

The Strategic Review of Charges 2006-10: The draft determination

Setting an appropriate level of operating costs

volume **6**

**WATER INDUSTRY
COMMISSIONER
FOR SCOTLAND**

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Executive summary

Introduction

In this volume we outline our analysis of the maximum total operating costs that we have allowed for in setting Scottish Water's maximum charges in the draft determination. This maximum total allowed for operating cost includes both 'base' operating costs (those costs required to deliver the current level of service) and 'new' operating costs (those costs that reflect improvements in customer service, public health compliance and environmental performance beyond that assumed in our benchmarking). The resulting profile of operating costs is compared with the experience of the water and sewerage companies south of the border.

The allowed for operating costs have been reduced to reflect the scope for improvement in efficiency. It is important to emphasise that by 'efficiency' we mean delivering the same level of service for less money. Efficiencies, by definition, cannot result in lower levels of service.

It now appears likely that Scottish Water will achieve the target that we set at the last Strategic Review of reducing operating costs to £265 million by the end of the current regulatory control period in March 2006. 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 greatly welcomed.

Background to our assessment of the scope for operating cost efficiency

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

The Annual Return¹ from Scottish Water allows us to analyse operating costs by both function and activity.

This information submission defines functions and activities in the same way as the equivalent Return which the companies in England and Wales submit to Ofwat. The analysis of expenditure by function provides information about how much it costs to provide a particular service. The analysis by activity shows the cost of each activity comprising a service.

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 waste water companies in the UK. These can typically be divided into those that are broadly controllable by management ('internal' factors) and those that can be outside the control of management ('external' factors).

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

- the difficulty of the operating environment (eg population density, topography, types of water source, etc.);
- customer mix;
- customer requirements (issuing bills, etc.);
- environmental requirements (eg sewage effluent standards);
- 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.

¹ The Annual 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 document 'Our work in regulating the Scottish water industry: Setting out a clear framework for the Strategic Review of Charges 2006-10'.

Factors that are within the control of management would include:

- the organisation's remuneration policy;
- the organisation's policy regarding the use of permanent or temporary employees;
- the organisation's policy regarding the purchasing and stocks of materials and consumables; and
- improvements in productivity.

Our assessment of efficiency also considers the service that is actually provided. Water and waste water undertakers in the UK have to provide a 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 waste water undertaker will carry out the minimum activities necessary to provide the service that customers expect.

We monitor Scottish Water's progress in improving its 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.

Approach to setting allowed for operating costs in the Strategic Review of Charges 2006-10

We have set targets for this draft determination in terms of the total operating expenditure allowed for (excluding depreciation). We have set the total allowed for operating

expenditure at a level that we believe is sufficient for Scottish Water to carry out its operations for each year of the regulatory control period and to meet all of the 'essential' and 'desirable' objectives of the Scottish Ministers. Figure 1 summarises how we have calculated the allowed for level of operating costs.

Figure 1: The calculation of the allowed for level of operating costs

Total allowed for operating expenditure	=
Baseline operating expenditure ²	±
Assessed changes in baseline operating expenditure	-
Efficiencies in baseline operating expenditure ³	+
New operating expenditure ⁴	-
Efficiencies on new operating expenditure	+
Public Private Partnership (PPP) operating expenditure	+
The impact of annual inflation on all of these components	+

We will review baseline operating expenditure, new operating costs and the scope for efficiency in turn.

Establishing a baseline for operating costs

The baseline level of operating costs is the expenditure incurred in the base year for this draft determination. We assess the scope for efficiency savings, and monitor performance against the baseline.

For each regulatory control period we need to identify one base year. We then monitor performance in each year of the regulatory control period against the level of service delivered in that base year. We have decided to use 2003-04 as the base year for this draft determination. This should make our monitoring more transparent and it should better reflect Scottish Water's current operating environment since it uses the most up-to-date operating costs available.

We have used information from Scottish Water's regulatory accounts for 2003-04 and the Annual Return 2004 to calculate the level of baseline operating costs in 2003-04.

² See Chapter 6 for more detail on the calculation of baseline operating costs and any necessary adjustments.

³ See Chapters 8, 9 and 10 for more detail on the calculation of the efficiency gap.

⁴ See Chapter 7 for more detail on new operating costs.

To establish the level of baseline operating costs for 2003-04 we:

- take reported core costs;
- adjust for atypical costs (or savings);
- remove exceptional costs; and
- ensure that cost allocation practices are consistent with those in England and Wales.

The baseline expenditure calculations are illustrated in Table 1.

Table 1: Calculation of base operating expenditure 2003-04

		£m
Water operating expenditure		£198.4m
Less:	PPP costs	£0.0m
	Exceptionals	£31.7m
		<u>£166.7m</u>
Sewerage operating expenditure		£262.4m
Less:	PPP costs	£111.5m
	Exceptionals	£21.2m
		<u>£129.8m</u>
Atypicals		0
Capitalisation adjustments		0
Base operating expenditure		<u><u>£296.5m</u></u>

This adjusted total operating expenditure forms the baseline for this draft determination. We expect that the new Commission will update our analysis of baseline expenditure to 2004-05 in the final determination.

Our baseline for operating costs has also taken account of potential changes in costs during the regulatory control period. We take account of any such potential changes that can be outside the control of management and not reflected in consumer price inflation. Examples of such changes include:

- non-domestic rates;
- pension costs; and
- energy costs.

We have analysed these factors carefully to ensure that Scottish Water has sufficient resources to deliver an appropriate level of service.

In its second draft business plan, Scottish Water claimed that it faced a number of unavoidable increases in operating costs, as shown in Table 2.

Table 2: Unavoidable operating cost increases claimed in Scottish Water's second draft business plan (2003-04 prices)

Factor:	Claimed costs			
	2006-07	2007-08	2008-09	2009-10
Non-domestic rates	£4.2m	£5.7m	£7.3m	£7.3m
Pension costs	£5.1m	£5.1m	£5.1m	£5.1m
Energy costs	£2.4m	£2.4m	£2.4m	£2.4m
Bad debt	£4.5m	£10.8m	£19.5m	£30.2m
Retail business operating costs	£2.5m	£3.4m	£8.6m	£8.7m
Other costs eg the landfill tax	£1.6m	£1.9m	£2.2m	£2.5m
SEPA	£4.6m	£4.6m	£4.6m	£4.6m
Total	£24.9m	£33.8m	£49.6m	£60.8m

We have analysed Scottish Water's claims carefully. We have allowed for the additional baseline operating costs included in Table 3.

Table 3: Allowed for additions to base operating cost 2006-10

Combined service				
Factor:	Allowed for costs (2003-04 prices):			
	2006-07	2007-08	2008-09	2009-10
Non-domestic rates	£3.8m	£5.2m	£6.7m	£6.7m
Pension costs	£5.1m	£5.1m	£5.1m	£5.1m
Energy costs	£1.0m	£1.0m	£1.0m	£1.0m
Bad debt	£0.0m	£0.0m	£0.0m	£0.0m
Retail business operating costs	£0.0m	£0.0m	£0.0m	£0.0m
Other costs eg the landfill tax	£0.0m	£0.0m	£0.0m	£0.0m
SEPA	£0.0m	£0.0m	£0.0m	£0.0m
Reporter	£0.3m	£0.3m	£0.3m	£0.3m
Total	£10.2m	£11.6m	£13.1m	£13.1m

Table 4 summarises the baseline that we have established.

Table 4: Summary of the operating cost baseline 2006-10

	2006-07	2007-08	2008-09	2009-10
Base operating costs (water)	£166.7m	£166.7m	£166.7m	£166.7m
Increase in operating costs – water	£7.5m	£8.9m	£10.4m	£10.4m
Base operating costs – waste water	£129.7m	£129.7m	£129.7m	£129.7m
Increase in operating costs – waste water	£2.8m	£2.8m	£2.8m	£2.8m
Total base operating costs	£306.7m	£308.1m	£309.6m	£309.6m

New operating costs

During the 2006-10 regulatory control period, Scottish Water will incur new operating expenditure to deliver improvements in:

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

We are interested specifically in the net new operating expenditure. Net new operating expenditure is best illustrated with an example.

New legislation requires a water and waste water undertaker to achieve higher standards of effluent discharge. A waste water treatment works is already in place, but the treatment processes employed will not meet the new required standards so the plant needs to be replaced. Currently, the works incurs £50,000 a year in operating expenditure. The new compliant treatment processes will incur £75,000 a year in operating expenditure. The new operating expenditure is the difference between the post-investment level of operating expenditure and the pre-investment level (ie £75,000 less £50,000). Net new operating expenditure is therefore £25,000 per year.

New operating expenditure can place an upward pressure on customers' bills. It is therefore important that Scottish Water provides a clear justification for any new operating

costs that it expects to incur, and that any claims for new operating expenditure undergo careful scrutiny. Customers should not be expected to pay for unnecessary or inefficient levels of new operating expenditure.

In its second draft business plan, Scottish Water submitted a total claim for new operating expenditure of £37 million by 2009-10, before efficiencies. This is set out in Table 5.

Table 5: Scottish Water's claimed new operating expenditure (pre-efficiency) 2006-10

	2006-07	2007-08	2008-09	2009-10
Water	£0.9m	£4.2m	£6.3m	£28.1m
Waste water	£1.9m	£3.3m	£5.1m	£9.1m
Total	£2.8m	£7.5m	£11.4m	£37.2m

We have assessed Scottish Water's claim in detail. Our analysis has shown that there are several reasons why less new operating expenditure should be allowed for. One of the most significant of these is that the companies in England and Wales in 2003-04 were already delivering enhanced water quality standards and, as such, this cost is already included in our benchmarking of relative efficiency. Moreover, our review of the capital programme has suggested that many of the proposed solutions are over-scoped and were likely to incur higher operating costs than necessary.

Our analysis has also indicated that Scottish Water should incur lower new operating costs for waste water. This reflects our investment review and an analysis of the expected completion dates of projects.

We have concluded that we should allow for annual new operating expenditure of £12.2 million (in 2003-04 prices) by 2009-10. This is detailed in Table 6.

