assessments of relative efficiency on a sound like-for-like basis. It allows us to exclude the companies' costs to deliver the better levels of service and broader scope of activity. It can, however, be difficult to obtain sufficiently detailed breakdowns of cost for some components of this analysis. A good example is the cost to companies of meeting leakage targets.

Option 2: Ask Scottish Water to estimate the extra cost of providing an equivalent scope of activities and level of service to England and Wales.

This approach could allow us to understand the cost that Scottish Water might incur to provide an equivalent level of service. Like option 1, it would enable us to make like-for-like comparisons. However, the use of cost estimates would weaken the reliability of the analysis.

Option 3: Commission an independent assessment for the monetary value/extra cost.

This approach could be used to reinforce initial results from either options 1 or 2. Such a project may prove to be relatively costly and it is not clear that it could replace option 1 or 2 completely.

Option 4: Extend our models of operating efficiency to factor in variables of scope and levels of service.

This would initially appear to be a relatively attractive option. It would combine the impact on costs of Scottish Water's operating environment, assets, customer base and levels of service in one set of econometric models. There are, however, two important drawbacks. Firstly, the current models are designed to exclude factors whose influence on costs is in some way controllable by managers. It would not be in customers' interests to reward a company for providing an unnecessary service. Secondly, it is not clear that the current models could be extended in this way. We doubt that the information is available either from the companies or from Scottish Water.

Option 5: Ignore differences in assessing relative efficiency, but make an appropriate adjustment (using information provided by the company, Scottish Water, or an independent source) to the revenue/price settlement.

Ofwat has adopted this approach in England and Wales. Ofwat measures a large cross-section of levels of service and combines them into an 'overall performance

assessment' (OPA) for each company. Ofwat consulted on the details of its proposed approach to linking service levels to prices in February 2002¹, and on the structure of its OPA in December 2003².

However, in England and Wales, the levels of service provided by companies are broadly similar. This reduces the importance of levels of service in comparative assessments of efficiency, and has allowed Ofwat to develop an approach that is designed to provide incentives for companies to improve levels of service (where this is economically justifiable). The significant gap between the levels of service provided by Scottish Water and those provided by companies south of the border may indicate that similar incentives are not yet appropriate in Scotland.

Option 6: Ignore differences in assessing relative efficiency, but set targets to reduce or remove the differences in scope and levels of service.

This option assumes that no account need be taken of levels of service in assessments of relative efficiency. The effect of this would be to understate the efficiency gap between Scottish Water and the companies. Our targets may not be sufficiently challenging and customers would, as a result, pay more than is strictly necessary. It may be possible to set targets for improvements in the level of service to customers within the price cap. This may potentially protect the customer interest but could make the assessment of performance less transparent. It could, for example, be difficult to trade-off reduced costs against changes in the level of service.

Option 7: Provide incentives and scope for Scottish Water to outperform efficiency targets by being selective about differences that we take into account.

This option could allow us to take account of levels of service in assessing relative efficiency, and provide targeted incentives designed to improve value for money for customers in Scotland. We believe that this approach could be more open to challenge (either from Scottish

¹ 'Linking service levels to prices', Ofwat, February 2002.

² 'Updating the overall performance assessment (OPA) – A consultation', Ofwat, December 2003.

Water or from customers/new entrants) unless we are able to show that we had developed an appropriate incentive scheme. It is likely that this option would require subjective judgement because it is unlikely to prove possible to develop a robust objective incentive scheme.

Table 10.1 summarises our initial thoughts on each of the options discussed. We regard the following criteria as important in assessing the advantages and disadvantages of the various options:

- Value to customers – the degree to which the approach is likely to provide value for money, in terms of better service or lower bills.
- Practicality – whether the approach is simple to use and whether relevant information can be provided on a reliable basis.
- Auditability – whether the approach lends itself to proper documentation of the information and analysis.
- Comparability – whether the approach is in line with our aim of comparing performance on a strictly like-for-like basis.
- Rigour – whether the approach can be relied on to provide an objective and accurate assessment.

Table 10.1: Summary of approaches to scope of activities and levels of service in our comparisons of operating expenditure performance

Potential approach	Value to customers	Practicality	Auditability	Comparability	Rigour
Use company information to derive a monetary value	High	Medium	Medium	High	Medium
Use Scottish Water estimates of cost to provide equivalent service	Low	High	Medium	Low	Low
Commission an independent assessment of the monetary value	Medium	Medium	Medium	Medium	High
Extend models to include levels of service and scope	Medium	Low	High	High	Low
Adjust final revenue cap instead of efficiency adjustment	Medium	High	Low	Medium	Medium
Set targets to align scope and levels of service with England and Wales	Medium	Low	Medium	Medium	Medium
Selectively apply analysis to promote incentives	Medium	Low	Low	Low	Low

10.4 Operating in Scotland

We want to ensure that our efficiency targets neither unduly penalise nor reward Scottish Water. Some commentators have argued that it is unfair to draw comparisons between Scottish Water's performance and that of the privatised water and sewerage companies in England and Wales. In particular, they question the application of Ofwat's econometric models in Scotland³. We believe that the fact that the Ofwat models have been successfully applied to companies as different as Severn Trent⁴ and South West Water⁵ and to both large water and sewerage companies⁶ and small water only companies⁷ confirm that the models can reasonably be applied in Scotland. While some new special factors may have to be taken into account, this does not invalidate the modelling process. It is also

³ See, for example, J Findlay, 'Financing the Scottish water and sewerage industry', paper to the Scottish Trades Union Conference, April 2004.

⁴ Severn Trent Water covers the West and East Midlands and a rural part of Wales.

⁵ South West Water covers Devon and Cornwall.

⁶ Thames Water has some 12 million customers.

⁷ Bournemouth (and West Hampshire) Water covers just the water service for the Bournemouth area.

noteworthy that those who seek to criticise the models do not advance any alternative approaches to ensure that customers receive value for money.

We consider that our comparisons with England and Wales will help to ensure that customers receive value for money in the next regulatory control period. Nonetheless, it is important to consider the views of commentators and to assess their validity.

Commentators who question our benchmarking process cite the following differences between the industry in Scotland and that south of the border:

- Scotland's geography (size, remote islands, long coastline, topography);
- its population settlement patterns (remote communities, concentrated dense urban areas);
- the extent of the assets required to serve customers in Scotland (long mains, small isolated treatment works);
- the quality of the assets inherited by Scottish Water (condition and performance of the mains, sewers, treatment works, pumps);
- the nature of the customer base;
- the fact that Scottish Water is in public ownership (political interest, Scottish Water's duty to Scotland, remit and freedom of management); and
- the short time that Scottish Water has had to mature and improve.

In our analysis for the next review, we plan to identify which parts of Scotland have similar demographic and geographic characteristics to those in England and Wales. At least for those parts of Scotland, there should be no grounds on which to argue that Ofwat's models are not applicable. We will pay particular attention to any areas that have demonstrably different characteristics. We would need to analyse the impact of remoteness on Scottish Water's operating costs. This analysis would also have to cover Scottish Water's concerns about the large number of small assets that it operates. In large

part these costs may be a function of population settlement patterns and geography.

It is worthwhile reviewing some of the differences that are cited by commentators and providing our initial response to the lines of argument.

10.4.1 Geography

Some would argue that Scotland's size, remoteness, long coastline and mountainous topography all place a burden on operating costs that is unlike the situation in England or even Wales. For example, size and remoteness can affect Scottish Water's ability to respond to system faults, a long coastline can affect the costs of transporting and treating sewage, and hilly topography means that many of Scottish Water's sources are small upland burns and streams with rapid variations in water quality.

We believe that this argument may have some merit. We have, however, placed the onus on Scottish Water to analyse its internal costs and other information, in order to make a robust case that quantifies the additional costs. It is of course important that this evidence also takes into account the circumstances of a number of the companies in England and Wales, where remoteness, coastline and topography may be a material factor. We believe that it is also important to recognise that not all of Scotland is dissimilar in geography to large parts of England and Wales.

10.4.2 Population settlement patterns

Commentators have claimed that the density of the population in Scotland is more varied (dense urban areas contrasting with sparsely inhabited areas) and, over large parts of Scotland, much lower than that in England and Wales. Moreover, the rural settlements, it is argued, tend to be smaller than their counterparts in England and Wales. As a consequence, Scottish Water's cost structure would be different and therefore it cannot be compared fairly with the cost structures of the companies south of the border. It is argued, for instance, that travel costs could be higher due to long distances in remote areas, a greater number of journeys to individual communities, and slow, heavy traffic in dense urban areas.

In our view, while there are differences in population settlement patterns, these should be seen in perspective. The large majority of Scotland's population lives in the central belt, where we would expect population density and settlement patterns to be very similar to much of England and Wales. Of the remainder, it is likely that a substantial part live in communities of similar size to rural communities in England and Wales, and that overall population densities are within the range found south of the border. The impact of any differences that do exist are likely to be limited to the costs of serving the more isolated communities in the Highlands and Islands. We will document detailed comparisons of population density and settlement size as part of our review, and will consider any evidence put forward by Scottish Water about the implications for its costs.

10.4.3 The extent of the assets required

The claim that Scottish Water requires a greater number of assets is an extension of the previous argument. As a general rule, remote, isolated communities require longer mains, longer sewers and their own small pumping, storage and treatment facilities for water and sewage. It is argued that this places an additional burden of costs on Scottish Water compared with a typical company.

Again, we believe that this claim may have some merit but, as with the previous point, it is important to understand which areas of Scotland are different. There is also a wider point, which is that the extent of the assets operated by Scottish Water and each company is an important factor in the benchmarking models that we use. We believe that in large part, the differences that do exist are accommodated in the models. We will review any evidence that Scottish Water provides in relation to the costs of its assets.

10.4.4 The quality of the assets inherited by Scottish Water

Some argue that Scottish Water inherited assets of poor quality from the three former authorities. They assert that the inherited assets are generally in poor physical

condition and perform badly, leading to higher operating costs to both repair and supervise the assets. Historic underinvestment in Scotland, relative to England and Wales, is cited as the root cause. In particular, it is claimed that Scotland has failed to match the levels of investment that have been delivered by the companies since privatisation in 1989.

On the basis of the evidence that Scottish Water has submitted so far, we would not be in a position to agree with this assertion. In our *'Investment and Asset Management Report 2002-03'*, we examine evidence on both the level of investment and the reported condition and performance of Scottish Water's assets. This evidence points to comparable levels of investment in Scotland and in England and Wales, and assets of comparable condition, for most categories of assets.

Our report found that, although there was higher investment in England and Wales in the initial years after privatisation, the cumulative amount of investment (per property) by the companies over the past 20 years has been similar to that in Scotland.

We will, of course, examine any new evidence produced by Scottish Water. We will test any such new evidence against the reported profiles of asset condition in the water and sewerage companies to determine whether there is a case where Scottish Water is at a disadvantage.

10.4.5 The nature of the customer base

Scottish Water has claimed that a larger proportion of its customers are claiming unemployment benefit than is the case in England and Wales. They suggest that customers' ability to pay is lower than that south of the border. Non-payment of bills would affect operating costs, because Scottish Water, like the companies, makes a provision in each year's accounts to cover any outstanding debt that it expects not to recover.

It could also be argued that Scottish Water's customer base differs from that in England and Wales in that it has:

- a greater proportion of customers in the manufacturing sector;
 - a greater proportion of smaller non-domestic customers; and
 - a much lower proportion of metered customers.
- Should a regulator act differently to deal with this?
 - If the regulator acts differently, which factors should he consider?

These differences could also affect operating costs. Some of these differences may benefit Scottish Water.

Although we recognise the problem of bad debt in Scotland, we believe that Scottish Water can do much to control this cost. In the case of non-domestic bad debt, there appears to be no obvious reason why Scottish Water should not have as much control as the companies. Domestic bad debt may be more problematic, as it is in part a function of the revenue recovery efforts of the local authorities. (Local authorities bill households on behalf of Scottish Water). Nevertheless, Scottish Water is able to influence the effectiveness of this service through liaison with local authorities.

Scottish Water has stated that it will submit evidence covering the total cost of the domestic billing process, including the costs and benefits of bad debt, billing, collection and metering in its 1st draft Business Plan.

10.4.6 Public and private sector ownership

There is a claim that our reliance on comparisons with private companies to induce increased efficiency from the management of Scottish Water, which is a public body, has no basis in economic theory⁸.

In our view, there are important questions to address here:

- Are there differences between public and private sectors that might affect the costs of operating a water and sewerage service?
- If so, should customers in Scotland be disadvantaged?

Water and sewerage provision is a natural monopoly. It uses the same techniques, skills and knowledge in both the private and public sectors. Operating costs should reflect these important similarities.

Differences may emerge, however, in the constraints faced by managers. For example, in the private sector there are corporate overheads in terms of reporting to and engaging with equity shareholders and with the providers of debt. In the public sector, there may be greater corporate overheads in responding to elected representatives than is typical in the private sector. There is also a possibility that the freedom of managers to take decisions may be more or less impacted by the expectations of private and public sector stakeholders. We recognise that the pressures on Scottish Water are unique but we think that it is unlikely that they are more expensive to deal with.

We are not aware of any economic studies that have found any conclusive evidence that the type of ownership determines the efficiency of a water and sewerage business.

Indeed, Estache and Rossi⁹ analysed the efficiency of 50 public and private water and sewerage companies over 29 countries in Asia. They found that there was no significant difference in efficiency:

“Public firms that have to compete with new private entrants who enjoy the latest technology will often be expected to play catch-up or die. These firms should be able to achieve not only the industry gain but also specific gains to offset firm-specific inefficiencies. This catch-up effect is one of the expected benefits to consumers of yardstick competition if regulators can ensure that quality is not the adjustment variable for the least cost efficient firms. Yardstick competition – even implicit, as a consequence of studies of this kind that

⁸ J Findlay, *Financing the Scottish water and sewerage industry*, paper to the Scottish Trades Union Conference, April 2004.

⁹ *How different is efficiency of public and private water companies in Asia?*, The World Bank Economic Review, Vol. 16, No. 1, 2002, pages 139-148.

generate results forcing comparisons – should minimize the scope for major differences between public and private providers. In the end, the inconclusiveness of the comparison of efficiency in public and private water utilities may simply reflect the fact that competition matters more than ownership.”

AEI-Brookings Joint Center for Regulatory Studies issued a study analysing Latin American private and public water and sewerage companies. Again, this study concluded that “benchmark competition with private utilities encourages utilities that remain publicly owned to improve their own performance.”¹⁰

We see no reason why customers in Scotland should be disadvantaged because of perceived constraints of operating in the public sector. We will, however, review any evidence presented by Scottish Water that could justify a relatively higher level of operating cost compared with a private company.

10.4.7 Short time that Scottish Water has had to mature and improve

It is argued that the 1974 reorganisation of water and sewerage provision into ten regional water authorities in England and Wales provided the companies with a stable financial, physical and management environment in which to implement reform and develop good practice. Similar structural changes did not take place in Scotland until 1996. Scottish Water itself was only established in 2002. The merger process may also have acted more as a barrier to, than a catalyst for, improved efficiency.

It is claimed that, as a result, it is not surprising that Scottish Water finds itself at a disadvantage in terms of performance. It is also claimed that the short timescale for Scottish Water to improve is unfair.