Table 6: Allowed for level of new operating expenditure (pre-efficiency) 2006-10⁵

	2006-07	2007-08	2008-09	2009-10
Water	£0.2m	£0.6m	£1.4m	£6.9m
Waste water	£0.9m	£2.3m	£3.3m	£5.4m
Total	£1.1m	£3.0m	£4.7m	£12.2m

⁵ Totals may not add exactly due to rounding.

Establishing the operating cost efficiency gap – the Ofwat models

We used the Ofwat econometric models to compare Scottish Water's performance against that of the companies in England and Wales.

Ofwat uses a top-down approach to benchmarking the English and Welsh companies and setting efficiency targets. It employs econometric modelling, a method that uses regression analysis 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 and Professor Mark Stewart of the University of Warwick developed these econometric models in the early 1990s. In January 2005, Ofwat⁶ published the models that it used for its 2004 final determination. The models are broadly similar to those published by Ofwat in January 1999.

The purpose of each model is to establish a relationship between the costs reported by the companies and external cost drivers. These cost drivers have a significant impact on costs but are outside the control of the management of the company.

The models take different forms and are summarised in Table 7.

Table 7: 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 BOD5.
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.

⁶ A revised suite of models was originally published in January 2004, but these were subsequently revised in light of the companies' June 2004 submissions.

⁷ Davidson 'Ofwat Efficiency Assessments Using Econometric Models: A comment', 1999 and Montgomery Watson 'Water distribution cost drivers', 1999.

Criticisms of the models

As part of its first draft business plan, Scottish Water submitted a number of papers by academics and consultants criticising the Ofwat econometric models. The majority of the papers submitted by Scottish Water were written for the water and sewerage companies in England and Wales or Water UK, the industry trade body. These papers were submitted to Ofwat, two of them at the 1999 price review⁷ and the remainder in the run up to the 2004 price review. Only one paper specifically addresses the use of econometric models in Scotland.

The criticisms that we consider are relevant to our analysis of Scottish Water's relative efficiency are as follows:

- The choice of explanatory factors and type of model.
- The use of ordinary least squares (OLS) regression, as opposed to other methods of assessing relative efficiency.
- The assumption that the residual represents inefficiency only and that this can then be used to set efficiency targets for the water and sewerage companies.
- The application of models to Scottish Water that were derived using information from the companies south of the border.

We address each of the criticisms in turn.

The most common criticism of the models is that they do not accurately reflect the true cost drivers in the water and sewerage industry. Ofwat has consulted with the companies south of the border and has tested alternative models. Ofwat provided information to the companies on these alternatives, but concluded that any improvement in the explanatory power of the model was insufficient to justify a move away from the original model.

A number of commentators have criticised Ofwat's use of OLS regression to assess relative efficiency. Ofwat

commissioned Europe Economics to consider alternatives to the OLS approach. Europe Economics used data envelopment analysis and stochastic frontier analysis. Ofwat noted that although the results of the alternative approaches were different in a number of respects, the overall picture was similar and in most cases there was a high degree of correlation between the results of all three methods⁸.

The third key criticism of the models is that the residual from the econometric analysis should not be interpreted wholly as representing efficiency. In a report for Water UK⁹, Professor John Cubbin breaks the residual down between six factors: omitted variables, poor proxy, sampling error, measurement error, mathematical form and efficiency. The author carried out his analysis for each of the nine operating expenditure models and the nine capital maintenance expenditure models. He concluded that for the operating expenditure models, efficiency accounts for around 40% of the residual on the water service and around 50% of the residual on the sewerage service.

Ofwat reviewed the paper and concluded that uncertainties of this scale are unlikely under normal operating circumstances¹⁰. Several elements of the approach should allay Scottish Water's concerns regarding the results of the econometric models. We have followed Ofwat's lead in recognising the potential for errors in information and have adjusted the residuals downwards to reduce the impact of these errors. We have adjusted the water service residual by 10% and the sewerage service residual by 20%. We also take into account company-specific factors, which may reduce a company's residual by a significant amount.

Professor Cubbin has examined each of the Ofwat models in detail and set out reasons why he thinks the models are less suitable for application to Scottish Water. These reasons appear to relate to differences between the operating environment in Scotland and in England and Wales. Table 8 sets out the operational factors which he believes have an impact on each of the models.

Table 8: Issues raised by Professor Cubbin regarding the use of Ofwat's econometric models to calculate Scottish Water's relative efficiency

Model	Issues
Water distribution	Rurality: travel costs, electricity, number of service reservoirs
Water resources and treatment	Sources; size of treatment plant; raw water quality
Water power	Electricity distribution costs; non-pumping costs
Water business activities	Cryptosporidium testing; bad debt
Sewer network	Lateral sewers; possibly age and condition of assets
Large sewage treatment works	Possibly electricity costs
Small sewage treatment works	Very small works; deep rural effect; possibly septic tanks effect
Sludge treatment and disposal	Sparsity; specialised sludge treatment works
Sewerage business activities	Bad debt

Almost all of these potential problems were included as special factors in Scottish Water's submission.

Scottish Water's efficiency

We set out the results of our analysis of Scottish Water's efficiency in 2003-04 in Table 9. We present our results for the water and sewerage services separately.

The econometric models generate a series of efficiency scores (the residuals in the statistical analysis). We compare these residuals in order to establish the relative efficiency of Scottish Water and the companies south of the border.

We adjust the efficiency scores such that the average score in England and Wales is 100. These results do not take into account residual adjustments, any special factors or differences in the level of service provided to customers.

Table 9: Scottish Water's efficiency scores 2003-04

	Efficiency score
Water service	112
Sewerage service	130

⁸ Ofwat, 'Water and sewerage service unit costs and relative efficiency: 2001-02 report', December 2002.

⁹ Professor John Cubbin, 'Assessing Ofwat's efficiency econometrics', March 2004.

¹⁰ Ofwat, 'Future water and sewerage charges 2005-10: Final determinations', December 2004.

The efficiency gap is calculated as follows: using the average water service as an example, Scottish Water's efficiency score is 112 and that of the average is 100. The gap is calculated as $((112-100)/112)*100$.

The benchmark company for the water service in England and Wales was Wessex Water. For the sewerage service, the benchmark company was Yorkshire Water.

Table 10 shows that the efficiency gap between Scottish Water and the benchmark companies is around 30%.

Table 10: Scottish Water's efficiency gaps

	Efficiency gap
Average – water service	11%
Wessex – water service	30%
Yorkshire – water service	26%
Average – sewerage service	23%
Wessex – sewerage service ¹¹	39%
Yorkshire – sewerage service	34%
Average – combined	16%
Wessex – combined	34%
Yorkshire – combined	29%

We have applied the Ofwat residual adjustments in assessing Scottish Water's relative efficiency. Table 11 shows that even after the adjustments to the residuals, the efficiency gap between Scottish Water and the average in England and Wales is around 14%. The gap between Scottish Water and the benchmark companies in England and Wales is around 25%.

Table 11: Scottish Water's efficiency gaps after adjustments of the residuals

	Efficiency gap
Average – water service	10%
Wessex – water service	28%
Yorkshire – water service	23%
Average – sewerage service	19%
Wessex – sewerage service	33%
Yorkshire – sewerage service	29%
Average – combined	14%
Wessex – combined	30%
Yorkshire – combined	26%

Establishing the operating cost efficiency gap – the modified Ofwat models

We repeated our econometric analysis using recalculated versions of Ofwat's models. We have reworked the Ofwat models to include information from Scottish Water in 2003-04. We excluded information about the costs, customers served and asset bases of Scottish Water's PPP contracts. We recognise that Scottish Water cannot control the operating costs at PPP works.

The results of our analysis are shown in Table 12. This table also includes the results of our original analysis using the Ofwat models. We show Scottish Water's relative efficiency in the water service and sewerage service separately.

Table 12: Results of our relative efficiency modelling

	Efficiency score – Ofwat models	Efficiency score – extended models
Water service	112	112
Sewerage service	130	127

Scottish Water's level of efficiency appears slightly better when we use the modified models. Table 13 shows the efficiency gap between Scottish Water and the average in England and Wales and between Scottish Water and the two benchmark companies. Table 13 also includes the results of our analysis using the unadjusted models. Table 13 shows that the efficiency gap between Scottish Water and the benchmark companies is still around 30%, even when we use the modified models.

¹¹ The reason that there is a larger efficiency gap to Wessex than Yorkshire on the sewerage service is that at this stage in our analysis, we have not taken into account either special factors or pension adjustments.

Table 13: Scottish Water's efficiency gaps

	Efficiency gap – Ofwat models	Efficiency gap – extended models
Average – water service	11%	11%
Wessex – water service	30%	30%
Yorkshire – water service	26%	26%
Average – sewerage service	23%	21%
Wessex – sewerage service	39%	38%
Yorkshire – sewerage service	34%	33%
Average – combined	16%	15%
Wessex – combined	34%	33%
Yorkshire – combined	29%	29%

Table 14 shows that, even after the adjustments to residuals, the efficiency gap between Scottish Water and the average in England and Wales is around 14%. The gap between Scottish Water and the benchmark companies in England and Wales is around 25% to 30%.

Table 14: Scottish Water's efficiency gaps after residual adjustments

	Efficiency gap – Ofwat models	Efficiency gap – extended models
Average – water service	10%	10%
Wessex – water service	28%	27%
Yorkshire – water service	23%	23%
Average – sewerage service	19%	18%
Wessex – sewerage service	33%	32%
Yorkshire – sewerage service	29%	28%
Average – combined	14%	13%
Wessex – combined	30%	29%
Yorkshire – combined	26%	25%

Establishing the operating cost efficiency gap – our alternative model

In line with the approach of the Competition Commission, we have developed an additional model to assess the scope for efficiency using a different approach¹².

We originally developed the alternative model as part of the Strategic Review of Charges 2002-06. Our

alternative model represents a useful check on the results of the econometric modelling.

In preparation for this draft determination we reviewed both the cost drivers included in, and the structure of, the model. We developed two versions; one which used information from the ten water and sewerage companies in England and Wales; and a second, which also includes management information from Scottish Water.

We have used both versions of the alternative model to assess Scottish Water's relative efficiency. Both versions use a fundamentally different approach to Ofwat's econometric models.