We are not yet persuaded by these arguments for the following reasons:

- We see no reason why customers in Scotland should continue to have to pay more for a poorer service;

- We estimate that our published targets will, if achieved in 2006, take Scottish Water to a level of performance that is comparable with the leading company south of the border in the early 1990s;
- Objective comparison of the efficiency gap is not a criticism of current management, but rather a signal that customers should expect better value for money;
- The targets in the *Strategic Review of Charges 2002-06* took account of the rate of improvement of the companies in England and Wales – we did not ask Scottish Water to improve its efficiency at an unprecedented rate; and
- Scottish Water benefited from ‘spend to save’ of £200 million provided by customers. In England and Wales, shareholders had to reinvest the benefits of outperforming regulatory targets in order to ensure that further progress was made in improving efficiency.

10.4.8 Conclusion

We propose to continue to assess the efficiency of Scottish Water relative to the companies in England and Wales. We will, however, identify and quantify adjustments for any special factors which Scottish Water demonstrates are not covered, or are inadequately covered, in our benchmarking.

10.5 Approach of other regulators and how we propose to make adjustments

10.5.1 Ofwat

Ofwat uses special factors in order to adjust for any circumstances that could be considered to be company specific and which cannot be incorporated into its econometric models. These factors must be beyond management control; and they usually increase operating or capital expenditure costs.

In order to assess the relative efficiency of the companies

¹⁰ ‘Has private participation in water and sewerage improved coverage? Empirical evidence from Latin America’, George R.C. Clarke, Katrina Kosec and Scott Wallsten, page 28. Working Paper 04-02. January 2004. American Enterprise Institute – Brookings Joint Center for Regulatory Studies.

for its 2002-03 report¹¹, Ofwat asked the companies to submit their claims for special factors. Twenty-one companies submitted a total of 150 special factors.

The following table summarises the special factors which were taken into account by Ofwat when it assessed relative efficiency:

Table 10.2: Successful claims by the companies south of the border for special factors

Special Factor	Number of companies	
	Operating Expenditure	Capital Maintenance expenditure
Water resources (including bulk supplies)	7	0
Water quality	3	0
Water treatment	5	0
Leakage in north London	1	0
High level of meter penetration	5	0
Sewage treatment and sludge	2	0
Location		
Regional salaries and construction costs	5	6
Regional power costs	3	0
Debt	3	0
Coastal sewage treatment works	2	0
Traffic congestion	2	0
Burst rate	2	0
Size and number of assets (including rurality)	5	0
Company size (small companies)	3	2
Impact of large industrial customers on the econometric models	2	0
Total	50	8

Of the 150 claims submitted, only 58 were considered to genuinely impact on costs.

10.5.2 Ofgem

Ofgem also uses econometric modelling in its electricity distribution price reviews. It recognises that distribution companies may face external cost pressures. Ofgem stated recently¹² that it would make “*adjustments for regional factors to take account of significant geographical, demographic and operational circumstances...*”

Ofgem’s detailed proposals¹³ include the following approach to such factors:

“Regional factors

As at previous reviews, adjustments have been made for regional factors – costs specific to a particular area or region (e.g. higher labour costs in London and costs associated with the Highlands and Islands of Scotland). Several DNOs¹⁴ have provided qualitative or quantitative arguments for additional regional factors. Several have suggested that all companies have such regional factors and, with some exceptions, these approximately cancel out. EDF has argued that the areas it serves are disproportionately affected by factors such as wages and property prices and submitted a report by OXERA quantifying the impact.

Adjustments for regional factors may be appropriate where there are justifiable differences in costs due to factors that are outside the companies’ control that are not captured by the composite scale variable....

Ofgem is persuaded that such circumstances apply to EDF-LPN and SSE-Hydro.

The size of the adjustments Ofgem has made are broadly in line with those applied at the last review in 1999.”

10.5.3 Criteria we use to assess special factors

We analyse the impact of special factors using the same approach as Ofwat. To justify an adjustment, Scottish Water has to provide evidence in the following areas:¹⁵

- What is the justification of the special circumstances that demonstrates a material difference from industry norms? Scottish Water will need to set out whether the factors are the result of special obligations, the character of all or part of its customer base, or the result of historical development of the water and sewerage systems in its area of supply.
- What is the quantification of the impact of the special factors that demonstrate a net additional effect on

¹¹ ‘Water and sewerage service unit costs and relative efficiency 2002-03 report’, Ofwat.

¹² Electricity distribution price control review: Initial proposals
Office of Gas and Electricity Markets June 2004, Document 145/04, page 60.

¹³ Ibid, paragraphs 6.22 to 6.25.

¹⁴ DNO – (Electricity) Distribution Network Operator.

¹⁵ These questions are adapted from Ofwat’s Letter to Regulatory Directors, RD35/98, 1998.

Scottish Water's costs over and above that which would be incurred without these factors?

- What has Scottish Water done to manage the additional costs arising from the special factors and to limit their impact?
- Are there other special factors that reduce costs relative to industry norms? If so, have these been quantified and offset against the upward cost pressures?

10.5.4 Current Scottish Water claims for special factors

In June 2004, we received Scottish Water's initial evidence regarding special factors. This provides an overview of the factors which Scottish Water believes justifies higher operating expenditure than is predicted by the benchmarking models that we use. Scottish Water intends to develop this evidence in its business plans for the *Strategic Review of Charges 2006-10*. The current submission therefore represents an initial view only.

The factors that Scottish Water currently regards as having a significant adverse impact on operating expenditure can be summarised as follows:

Geographical

- **Travel costs:** Due to the size of Scottish Water's service area, asset employees have to travel long distances. In addition, personnel from areas such as Customer Service, Business Services, Laboratory Services and Contract Services also have to travel extensively.
- **High number of small treatment works:** According to Scottish Water, the sparsity of the population requires it to operate a large number of treatment works in comparison to those used by companies located south of the border.
- **'Flashy' supplies:** Scottish Water claims that many of its treatment works deal with supplies that are difficult to treat due to the changeable nature of the raw water.
- **Electricity:** Scottish Water claims that in some regions its operating costs are increased due to higher

charges (distribution use of system charges and the tariff itself) than those incurred by the companies in England and Wales. It also claims that the use of electricity for activities other than pumping is higher in Scotland than in England and Wales, and that this is not taken into account in the models.

- **Sludge treatment costs:** Scottish Water indicates that it has to transport sludge longer distances than is the norm in England and Wales (from small rural areas to dedicated sludge treatment centres).

Asset base

- Scottish Water argues that it has inherited an asset base with a leakage rate that is much higher than the rates for companies south of the border. According to Scottish Water, this impacts on its costs (due to the need to treat relatively more water per inhabitant) but the model does not take this into account.

Economic

- **Domestic bad debt, billing and metering:** Scottish Water argues that it has a higher level of customer bad debt than that of the companies in England and Wales. It suggests that this is largely due to factors which are outside its control.
- **Purchase of operational materials:** Scottish Water claims that there is an additional cost when purchasing materials because most of these are purchased in England and transportation costs are significant.

Legal

- **Sewer laterals:** Scottish Water has a legal responsibility for lateral sewers (the drains that connect customers' properties to the main sewer), which are customers' responsibility in England and Wales.
- **Freedom of Information Act:** Scottish Water argues that it has to comply with the Freedom of Information Act whereas the privatised water and sewerage companies do not have to comply with this Act.
- **Political queries:** Scottish Water argues that its status

as a public body leads to a large number of enquiries by MPs and MSPs, compared with companies in England and Wales, and that it incurs additional costs because of this.

- Removal of phosphorus and nitrates: Scottish Water indicates that it has to incur higher costs to remove phosphorus and nitrates from sewage effluent than the costs incurred by companies south of the border. This is due to tighter consent conditions imposed by the environmental regulator in Scotland.
- Cryptosporidium standards: Scottish Water argues that the sampling requirement for cryptosporidium imposed by the drinking water quality regulator is greater than the sampling programmes undertaken by the water and sewerage companies. This leads to additional costs.

We would expect that other factors may come to light as Scottish Water prepares its business plans. We will review any claims against the criteria that we set out above. This will determine the extent of any adjustments that we should make.

We will also identify and quantify special factors that may favour Scottish Water, compared with the companies. These might include, but are unlikely to be limited to:

- lower regional rates of pay than is the norm in England and Wales;
- lower regional property rental charges;
- lower peak water consumption by domestic customers for garden watering;
- less agricultural pollution affecting water sources;
- Reporter costs are not met by Scottish Water; and
- a lower volume of billing queries and customer complaints.

10.5.5 Conclusions

In Chapter 7 we highlighted the importance of ensuring that our comparisons are made on a like-for-like basis. We recognise that when we use the econometric models to compare Scottish Water's performance with that of the companies in England and Wales, we also have to take account of any special factors that are not included in our benchmarking. In this chapter we have examined:

- differences in the scope of activities, where companies carry out additional or fewer functions to those of Scottish Water;
- differences in levels of service to customers and to the environment;
- issues arising from operating a water and sewerage service in remote areas of Scotland; and
- issues arising from operating in the public sector.

We believe that we are developing sound approaches to deal with these issues. However, we particularly welcome views on our suggested options for taking account of the differences in scope of activities and levels of service in our benchmarking comparisons.

10 6 Questions for consultation

1. Do you agree that it is appropriate to take into account differences in the scope of activities when determining Scottish Water's operating efficiency, relative to England and Wales? If so, which differences do you think are important to recognise and possibly take into account?
2. Do you agree that it is appropriate to take into account differences in levels of service when determining Scottish Water's operating efficiency, relative to England and Wales? If so, which differences do you think are important to recognise and possibly take into account?
3. How should we assess the cost of any such differences?

Section 4: Chapter 11

The scope and timeframe for improvement

11.1 Introduction

In this chapter we focus on the scope for Scottish Water to improve its operating expenditure efficiency over the period 2006-10. We also consider the pace at which Scottish Water could be expected to catch up with the performance levels of the companies in England and Wales.

By way of background, we begin with an account of the companies' responses to targets that were set by Ofwat in successive price reviews. We then summarise recent performance benchmarking of Scottish Water (discussed in more detail in Chapter 5). We continue by explaining our approach to assessing the degree to which companies are likely to continue to improve. This enables us to identify the extent of the potential efficiency gap if Scottish Water does not improve its performance. We then examine how we can assess the pace of improvement that Scottish Water should be expected to achieve.

11.2 Background

Firstly, it is important that we acknowledge and welcome the significant efficiency savings in operating expenditure that have been achieved by Scottish Water to date. We do not underestimate the challenge that the organisation has faced in merging the three authorities and meeting its regulatory targets.

When we set the efficiency targets in our *Strategic Review of Charges 2002-06* we explained that they were designed to close 80% of the assessed efficiency gap by 2005-06. Obviously, this meant that even if Scottish Water achieved its efficiency targets, there would still be an efficiency gap. If the companies in England and Wales outperformed their own efficiency targets, the efficiency gap would be even greater.

Evidence published by Ofwat in their Financial Performance Report indicates that the companies in England and Wales have outperformed their efficiency targets during 2000-2004 (albeit by less than they did during the 1995-2000 review period). Ofwat has recently

published draft targets¹ for companies for the period up to March 2010. These targets show Ofwat considers that the companies still have to improve their efficiency.

11.2.1 Efficiency in the water industry

The companies in England and Wales were privatised in 1989. In the subsequent 15 years they have achieved considerable savings. The fact that Ofwat continues to set efficiency targets suggests that the scope for savings has not yet been exhausted.

In its first price review of the water and sewerage industry in 1994, Ofwat estimated that there was significant scope for efficiency savings in both water and sewerage service operating expenditure. The range of the targets that it set is illustrated in Table 11.1.

Table 11.1: Efficiency targets set by Ofwat in 1994

	Water service		Sewerage service	
	% per year	Five-year total	% per year	Five-year total
Minimum ²	1.0%	4.9%	1.0%	4.9%
Maximum	3.5%	16.3%	3.4%	15.9%

All of the companies outperformed these assumptions. Indeed, the companies that were set the most challenging targets performed best.

The efficiency targets comprised two elements:

- an overall improvement in the efficiency of the industry; and
- a 'catch-up' factor which all bar the leading company had to achieve.

In the 1994 price review, the catch-up factor was set at 50% of the gap to the leading company.

At the 1999 price review, Ofwat concluded that there was still significant scope for efficiency savings in both water and sewerage service operating expenditure. The efficiency targets were designed to close 60% of the efficiency gap between the least efficient companies and those at the efficiency frontier. The range of targets

¹ Ofwat, *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004.

² Note that some of the small, low bill and efficient water only companies were set targets of 0.5% per year.

that were set is shown in Table 11.2.

Table 11.2: Efficiency targets set by Ofwat in 1999

	Water service		Sewerage service	
	% per year	Five-year total	% per year	Five-year total
Minimum	1.4%	6.8%	1.4%	6.8%
Maximum	4.9%	22.2%	4.3%	19.7%

Ofwat set targets for the companies that were significantly lower than the actual assessed efficiency gap. This was designed to create an incentive for the companies to beat the targets. The incentive effect of RPI-X regulation was discussed in Chapter 4.

In August 2004, Ofwat published its draft determinations for the 2004 price review, which covers the period 2005-10³. Ofwat stated that at an aggregate level, it believes that there is scope for efficiency savings of the order of 3% compound per year. This implies that at an industry level, there is scope for efficiency savings of more than 14% during the regulatory control period.

The scope for savings varies. The least efficient companies in water services have been set draft targets to reduce operating costs by 3.6% per year. Ofwat has again set targets such that companies should close 60% of the efficiency gap to the leading company. The companies should therefore be able to outperform the targets.

The companies' success in beating the significant efficiency targets that they have been set shows that there is significant scope for Scottish Water to achieve savings. As part of the current Strategic Review, we expect to set Scottish Water further targets for reducing operating expenditure. Evidence from the water and sewerage companies in England and Wales shows that savings can be sustained over a number of years and we expect Scottish Water to continue to improve its performance. Customers have a right to expect value for money from their water and sewerage service. Achieving value for money will require Scottish Water to improve its efficiency.

11.3 Assessing the size of the efficiency gap

The term 'efficiency gap' refers to the difference between Scottish Water's actual reported operating costs and the costs reported by the comparator companies for providing a similar level of service. We have selected comparator companies from south of the border that are broadly similar geographically and demographically and are relative efficient in operating costs.

We need to distinguish between the efficiency gap that exists today and the gap that could exist in the future because it is likely that the companies in England and Wales will continue to improve.

Efficiency comparisons can be made at a point of time or through analysis of trends over time. In our Costs and Performance Reports we provide a snap-shot of the current efficiency gap. We do not estimate how the leading companies might improve.

We use information from both Scottish Water and the water and sewerage companies to analyse the current efficiency gap.

This information comes from:

- annual regulatory returns and annual accounts of Scottish Water and each company;
- Ofwat publications on the financial performance, efficiency and levels of service of the companies;
- responses to our regulatory letters from Scottish Water; and
- reports from analysts, auditors and independent Reporters.

We use this information in our benchmarking models (see Chapters 8 and 9). We then make adjustments for factors which are not taken into account by the models.