The results of our analysis are set out in Table 15. This table includes the results of our analysis for both versions of the alternative model. It includes the results for the water and sewerage services separately.

Table 15: Scottish Water – analysis of performance using the alternative model

	Efficiency score – England & Wales based alternative model	Efficiency score – alternative model including Scottish Water
Water service	110	115
Sewerage service	130	129

The results of this analysis suggest that the absolute performance of Scottish Water appears to be slightly worse when we use the alternative model, although the difference is not significant. However, our analysis focuses on Scottish Water's efficiency relative to the companies in England and Wales. Table 16 shows the efficiency gap between Scottish Water, the average in England and Wales and the two benchmark companies – Wessex Water on the water service and Yorkshire Water on the sewerage service¹³. Table 16 also shows the results of our analysis using the revised Ofwat econometric models¹⁴.

¹² The Competition Commission's consideration of the price limits for Mid Kent Water and Sutton & East Surrey Water in 2000.

¹³ Ofwat identified Wessex Water and Yorkshire Water as its chosen benchmark companies in its 'Water and sewerage service unit costs and relative efficiency 2003-2004 report'.

¹⁴ The results of the econometric models include adjustments to residuals, described in Chapter 8.

Table 16: Scottish Water's efficiency gap

	Efficiency gap – revised Ofwat econometric models	Efficiency gap – alternative model including Scottish Water
Average – water service	10%	13%
Wessex – water service	27%	39%
Yorkshire – water service	23%	24%
Average – sewerage service	18%	22%
Wessex – sewerage service	32%	39%
Yorkshire – sewerage service	28%	40%
Average – combined	13%	17%
Wessex – combined	29%	39%
Yorkshire – combined	25%	31%

The results set out in Table 16 show that Scottish Water's relative performance appears to be worse for both the water service and the sewerage service when we assess its performance using the alternative model. The difference is smaller when we look at the relative performance for both water and sewerage together.

Adjustments to our models for special factors

Our approach to benchmarking is top down. It looks at the overall level of costs that Scottish Water incurs and compares this with the costs incurred by the companies south of the border. The approach recognises that costs are influenced by the conditions in which a company operates. It measures the impact of factors that are outside the control of managers on the level of costs incurred.

It is not possible to include every factor that may have an impact on companies' costs. Even if we could identify every factor that influences a company's costs, such an approach would be impractical. The models would become too complex and many of the factors are likely to add little to our understanding.

We are keen that our analysis is as complete as possible and compares like with like. It is important, therefore, that we identify any special factors that affect Scottish Water's operating costs (either causing them to be higher or lower) that are not captured by our models. We asked Scottish Water to draw such factors to our attention.

In assessing special factors for Scottish Water we used the same approach as Ofwat uses for the companies in England and Wales. Scottish Water had to provide evidence in the following areas in order to justify a special factor¹⁵.

1. What is the justification of the special circumstances that demonstrate a material difference from industry norms? Scottish Water has to have explained how the special 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.
2. What is the quantification of the impact of the special factors that demonstrate a net additional effect on Scottish Water's costs over and above that which would be incurred without these factors?
3. What has Scottish Water done to manage the additional costs arising from the special factors and to limit their impact?
4. 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?

Scottish Water provided us with three submissions which claim that special factors result in higher operating costs than those predicted by our econometric models. The three submissions are:

- Scottish Water special factors submission accompanying the Annual Return, June 2004;
- special factors submitted with Scottish Water's first draft business plan, October 2004; and
- special factors submitted with the second draft business plan, April 2005.

¹⁵ These questions are adapted from Ofwat's letter to Regulatory Directors, RD35/98, 1998, available at: www.ofwat.gov.uk.

Annual Return June 2004

Scottish Water provided its initial evidence on special factors in its Annual Return of June 2004. Scottish Water argued that the following special factors caused it to incur a higher level of operating expenditure than could be justified by our benchmarking.

Geographical

- **Travel costs:** Due to the size of Scottish Water's service area, employees working on the assets have to travel long distances. In addition, personnel from areas such as customer service and business, laboratory 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 with the companies south of the border.
- **'Flashy'¹⁶ supplies:** Scottish Water claimed 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 claimed 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 indicated that it had to transport sludge greater distances than is the norm in England and Wales (from small rural areas to dedicated sludge treatment centres).

Asset base

- **Leakage:** Scottish Water argued that it has inherited an asset base with a leakage rate that is much higher than in England and Wales. It asserts that this has an

impact on costs (due to the need to treat relatively more water per inhabitant) which the model does not take into account.

Economic

- **Household bad debt, billing and metering:** Scottish Water argued 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 that are outside its control.
- **Purchase of materials:** Scottish Water claimed 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). In England and Wales these are the responsibility of the customer.
- **Freedom of Information Act:** Scottish Water argued that it has to comply with the Freedom of Information Act, whereas the privatised water and sewerage companies do not.
- **Queries from politicians:** Scottish Water argued that as a public body it receives a larger number of enquiries from politicians than the companies in England and Wales so incurs additional costs in this area.
- **Removal of phosphorus and nitrates:** Scottish Water indicated that it has to incur higher costs to remove phosphorus and nitrates from sewage effluent than the companies south of the border. This is due to tighter consent conditions imposed by the Scottish Environment Protection Agency (SEPA).
- **Cryptosporidium standards:** Scottish Water argued that the sampling requirement for cryptosporidium imposed by the Drinking Water Quality Regulator

¹⁶ 'Flashy' conditions are where a greater than or equal to a four-fold change in colour in a 12-hour period can occur.

(DWQR) is greater than the sampling programmes undertaken by the water and sewerage companies. This leads to additional costs.

First draft business plan (October 2004)

Scottish Water provided a 'First draft special factors submission' with its first draft business plan. This set out a revised view of the special factors that might apply to Scottish Water.

It repeated many of the special factors suggested in June 2004. In some cases it provided additional evidence to support particular special factors. Scottish Water also identified some new special factors and withdrew others that it now considered to be immaterial. The new factors were as follows:

- **Central regulatory laboratory:** Scottish Water argued that the cost of its central regulatory laboratory is an additional operating cost that is not allowed for in the benchmarking models. This reflects the fact that in England and Wales the capital costs would be included within the current cost depreciation charge. In Scotland, the long-term financing arrangements for the laboratory mean that the cost is included within operating costs.
- **Service reservoirs and water towers:** Scottish Water argued that it has proportionately far more service reservoirs and water towers than the average for companies in England and Wales. It argued that this reflects the sparse population distribution, Scotland's topography and the assets it inherited from the former water authorities.
- **Waterworks sludge disposal:** Scottish Water argued that it faces an additional cost due to the need to dispose of waterworks sludge to landfill rather than farmland. Scottish Water explained that it is not exempt from the Waste Management Licensing Regulations, unlike the companies in England and Wales.

In its first draft business plan, Scottish Water explained that it had undertaken further analysis and now

considered that the following factors were not sufficiently material to be considered:

- the additional costs associated with the high number of small treatment works;
- the additional costs associated with sludge treatment; and
- the costs of removing phosphorus and nitrates.

Second draft business plan (April 2005)

Scottish Water further revised and developed its claim for special factors in its second draft business plan. There were no changes to the operating expenditure special factors. Scottish Water did propose two new special factors that affected its level of capital maintenance expenditure. These special factors related to water resources and treatment, and service reservoirs.

Scottish Water's assessment (in 2003-04 prices) of the impact of special factors on its benchmarked annual operating expenditure changed only marginally between the first and second draft business plans. This is shown in Table 17.

Table 17: The annual financial impact of special factors (2003-04 prices)¹⁷

Special factor	October 2004 submission	April 2005 submission
OPERATING EXPENDITURE		
Inherited asset base		
Inherited asset base		
Leakage	£7.8m	£9.8m
Central regulatory laboratory	£0.7m	£0.7m
Geography and environment		
Travel costs	£16.8m	£11.4m
Service reservoirs and water towers	£1.9m	£2.1m
Electricity	£4.6m	£4.7m
Supply of materials to rural locations	£0.5m	£0.5m
Bad debt	£7.8m	£7.3m
Legal		
Sewer laterals	£10.0m	£11.7m
Waterworks sludge disposal	£2.3m	£2.3m
Political queries	£0.3m	£0.3m
Cryptosporidium	£1.7m	£2.0m
Operating expenditure total	£54.4m	£52.7m
CAPITAL MAINTENANCE EXPENDITURE		
Water resources and treatment	-	£17.4m
Service reservoirs	-	£1.0m
Capital maintenance total	-	£18.4m
TOTAL	£54.4m	£71.1m

Scottish Water has claimed that there are 11 special factors which increase its operating costs and which are not taken into account by the econometric models. It has also claimed that there are two special factors that increase its capital maintenance costs. We reviewed each of these special factors in detail.

Our response to claims of special factors

We found that some of the claims for special factors are either not material or are not outside managerial control. However, we have accepted some of the special factors that Scottish Water identified and have made appropriate adjustments to our benchmarking.

We have found no evidence to support the claim for an adjustment to benchmarked capital maintenance costs. In the case of operating expenditure, benchmarked costs have been adjusted by £17.4 million per annum in 2003-04 prices. Our response is detailed in Table 18.

Table 18: Summary of our response to special factors

Special factor	Our response	Allowance made
OPERATING EXPENDITURE		
Inherited asset base		
Leakage	No allowance	
Central regulatory laboratory	Re-categorisation of central regulatory laboratory costs	£0.7m
Geography and environment		
Travel costs (including supply of materials to rural locations)	Partial allowance	£6.5m
Service reservoirs and water towers	No allowance	
Electricity	Partial allowance	£2.0m
Bad debt	Partial allowance	£2.6m
Legal		
Sewer laterals	Partial allowance	£3.9m
Waterworks sludge disposal	Partial allowance	£0.9m
Political queries	No allowance	
Cryptosporidium	No allowance	
Other		
Public septic tanks	Partial allowance	£0.8m
Operating expenditure total allowance		
CAPITAL MAINTENANCE EXPENDITURE		
Water resources and treatment	No allowance	
Service reservoirs	No allowance	
Capital maintenance total allowance		
TOTAL ALLOWANCE		£17.4m

This includes a small allowance for public septic tanks that was not requested by Scottish Water.

Adjustments for differences in the scope of activities

We now have much better information about Scottish Water's activities and about the quality of service it provides. In this draft determination we have taken account of both of these in assessing the scope for improvement in Scottish Water's efficiency.

In England and Wales the companies provide a broadly equivalent level of service to their customers. The scope of activity each company provides is also comparable. In general, therefore, Ofwat does not have to adjust the result of its models to reflect any differences in the scope of activities or the level of service between companies.

¹⁷ Totals may not add exactly due to rounding.

In Scotland, by contrast, the scope of activities and the levels of service provided to customers are different from that provided in England and Wales. Such differences matter to customers, impacting not only on the service they receive, but also on the charges they pay.

The scope of Scottish Water's activities is in large part a function of the history of the water and waste water industry in Scotland.

Activities where the scope of activity in Scotland is greater

- Scottish Water is responsible for lateral sewers (sewer pipes connecting properties to main sewers). In England and Wales most lateral sewers are the responsibility of customers.
- Scottish Water is responsible for public septic tanks. These are common in Scotland but rare in England and Wales.

Activities where the scope of activities in Scotland is smaller

- Around one-quarter of all households in England and Wales are metered, compared with only around 0.03% in Scotland, thus adding to the cost of support activities such as meter reading.
- Sophisticated water treatment processes to remove agricultural nitrate and pesticide pollution are much more commonly required in England and Wales than in Scotland.
- 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.
- Reporters are used in Scotland and in England and Wales to scrutinise the regulatory returns. In Scotland the Scottish Executive pays for the Reporter. In England and Wales the companies meet these costs.

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 these differences.

We have used Yorkshire Water as a comparator company for both water and waste water. We reduce Yorkshire Water's operating costs to reflect its implied level of costs if it engaged in the same scope of activities as Scottish Water. This widens the efficiency gap, and suggests that there is greater scope for efficiency¹⁸.

Our analysis of differences in the scope of activities enables us to draw more accurate conclusions about Scottish Water's relative performance. In Tables 19 and 20 we summarise the adjustments we have made to reflect differences in scope.

Table 19: Summary of adjustments to the allowed for operating expenditure for differences in the scope of activities for the water service¹⁹

Water activity	Effect on Scottish Water's allowed for operating costs	Value of adjustment to Yorkshire Water's operating costs
Household metering	Decrease	£1.9m
Non-household metering	Decrease	£0.3m
Leakage	Decrease	£6.8m
Nitrate removal	Decrease	£1.6m
Legal duty to promote efficient water use	None	Immaterial
Reporter costs	Decrease	£0.15m
Total	Decrease	£10.8m

Table 20: Summary of adjustments to the allowed for operating expenditure for differences in the scope of activities for the waste water service²⁰

Waste water activity	Effect on Scottish Water's allowed for operating costs	Value of adjustment to Yorkshire Water's operating costs
Household metering	Decrease	£1.9m
Non-household metering	Decrease	£0.3m
Reporter costs	Decrease	£0.15m
Total	Decrease	£2.3m

The adjustments represent approximately 11.3% of Yorkshire Water's modelled water operating cost. This

¹⁸ We have also examined the impact on Wessex Water – the other leading comparator company. The impact on both Wessex Water and Yorkshire Water is very similar.

¹⁹ Totals may not add exactly due to rounding.

²⁰ Totals may not add exactly due to rounding.

has the effect on the efficiency gap as shown in Table 21. In our base year, 2003-04, these adjustments resulted in an efficiency gap of 32% for the water service and 24% for the waste water service.

Table 21: Adjusted modelled answers

	Water ²¹	Waste water ²²
Initial gap	27%	28%
Gap after special factors	25%	23%
Gap after scope	32%	24%

The level of service provided by Scottish Water

It is essential that Scottish Water does not seek to live within its charge cap by reducing the level of service it provides to customers. We have therefore set milestones for improvements in customer service.

We plan to use benchmarking to monitor the level of customer service provided by Scottish Water. We can use the overall performance assessment (OPA) framework developed by Ofwat, and information from the companies south of the border, to monitor both Scottish Water's absolute and relative performance. We have not adjusted our calculation of the scope for efficiency to reflect the difference in levels of service.

We had intended to make similar adjustments to Scottish Water's operating costs to reflect the difference in the level of service provided. Unfortunately, Scottish Water did not provide the necessary information that we had requested in our business plan guidance.

As a result we have set milestones for improvement in the OPA.

The OPA depends on each company's performance in each of 15 individual performance measures. We can also compare performance for each individual measure.

We have included as many of the measures that are used by Ofwat as possible in our assessment of the OPA score for Scottish Water. Table 22 sets out the measures that we have included.

Table 22: Components of the OPA assessment

OPA component	Included or not	Basis and comparability
Inadequate pressure	Included	Actual performance, equivalent measure
Supply interruptions	Included	Actual performance, equivalent measure
Hosepipe restrictions	Included	Assumed performance
Drinking water quality	Included	Actual performance, some difference in definition of measure
Sewer flooding (overloaded sewers)	Included	Actual performance, equivalent measure
Sewer flooding (other causes)	Included	Actual performance, equivalent measure
Sewer flooding (at risk)	Included	Actual performance, equivalent measure
Company contact (3 out of 4 measures)	Included	Actual performance, equivalent measure
Assessed customer service	Not included	
Sewage treatment works compliance	Included	Actual performance, equivalent measure
Category 1 & 2 pollution incidents (sewerage)	Not included	
Category 3 pollution incidents (sewerage)	Not included	
Category 1 & 2 pollution incidents (water)	Not included	
Leakage	Included	Assumed performance

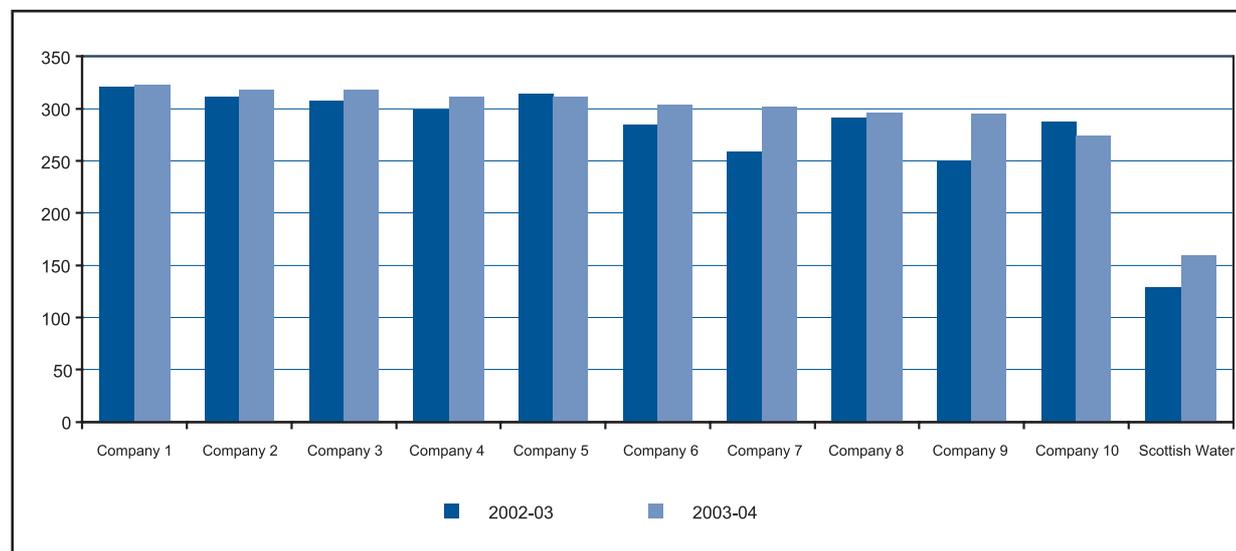
Scottish Water's OPA score for 2003-04 is 159. Figure 2 compares this with the equivalent scores for the water and sewerage companies in England and Wales²³.

²¹ The gap for the water service is with respect to Wessex Water.

²² The gap for the waste water service is with respect to Yorkshire Water.

²³ Adjusted to reflect the parameters, which we are able to measure on an equivalent basis in Scotland.

Figure 2: OPA scores for 2002-03 and 2003-04 – water and sewerage company measures



Scottish Water's overall performance was relatively poor. It scored 58% of the score of the worst performing company in England and Wales and 49% of the best performing company's score.

Scottish Water clearly has considerable room for improvement in the level of service it provides to its customers. We have set charges in this draft determination such that Scottish Water's customers should expect to see improving service during the regulatory control period. Our assumption is that Scottish Water's performance should be broadly equivalent to that of the companies south of the border by the end of this regulatory control period.

We have set milestones to monitor improvements in the level of service provided by Scottish Water each year. These milestones will help us to gauge whether Scottish Water is making good progress in closing the level of service gap. These milestones will also allow us to confirm that efficiency targets are not being met at the expense of customer service.

Table 23 shows the milestones that we expect Scottish Water to achieve.

Table 23: Milestones for the overall performance assessment

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
OPA	159	159	159	195	232	268	305

Scottish Water's response²⁴ to our second open letter to Ministers²⁵ suggests a misunderstanding of the way that the OPA is calculated. Scottish Water stated: "OPA scores will vary from year to year based on the relative performance with the water companies in England and Wales". In fact, Scottish Water's OPA score will vary only in response to its own customer service performance.

In its response, Scottish Water also suggested that it should be not expected to improve its performance as Ministers had merely required serviceability to be maintained. Such a suggestion overlooks the very significant investment required by Ministers to improve levels of service to customers, remove development constraints and improve public health/environment performance. This investment should result in considerable improvements in Scottish Water's OPA score. We would also emphasise that judicious use of operating costs by Scottish Water could improve its OPA performance quite significantly.

²⁴ Letter dated 2/6/2005, available on our website.

²⁵ Letter dated 10/5/2005, available on our website.

Required improvement in Scottish Water's performance

It is necessary for us to distinguish between the efficiency gap that exists today and the gap that could exist in the future. In its 2004 price review, Ofwat has set prices that require all of the companies south of the border to improve their absolute level of efficiency. It has also identified that there is scope for well-managed companies to out-perform their regulatory contracts.