³ Ofwat, *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004.

This provides us with the following information:

- observed operating expenditures of Scottish Water;
- observed operating expenditures of comparable companies from England and Scotland;
- predicted operating expenditures of Scottish Water; and
- predicted operating expenditures of comparable companies from England and Wales.

The next step is to calculate 'residuals'. The residual is simply the percentage difference between the predicted and the observed expenditure for each organisation. A positive residual means that an organisation is spending more than predicted – it is therefore relatively inefficient. A negative residual means that an organisation is spending less than predicted – it is therefore relatively efficient.

11.3.1 Calculating the current efficiency gap

The efficiency gap is the difference in residuals between Scottish Water and a chosen company or the average of a set of companies.

We convert absolute residuals to a relative scale in order to be able to complete the benchmarking. We call this the efficiency score. To calculate the efficiency score, we divide each residual by the corresponding predicted expenditure. An illustrative example is presented in Table 11.3 below.

Table 11.3: Example illustrating how the efficiency score is calculated

	Adjusted Observed £m	Predicted £m	Adjusted Residual		Efficiency Score
			£m	%	
A water & sewerage company	200.00	155.00	45.00	29.03%	129.03

In this example, a company has reported operating costs of £200 million, after adjustments. The

econometric models predict costs of £155 million for this company. It is therefore relatively inefficient. We first calculate the residual in percentage terms:
 $100\% \times 45/155 = 29.03\%$

Then to calculate an efficiency score we add 100 to 29.03 = 129.03

The last step in the comparison process is to rebase efficiency scores such that the average efficiency score of companies south of the border is 100. This simplifies the presentation of Scottish Water's score.

In our last Costs and Performance Report we published our analysis of Scottish Water's performance in 2002-03⁴. Scottish Water's efficiency score is as shown in Table 11.4.

Table 11.4: Published efficiency scores for 2002-03

	Efficiency Scores
Scottish Water	159
England and Wales average	100
England and Wales leading company	87

The efficiency scores can be converted to monetary equivalents. In the example above, for every £1 of operating expenditure in England and Wales, Scottish Water incurred £1.59.

We also published Scottish Water's efficiency gap, expressed as a percentage of its score. This is shown in Table 11.5.

Table 11.5: Published efficiency gaps for 2002-03

	Efficiency gap (%)
Scottish Water to average company in England and Wales	$(159-100)/159 = 37.1\%$
Scottish Water to England and Wales leading company	$(159-87)/159 = 45.3\%$

The efficiency gap represents the amount by which Scottish Water would be required to reduce its costs from 2002-03 levels in order to match the efficiency of the comparator company.

⁴ Costs and Performance Report 2002-03, November 2003.

11.3.2 Adjustments for levels of service and scope of activities

The 2002-03 scores for Scottish Water shown above exclude the significant differences between the scope of activities and levels of service offered by Scottish Water and those provided by the England and Wales companies. This is discussed in detail in Chapters 7 and 10.

We estimate that, if the companies only had to provide the same scope of activities and level of service as Scottish Water in 2002-03, they would be able to reduce their operating costs by around 12% on average.

Table 11.6 shows the revised efficiency scores after taking into account differences in levels of service and scope of activities.

Table 11.6: Published efficiency scores for 2002-03, adjusted for levels of service and scope of activities

	Efficiency Scores
Scottish Water	186
England and Wales average	100
England and Wales leading company	87

The efficiency scores can be converted to monetary equivalents. In the example above, for every £1 of operating expenditure in England and Wales, Scottish Water incurred £1.86.

We also published Scottish Water's efficiency gap, expressed as a percentage of its score. This is shown in Table 11.7.

Table 11.7: Published efficiency gaps for 2002-03, adjusted for levels of service and scope of activities

	Efficiency gap (%)
Scottish Water to average company in England and Wales	$(186-100)/186 = 46.2\%$
Scottish Water to England and Wales' leading company	$(186-87)/187 = 53.2\%$

11.3.3 Ofwat adjustments to residuals

In its models for the *2002-03 Water and sewerage service unit costs and relative efficiency report*, Ofwat adjusted the water residuals by 10% and the sewerage residuals by 20%. This is the first time that Ofwat has adjusted residuals. It gives the following reasons for the adjustments⁵:

“We have introduced for the first time a specific adjustment to the model outputs to take some account of the underlying error term in the model residuals. We make a reduction to the residual of 10% for water and 20% for sewerage (where we have fewer companies to compare). In addition we have carefully considered a critical analysis of our approach but we remain confident that it deals appropriately with the uncertainty that surrounds any use of statistical tools for decision making.”

We are not convinced that a percentage adjustment to the efficiency scores would be appropriate in Scotland. There are two reasons for this: firstly, our use of the alternative model⁶ already provides an independent check on the results that we obtain from the Ofwat econometric models. Secondly the effect of these adjustments on company scores in England and Wales is small in relation to the corresponding adjustment that would have to be made to Scottish Water's 2002-03 score. Scottish Water has a comparatively large residual. It would not seem appropriate to reward a company for being inefficient. A large percentage adjustment in the residual would result in a reduced efficiency target and ultimately higher bills for customers.

We propose to consider carefully the results of both the alternative model and the Ofwat econometric models in setting targets in the *Strategic Review of Charges 2006-10*. If the results of the alternative model are broadly similar to the results of the Ofwat models, then we propose not to accept the residual adjustments made by Ofwat for the companies south of the border. We would limit the adjustment in Scottish Water's residual to the maximum allowed to any company in England and

⁵ Ofwat *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004, page 131.

⁶ See Chapter 9.

Wales. If the alternative model suggested a much smaller efficiency gap between Scottish Water and the comparator company, we would propose to adopt the percentage adjustments implemented by Ofwat. This would reflect our view that the models provide a robust assessment of relative efficiency.

11.4 Assessing the future gap

11.4.1 Why we need to assess the future gap

The efficiency of the comparator companies in England and Wales continues to improve. There are two reasons why companies south of the border continue to improve. The first is the result of both regulatory and shareholder scrutiny. Ofwat seeks to minimise customer bills and shareholders demand outperformance of the regulatory settlement in order to improve the available rate of return. The second is the impact of innovation and technological change. This, of course, impacts on the whole economy, but it is clear the developments in information technology allow an industry that is responsible for a large number of assets, spread over a wide area, to reduce its operating costs.

We believe that we need to take account of the way in which the performance of the companies south of the border is likely to change over the next regulatory control period. Otherwise customers in Scotland may have to pay more than is strictly necessary.

When assessing the scope for improvement in efficiency, Ofwat took account of analysis by Europe Economics and London Economics. These analyses examined information on levels of productivity. We discuss their findings later in this chapter.

Unlike Ofwat we do not need to understand the scope of the leading company to improve its efficiency. We can set targets relative to the levels of efficiency that Ofwat expects the leading company to achieve. There is little prospect that Scottish Water will be the leading company in the UK by 2010.

Ofwat determines targets that it believes a well-managed company can better. This creates an incentive for management to outperform. The companies south of the border have, on average, always managed to outperform the targets set by Ofwat. The industry as a whole performed more than 10% better than the targets set by Ofwat. Current levels of outperformance are rather less than this figure, but if we ignore companies' capacity to outperform targets, we would almost certainly underestimate the future efficiency gap.

Ofwat published draft targets and incentives in August 2004⁷, and will finalise them in November 2004. This will inform our assessment of the scope for improvement by Scottish Water over the period 2006 to 2010. We can then set targets for Scottish Water which would close much of the expected efficiency gap in 2010.

In the *Strategic Review of Charges 2002-06* we used the expected level of efficiency of the comparator companies in the final year of the review period as our benchmark. We assumed, conservatively, that companies would meet but not exceed their targets. We then assessed the degree to which Scottish Water could be expected to close the efficiency gap.

We propose to examine Ofwat's final determinations when they are published in November 2004, and to review Ofwat's expectations of the scope for companies to outperform. Our draft targets will be based on the improvements we expect the companies to achieve by 2010. We will present this assessment in January 2005 when we publish the draft targets for Scottish Water. At this stage it would seem likely that we will be justified in assuming a modest degree of outperformance by companies south of the border.

11.4.2 Implications for customers

The assessment of the future efficiency gap allows us to set efficiency targets that reflect the continuing scope for improvement in the water industry. This ensures that customers pay no more than is necessary for the services they receive.

⁷ Ofwat *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004.

We discuss target setting in Chapter 14. This chapter now continues by reviewing the findings of Europe Economics and London Economics on the scope for productivity improvement in the water industry.

11.5 Industry-wide scope for productivity improvement

Our assessment of the scope for improvement by Scottish Water will focus on the targets and incentives determined by Ofwat later this year. Nonetheless, it is useful to examine the evidence that is likely to inform Ofwat's decisions. As part of the 2004 price review, Ofwat commissioned two studies to look at the potential scope for efficiency improvement in the water industry. These studies were completed by Europe Economics⁸ and by London Economics⁹.

11.5.1 The Europe Economics report

Ofwat asked Europe Economics to undertake a study regarding the potential scope for efficiency improvements in the water and sewerage industry. Europe Economics undertook, updated and expanded on work that they had carried out for Ofwat as part of the 1999 price review. The updated study was published in March 2003.

Europe Economics adopted a top-down approach to assess the scope for efficiency improvement in the water and sewerage industry in England and Wales over the period 2003-13. Essentially, this approach involved comparing the water and sewerage companies with:

- sectors of the economy that have similar activities to the water and sewerage companies; and
- other UK privatised infrastructure companies since their privatisation.

The study compared productivity trends in the water and sewerage companies in England and Wales against the same trends in the two groups of comparators. Comparison against the first group appeared to indicate that as a result of the nature of their businesses, water

and sewerage companies do have further scope to improve their efficiency faster than the economy as a whole. Comparison against other privatised infrastructure companies showed that such companies have reduced costs by more than might have been expected, simply because they have been privatised and subjected to incentive regulation. The study found that it was difficult to forecast if such outperformance would continue in the future.

Europe Economics took into account the improvements in customer service and the delivery of higher water and environmental quality standards. It was essential that these changes were taken into account, otherwise the improvement in productivity achieved by the industry would be underestimated.

These comparisons of productivity trends allowed Europe Economics to forecast the scope for efficiency improvements in the water and sewerage industry in England and Wales for the period 2003-13. Europe Economics concluded that the companies in England and Wales, as a whole, had scope to improve operating expenditure efficiency on a like-for-like basis over time by around 3% per year. Europe Economics also looked at capital maintenance improvements, which we will discuss in Volume 5 of our methodology. Table 11.8 summarises Europe Economics' conclusions.

Table 11.8: Summary of Europe Economics' conclusions

	Water	Sewerage
Scope for reductions in real base service operating and capital maintenance expenditure	1.5% to 3% per year	1.75% to 3.25% per year
Scope for reductions in real base service operating expenditure	2% to 4% per year	2.25% to 4.25% per year

Europe Economics' conclusions are not directly applicable to Scotland because they relate to companies that are already well ahead of Scottish Water in their operating efficiency. They do, however, set the scene for Ofwat's determination of prices.

⁸ Europe Economics, *Scope for efficiency improvement in the water and sewerage industries – Final report*, March 2003.

⁹ London Economics, Black & Veatch Consulting and Professor Maurice F. Shuttler, *PR04 Scope for efficiency studies*, December 2003.

11.5.2 The London Economics report

The London Economics report was published in December 2003. Ofwat asked London Economics to look at the scope for future efficiency in the water and sewerage industry and address criticisms of previous efficiency reports.

London Economics used two methods to arrive at their assessment of the scope for future efficiency – a top-down approach and a bottom-up approach. The top-down approach was essentially similar to that used by Europe Economics in that it involved analysing past productivity trends in the water and sewerage industry and comparing these with similar industries. In contrast, the bottom-up (or activity-based) approach estimated efficiency gains for each component of water and sewerage activity. Table 11.9 summarises the conclusions of London Economics' study.

Table 11.9: Summary of Europe Economics' conclusions

	Annual average reduction in real unit costs(%)	
	Top-down results	Bottom-up results
Operating expenditure (water)	0.1% to 1.3% per year	2.9% to 3.0% per year
Operating expenditure (sewerage)	0.1% to 1.3% per year	-0.1% to 1.9% per year

The authors of the report believed that the results of the two approaches are not significantly different and that most of the difference can be explained by normal measurement error. London Economics found that the scope for efficiency was lower than that assessed by Europe Economics. There were two reasons for this:

- The London Economics study used UK industry information to assess past productivity trends. Europe Economics used England and Wales information only. London Economics included information for the water and sewerage industries in both Scotland and Northern Ireland. Neither Scotland nor Northern Ireland had been subjected

to the same period of incentive regulation. This raises the possibility that the observed productivity trends underestimated the achievements in England and Wales and overestimated the achievements in Scotland and Northern Ireland.

- London Economics acknowledged that a significant proportion of productivity growth was due to continuing improvements in water quality (and that this was likely to continue), and that their estimate made no allowance for the improvement in customer service that had occurred in England and Wales since privatisation. This would potentially introduce a downward bias to the estimates.

London Economics' bottom-up analysis of the scope for efficiency improvements used detailed cost breakdowns by activity from the water and sewerage companies' annual regulatory returns. It did not use information from Scotland or Northern Ireland. The water and sewerage services were treated separately and unit costs were calculated for each service. The output measures were water delivered¹⁰ for the water service and population equivalent served¹¹ for the sewerage service. Two trends were calculated, one 'long-term' covering the period 1992-93 to 2002-03 and the other 'short-term', covering the period 1998-99 to 2002-03.

Since 1992-93 a number of factors have increased the costs of the water and sewerage industry. London Economics acknowledged the existence of these factors but does not appear to have taken account of them in the analysis. These factors include:

- the introduction of mandatory leakage targets and the resultant leakage control costs;
- improved levels of customer service; and
- improvements in environmental quality, ie higher levels of sewage treatment.

¹⁰ Broadly, water delivered is the volume of water supplied to customers' premises.

¹¹ Population equivalent is the domestic population connected to the sewer network, plus an estimate of the additional population that would be required to generate an equivalent level of sewage to that generated by non-domestic customers.

London Economics may well have underestimated productivity improvements by not taking these factors into account in the analysis. London Economics concluded that their estimated scope for savings on the water service of 2.9-3.0% per year would be unsustainable during the regulatory control period, largely as a result of rising input prices.

11.6 Rate of improvement in efficiency

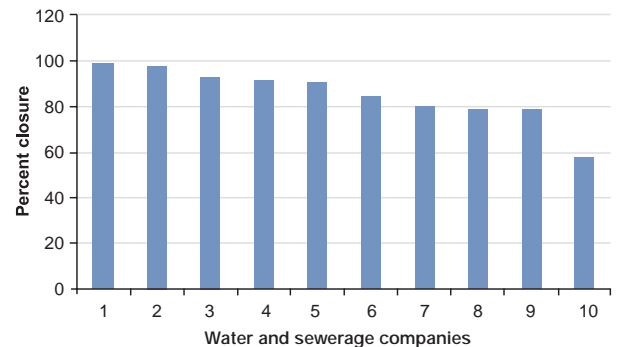
In the *Strategic Review of Charges 2002-06* we examined evidence from England and Wales about the rate of progress achieved by companies during the 1990s. We assumed that Scottish Water should be able to match the pace of change achieved south of the border. This was a conservative assumption for two reasons. Firstly, Scottish Water could draw on the experience of the companies south of the border. Secondly, Scottish Water was allocated £200 million of spend to save to help deliver the required improvements quickly. The companies had to fund improvements by outperforming regulatory targets.