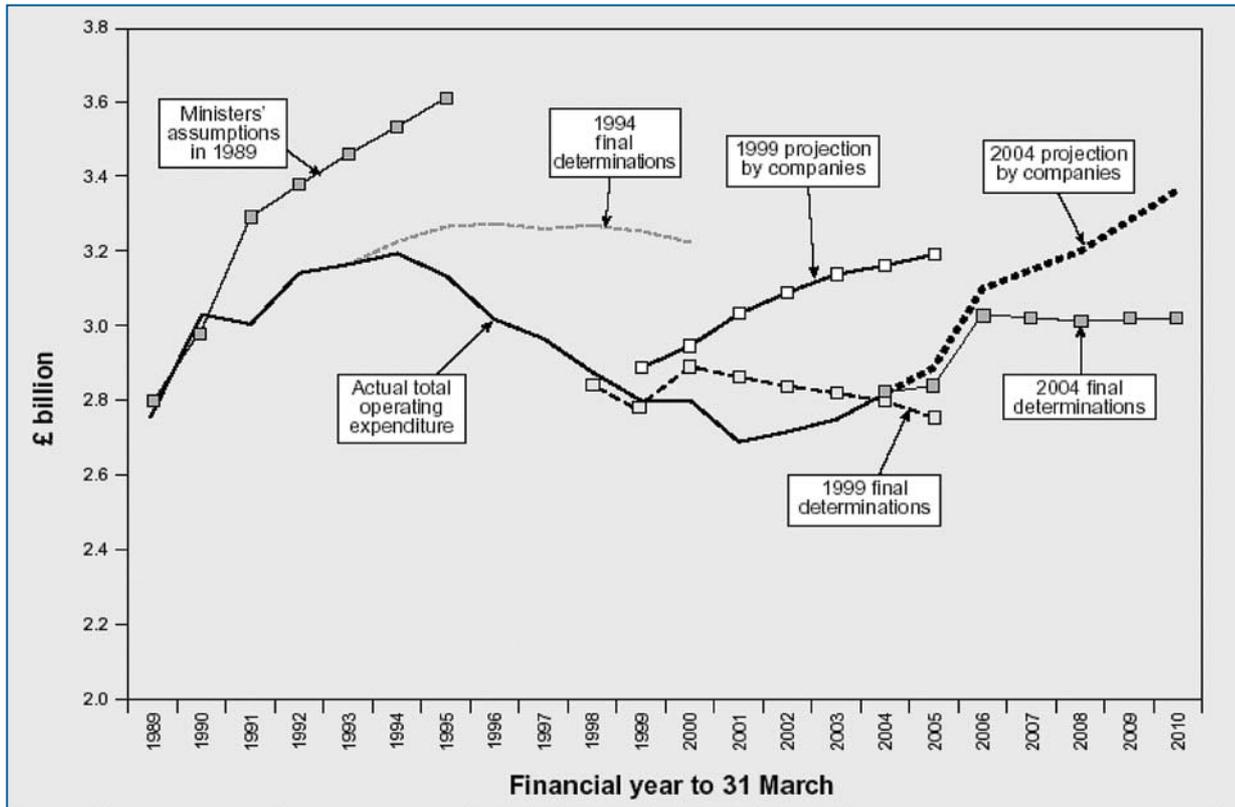
The expectation made by Ofwat when setting prices for the companies south of the border therefore comprises two elements:

- an overall improvement in the efficiency of the industry; and
- a 'catch-up' factor, by which all companies (except of course the leading company) have to narrow the gap to the leading company.

Ofwat set prices that reflected the scope for the industry to improve its efficiency at approximately 0.6% a year for the water service and 1% a year for the sewerage service. It also required companies to narrow 60% of the gap to the frontier company.

The success of the companies south of the border in out-performing their regulatory contracts is illustrated in Figure 3.

Figure 3: Comparison of total operating costs for the water and sewerage industry in England and Wales (2003-04 prices)²⁶

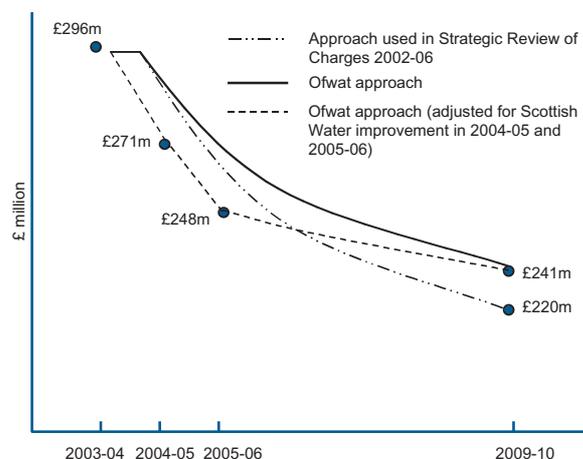


We considered the following four approaches to assessing the scope for Scottish Water to improve:

- retain the approach that we used in the Strategic Review of Charges 2002-06;
- adopt Ofwat's approach using a 2003-04 baseline;
- adopt Ofwat's approach using a 2003-04 baseline, but take account of continuing improvements by Scottish Water in 2004-05 and 2005-06; and
- determine the required pace of improvement that would bring Scottish Water's performance in line with the companies over the period to 2014.

Figure 4 shows the impact of these options on Scottish Water's baseline operating costs.

Figure 4: Scope for improvement in operating costs (in 2003-04 prices)



We decided to adopt the approach that is used by Ofwat, adjusted to take account of the rapid improvement by

²⁶ From Ofwat's 'Water and sewerage service unit costs and relative efficiency 2003-04 report', p10.

Scottish Water that is likely in the last two years of the current regulatory control period. We have accepted Scottish Water's view on its likely improvement over the remainder of this regulatory control period. This assumption affects the level of operating costs that we have allowed for in the earlier years of the regulatory control period. It does not affect the overall closure of the operating cost efficiency gap achieved by 2009-10.

Allowed for level of operating expenditure

The level of operating cost that we have allowed for provides the same scope for Scottish Water to out-perform as Ofwat would normally make available to the companies south of the border. We have allowed for the profile of operating expenditure for the 2006-10 regulatory control period outlined in Table 24.

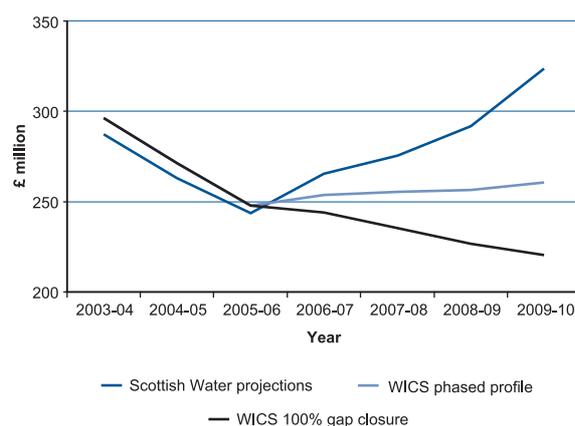
Table 24: Summary of allowed for total operating costs for 2006-10²⁷

		2006-07	2007-08	2008-09	2009-10
	Baseline operating expenditure	£296.5m	£296.5m	£296.5m	£296.5m
Less	Efficiencies in the baseline	£53.0m	£53.8m	£54.7m	£55.6m
Plus	Assessed changes to baseline operating expenditure	£10.2m	£11.6m	£13.1m	£13.1m
Less	Efficiencies in assessed changes to the baseline	£0.9m	£1.4m	£2.1m	£2.6m
Plus	New operating expenditure	£1.1m	£3.0m	£4.7m	£12.2m
Less	Efficiencies in new operating expenditure	£0.1m	£0.4m	£0.9m	£2.9m
Equals	Sub total operating expenditure	£253.9m	£255.4m	£256.6m	£260.8m
Plus	PPP operating expenditure	£116.0m	£116.0m	£117.9m	£121.3m
Plus	Inflation ²⁸ from 2003-04	£22.6m	£30.6m	£39.0m	£48.2m
Equals	Total allowed operating expenditure	£392.5m	£402.0m	£413.5m	£430.3m

In its second draft business plan, Scottish Water said that it would incur a significant increase in its operating costs. Figure 5 illustrates the difference between its forecast level of operating costs and the level of operating cost that we have allowed for. We also show the scope that we believe Scottish Water has to out-perform. The scope for this out-performance has

been calculated with reference to the expected performance of the benchmark companies.

Figure 5: Comparison between the allowed for operating cost, the scope to out-perform and Scottish Water's projection²⁹ (in 2003-04 prices)



Monitoring performance on operating expenditure

Our role as regulator is to set challenging, achievable levels of performance for Scottish Water which promote customers' interests. It is not for us to direct how this performance should be achieved. This is a matter for the board and management of Scottish Water.

It is our role, however, to monitor progress against the minimum acceptable performance levels that we set, 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 control 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.

²⁷ Numbers may not add exactly due to rounding.

²⁸ We have assumed annual inflation of 2% between 2003-04 and 2009-10.

²⁹ We have used Scottish Water's regulatory accounts for 2003-04 to calculate operating expenditure in that year. This figure is higher than that reported by Scottish Water in its business plan submission, which is why our figures for 2003-04 to 2005-06 are higher than Scottish Water's figures.

Section 1: Introduction and background

Chapter 1: Introduction

Introduction

Our core function is to promote the interests of customers and prospective customers of Scottish Water's core business. We do this by ensuring that Scottish Water delivers Ministerial objectives for the lowest reasonable overall cost.

In this volume we assess the level of operating cost that Scottish Water should incur in providing the required level of service to customers. Operating costs have a direct impact on the prices that customers pay. 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 for water treatment.

In this volume we outline our analysis of the maximum total operating costs that we have allowed for in the draft determination. This maximum total allowed for level of operating cost includes both 'base' operating costs (those required to deliver the current level of service) and 'new' operating costs (those costs that reflect improvements in customer service, public health compliance and environmental performance beyond that assumed in our benchmarking). The resulting profile of operating cost is compared to that of the water and sewerage companies south of the border.

We have reduced the allowed for level of total operating costs to reflect the scope for improvement in efficiency. This volume describes in detail how we assessed the scope for efficiency in Scottish Water's operating expenditure. It is important to emphasise that by 'efficiency' we mean delivering the same level of service for less money. Efficiencies, by definition, cannot result in lower levels of service.

In the Strategic Review of Charges 2002-06, we set challenging but achievable efficiency targets for operating costs and capital expenditure. In 2003, we welcomed the solid start made by Scottish Water in improving its operating cost efficiency, but cautioned that more still needed to be done. It now appears likely that Scottish Water will achieve the target of reducing operating costs to £265 million by the end of the current regulatory period in March 2006. 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 greatly welcomed.

The improvement in operating cost efficiency is an undoubted success. However, it is also important to note that operating cost inefficiency still costs the average household in Scotland some £23 per year, or around 8% of the annual bill.

We do not believe that customers of Scottish Water should have to pay higher bills because of the relative inefficiency of the water industry in Scotland

Companies in England and Wales have a strong incentive to out-perform the efficiency targets set by Ofwat. This out-performance increases the total return available to their shareholders. The current efficiency gap is therefore likely to grow unless we set an allowed level of operating costs that takes proper account of the scope for improvement. In December 2004, Ofwat published its final determination of prices for the companies south of the border. This draft determination takes account of Ofwat's final determinations.

This volume contains 15 chapters, presented in three sections:

Section 1 contains two chapters and introduces the volume:

- Chapter 1 is this introduction.
- Chapter 2 provides background information on what is included in operating costs and which factors can influence these costs.

Section 2 contains three chapters. It discusses the lessons learned from the Strategic Review of Charges 2002-06:

- Chapter 3 looks at how we established the levels of operating cost for Scottish Water in the Strategic Review of Charges 2002-06.
- Chapter 4 explains the lessons learned from the last Review.
- Chapter 5 describes our monitoring of Scottish Water's performance during the 2002-06 regulatory control period.

Section 3 contains 10 chapters. This section outlines how we set the allowed for level of operating costs for Scottish Water for the 2006-10 regulatory control period.

- Chapter 6 explains how we established a baseline for Scottish Water's operating costs.
- Chapter 7 assesses new operating costs (those not included in our benchmarking) faced by Scottish Water as a result of improvements in customer service, public health compliance and environmental performance.
- Chapter 8 explains how we have used Ofwat's modelling techniques to assess the operating cost efficiency gap between Scottish Water and the companies in England and Wales.
- Chapter 9 compares the results obtained using a version of the Ofwat models that have been modified to include information from Scottish Water.
- Chapter 10 presents the results of our alternative model for assessing the appropriate level of Scottish Water's operating costs.
- Chapter 11 explains the adjustments we have made to the models to take account of identified special factors that have an impact on Scottish Water's operating costs.

- Chapter 12 outlines how we have taken account of differences in the scope of activities carried out by Scottish Water and the companies south of the border.
- Chapter 13 describes adjustments we have made to take account of differences in the levels of service provided in Scotland and south of the border.
- Chapter 14 explains how we have assessed the scope for improvement in Scottish Water's performance.
- Finally, Chapter 15 summarises our analysis of the scope for efficiency and sets out the operating costs that we have allowed for Scottish Water.

Section 1: Introduction and background

Chapter 2: Background to operating expenditure

Introduction

This chapter begins by outlining how we define operating costs. We then explain the factors that influence operating costs. We distinguish between external factors – which managers may not be able to control – and internal factors. The chapter goes on to explain the increased operating costs that can result from investment to meet new standards of service.

It is important that we set a level of operating expenditure that is sufficient, but no more than sufficient, for Scottish Water to provide customers with an acceptable standard of service. This ensures that operating expenditure is efficiently incurred.

The chapter summarises our approach to setting the level of operating costs that we have allowed for in this draft determination. This includes our assessment of the scope for improved efficiency in operating cost. Our assessment takes full account of the special factors that we believe have an impact on costs in Scotland.

Finally, we review trends in operating costs south of the border, reflecting on the profile of both base and total operating costs. It is clear that performance on operating costs for the water industry as a whole in England and Wales has improved significantly since 1990.

What is operating expenditure?

Operating expenditure comprises day-to-day running costs, as opposed to capital investment or financing costs. Operating expenditure therefore includes employment costs, electricity, materials, hired and contracted costs, local authority rates, insurance, software licences and vehicle running costs. Bad debt is also regarded as an operating cost.

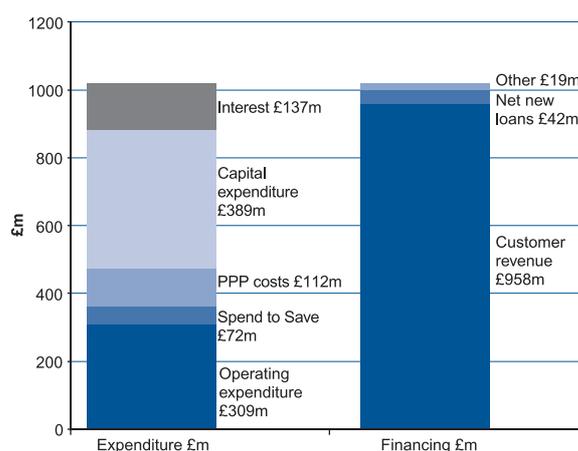
Our definition of operating expenditure is narrower than that which is employed in the statutory accounts of a limited company. We exclude the following items from our analysis of operating expenditure:

- Replacement 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.

Operating expenditure currently accounts for some 30% of revenue. Figure 2.1 shows that in 2003-04, Scottish Water’s operating expenditure was £309 million. This equates to £131 per connected property.

Figure 2.1: Scottish Water expenditure and funding 2003-04



We collect information about the operating costs incurred by the water and waste water service undertakers in the UK.

How we treat operating expenditure in the Strategic Review of Charges 2006-10

The Annual Return³⁰ from Scottish Water allows us to analyse operating costs by both function and activity. This Return defines functions and activities in the same way as the equivalent return which the companies in England and Wales submit to Ofwat. The analysis of expenditure by function provides information about how much 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.

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 of such one-off items 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 for this Strategic Review, 2003-04. We have applied future efficiency targets to this baseline. We have used the following process to set the baseline level of operating costs in this draft determination:

- We used the 2003-04 regulatory accounts and Annual Return information to establish the total level of Scottish Water's operating expenditure in that year.
- We identified exceptional and atypical costs and subtracted them from total operating expenditure. This allowed us to establish the normal ongoing costs of running the business.
- Finally, we assessed whether there was anything unusual about Scottish Water's cost allocation in 2003-04. We compared Scottish Water's cost allocation practices with those of the companies in England and Wales to make sure that they are consistent. This allowed us to establish whether any adjustments to Scottish Water's operating expenditure

³⁰ The Annual 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 document 'Our work in regulating the Scottish water industry: Setting out a clear framework for the Strategic Review of Charges 2006-10'.

were necessary in order to be sure that our comparisons are fair.

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.

These new operating costs are added to the baseline (to the extent that they are not included in our benchmarking).

We used the same criteria to assess the level of new operating costs as we used 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 Scottish Water required to provide this additional level of service, and for what reason?
- Has Scottish Water 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 Scottish Water demonstrated management challenge and control over the proposed costs?
- Has Scottish Water 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?

- Has Scottish Water quantified potential savings to baseline operating expenditure arising from upgrading works or systems, and offset the new operating expenditure accordingly?

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 waste water companies in the UK. These can typically be divided into those that are broadly controllable by management ('internal' factors) and those that are outside the control of management ('external' factors).

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

- difficulty of operating environment (eg population density, topography, types of water source, etc.);
- customer mix;
- customer requirements (eg issuing bills, etc.);
- environmental requirements (eg sewage effluent standards);
- 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 (eg '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 the purchasing and stocks of materials and consumables;
- the organisation's policy regarding hired and contracted services, for example the use of lawyers and consultants;
- improvements in productivity; and
- in the long term, the nature of the assets operated and maintained (size, mix, performance) – over time, water and waste water 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 that external cost drivers can 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.

Our comparisons with other water and waste water companies take full account of how external factors have influenced the actual level of operating expenditure for Scottish Water. The models that we have used are described in more detail in Chapters 8, 9 and 10.

What do we mean by 'efficiency'?

Cutting the costs of providing a service is often confused with efficiency. However, an assessment of efficiency should also consider the service that is actually provided. Water and waste water undertakers in the UK

have to provide a minimum standard of customer 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 waste water 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 standard of 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.

In our second draft business plan guidance we asked Scottish Water to identify any new operating costs that it felt it needed to improve the level of service to customers. Such additional operating costs should be tied to a measurable improvement in customer service performance. Scottish Water did not provide the information that we requested.

Establishing the scope for efficiency

Our process for establishing the scope to improve efficiency involves the following stages:

- Assessing the size of the efficiency gap** – The efficiency gap refers to the difference between Scottish Water’s actual reported operating costs and the costs reported by similar comparator companies for providing a similar level of service.
- Assessing the future efficiency gap** – The efficiency of comparator companies continues to improve. We take account of the way in which the performance of companies south of border is likely to change over the next regulatory control period. Otherwise customers in Scotland would have had to pay more than is necessary.
- Determining a rate of improvement** – We used historical evidence from the English and Welsh companies about the rate of improvement they have achieved in order to determine how quickly Scottish Water should close the efficiency gap.
- Calculating the total allowable operating expenditure** – In this draft determination, we have established a minimum acceptable level of performance in operating expenditure. We have set the maximum allowed for operating expenditure (not including depreciation) at a level that we believe is sufficient for Scottish Water to meet the objectives of Ministers in each year of the regulatory control period.

Operating costs in the water industry in England and Wales

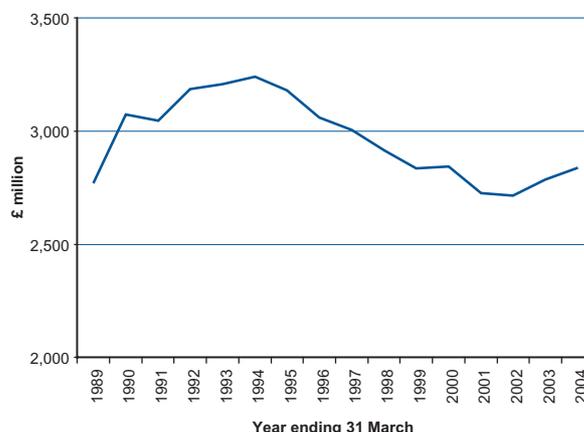
In England and Wales, operating costs have remained broadly unchanged in real terms since privatisation. The companies are, however, operating far more efficiently and delivering a higher level of service through improvements in environmental performance, drinking water quality and customer service.