We examined two aspects of the pace of improvement – the percentage reduction in operating costs, and the degree to which each company closed the efficiency gap between itself and the leading company. We focused in particular on the efficiency gap, because the level of cost inefficiency in the three authorities was much greater than for any company south of the border.

We examined timescales from one up to six years. We focused on a five-year timescale because the authorities would begin to tackle efficiency from 2001 and the review period ran until 2006.

Our analysis in the review demonstrated that during their best five-year period, the companies achieved an average closure of 85% of the gap to the leading company. Figure 11.1 below is taken from the *Strategic Review of Charges 2002-06*.

Figure 11.1: Closure of efficiency gap by water and sewerage companies over five years

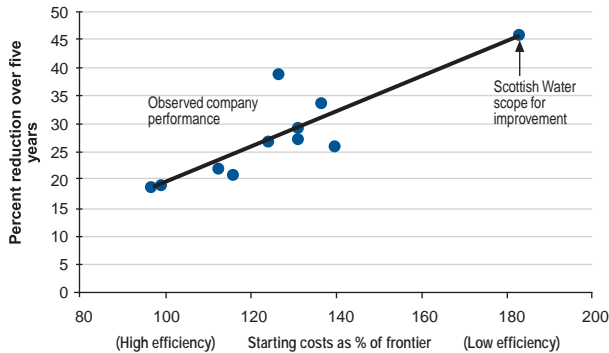


All but two companies achieved more than a 40% closure of the efficiency as their best single year performance. We considered that this analysis represented a sound basis for the setting of efficiency targets.

We believed that, given that most companies had shown that they could achieve significant savings in a single year, this should be reflected in Scottish Water's targets. Our view was reinforced by a belief that the merger should act as a catalyst for savings, and by the spend to save resources that had been made available as well as the significant preparatory work for the merger that had been undertaken before 2002. We therefore set Scottish Water a target of 80% gap closure, with 40% closure to be achieved by 2002-03.

Our analysis further showed that companies facing larger initial efficiency gaps made greater absolute cost reductions than companies that were relatively more efficient. This is not surprising because as organisations approach the efficiency frontier, we would expect efficiency savings to become progressively harder to achieve. Conversely, the less efficient an organisation, the easier it should be to make the initial savings. The larger inefficiencies are more obvious to identify and simpler to correct. Figure 11.2, adapted from the review, demonstrates the relationship that we found.

Figure 11.2: Reduction in operating expenditure for a given initial efficiency



The target would reduce operating expenditure by 33%. We were able to confirm from our analysis of companies' performance that such a reduction in operating costs in five years had previously been achieved.

We would propose to use a similar approach in setting targets for the 2006-10 regulatory control period.

11.7 Summary

It is clear that Scottish Water is likely to have scope for considerable further improvement over the period 2006-10. Companies in England and Wales continue to improve, and Ofwat expects significant further improvement over the next few years. Our assessment of the scope for Scottish Water to improve its performance will draw on six main strands of analysis:

- The baseline for operating expenditure that we will establish using the approach described in Chapter 6.
- Our benchmarking of Scottish Water's present performance against the companies in England and Wales, using the methods described in Chapters 8 and 9.
- Our adjustments to reflect the costs of operating in Scotland, described in Chapter 10.

- Our adjustments to reflect differences in scope and levels of service in Scotland, described in Chapter 10.
- Ofwat's targets and assessments of the scope for companies to continue to improve, discussed in this chapter.
- Our assessment of the pace of improvement that Scottish Water could sustain, based on evidence from England and Wales, as discussed in this chapter.

In the next two chapters we examine further elements of operating expenditure that we will need to take into account – new operating expenditure and Public Private Partnerships.

11.8 Question for consultation

1. Do respondents agree with our proposed approach to assessing the rate at which any efficiency gap may be closed? If not, what approach would they suggest?

Section 4: Chapter 12

New operating expenditure

12.1 Introduction

This chapter sets out the options for dealing with ‘new operating expenditure’. Scottish Water incurs ‘new’ operating expenditure to deliver improvements in:

- environmental standards;
- drinking water standards;
- levels of service to customers; and
- the supply/demand balance.

In Chapter 6 we described how we propose to set a baseline for operating expenditure. This baseline applies to costs that are already being incurred to deliver a particular set of outputs and level of service. However, Scottish Water could incur significant new operating costs in the next regulatory control period. It is important for us to scrutinise carefully any claims for such new operating costs to be included in price limits.

In this chapter, we set out how we propose to determine appropriate efficiency targets for new operating expenditure. We also review Ofwat’s approach to claims for new operating costs from the companies in England and Wales.

12.2 Defining new operating expenditure

New operating expenditure arises from the following:

- Environmental compliance

Examples of environmental obligations include the *Urban Waste Water Treatment Directive* and the *Bathing Waters Directive*. In common with other water and sewerage providers in Europe, Scottish Water has to comply with this legislation. In many cases, compliance will be achieved through capital expenditure on new or upgraded sewage treatment plants. These upgraded sewage treatment plants are likely to have higher operating costs than the original processes that were in place. For example, secondary activated sludge treatment ensures higher

levels of compliance, but uses more power than primary treatment and is likely to lead to higher operating costs.

- Drinking water compliance

Examples of drinking water obligations include the cryptosporidium regulations and standards to reduce the amount of lead in drinking water. Meeting these obligations often requires capital expenditure on water treatment works or the water distribution system. However, meeting these obligations can also lead to increases in operating expenditure, for example through increased monitoring of water quality or increased rates of chemical dosing.

- Enhanced service levels

The three former authorities¹ lagged considerably behind the companies in England and Wales in the levels of service they provided to customers. At present there is still a considerable gap between Scottish Water and the companies south of the border. The companies in England and Wales have significantly increased operating expenditure to improve customer service in the past ten years, and it is likely that Scottish Water will face the same pressures.

- Supply/demand balance

Maintaining an appropriate supply/demand balance ensures that there is sufficient capacity (on both water and sewerage) for Scottish Water to meet the demands of new customers and/or the increasing demands of existing customers.

In the long term, Scottish Water may meet increased demand for water and sewerage services by building new water treatment and sewage treatment works, but in the short term, increased demand can often be dealt with through operational measures. For example, increased demand for water could be met by incremental reductions in leakage or by employing demand management techniques such as metering. Either approach is likely to increase operating costs.

¹ East of Scotland Water Authority, North of Scotland Water Authority and West of Scotland Water Authority.

Each of these factors would lead to increases in operating expenditure. We are interested in *net* new operating expenditure. This effect is best illustrated with an example.

New legislation requires a water and sewerage undertaker to achieve higher standards of effluent discharge. A sewage treatment works is already in place, but the treatment processes employed will not meet the new required standards and the plant needs to be replaced. Currently, the works incurs £50,000 per year in operating expenditure. The new compliant treatment processes will incur £75,000 per year in operating expenditure. New operating expenditure is not £75,000 per year; it is the difference between the new operating expenditure and that which was previously incurred, ie £75,000 less £50,000. Net new operating expenditure is therefore £25,000 per year.

12.2.1 The importance of new operating expenditure

New operating expenditure will over time represent a significant part of total operating expenditure. Over the past 15 years, the companies in England and Wales have incurred significant operating expenditure. This is in large part due to their quality investment programme. The ten water and sewerage companies have incurred annual new (extra) water operating expenditure of almost £24 million since 1997-98 and annual new (extra) sewerage operating expenditure of £163 million since 1997-98.

The companies in England and Wales have also invested in improving their supply/demand balance. By 2002-03, new (extra) operating expenditure on the supply/demand balance had increased by £26 million for the water and sewerage companies since 1997-98.

New (extra) operating expenditure represented approximately 10% of total operating expenditure in the water and sewerage companies in England and Wales in 2002-03. This includes new operating expenditure related to improved levels of service to customers.

We believe that Scottish Water is likely to face broadly similar percentage increases in new operating

expenditure over the coming years. Scottish Water continues to invest in projects to achieve greater compliance with both environmental and water quality obligations, both of which could give rise to new operating expenditure. In addition, we expect that Scottish Water will be making efforts to improve its levels of service to customers. All of this investment could result in significant levels of new operating expenditure and upward pressures on customers' bills.

12.3 How we deal with new operating expenditure

We propose to scrutinise the claims for new operating expenditure put forward by Scottish Water. Customers should not be expected to pay for unnecessary or inefficient levels of new operating expenditure. Previous chapters have set out how we intend to assess the efficiency of Scottish Water's baseline operating expenditure and the scope for future efficiency. This section reviews:

- how we assessed new operating expenditure at the last review;
- how Ofwat assesses new operating expenditure in England and Wales; and
- how other regulators assess new operating expenditure.

We conclude by reviewing the options for dealing with new operating expenditure for the next regulatory control period.

12.3.1 New operating expenditure in the Strategic Review of Charges 2002-06

At the last review, we wrote to each of the three authorities to request their views on the level of new operating expenditure that was likely to be incurred over the period 2002-06². At that time, we took the view that it would be inappropriate to allow the authorities new operating expenditure unless the reported levels of service in England and Wales were surpassed, or significant additional sewage treatment processes were required.

² WIC12: New opex and Spend to Save; 7 March 2001.

Our rationale was straightforward. We had not taken account of the extra expenditure incurred by the companies south of the border in improving drinking water quality and levels of customer service. Our comparison of the three former authorities with the companies in England and Wales therefore favoured the Scottish authorities. This is because the companies in England and Wales achieved higher levels of service and compliance with drinking water obligations. Differences in environmental compliance are taken into account in our comparisons of relative performance in sewerage. Chapters 8 and 9 explain our benchmarking methods in more detail and set out exactly which factors are taken into account.

We took the view that the Scottish water industry should be able to absorb any new operating expenditure associated with bringing its levels of customer service and drinking water quality up to the same standard as that achieved by the companies.

In our letter to the authorities³, we clearly set out the criteria that we intended to apply when assessing their claims for new operating expenditure:

- Does the expenditure result in a level of service that exceeds the reported norms for England and Wales, or enable significant additional sewage treatment?
- Is the authority required to provide this additional level of service, and for what reason?
- Has the authority carried out a proper assessment of the proposed new operating expenditure, rather than rely on estimates from contractors /manufacturers or on an arbitrary percentage of the capital cost?
- Has the authority demonstrated management challenge and control over the proposed costs?
- Has the authority compared alternative options on a whole life cost basis, within a project appraisal?
- Have full net present value calculations been provided?

- Do the alternative options include different mixes of operating expenditure and capital investment?
- Where appropriate, have single authority solutions been investigated?
- Has the authority quantified potential savings to baseline operating expenditure arising from upgrading works or systems, and offset the new operating expenditure accordingly?

Our letter made clear that all claims for new operating expenditure would require a satisfactory response to each of the above questions. In addition, we stated that an efficiency target would be applied to new operating expenditure.

Some claims for new operating expenditure did satisfy these criteria and we allowed new operating expenditure for sewage treatment and sludge disposal. Table 12.1 sets out the new operating expenditure that was allowed in the *Strategic Review of Charges 2002-06*, on a Scotland-wide basis.

Table 12.1: New operating expenditure limits in the Strategic Review of Charges 2002-06

	2001-02	2002-03	2003-04	2004-05	2005-06
New operating expenditure	£0.4m	£2.5m	£4.6m	£6.8m	£9.0m

All of this allowed new operating expenditure related to raising standards of sewage treatment and sludge disposal. The costs represented the allowed increase over the 2000-01 base year, such that by 2005-06, we expected annual new (extra) operating expenditure to have reached £9 million.

12.3.2 How Ofwat deals with new operating expenditure

Ofwat is currently undertaking a price review of the water and sewerage companies in England and Wales. As part of that review, Ofwat will have received claims from companies for new operating expenditure associated with:

³ WIC12, 7 March 2001, See Volume 1.

- quality enhancements (both water and environmental);
- supply/demand balance; and
- enhanced service levels.

In its March 2003 publication *Setting water and sewerage price limits for 2005-10: Framework and approach*, Ofwat made clear that it would carefully assess companies' estimates of new operating expenditure and that these estimates would have to be underpinned by a robust justification.

Ofwat published its draft price limits in August 2004⁴. As part of that document, it set out what it believes to be the scope for improvement in new operating expenditure. Ofwat's assumptions are split between targets, ie the efficiency improvements that are incorporated within price limits; and additional scope for the companies to outperform those targets. Table 12.2 sets out Ofwat's assumptions.

Table 12.2: Ofwat's draft assumptions for annual efficiency improvements in new operating expenditure

	Target annual improvement	Potential annual outperformance	Total scope for annual improvement
Water service – baseline operating expenditure	1.4%	1.2%	2.6%
Water service – enhancements	1.85%	1.15%	3.0%
Sewerage service – baseline operating expenditure	2.0%	1.9%	3.9%
Sewerage service – enhancements	2.65%	1.8%	4.45%

Table 12.2 shows that Ofwat believes that there is greater scope for efficiency improvements in new operating expenditure than in baseline operating expenditure. This is not surprising – companies should be able to achieve greater improvements in new operating expenditure because they are able to take advantage of new technology or the latest operational

practices. It is also worth noting that a company has to achieve more of the expected available improvement in new operating expenditure before it can retain performance benefits for shareholders.

Ofwat adopts a rigorous approach to assessing new operating expenditure. First, it reviews the justification for the estimates of new operating expenditure and then it applies strict efficiency targets to such expenditure. This ensures that customers' bills do not increase by more than is necessary to fund the higher standards and levels of service that are required.

12.4 Proposals for dealing with new operating expenditure at the next Strategic Review

Scottish Water could incur significant new operating expenditure in the next regulatory control period. We propose to continue to place the onus on Scottish Water to identify and justify new operating expenditure. We will scrutinise Scottish Water's estimates of new operating expenditure carefully and will ask the Reporter⁵ to pay particular attention to this area of Scottish Water's business plan.

We propose to use the same criteria as at the last Strategic Review to assess new operating expenditure for Scottish Water. Our review of new operating expenditure and the capital investment programme will check that proper minimum whole life costs solutions are being adopted. We would adjust our targets if we were to identify any imbalance between capital and operating costs.

We share Ofwat's view that it is easier for an organisation to deliver efficiency savings in new operating expenditure than in baseline operating expenditure. It is likely, therefore, that we will set higher efficiency targets (in percentage terms) for new operating expenditure than for baseline operating expenditure.

⁴ Ofwat, *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004.

⁵ The role of the Reporter is described in detail in Volume 2.

12.5 Questions for consultation

1. Do respondents agree that the criteria that we adopted for assessing new operating expenditure at the *Strategic Review of Charges 2002-06* remain appropriate for assessing such expenditure for 2006-10?
2. Do respondents agree that there is greater scope for achieving efficiencies in new operating expenditure than in base operating expenditure?