Trends in operating expenditure

The companies in England and Wales report two operating expenditure figures; one for base service and one for total operating expenditure.

Figure 2.2 details the total operating expenditure for the English and Welsh industry since 1989.

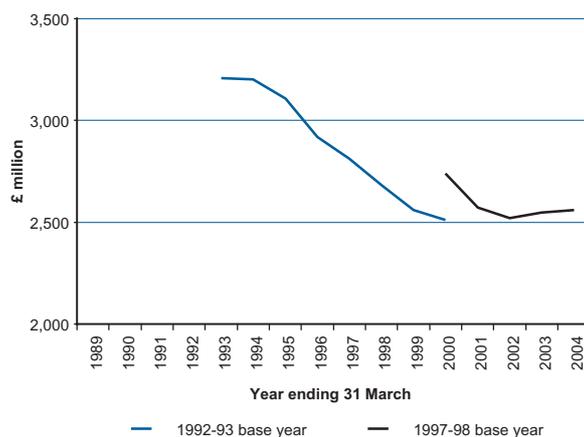
Figure 2.2: Total operating expenditure in the English and Welsh water industry 1989-2004 (in 2003-04 prices)



In Figure 2.3, we demonstrate the relative efficiency gains in adjusted base operating costs that the industry in England and Wales has made since 1989. Ofwat has conducted three price reviews since the privatisation of the industry. The first was in 1994, where 1992-93 was used as a base year for operating expenditure. The second was in 1999, where 1997-98 was used as a base year for operating expenditure. Ofwat’s most recent price review was carried out in 2004 for the regulatory period 2005-10. Operating expenditure for 2004 onwards is not yet available.

Figure 2.3 shows the operating expenditure for the English and Welsh industry using 1992-93 and 1997-98 as base years.

Figure 2.3: Base operating expenditure in the English and Welsh water industry 1993-2004 (in 2003-04 prices)



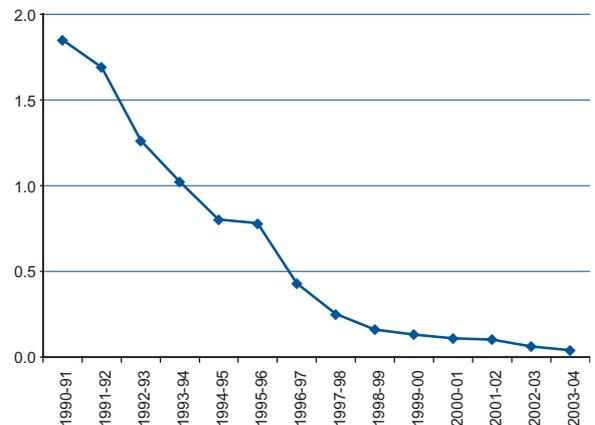
Changes in levels of service

Ofwat collects information on the level of service that the companies deliver to customers. The information collected includes:

- supply measures relating to water supply and the sewerage infrastructure – these measures indicate how reliable the service is, and include aspects such as water pressure, water supply, and sewer flooding; and
- customer service measures.

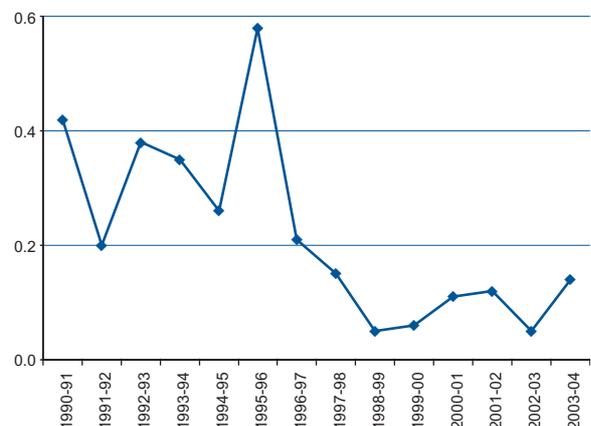
Figures 2.4 to 2.9 detail the total industry performance for both types of measures.

Figure 2.4: Properties at risk of low pressure³¹



The number of properties at risk of low pressure has decreased by 98%. There was a particularly rapid improvement in the early years after privatisation – but there has continued to be a steady improvement since 1998.

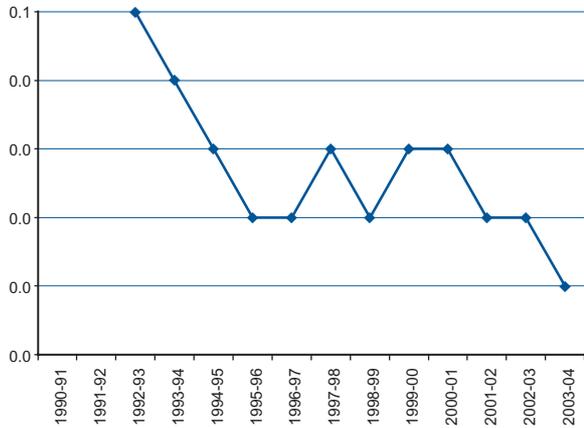
Figure 2.5: Properties subject to unplanned interruptions of 12 hours or more



The number of properties subject to unplanned interruptions of 12 hours or more has declined by 67%. The poor performance in 1995-96 reflects the well-documented drought of that year. Performance has – with the exception of that year – generally improved.

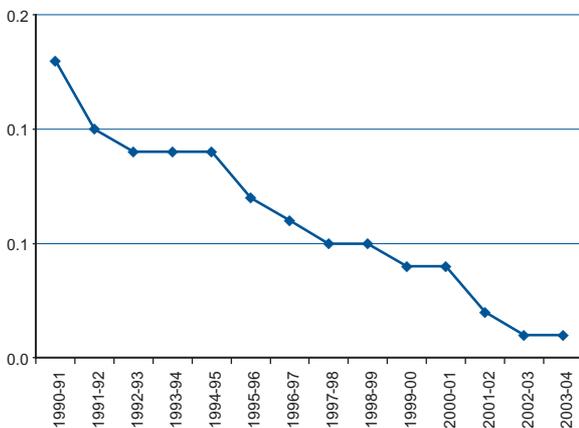
³¹ Based on information from Ofwat's 'Levels of Service Reports' (1997-2004).

Figure 2.6: Properties subject to sewer flooding incidents (overloaded sewers and other causes)



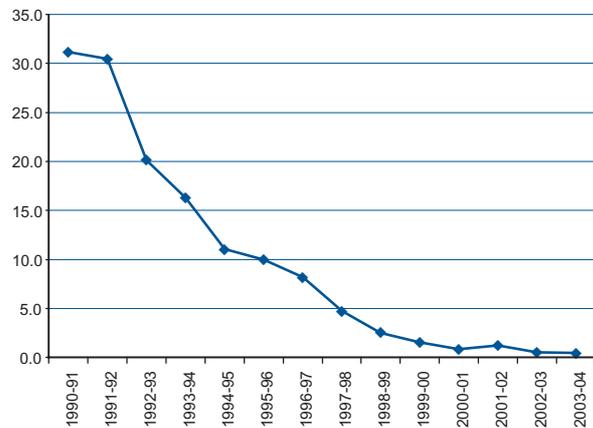
The number of properties subject to sewer flooding incidents has decreased by 80%. Again there has been a consistent improvement over the last 12 years.

Figure 2.7: Properties at risk of sewer flooding incidents (twice in 10 years)



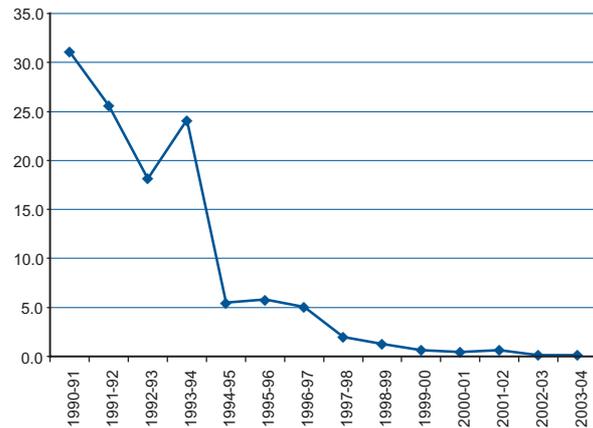
There has been a steady improvement year on year since 1990. The number of properties at risk of sewer flooding incidents (twice in 10 years) has decreased by 92%.

Figure 2.8: Billing contacts not responded to within five working days



Performance in this area improved quickly after privatisation. Since 1999-2000 the level of service has been maintained. The number of billing contacts not responded to within five working days has decreased by 98%.

Figure 2.9: Written complaints not responded to within ten working days



Again there was generally a rapid improvement in the first ten years after privatisation. The level of service has been maintained at this high level since that time. The number of written complaints not responded to within ten working days has decreased by 99%.

This analysis shows that the water industry in England and Wales has improved significantly since 1990. It is important to note that these improvements have been achieved without any real increase in operating costs since 1990.

Summary

Our approach to assessing an appropriate level of operating costs for Scottish Water is fully consistent with that which Ofwat has used successfully in regulating the companies south of the border. The Competition Commission has also reviewed the approach and found it to be robust.

Operating costs represent a substantial proportion of customers' bills and it is therefore important that we scrutinise these costs carefully. Our analysis takes full account of special factors that impact on the level of operating costs faced by Scottish Water. It also takes account of the level of performance that has been achieved south of the border.

We have set a maximum allowed for level of total operating costs so that the challenge faced by Scottish Water is clear to all stakeholders. We will measure total operating costs based on the information contained in the regulatory accounts.