Section 4: Chapter 13

Public private partnership financing (PPP)

13.1 Introduction

In this chapter we examine PPP projects and analyse the benefits. PPP accounts for some 12% of Scottish Water's current spending. It is therefore important that we consider the experience of using PPP in the Scottish water industry. It is important that PPP delivers value for money to customers and that Scottish Water is alert to opportunities to reduce the costs associated with the PPP contracts.

13.2 Background

Until 1993, new capital assets in the public sector were funded by a combination of new loans and, where appropriate, customer revenue. In 1993, the Private Finance Initiative (PFI), later renamed the Public Private Partnership (PPP), was introduced as an alternative way to provide services to public sector customers. The new scheme placed emphasis on the partnership that would need to exist between the private and public sectors if this method of service delivery were to be fully effective.

While the original aim was to reduce the demand for new loans from central government for capital investment, the main benefit from successful schemes appears to be the timely delivery and innovative solutions for building and operating new facilities. These benefits ensure that the bills which customers face are lower than they would otherwise have been and that customers receive a better service, more quickly.

13.3 Use of PPP in the Scottish water industry

By 1997, it had become clear that there needed to be a step function change in the level of investment required if the water and sewerage industry was going to comply with pressing environmental deadlines. Little had been done to ensure compliance with the 1991 Urban Waste Water Treatment Directive (UWWTD) prior to the creation of the three water authorities in April 1996.

The extent of the investment required, and the exceptionally tight timescale, meant that the PPP route appeared to offer an attractive solution. It seemed likely that this route would deliver benefits more immediately,

within the constraints of public expenditure, and would keep charge increases as low as possible. It is an essential criterion of PPP that value for money in the delivery of the service should be demonstrated against traditional public sector delivery of equivalent outputs.

The water authorities assessed a range of possible partnerships and nine projects progressed to completion. All nine are for waste water services in order to comply with the requirements of the UWWTD. These waste water projects have the benefits of large scale in the collection and treatment of waste water and its sludge. This ensures that set-up costs are kept to a reasonable proportion of the total cost. Initial costs and external fees in preparing contracts, both for the authorities and the competing consortia, can be substantial. These initial expenses include legal, due diligence and capital commitment fees. Such costs tend to make PPP inappropriate for smaller projects.

All nine of the PPP contracts were initiated by the three former water authorities. Each of the former three water authorities assessed the improvements in waste water treatment that had to be delivered in order to comply with the requirements of the UWWTD. One of the options that the authorities considered was to let a concession for a period of 25-30 years. This concession involved designing, building, operating and financing the required improvement to waste water treatment.

The water authorities invited responses from the private sector, which were then compared with the best traditional public sector procurement option. The aim of this appraisal was to ensure that the authorities' service delivery and compliance criteria were met in the most effective manner and would provide best value. The appraisal process and subsequent negotiation with consortia of service providers, their advisers and financiers was sometimes protracted (it is governed by European Union competition rules, and involves liaison with government).

A consortium usually consists of a consultant engineering and design firm, a construction contractor, and an operations company. These organisations formed a joint company for the provision of specific services to the authority. Consortium members also had

to accept responsibility for both maintenance over the contract period as well as accepting the inherent risks of project delays, cost over-runs and volume changes caused by shifts in demand. The consortia were also required to deliver the service within tightly specified parameters.

The benefits for the partnership companies included:

- the long operating franchise, with a guaranteed return if the service level agreement is met; and
- the opportunity to establish or develop a presence in the Scottish marketplace.

The outcomes from the nine projects appear to have realised considerable tangible benefits in the short term. These benefits are discussed further below. It is open to question, however, whether these benefits still apply.

13.4 Operation of PPP

An essential element of PPP is the transfer of risk from the public to the private sector. This meant that the authority did not have to record the assets or liabilities associated with delivering the service on its balance sheet. Once the PPP waste water treatment works were commissioned, the authority started to pay the partnership companies a fee that reflected the volumetric and qualitative services provided to the authority for that period. This fee was an operational expenditure item for the authority, although the charge reflected the operating, capital and financing costs of the consortium which delivered the service.

The consortium's books and records were open to inspection by the authority to verify the fees and ensure compliance with all contracted obligations. For the duration of the contract the assets adopted, constructed or modernised are in the ownership of the consortium. The water authority leased the land upon which the assets were located to the consortium. At the end of the contract all assets will revert to Scottish Water, and are required to be in a fully operable condition.

Each of the PPP contracts provides for the indexation of fees. These vary in line with annual inflation indices, but apply only to costs excluding interest, funding costs and depreciation. The consortium will bear all existing risks for the agreed fee. However, if a tightening of environmental standards resulted in a requirement for significant new capital or operational expenditure, there would be a renegotiation of the fee. There is also a provision in the agreements that governs the sharing of net revenue arising from third party use of the treatment works.

To date there has been no indication of profit-sharing with any of the authorities or with Scottish Water. The onus would be on Scottish Water to monitor closely the delivery of service and ensure that benefits of any extra efficiency are shared between the concession holder and the customer.

13.5 Customer benefits

The principal benefits to customers should be:

- the provision of improved waste water treatment to secondary and tertiary levels fully compliant with EU standards, and in some cases primary level where none existed before;
- quicker delivery of the service;
- more cost-effective construction and delivery of service; and
- charges that are variable and reflect the annualised costs of the service used.

The Transport & Environment Committee 9th Report 2001 contains details of the eight projects that were fully agreed up until June 2001. The report also presents the combined operational and capital cost efficiencies, compared with the public sector alternative, for each of these schemes. The largest savings achieved by each authority are reported as follows:

- North of Scotland Water Authority reported a 19% efficiency in the Aberdeen PPP scheme;
- West of Scotland Water Authority reported a 29% efficiency in the Meadowhead, Stevenston & Inverclyde PPP scheme;
- East of Scotland Water Authority reported a 42% efficiency in the Almond Valley, Seafield & Esk Valley PPP scheme.

One of the major potential advantages, from the customer's perspective, of the PPP method of service delivery is that it ensures that the service is delivered before significant cost is incurred. It also brings with it the market disciplines of finance, management, construction and operation, and does so over the whole life of the agreed project. It is the efficient whole life management of the project that principally differentiated PPP from the investment delivery of the three former water authorities.

The annual cost of the services provided represents a major component of Scottish Water's costs (around 12%) and therefore its future bills. In their evidence to the Transport and Environment Committee, the authorities claimed that the use of PPP to comply with EU standards, rather than the conventional procurement options, had reduced the increase in revenue required by the water industry by approximately £33 million each year¹. This was equivalent to about 4% of customers' bills (or nearly £10 for the average household) at that time. The estimates of the savings achieved in each project are summarised in Table 13.1 below.

Table 13.1: Savings per annum estimated by each authority

	No of schemes	Water authority estimate of annual savings
East of Scotland Water Authority	2	£20m
North of Scotland Water Authority	3	£6m
West of Scotland Water Authority	3	£7m
Total	8	£33m

Where conventional procurement and funding provided the same services at lower cost, the PPP route was not followed. The Montrose scheme, which North of Scotland Water Authority originally expected to complete by means of a PPP, proved to be better value if procured by traditional means.

13.6 PPP projects in progress

The nine PPP contracts represent a capital investment on behalf of customers of around £550 million, which contrasted with an estimated investment of more than £700 million under the conventional procurement route.

The contracted solutions for the collection, transmission and treatment of waste water and its resultant sludge were tailored to each project's particular location. The annual fees are therefore not comparable on an aggregate basis, but only when the actual service delivered and the construction of assets is taken into account.

The schemes were complex and involved the development and improvement of sewerage mains, pumping stations, storage facilities, treatment works, outfalls and sludge treatment facilities. The nine projects were in operation by the end of 2002-03; they currently process around 50% of the total waste water of Scotland. PPP projects account for virtually all of the waste water treatment in non-rural areas of Scotland. The sewerage needs of rural areas are likely to continue to be met by projects procured in the traditional way.

The nine projects are outlined in Table 13.2. The table also shows the projected fee payable to each consortium.

¹ Representing the claimed saving in annualised capital and operating costs, in the authorities' evidence to the Transport and Environment Committee.

Table 13.2: PPP contracts with Scottish Water

Project name:	Contract signed	Duration years	Construction costs (£m)	Annual fee in 2002-03
Almond Valley, Seafield and Esk Valley: Stirling Water (Seafield) Ltd	1999	30	£100m	£25m
Levenmouth: Caledonian Environmental Services Ltd	2000	40	£46m	£5m
Highland (Fort William and Inverness): Catchment Ltd	1996	25	£33m	£9m
Tay: Catchment (Tay) Ltd	1999	30	£84m	£17m
Aberdeen: Aberdeen Environmental Services Ltd	2000	30	£64m	£13m
Moray: Catchment (Moray) Ltd	2001	30	£60m	£8m
Daldowie/Shieldhall: SMW Ltd	1999	25	£66m	£16m
Dalmuir: Scotia Water UK Ltd	1999	25	£37m	£7m
Meadowhead, Stevenston & Inverclyde: Ayr Environmental Services Ltd	2000	30	£59m	£12m
Scotland total			£549m	£112m

Not only was the design of the projects tailored to meet local conditions, there were also some important differences in what had been agreed between the contracting parties. The most obvious was that in the three projects contracted by the West of Scotland Water Authority, operational staff from the authority (now Scottish Water) work in the waste water treatment works and continue to be paid directly by Scottish Water. These costs are not included in the costs quoted above. Scottish Water also continues to pay local authority business rates directly, since there is no benefit from risk transfer in having a consortium pay this directly. Table 13.2 therefore does not include business rate costs still incurred by Scottish Water.

There are also costs that relate to insuring and maintaining the assets transferred to PPP schemes which ceased to be direct costs to Scottish Water (East of Scotland Water Authority transferred £30 million of treatment works). Assets and equipment that become redundant as a result of the PPP may be closed and sold.

This will have two benefits: there is no longer a need to operate these assets and incur expense; and it may be possible to realise cash from the sale of associated land.

13.7 Financial and efficiency consequences

It is unfortunate that analysis of PPP projects often focuses on the benefits of substituting an operational payment for a large upfront capital payment. Similarly, some commentators focus on the relative merits of the public and private sectors in general. While it is true that the impact of meeting the UWWTD would have placed a very large burden on public spending over a short timescale, the key measure should be whether the PPP achieved value for money for customers.

When we analysed this issue in 2001, we concluded that the evidence suggested that these schemes were all delivered at a much lower cost for customers than would have been achieved by the three authorities under traditional procurement.

We outlined our analysis in the *Strategic Review of Charges 2002-06*:

“The annual charge for PPP schemes covers the capital financing costs, maintenance, and day-to-day running costs. Assuming an average weighted cost of capital of 7.5% before tax, the financing cost of an investment of £550 million, annuitised over 25 years, is around £48 million per year. On this assumption, the remaining annual costs of PPP, some £64 million, cover operating and capital maintenance costs. If I compare these costs with information from England and Wales and from the authorities, capital maintenance costs probably account for about half of this £64 million. This leaves £32 million to cover the pure operating costs of the consortium. This cost can be benchmarked against England and Wales, using my adapted version of Ofwat’s econometric models.

The results of analysis using the econometric models are instructive. The benchmark costs for operating

similar works to those provided in Scotland by the PPP in England is approximately £22 million. There may be some special factors that might very moderately increase this allowance for efficient operation. This may be as much as £1 million, taking the allowable operating costs at the frontier of efficiency to £23 million [...].

In general terms, my analysis shows that operating costs in Scotland are currently approximately double what they should be possible to achieve. On this basis my expectation would be that if the Scottish industry were to operate these works, the likely operating costs would be £46 million. The £32 million of operating cost included in the PPP contracts therefore compares favourably with the operating costs that would otherwise have been incurred. The 7.5% discount rate on the capital is also broadly equivalent to the 6% real rate that the public sector is required to use [...].

It would appear (as would almost certainly be expected) that the value of the gap between the efficiency frontier and current Scottish authority performance has been shared. It is therefore possible to conclude that PPP to date in Scotland has delivered some quite significant benefits to customers. These benefits include more timely compliance with the UWWTD and the removal of operating cost and capital delivery risk. Most importantly, customers will actually pay less for the service provided by the PPP contractor than they would have done under traditional procurement."²

In the *Strategic Review of Charges 2002-06*, we suggested that there were opportunities for Scottish Water to review the PPP contracts that it inherited. There were two principal opportunities in this regard. The first relates to the costs of financing the capital investment. The decline in interest rates since the contracts were originally let would suggest that there should be scope to reduce the capital costs that are included in the annual payment. Guidance from HM Treasury would suggest that such benefits ought to be pursued in a proactive way by the public sector organisation, and the benefits shared between the customer and the contractor.

The second potential benefit relates to the scope for reduced operating costs. It seems clear that the implied operating costs of the PPP consortia are high relative to the expected level of operating costs associated with a waste water treatment plant of similar size. There would therefore appear to be some scope for improved efficiency. Moreover, the recent and continuing significant improvement in Scottish Water's operating expenditure efficiency would suggest that it is now quite likely that Scottish Water could operate these plants at equal or lower cost than the PPP consortia. It is conceivable that Scottish Water could seek to take the operation of these assets back 'in-house'.

13.8 Options for 2006-10

We do not have any doubt that the PPP contracts represented good value for money at the time that they were concluded. However, we consider that improvements in Scottish Water's performance have made it less clear that the PPP contracts represent good value for money to customers today. It is important to make sure that customers' bills are no higher than they need to be and, as such, we need to consider which steps we might take to reduce PPP costs.

Possible options could be to set an efficiency target for PPP or to adjust the level of allowed revenue to reflect the efficient costs (financing and operating) of the services that are being delivered through PPP.

We would, of course have to establish that such an action was proportionate and could be realised by Scottish Water. Any contractual barrier to renegotiation would therefore have to be clearly demonstrated.

Our first proposed approach will be to look at the prices for which shares in the PPP concessions are changing hands and assess what this may tell us about the value for money that customers are currently receiving. Even if these prices are quite significantly lower than the apparent value to the current customer, we would have to take account of the extent of the risk transfer that still remains with the PPP consortia.

² Page 181, *Strategic Review of Charges 2002-06*.

The second proposed approach will be to look again at the operating and capital maintenance costs of the PPP consortia and use the benchmarking techniques that we outlined in Chapters 8 and 9 to assess the scope of any inefficiency. We will also use the capital maintenance models that we will describe in detail in Volume 5. Again, we would propose to take account of the value of any remaining risk transfer.

If we conclude that the customer is currently paying too much for the services that are being provided (or will be by the end of the next regulatory control period) we would propose to take account of this in Scottish Water's price caps. This is clearly a move forward from the *Strategic Review of Charges 2002-06* where we did not set an efficiency target on PPP. However, we did note at that time that it could in the future be appropriate to apply such an efficiency target. We would welcome the views of stakeholders on this issue.

13.9 Questions for consultation

1. Do respondents believe that we should set an efficiency target on PPP if we can identify that it is currently a more expensive option for customers?
2. Do respondents believe that our approach to looking at the value for money of PPP is appropriate?
3. If we determined that an efficiency target was appropriate, should this be implemented at the start, during or at the end of the next regulatory control period?

Section 5: Chapter 14

Setting the allowed level of operating costs

14.1 Introduction

In Chapters 7 to 10, we explained how we would determine the size of the efficiency gap that exists between the water industry in Scotland and that in England and Wales. In Chapters 11 and 12 we set out how we would assess the scope of improvement and the impact of new operating costs on the baseline for operating costs. This chapter explains how we use this analysis to set targets. It also discusses in some detail how the target should be presented. It is important that this target is clear and cannot be misinterpreted. It is also vital that the target is consistent with the results of our benchmarking.

This chapter sets out the following:

- the response to targets in the *Strategic Review of Charges 2002-06*;
- how Ofwat presents targets for improvement in operating cost efficiency;
- a potential role for incentives in setting targets;
- the detailed process for determining allowable operating expenditure; and
- the process for setting separate operating expenditure efficiency targets for different areas of the business.

14.2 Operating cost efficiency targets in the Strategic Review of Charges 2002-06

14.2.1 Presentation of the targets

In the *Strategic Review of Charges 2002-06*, we set two operating cost efficiency targets. We assessed the first by benchmarking the performance of the three authorities and the three former authorities combined against an appropriate comparator company. This benchmarking used both the adapted Ofwat econometric models and the alternative model. The second target reflected the scope for savings in Scottish Water as a result of the merger¹.

In using both the Ofwat econometric models and the alternative model we made it clear that we had not adjusted the targets to reflect differences in either the level of service or the scope of activities:

“It is worth reiterating, while reviewing these comparisons, that:

- I have not adjusted the expenditure of the English and Welsh companies to take account of their spending to meet mandatory leakage targets.
- I have not adjusted the expenditure of the English and Welsh companies for the costs incurred in domestic metering.
- English and Welsh companies are expected to out-perform their targets.
- The proposed Scottish Water should be able to learn from the privatised companies.
- My target is to a comparator company rather than the ‘frontier’ company.
- My alternative benchmarking suggested a higher efficiency gap than that from the revised Ofwat econometric models.”

The advised revenue caps also included ‘spend to save’ of £200 million over the first three years of the regulatory control period. Spend to save was made available so that the management of Scottish Water would be able to meet any one-off costs (such as redundancy payments, cancelling leases, updating IT systems and so on) associated with improving efficiency.

Our presentation of the first operating cost efficiency target (ie not including the merger savings) was clear. This information was included in a table²:

	2001-02	2002-03	2003-04	2004-05	2005-06
Target	£15.3m	£63.0m	£96.9m	£115.9m	£135.8m
Annual % real reduction	4%	13%	10%	5.5%	5.5%
Allowable operating expenditure	£360.1m	£321.8m	£297.5m	£288.4m	£278.7m

¹ Details of this analysis can be found in Chapters 18 and 20 of the *Strategic Review of Charges 2002-06*.

² *Strategic Review of Charges 2002-06*, page 192.

The allowable operating cost did not include any new operating costs.

New operating costs were presented separately³:

	2002-03	2003-04	2004-05	2005-06
Scottish Water	£2.47m	£4.56m	£6.76m	£9.02m
East of Scotland Water Authority	£0.83m	£1.69m	£2.60m	£3.55m
North of Scotland Water Authority	£0.86m	£1.28m	£1.71m	£2.14m
West of Scotland Water Authority	£0.78m	£1.58m	£2.44m	£3.33m

The merger savings were explained separately. They amounted to £29.3 million in 2005-06.

14.2.2 Response to the targets

In hindsight, it would clearly have been better to present a summary of the various elements of the operating cost efficiency target, including spend to save. This would have reduced the scope for misunderstanding of the target. Responses to the way we had set targets focused on the following areas:

- merger savings;
- the target to close 80% of the assessed efficiency gap; and
- the application of new operating costs.

These are discussed in more detail below.

Merger savings

The shadow management of Scottish Water argued that it was not reasonable to include merger savings in the targets for the 2002-06 regulatory control period. They suggested that the target should only reflect the results of the econometric models.

We considered that this was not appropriate for two reasons. Firstly, there would be significant and immediate savings that resulted from the merger of the three authorities (the reduction in head offices, senior management, depots etc). Moreover, any costs of

making these changes would be covered by the spend to save that we had included in the revenue caps. Secondly, the Scottish Executive had cited potential merger savings as one of the factors that had influenced its decision to merge the three authorities.

The target to close 80% of the assessed efficiency gap

The shadow management of Scottish Water argued that we ought to set targets using the Ofwat methodology for the rate at which an efficiency gap should be closed. Ofwat sets two targets: one for the industry as a whole and a second for companies to narrow the gap to the frontier company. We explained this method in Chapter 11 and will discuss the presentation of targets by Ofwat later in this chapter. They argued that if we had used this approach the target would have been somewhat lower.

It is true that the 80% closure of the efficiency gap was a slightly more demanding target. However, the companies south of the border did not receive a spend to save allowance in their regulatory settlement. Furthermore, the companies had an incentive to outperform regulatory targets in order to provide shareholders with an enhanced return on their investment.

We had also been able to show that the companies had on average closed 85% of their efficiency gap to the frontier company in their best five-year period. A target of 80% closure therefore seemed proportionate, especially since Scottish Water could take advantage of the lessons that had been learned south of the border in improving efficiency.

The application of new operating costs

We included an allowance to cover the additional operating costs of treating sewage required by the *Quality and Standards II* investment programme. We explained that there was no extra allowance for customer service or water quality because, in each case, the benchmark company was delivering a higher level of service in 1998-99 than the level that will be delivered by the Scottish industry in 2005-06.

³ *Strategic Review of Charges 2002-06*, page 190..

Our expectation was that the level of service would improve during the 2002-06 regulatory control period. The shadow management of Scottish Water complained that the efficiency target materially understated the challenge. This was because Scottish Water would have to fund the extra costs of operating new capital plant built to improve water quality standards. The management estimated these costs and added them to the efficiency target. As a result, the targets that the management presented differed from ours.

This difference was important because performance monitoring by a regulator requires any assessment of performance to be consistent with the established baseline for operating expenditure. It is important that all stakeholders accept that all comparisons will be made relative to this baseline.

Lessons to be learned

Although we presented a level of total operating costs for Scottish Water in the *Strategic Review of Charges 2002-06* in a clear way, we did not combine all of the elements of the targets. This resulted in an undesirable loss of transparency. We therefore propose to ensure that we present the target clearly in terms of total allowed operating costs (not including depreciation).

We also propose that the efficiency targets that we set will take account of the actual level of service that is currently delivered by Scottish Water. This will increase the efficiency target, but will allow Scottish Water to submit a claim for new operating costs for all improvements in the level of service or in the scope of activities undertaken. This will place the onus on Scottish Water to make the claim for new operating costs and will ensure that we can monitor delivery of improvements and improvements in efficiency. The targets will therefore be as transparent as possible.

14.3 Ofwat's 'continuing' and 'catch-up' targets

We are proposing to set one target for operating costs for each year. We believe that this will reduce the scope

for uncertainty about whether or not Scottish Water has met its targets.

Ofwat has traditionally used a different approach. Ofwat sets two targets for operating expenditure:

- one which identifies the scope for continuing efficiency improvement by all companies; and
- a separate target which sets the rate at which the other companies should close the efficiency gap to the frontier company.

Ofwat's benchmarking models allow it to assess the scope for catch-up, based on relative performance. In Chapter 11, we described how Ofwat has sought advice from expert independent economic consultants. This advice focused in particular on the scope for productivity improvements across the water industry as a whole.

Following this work, Ofwat has reached its draft conclusions on the size of the two elements of its targets⁴:

- Continuing (minimum) efficiency – the amount of improvement that even the most efficient company can achieve.

Ofwat's draft determination⁵ assessed that all of the water and sewerage companies in England and Wales had scope to achieve improvements of 0.6% per year in water service base operating expenditure, and 1% per year for sewerage.

- Catch-up efficiency – the amount of improvement that a less efficient company has to make in order to close the gap with the most efficient company.

Catch-up targets are usually company specific – in its draft determination, Ofwat assessed the scope for catch-up factors for water base service operating expenditure at an average of 2% per year. For the sewerage service, the scope for catch-up was assessed at an average of 2.9% per year.

⁴ Ofwat, *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004, page 128.

⁵ Ofwat, *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004.

In summary, Ofwat concluded that the industry should improve at 2.6% and 3.9% each year for the water and sewerage services.

Ofwat adopts the approach of setting two separate efficiency targets because it considers that it is helpful to split the efficiency targets between continuing and catch-up elements. It believes that this increases transparency and that companies (and stakeholders) will understand exactly what they are being asked to achieve.

As we explained in Chapter 11, we do not consider that it would be reasonable to expect Scottish Water to be at the frontier of water and sewerage operating cost efficiency by the end of the next regulatory control period. As a result, we believe that we do not need to consider the scope of productivity gains in the water industry as a whole. We can set targets with reference to the companies' likely response to Ofwat's targets. This analysis would take into account the incentive element of Ofwat's targets. The target and the incentive element are likely to determine Scottish Water's future performance gap.

We believe that we are able to set more robust targets by focusing on where the companies are likely to be by the end of their next regulatory control period. It is important that Ofwat assesses the scope for overall industry improvement and includes this in efficiency targets; however, such analysis is rather less robust than efficiency targets that are part of a regulatory settlement which companies have accepted.

14.4 A role for incentives in setting targets

In setting these targets for improvement in operating cost efficiency, Ofwat leaves scope for a company to outperform the target. Shareholders are likely to pressure management to maximise their available return and encourage outperformance. Shareholders are allowed to retain the benefits of such outperformance for five years.

We have to decide whether we should adopt a similar approach to that used by other regulators by setting

efficiency targets for Scottish Water such that it has an incentive to beat our targets. In Chapter 4 we discussed the incentive effect of RPI-X regulation and outlined some of the ways in which the benefits of outperformance can be used, namely to:

- reward employees for their efforts (eg through bonus schemes);
- reward shareholders for investing in the company (eg through higher dividends);
- give customers a share in the benefits of outperformance (eg through a reduction in prices); and
- allow companies to reinvest their outperformance in improving performance (eg an enhanced level of service).

Ofwat allows companies to retain the benefits of outperformance for five years because there would be a danger that if the benefits were immediately returned to customers, then shareholders (and consequently management) would see no reason to outperform the regulatory settlement. This is because there would be no prospect of improving on the allowed rate of return set by Ofwat (RPI-X would be hardly different from rate of return regulation). In the longer term, allowing companies to outperform the regulator's targets and retain the benefits for a limited period will benefit customers.

One of the ways in which a regulator can encourage outperformance is to set efficiency targets at less than the reasonable scope for improvement. For example, if we decided that the scope for improving efficiency was 5% per year, then we might set the target at 3% per year. Customers would benefit from the 3% efficiency target, which would reduce prices (relative to what they would otherwise have been) and Scottish Water is encouraged to outperform the efficiency target because it should be able to improve at 5% per year. It could then use the additional 2% annual scope for improvement to reward employees, invest in non-core activities or, perhaps, reduce prices to customers. In the long run, customers

will benefit because the baseline for operating expenditure in future regulatory control periods will be lower and this will help keep prices to customers at the lowest sustainable level.

Ofwat has adopted such an approach in its current review of price limits for the water and sewerage industry in England and Wales. In its draft determination⁶, Ofwat stated that it believes that the scope for efficiency improvements in operating expenditure is around 3% per year. This is split between the water and sewerage services as follows:

- Ofwat assessed the overall scope for efficiency from the water service operating expenditure baseline to be 2.6% per year. However, Ofwat has assumed an efficiency improvement of only 1.4% per year. Ofwat therefore expects that the companies will outperform the target by 1.2% a year.
- Ofwat assessed the overall scope for efficiency from the sewerage service operating expenditure baseline to be 3.9% per year. However, Ofwat has assumed an efficiency improvement of only 2.0% per year. Ofwat therefore expects that the companies will outperform the target by 1.9% a year.

For both water and sewerage, Ofwat has included in price limits only just over half of the total scope for improvement that it believes is available to the companies. The benefits of the potential for improvement in operating cost efficiency is therefore being split broadly evenly between customers and shareholders in the hope that this incentive will encourage companies to strive to improve their efficiency by as much as possible.

If we were to adopt a similar approach and set efficiency targets such that Scottish Water was encouraged to outperform and make additional savings, then we would need to ensure that these savings would ultimately be passed on to customers. More fundamentally, we need to consider whether it is appropriate to give Scottish

Water incentives to outperform its regulatory settlement. Scottish Water remains in the public sector and stakeholders may take the view that it should not keep the benefit of any outperformance for even a short time. The question is whether customers should pay a little more now in order to ensure that Scottish Water becomes more efficient in the future. We would welcome stakeholders' views on this issue.

14.5 Calculating total allowable operating expenditure

We are proposing to set targets in terms of total allowable operating expenditure (not including depreciation). We will set total allowable operating expenditure at a level that we believe is sufficient for Scottish Water to carry out its operations for each year of the regulatory period. This is the amount that will be funded through charges to customers. It is made up as follows:

Total allowable operating expenditure
=
Baseline operating expenditure ⁷
±
Assessed changes in baseline operating expenditure
-
Efficiencies in baseline operating expenditure ⁸
+
New operating expenditure ⁹
-
Efficiencies on new operating expenditure
+
Public Private Partnership operating expenditure ¹⁰
-
Efficiencies on Public Private Partnership operating expenditure
+
The impact of annual inflation on all of these components

We will no longer refer to a monetary value for the total efficiencies required. However, if stakeholders want to

⁶ Ofwat, *Future water and sewerage charges 2005-10 – Draft determinations*, August 2004.

⁷ See Chapter 6.

⁸ See Chapters 7, 8 and 9.

⁹ See Chapter 12.

¹⁰ See Chapter 13.

count the total monetary value of the efficiencies required in this regulatory control period in order to compare it with that used in the *Strategic Review of Charges 2002-06*, they should add up the following for each year and then adjust for annual inflation:

- efficiencies in baseline operating expenditure;
- efficiencies in new operating expenditure; and
- efficiencies in Public Private Partnership costs.

14.6 Detailed process for calculating allowable operating expenditure

We propose to follow the steps outlined below to determine our initial conclusions on the allowable operating expenditure for Scottish Water:

Step 1 Establish base operating expenditure, as set out in Chapter 6.

Step 2 Assess whether there are likely to be any changes to base operating expenditure, as set out in Chapter 6.

Step 3 Use reported total operating expenditure in 2003-04 (which we proposed to use as the base year for the Review) to assess the extent of the efficiency gap that exists between Scottish Water and the companies in England and Wales. We will use the tools set out in Chapters 8 and 9 to assess the efficiency gap.

Step 4 Review the evidence on Scotland-specific factors that we should take into account and which would alter our assessment of the efficiency gap. These factors could include:

- differences in levels of service provided to customers with those provided in England and Wales;
- differences in the scope of activities with England and Wales; and
- factors relating to Scotland's geography. Our initial thoughts on these issues are set out in Chapter 10.

Step 5 Given the size of the adjusted efficiency gap, review the evidence on the following, each of which are discussed in Chapter 11:

- the scope for improvement in the water and sewerage industry in Scotland;
- the pace of change that Scottish Water could realistically achieve in tackling efficiency savings;
- the extent of gap closure that could realistically be achieved by Scottish Water in the four years 2006 to 2010; and
- the scale of targets set by Ofwat for the companies over the period 2005 to 2010.

Step 6 Assess the forecast level of new operating expenditure and the level of efficiency savings that could be applied to such expenditure. This is discussed in more detail in Chapter 12.

Step 7 Assess the forecast level of Public Private Partnership expenditure and the level of efficiency savings that could be applied to such expenditure. This is discussed in more detail in Chapter 13.

Step 8 Apply our assumptions of annual inflation to the results of Steps 5, 6 and 7.

This process will allow us to assess a level of operating expenditure that we believe it would be possible for Scottish Water to achieve by March 2010. We will also, however, take into account the views of stakeholders on the extent of the efficiency gap that Scottish Water should be required to close.

We would expect to receive a wide range of responses. If we believe that some stakeholders' expectations are unachievable, then we will explain the reasons for this view. If stakeholders were happy for Scottish Water to make less progress than we believe is possible towards an efficient level of operating expenditure, then we would have to consider whether or not to modify our calculated targets.

14.7 Setting separate efficiency targets for different areas of the business

In the *Strategic Review of Charges 2002-06*, we set efficiency targets for Scottish Water as a whole, ie for all water and sewerage services, together with its non-core services. This approach was different from that adopted by Ofwat for the companies in England and Wales. Ofwat sets efficiency targets for the core (regulated) business only, and splits the targets into separate targets for the water and sewerage services.

For the current Strategic Review, we need to take into account recent developments in the regulatory framework in Scotland. These are discussed in detail in Volume 2. As a consequence of these changes, we believe that we will need to set targets for the following business areas:

- core wholesale water service;
- core wholesale sewerage service; and
- new non-core retail service for non-domestic customers.

There are three main changes that affect the way we set targets. First, our legal remit changed in 2002 to cover only the core activities of Scottish Water – broadly those activities required by statute. We will not therefore be extending our targets to cover Scottish Water’s non-core services.

Second, since the last Review we have sought to make charges more cost reflective than in the past. Customers pay separately for water and sewerage services, so it appears sensible to set separate targets for water and sewerage operating expenditure. Ofwat also follows this approach.

Third, draft legislation – The Water Services Etc. (Scotland) Bill – proposes to separate the wholesale and retail parts of Scottish Water’s business, and to open up the latter to competition for non-domestic customers. Again, it would appear to be sensible to separate wholesale and retail targets.

Setting separate targets may, however, present an issue regarding how achievable they might be. Some commentators have argued that where targets are based on comparisons of performance between different business areas of different companies, then they are based, in effect, on a hypothetical comparator. This would be because, in practice, no single company is a leading performer in every business area. It could be argued that no single company had demonstrated the overall level of performance implied by the targets when taken together.

However, we believe that where comparator companies have demonstrated best practice in a particular area, it would not be in customers’ interests for us to ignore that when setting targets. There is an important proviso to this – the demonstrated best practice must be real and must be measured in a reliable way, with costs appropriately allocated by the comparator company. Ofwat applies tests to ensure that this proviso holds when it sets separate targets for water and sewerage operating expenditure, using different comparator companies. The argument also extends to the separation of capital investment from operating expenditure – again, Ofwat uses different comparator companies. Given Ofwat’s approach, we believe that it is appropriate and in customers’ interests to set targets for Scottish Water using comparisons with best practice.

14.8 Conclusion

We are keen to ensure that our targets are clear and unambiguous. We believe that setting the total allowable level of operating cost will ensure that there is less scope for disagreement about whether the targets have been achieved.

In this chapter we have explained how we will set the level of allowable operating expenditure. The actual level will of course depend on the detailed analysis that we carry out, first in advance of publishing draft targets in January 2005, then for draft determination in June 2005, followed by final determination in December 2005.

We are keen to hear stakeholders’ views on our proposed approach to setting targets and the role of incentives.

14.9 Questions for consultation

1. What are respondents' views on our proposals to set a level of allowable operating cost as the target for Scottish Water in each year of the regulatory control period?
2. What are respondents' views on the scope for improved efficiency at Scottish Water? It would be helpful if stakeholders could express their views either with reference to the performance of the companies in England and Wales or with reference to Scottish Water in isolation, and to provide reasons.
3. Do respondents have any views regarding Scottish Water's performance beyond 2010?
4. Do respondents believe that it is appropriate for us to set allowable levels of operating expenditure for Scottish Water such that the corporation has an incentive to outperform? If so, what are respondents' views on the split between efficiency targets and the incentive to outperform?
5. Should we seek to set separate levels of allowable operating expenditure for the 'wholesale' sewerage, 'wholesale' water and non-domestic retail components of Scottish Water?

Section 5: Chapter 15

Regulating levels of service

15.1 Introduction

The price caps that we propose to set at the *Strategic Review of Charges 2006-10* will take account of the scope for operating cost efficiency that we identify. Scottish Water should meet its efficiency targets by improving the way that the business is operated. It is important that Scottish Water does not seek to live within its price cap by reducing the level of service that it provides to customers.

We must therefore decide how to ensure that an appropriate level of service is delivered at the same time as cost efficiencies are being achieved. There are two possibilities for regulating levels of service:

- Firstly, we could benchmark the performance of the regulated company against the performance of other companies in the same or similar industries. The results of this benchmarking would be published in order to provide the company with an incentive to improve performance in the future.
- Alternatively, we could set targets for some or all aspects of service quality. These targets should be quantifiable so that it is possible to measure whether the particular aspect of service has been delivered to the required standard.

There are strengths and weaknesses associated with both approaches. Different regulators have taken different views on which approach is most appropriate in their industry. One reason for this may be that different industries face different challenges.

There are specific circumstances in Scotland that may have an impact on how we regulate quality of service. An important consideration is that the information relating to quality of service performance in Scotland is poor relative to that which is available in England and Wales. This would make it more difficult to set robust targets for improvements in the level of service. However, it could be argued that since the quality of service performance in Scotland is relatively poor, it is

clearly in customers' interests to set a target for improved service performance.

This chapter will outline the two possible approaches to levels of service regulation. It then provides an example of each approach in practice – Ofwat's use of the benchmarking approach in regulating the water and sewerage industry, and Postcomm's use of target setting in regulating Royal Mail. We then consider the strengths and weakness of each approach, and discuss how we might address this issue in Scotland.

15.2 The benchmarking approach

The benchmarking approach involves comparisons of the way that different companies perform. Under this approach, the regulator identifies and reports on the relative performance of companies. On the basis of these comparisons, the regulator may decide to introduce incentives or penalties for companies.

In order to benchmark performance there must be at least one comparator company. Moreover, the companies being compared should be similar. Generally this will mean that the companies are in the same industry, although in some circumstances it may be possible to make comparisons between industries. For example, electricity, gas and water companies all have metering, billing and complaints handling functions. For these activities it would be possible to compare the level of service provided by Scottish Water with the level of service provided by water companies in England and Wales and by other utilities. If we used a comparator from a different industry, there would be an onus on us to explain why the comparison was valid.

15.2.1 Ofwat's approach to level of service benchmarking

Ofwat has adopted a benchmarking approach to its regulation of levels of service. Each year it publishes a report on the levels of service provided by the water industry in England and Wales. In this report, Ofwat describes the levels of service provided by the water

and sewerage companies for a variety of elements of customer service. Eight individual standards are reported and discussed. These individual standards are referred to as the 'DG standards'¹. In addition to performance against the DG standards, a measure of overall performance is reported. This combines the eight individual DG standards as well as some additional measures that are not reported separately.

For overall performance and for each individual measure Ofwat provides the following information:

- A table showing the performance of each individual company. This allows the differences in performance between companies to be quantified.
- A rank order of companies, from the best performer to the worst performer. This also indicates which companies perform better than the industry average and which perform worse.

Ofwat's benchmarking of levels of service plays a role at price reviews. On the basis of the companies' performance in the period 1996-97 to 1998-99, Ofwat made an adjustment to price limits at the 1999 price review. In the first year of the 2000-04 regulatory control period, Ofwat rewarded good performance with an adjustment to the 'K'² factor of +0.5% and penalised poor performance with an adjustment of -1.0%. After analysing company performance, Ofwat made the following adjustments:

Adjustment to K factors in 2000-01	Company
+0.5	Southern, Wessex, Bristol, North Surrey, Tendring Hundred
-0.5	North West, South West, Yorkshire, Mid Kent, Three Valleys
-1.0	None

Ofwat intends to retain the same range of potential adjustments for the 2004 price review.

15.2.2 Rationale for the benchmarking approach

The role of a regulator is to ensure that customers receive better value for money. Improved value for money can result either from lower costs and maintenance of service levels or an improvement in the quality of service provided to customers. There are several reasons why companies might attempt to improve the quality of service they provide if they know that their performance will be published in a league table and may impact on their price settlement.

- Companies are likely to act to avoid being a poor performer. Managers do not want to get a reputation for running a company that performs less well than other similar companies. The more widely the results of the benchmarking are circulated, the greater should be the incentive effect on managers.
- Shareholders will be concerned about the impact of poor performance. It may attract the attention of the regulator and encourage more detailed scrutiny of the business. Shareholders will therefore exert pressure on managers to improve service performance.
- The level of service adjustment that Ofwat applies at the price review should provide an incentive to companies to avoid being one of the worst performing companies and to aim to be one of the best performing companies. The effectiveness of these incentives will depend on the size of the potential reward or penalty relative to the expenditure required to make a difference to the assessed level of service performance.
- The threat of competition in certain aspects of the business, for example as a result of common carriage, retail competition or off-network solutions, should encourage companies to consider their level of service performance relative to other companies. One way to win customers in a competitive environment is to provide a higher quality service.

¹ The first report by Ofwat on the water companies' non-financial performance was entitled '*The water industry of England and Wales: Levels of service information, 1989-90*' (Ofwat 1990). This introduced a number of service quality performance indicators known as DG standards. These indicators have been developed and refined over time.

² The 'K' factor is the amount by which companies south of the border are allowed to change their prices.

15.2.3 Issues raised by the benchmarking approach

The benchmarking approach raises two issues:

- Whether or not the incentives for performance improvement are sufficiently strong.

In practice, regulatory reports are not widely read. This may limit the incentives on companies to improve their performance in order to maintain their reputation. It is also possible that a poorly performing company would prefer to suffer a penalty rather than incur the expenditure that is necessary to improve performance.

- Whether or not the incentives for performance improvement are appropriate.

In England and Wales, companies may have an incentive to focus on improving their OPA score rather than focusing on delivering the elements of service that customers want and are willing to pay for. Companies also have an incentive to focus on the least cost way to raise their OPA score. However, provided Ofwat's overall performance measure reflects customer preferences accurately for all companies in England and Wales, this should not be an issue. This places an onus on the regulator to ensure that the system that is used to measure performance reflects any significant changes in customers' priorities.

15.3 The target setting approach

The target setting approach involves setting specific targets for particular aspects of a company's performance. In principle, the target could be set for the company's overall performance, with the company being left to decide the effort required on each aspect of service in order to meet the overall target. It could be that the performance targets require the company to maintain its level of service, or could require the company to improve its level of service.

The target setting approach requires the regulator to take a view on the optimum level of service. This is not

a straightforward process. The regulator will have to take account of customer preferences about each aspect of service, both individually and relative to each other. The regulator will also have to take account of customers' willingness to pay for different levels of service.

Under the target setting approach the regulator imposes penalties on the regulated company for failing to meet levels of service targets. Such penalties are designed to raise customer awareness of the shortfall in the standard of service and to require managers to cut costs further to meet their financial targets.

15.3.1 Postcomm and Postwatch's approach to level of service targets

In the UK, Postcomm (the Postal Services Commission) and Postwatch (the Consumer Council for Postal Services) have adopted the target setting approach to regulating levels of service. Postcomm was set up by the Postal Services Act 2000 to ensure that postal operators, including the Royal Mail, meet the needs of their customers throughout the UK. Postwatch, set up by the same Act, is the consumer watchdog for postal services. Postwatch and Postcomm both play a role in customer service regulation:

- At the 2003 price review, Postwatch and the Royal Mail agreed 15 targets for quality of service. The broad areas of service where Postwatch sets targets are documented in Royal Mail's licence at Condition 4. Specific standards and targets are incorporated into the licence in an annex to Condition 4.
- Postcomm monitors compliance with the standards and publishes information on Royal Mail's performance. It also has the power to take enforcement action and levy financial penalties for service failure.

The target setting approach in postal services is required as a result of European and national legislation. The EU Postal Services Directive³ implemented the first steps towards a harmonised approach to postal services within the EU. The Postal

³ Directive 97/67/EC.

Services Regulations 1999 brought this Directive into UK law. These regulations were superseded by the Postal Services Act 2000. The Directive required member states to set quality of service standards and report against them⁴. It also provided an indication of the broad areas for levels of service standards – ‘routing times’⁵ and the regularity and reliability of service.

The current service standards reflect Royal Mail’s own internal performance measures. These were not developed on the basis of customer preferences and they pre-date the current regulatory regime and the Royal Mail licence. Postwatch, Postcomm and Royal Mail recognise that there is a need to relate targets for service standards to customers’ preferences. The three parties jointly commissioned market research into customers’ needs and expectations. Postcomm’s preliminary analysis⁶ of the results of this research suggests that there is no single dominant factor, but that most customers are looking for improved service in all areas. Postwatch intends to consult on how the research should be used to develop measures of the quality of service. If Royal Mail does not meet its level of service targets for first class mail, second class mail and the standard parcel service, its allowed revenue is reduced. For non-bulk mail, 0.9% of Royal Mail’s revenue is dependent on the company meeting service targets. This is known as the ‘C’ factor and it results in lower price increases for customers in the year following a failure to meet targets. In 2003-04, the Royal Mail was allowed £13 million out of a total ‘C’ factor of £30 million.

Postcomm can also impose financial penalties on Royal Mail. The power to levy a financial penalty requires Postcomm to demonstrate that Royal Mail has not made “all reasonable endeavours” to meet its targets. The penalty aims to claw back ‘excess profits’ ie the profits that would have been earned if the targets had been met. Postcomm fined Royal Mail £7.5 million in 2002-03.

Two compensation schemes are also available to Royal Mail’s customers:

- The first scheme covers bulk mail. This compensation scheme returns increments of Royal Mail’s income to customers for this service. The rate is 0.1% of income generated from each bulk mail product for every 0.1% that it fails on a target. This is subject to a minimum of 1% and a maximum of 5%.
- The second scheme covers retail services. This scheme allows retail customers to seek compensation directly from Royal Mail for delays in delivery.

The total financial penalty on Royal Mail in 2003-04 was £50 million (this compares with a turnover of £8,633 million).

In its price and service review, Postcomm is consulting on whether further incentives are required to ensure that Royal Mail performs better in its levels of service. Postcomm is also seeking to place more responsibility than “all reasonable endeavours” on the Royal Mail for improving its level of service.

15.3.4 Rationale for the target setting approach

The target setting approach is particularly useful in situations where there are no direct comparators for the regulated company, for example in industries where there is one company and one regulator. In some industries, such as the water industry in England and Wales, there are regional monopolies that can be compared with one another. However, in other industries, such as the postal industry, there is a single dominant incumbent. To the extent that other postal companies exist, they compete only in certain locations or in certain elements of the incumbent’s business. In theory, it could

⁴ Directive 97/67/EC (The EU Postal Services Directive) Chapter 6. Quality of services Article 16: Member States shall ensure that quality-of-service standards are set and published in relation to universal service in order to guarantee a postal service of good quality. Quality standards shall focus, in particular, on routing times and on the regularity and reliability of services. These standards shall be set by: the Member States in the case of national services, the European Parliament and the Council in the case of intra-Community cross-border services. Future adjustment of these standards to technical progress or market developments shall be made in accordance with the procedure laid down in Article 21. Independent performance monitoring shall be carried out at least once a year by external bodies having no links with the universal service providers under standardised conditions to be specified in accordance with the procedure laid down in Article 21 and shall be the subject of reports published at least once a year.

⁵ The time taken to deliver an item after the customer has deposited it.

⁶ 2006 Royal Mail price and service quality review - Consultation on principles, September 2004.

be possible to make international comparisons, but such comparisons may end up being relatively subjective.

An alternative approach in these circumstances is to assess the current customer service performance of the company and to set a target for future customer service performance.

In industries where comparators are available there may also be a role for targets. It could be argued that setting a company-specific target improves incentives by increasing transparency and certainty. In the same way that a water company in England and Wales is given a specific operating efficiency target (which takes account of benchmarking evidence) it could also be given a specific level of service target.

15.3.5 Issues raised by the target setting approach

The target setting raises two issues:

- Whether or not there is sufficient information to set a target.

In order to set an appropriate target, the regulator needs to understand the consequences in terms of cost to the firm of providing different levels of service.

- Whether or not the interaction between efficiency targets and level of service targets weakens the regulator's ability to target reductions in costs.

The regulator may be faced with a situation where the company meets most or all of its level of service targets but fails to meet an efficiency target. In this situation there is a clear risk that the regulator feels unable to enforce efficiency targets quite as strictly as he would otherwise have done.

Customer service has many different aspects. The cost of improving each aspect will vary depending on the level of service target that is set. Initial improvements may not be too costly to achieve, but further improvements are likely to become increasingly expensive.

It is also possible that in improving one aspect of service, there would be an impact on another, apparently separate, aspect of service.

If the regulator is to set appropriate levels of service targets, he needs to understand these marginal costs and customers' willingness to pay. We are not convinced that this would be consistent with our principles of transparency, consistency and proportionality.

15.4 An approach for Scotland

15.4.1 Strengths and weaknesses of different approaches

We believe that there may be some constraints on how we regulate the level of service provided by Scottish Water. Firstly, the information relating to the level of service performance in Scotland is poor relative to that which is available in England and Wales. Scottish Water provides this Office with customer service information on a quarterly and an annual basis. The reliability of this information currently restricts our ability to understand the actual customer service performance of Scottish Water.

Secondly, the quality of service performance in Scotland is poor relative to that in England and Wales. Scottish Water currently provides a lower quality service than any company in England and Wales. The gap in performance between Scotland and England and Wales is larger than can be explained by any inaccuracies in the information provided.

15.4.2 The benchmarking approach

We are currently using the benchmarking approach to monitor the level of the customer service that Scottish Water provides. This approach offers the advantage that we can use Ofwat's framework and information from the companies south of the border. We also have experience in collecting the customer service information required to make comparisons with the companies in England and Wales.

We do have concerns that the benchmarking approach may not provide sufficiently strong incentives to ensure that Scottish Water's performance improves. Unlike England and Wales, Scottish Water has no shareholders to exert pressure on the firm's managers. However, we recognise that there is considerable political pressure on

the corporation to demonstrate that it can provide a level of service that is comparable with that provided by the companies south of the border.

15.4.3 The target setting approach

The target setting approach is generally used when there is a single company without obvious comparators and there is good information available for setting the targets. We believe that this approach could be used even when a regulated company has comparator companies and the quality of information on performance would not allow us to identify the optimum level of service. We consider that there may be a case for setting a target to improve levels of service when the regulated company clearly lags behind a comparator.

There are, however, three potential weaknesses with such an approach:

- It is not clear that we could comment objectively on performance if some of the level of service targets were exceeded (and others met), yet costs remained demonstrably high.
- If we set targets now (when the gap is clearly significant) it may be difficult not to set targets in future. It is not clear that the costs of collecting the required information could be justified when the gap is much less significant.
- The Water Service etc (Scotland) Bill proposes to introduce a licensing regime for new entrants who want to provide a retail service to customers. These new entrants are likely to adopt a mix of pricing and service level approaches and it is not clear that we should constrain the management of Scottish Water Retail in its approach to the market. This would be a consequence of setting some level of service targets.

15.5 The proposed approach for Scottish Water

We propose to retain the benchmarking approach for

quality of service regulation. The approach is tried and tested for the water industries in Scotland and in England and Wales.

However, there may be a case for setting targets for certain key areas of service, where there is sufficiently good information available to adopt this approach. We believe, for example, that we should introduce a target for the level of leakage. We believe that the majority of customers would support action to reduce the level of leakage and also that there are substantial cost savings that Scottish Water could make by reducing leakage. We stated in the previous chapter that we are proposing to set efficiency targets that are adjusted to take account of differences in the level of service. In this instance, we would accept claims for new operating costs designed to improve levels of service provided there is a clear measurable output. We believe that this refinement of our benchmarking approach may capture some of the potential benefit of the target setting approach without the weaknesses. We would welcome the views of stakeholders.

15.6 Questions for consultation

1. What are respondents' views on the benchmarking approach and the target setting approach?
2. What are respondents' views on our proposed refinement of the benchmarking approach to include target setting for some key areas of service?
3. Are there any targets (eg leakage) that are appropriate in pursuing the benchmarking approach?

Section 5: Chapter 16

Monitoring operating expenditure and levels of service

16.1 Introduction

In this chapter, we describe how we intend to monitor Scottish Water's performance on operating expenditure – against the targets that we will set – and on levels of service. We have to monitor performance on both operating expenditure and levels of service to ensure that customers will benefit from improvements in efficiency.

We begin by describing how we currently monitor Scottish Water's performance. We then set out the information that we will use to monitor operating expenditure over the period 2006 to 2010 and how we propose to report progress. The chapter closes by outlining how we propose to monitor levels of service to customers so that we can be sure that Scottish Water does not compromise service delivery in order to achieve operating expenditure targets.

16.2 Monitoring framework

Our role as regulator is to set challenging, achievable targets which promote customers' interests. It is not for us to direct how targets should be achieved. This is a matter for the board and management of Scottish Water.

It is our role, however, to monitor progress against targets, and to verify that service levels to customers do not suffer as a result of management action to reduce costs.

The *Strategic Review of Charges 2006-10* is only the start of the regulatory process. During the regulatory control period we will monitor Scottish Water's progress in reducing costs and improving levels of service. We intend to build on the framework that we have already put in place to monitor performance, through:

- regular information submissions, comprising the Annual Return and more frequent updates of key performance indicators, and forecasts;
- independent audit of regulatory information;

- a process of query, challenge and confirmation of numbers;
- rigorous analysis of current and expected progress against targets;
- publishing reports;
- the application of analytical tools which are designed to ensure that we can monitor real progress as opposed to apparent progress (for example, improvements that come from calculating information from the Annual Return in a different way).

We will also monitor Scottish Water's progress relative to that of the companies in England and Wales. We will continue to use information from the companies south of the border. This information will include:

- their Annual Returns to Ofwat;
- comments on these returns by independent auditors, which are published by Ofwat;
- companies' published regulatory accounts;
- Ofwat's published analysis of companies' progress; and
- rigorous analysis of relative efficiency using the benchmarking tools described in Chapters 8 and 9.

All stakeholders should have an interest in Scottish Water's progress. We are keen to share the results of our monitoring with stakeholders and to explain progress against the targets that we establish in the *Strategic Review of Charges 2006-10*. This should help ensure that surprises are kept to a minimum and that Scottish Water stays focussed on delivering improved value for money to customers.

16.3 Monitoring operating expenditure

In monitoring Scottish Water's performance in operating expenditure, we are primarily concerned with how much it spends each year relative to the total allowed operating costs. We would not be concerned with how Scottish Water spends the money unless there is evidence that the level of service provided to customers is getting worse.

Our monitoring will cover the following¹:

- baseline operating expenditure;
- new operating expenditure;
- Public Private Partnership (PPP) operating expenditure;
- year on year progress on each of the above against targets; and
- progress on baseline and new operating expenditure, relative to England and Wales.

Our sources of information for monitoring Scottish Water's progress against operating expenditure targets and its performance relative to the companies in England and Wales will include the regulatory returns shown in Table 16.1. Much of this framework is already in place and we use it to monitor progress against existing targets. We intend to introduce regulatory accounts² in 2005, to enhance the consistency of regulatory reporting year on year.

Table 16.1: Framework for monitoring progress on operating expenditure³

Sources of information	Operating expenditure			Relative performance
	Baseline	New	PPP	Baseline and new ⁴
<i>Scottish Water</i>				
Annual Return				
Regulatory accounts (from 2005)				
Monthly operating expenditure returns				
Quarterly investment returns ⁵				
Independent comments by Scottish Water's Reporter				
<i>England and Wales</i>				
Companies' annual returns				
Company regulatory accounts				
Independent comments by Reporters in England and Wales				
Ofwat's published annual reports				
<i>Reporting progress</i>	↓			
	Costs & performance reports			

These sources of information are described in more detail in Volumes 1, 2 and 3. It is worthwhile to highlight two of the key information sources here.

Annual Return

The Annual Return includes a detailed breakdown of Scottish Water's operating expenditure by activity. It requires Scottish Water to submit important information about its customers, assets, volumes of water and sewage treated etc. We use this information to assess Scottish Water's efficiency in operating expenditure and its position relative to the companies in England and Wales.

¹ Chapters 6, 12 and 13 define and explain baseline, new and PPP expenditure, respectively.

² See Volume 2, Chapter 3.

³ The components of operating expenditure are defined in earlier chapters of this volume and are summarised in Chapter 14.

⁴ Comparisons of relative performance exclude PPPs as there is no direct parallel in the water and sewerage industry in England and Wales.

⁵ We use the quarterly investment returns to help monitor new operating expenditure because this expenditure is driven largely by Scottish Water's Capital Investment.

The Annual Return will continue to be Scottish Water's main information submission. This information will be supported by two changes to our monitoring regime:

- the appointment of a Reporter for the water industry in Scotland; and
- the introduction of regulatory accounts.

In December 2003, we appointed a Reporter to audit the information provided to us by Scottish Water, and to highlight any issues or inaccuracies. The Annual Return is subject to detailed review by the Reporter. Experience south of the border demonstrates that the introduction of a Reporter results in improved quality of information, increased regulatory transparency and more effective performance monitoring.

Regulatory accounts

The introduction of regulatory accounts is intended to provide separate reporting frameworks for the retail and wholesale elements of the current core business of Scottish Water. Regulatory accounts will reduce the number and scale of adjustments that we currently need to make to reported operating expenditure in order to ensure like-for-like comparisons with targets. This is because regulatory accounts impose accounting definitions that are fully consistent with the regulatory settlement. This should also ensure that stakeholders can have increased confidence in our reports on Scottish Water's performance.

16.4 Monitoring levels of service

In the previous two chapters we explained our proposals to monitor an allowed level of operating costs that would take full account of the scope for efficiency (ie it would also adjust for differences in the level of service and the scope of activities). We explained that we would accept claims for new operating cost from Scottish Water that were tied to an improvement in the level of service. We would scrutinise such claims to ensure that they were efficient and reasonable.

The baseline allowed level of operating cost should be sufficient to maintain the current level of service. New

operating costs would be expected to improve the overall level of service.

At the current time, we monitor the level of Scottish Water's customer service performance by using the overall performance assessment (OPA) that was developed by Ofwat. We would propose to monitor improvements in customer service (financed by new operating cost) relative to the OPA or, if this is not appropriate, to some other clearly defined benchmark.

The OPA combines results for customer service measures with other information about performance in drinking water quality and environmental compliance to derive an overall score for the level of service. Indicators include:

- water supply – pressure, supply interruptions and drinking water quality;
- sewerage service – sewer flooding incidents and risk of flooding;
- environmental impact – sewage treatment works compliance and pollution incidents; and
- customer service – speed of handling complaints, billing enquiries and telephone contacts.

Our framework for monitoring performance will focus primarily on the levels of service measures that comprise the OPA. However, the OPA does not cover all aspects of customer service. We will also monitor performance against Scottish Water's Guaranteed Minimum Standards (GMS). These were introduced in December 2000. They are minimum standards of service that Scottish Water must meet and which customers have a right to expect. Failure to comply with GMS entitles the customer to financial compensation. The GMS relate to:

- planned and unplanned interruptions;
- internal sewer flooding;
- payment enquiries; and
- complaints.

Table 16.2 sets out our framework for monitoring levels of service performance.

Table 16.2: Framework for monitoring levels of service performance

Sources of information	Guaranteed Minimum Standards	Overall performance assessment
<i>Scottish Water</i>		
Annual Return		
Customer Service Performance Return		
Quality Performance Assessments		
Independent comments by Scottish Water's Reporter		
<i>England and Wales</i>		
Companies' annual returns		
Independent comments by Reporters in England and Wales		
<i>Reporting progress</i>	↓	
	Customer service reports	

We currently use three different information submissions to monitor the service Scottish Water provides to its customers. These are the Annual Return, the Customer Service Performance Return and Quality Performance Assessments.

The Annual Return includes:

- information on the customer base;
- a description of the service delivered to customers (for example: water pressure and sewer flooding events);
- compliance with customer care indicators; and
- compliance with quality and environmental requirements.

This information allows us to assess the level of service to customers and compliance with environmental and drinking water standards. It also allows us to calculate the OPA score.

The Customer Service Performance Return is submitted quarterly and includes:

- the number and nature of complaints, and the speed of response;
- the number of planned and unplanned interruptions to supply;
- the number of sewer flooding incidents; and
- the number of Guaranteed Minimum Payments made.

The Customer Service Performance Return supports the information that is submitted in the Annual Return, and allows us to examine trends and any seasonal variations.

The Quality Performance Assessments are regular audits of the way in which Scottish Water handled complaints. We identify how the complaint was handled using a set of standard criteria including:

- Did the right person at Scottish Water deal with the complaint?
- Did the response address the substance of the complaint?
- Was the response written in plain English?
- Did the handling of the complaint comply with Scottish Water's Guaranteed Minimum Standards?

We score each complaint in the audit sample based on these criteria in order to make a balanced assessment of Scottish Water's complaints handling procedure.

We propose to continue to use these tools to monitor Scottish Water's levels of service to its customers during 2006-10.

16.5 Conclusion

We believe that our framework for monitoring Scottish Water's performance is robust. The introduction of regulatory accounts in 2005 will further strengthen this framework.

We will continue to publish reports on progress made by Scottish Water, in order to inform stakeholders and encourage discussion and debate. These reports will pay particular attention to changes in the level of service provided to customers and will check whether such changes are consistent with any new operating costs claimed by Scottish Water.

16.6 Question for consultation

1. What are respondents' views on our proposed approach to monitoring Scottish Water's performance?

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