Section 2: Lessons learned from the Strategic Review of Charges 2002-06

Chapter 3: The approach to operating cost efficiency in the Strategic Review of Charges 2002-06

Introduction

This chapter examines how we established the allowed for levels of operating expenditure for the water industry in Scotland in the Strategic Review of Charges 2002-06. We describe the range of modelling techniques that we used to assess the performance of the three former authorities³². These techniques allowed us to compare the performance of the authorities with each other and with the industry in England and Wales.

In 2001 the Scottish Parliament had not yet approved the proposed merger of the three former water authorities to create Scottish Water. The Strategic Review of Charges therefore set operating cost efficiency targets for the three former authorities and for the proposed Scottish Water.

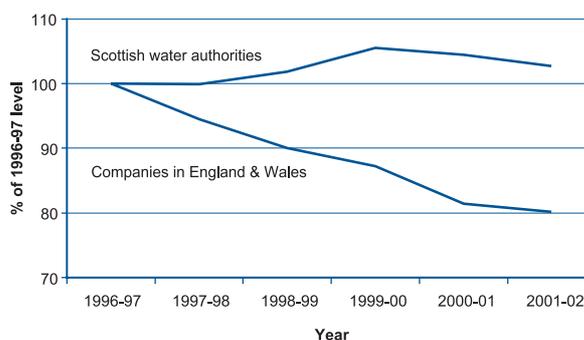
The chapter discusses how we established the scope for savings from the proposed merger. It continues by discussing the important lessons that we have learned. Our analysis concludes with an overview of how we have modified our approach in this Strategic Review to take account of these lessons.

How we set targets at the Strategic Review of Charges 2002-06

The focus of the Strategic Review of Charges 2002-06 was to set revenue caps that were consistent with a sustainable water industry in the public sector. The Quality and Standards II process highlighted that there was a need for increased investment. It was also likely that some of this investment in higher treatment standards would result in higher operating costs. There was therefore a significant upward pressure on the prices faced by customers.

In the Strategic Review of Charges 2002-06, we explained that the need for increased revenue could be markedly reduced by an improvement in the operating cost and capital expenditure efficiency of the Scottish water industry. Figure 3.1 shows that the level of efficiency of the Scottish water industry since 1996-97 had been worsening while that for the industry south of the border had improved.

Figure 3.1: Trends in base operating costs since 1996-97³³



The level of operating costs has a direct impact on customers' bills. If the level of operating costs is higher than it should be, because of inefficiency, this will further increase the charges faced by customers. We therefore set operating expenditure efficiency targets for each of the three authorities and for the proposed Scottish Water.

Establishing a baseline and underlying operating expenditure

We established a baseline level of operating expenditure for the three authorities to which future efficiency targets could be applied. This was based on the 2000-01 statutory accounts and the corresponding June Return information for that year.

The costs associated with interest, depreciation and PPP services were deducted. We also identified and deducted exceptional and atypical costs in order to establish the normal ongoing costs of running the businesses. This allowed us to determine the underlying operating costs for each of the three authorities.

Assessing the level of new operating expenditure required

We wrote to each of the three authorities to ask for their views on the level of new operating expenditure that was likely to be incurred over the period 2002-06³⁴. We allowed

³² North of Scotland Water Authority, East of Scotland Water Authority, West of Scotland Water Authority.

³³ It is important to note that there have been significant improvements to drinking water quality and environmental compliance during the past five years.

³⁴ WIC 12, 7 March 2001.

new operating costs that were not already included in our benchmarking. Our analysis of the authorities' claims resulted in an allowance of some £9 million by 2005-06.

To assess the scope for the three authorities to improve their efficiency, we compared the operating costs incurred by the three authorities with those incurred by the English and Welsh companies. However, our comparisons took no account of the quality or scope of the outputs delivered by the companies south of the border. This assumption favoured the three authorities.

We expected the three authorities (or Scottish Water) both to reduce costs and to improve the level of service they provided. Our efficiency target was therefore only quantified partly in money terms. Part of the efficiency gap reflected the difference in the level of service provided to customers.

Calculating relative efficiency

We used three techniques to compare the relative performance of the three authorities. These were:

- adjusted Ofwat econometric models;
- a specially developed alternative model; and
- basic unit cost comparisons.

Ofwat's approach to assessing relative operating efficiency had previously been endorsed by the Competition Commission. We collected information from the three authorities using the same format and definitions as Ofwat. This allowed us to use the Ofwat models to assess the relative efficiency of the three authorities. We also combined the information from the three authorities to assess the overall level of efficiency in the Scottish water industry.

It was important to make sure that the comparisons were on a genuinely like-for-like basis. We therefore considered carefully any geographical, demographic and other differences between Scotland and England and Wales.

The Ofwat econometric models take many of these differences into account. We revised Ofwat's methodology as follows:

- We re-categorised water source types to include lochs, springs and burns. This affected the resources and treatment model.
- We extended Ofwat's banding for small waste water treatment works to include a separate category comprising the many very small works in Scotland. We also included higher unit costs for these works in the model.

The Competition Commission recommended that alternative models could have a place in efficiency analysis. We developed an alternative model so that we could check the results of the Ofwat models.

Our alternative model was based on the premise that most operating costs are a function of the assets used, the volumes of water and waste water handled and/or the number of customers served. The model calculates the impact of each of these cost drivers separately for a number of activities. By contrast, the Ofwat models examine the interrelationships between drivers, and focus on the drivers that explain the differences in the observed costs of the companies most effectively. There is no separation of the impact of each cost driver in the Ofwat models. By taking such a different approach to Ofwat, we could be confident that our alternative model provided an effective independent check on the results given by Ofwat's models.

We also used basic comparisons of unit costs to provide a simple, broad picture of relative costs. All of these methods gave very similar results.

Closing the efficiency gap

Our analysis of the relative efficiency of the water industry in Scotland showed that the companies south of the border were some 40% more cost efficient in 2001 (this assessment did not include the difference in quality of service or scope of activities highlighted earlier).

If the comparator companies achieved the efficiency targets set by Ofwat by 2004-05, this efficiency gap would grow to some 48%³⁵. Moreover, given the nature of incentive-based regulation, it was reasonable to expect the English and Welsh companies to outperform Ofwat's targets.

We set efficiency targets to narrow this gap. It was important that any targets were realistic. Our analysis of the progress made by the English and Welsh companies in improving their performance over the last decade showed that the companies reduced their operating expenditure by between 18% and 39%³⁶. In our advice to the Minister on revenue caps, we therefore set a target of a 35% reduction in operating expenditure in real terms. Such a target closed 80% of the efficiency gap between Scottish Water and a comparator company (not the frontier company in England and Wales). This was below the average closure of 85% achieved by the privatised companies over their best five years³⁷.

If we had adopted Ofwat's approach to setting the scope for efficiency in the 2002-06 Review, Scottish Water would have faced a marginally (c5%) easier target. However, the authorities had the advantage of 'spend to save'. This reduced the required closure of the gap to approximately 50%.

Spend to save was an additional £200 million of funds allowed in the authorities' revenue caps. It was intended that these funds would facilitate the improvement in efficiency. The aim was to ensure that Scottish Water would be able to meet all of its restructuring costs without delaying investment or improvements in customer service. In England and Wales the companies have to fund any similar initiatives by outperforming Ofwat's targets.

Lessons learned from the Strategic Review of Charges 2002-06

We believe that there are clear lessons to be learned from the response of stakeholders to the Strategic Review of Charges 2002-06. In particular, issues arose in the following areas:

- The need for a clear definition of the allowed level of operating costs.
- Greater transparency in the process by which comparisons are made.
- The importance of like-for-like comparisons when benchmarking performance with England and Wales.

In this draft determination, we state clearly the operating cost performance that is required. We have set an allowed for level of total operating costs and commented clearly on our expectations of the level of service that should be delivered. We will monitor total allowed for operating costs. We will also use regulatory accounts to ensure that we deal as transparently as possible with any:

- adjustments required to reported operating expenditure to ensure like-for-like comparisons;
- differences in the scope of activities between Scotland and England and Wales; and
- differences in the level of service between Scotland and England and Wales.

We examined these issues in detail in Volume 4 of our methodology consultation.

Summary

Scottish Water appears likely to have improved its relative efficiency markedly over the 2002-06 regulatory control period. This is good news for customers.

We set out to learn from stakeholders' responses to the Strategic Review of Charges 2002-06. In particular, we have:

- reduced the scope for misunderstandings and misinterpretation of the efficiency requirements by setting out a clear definition of the allowed for level of operating expenditure;

³⁵ The comparator companies were Northumbrian Water, South West Water and Yorkshire Water. See 'Strategic Review of Charges 2002-06', pp.186-187.

³⁶ Ibid., pp194-195.

³⁷ Ibid.

- introduced a regulatory accounting framework³⁸ to provide an agreed set of regulatory information which is not subject to changes in accounting policy; and
- included in our benchmarking process an assessment of the impact of differences in the scope of activities and the levels of service between Scottish Water and the English and Welsh companies.

Section 3 of this volume explains our calculation of the total allowed for level of operating costs in detail.

³⁸ Discussed in more detail in Volume 4, Chapter 7 to Chapter 10.

Section 2: Lessons learned from the Strategic Review of Charges 2002-06

Chapter 4: Amended approach to setting allowed for operating costs in the Strategic Review of Charges 2006-10

Introduction

In this chapter we set out the eight-stage process that we have used to set Scottish Water’s total allowed level of operating costs. Subsequent chapters describe each stage of the process in more detail, and our draft determination of allowed for operating expenditure is presented in Chapter 15.

We believe that this process has provided a robust and transparent assessment of the minimum acceptable level of operating cost performance that customers can expect Scottish Water to achieve. The greater degree of transparency at this Review will allow customers and other stakeholders to monitor Scottish Water’s performance and will, therefore, increase Scottish Water’s accountability for delivering the required improvements.

Calculating total allowed for operating expenditure

In this draft determination, we have set the total allowed for level of operating expenditure (excluding depreciation and Infrastructure Renewals Charges (IRC)) at a level that we believe is sufficient for Scottish Water to carry out its operations for each year of the regulatory control period and meet all the ‘essential’ and ‘desirable’ objectives of Scottish Ministers. This level of operating cost will be directly funded through charges to customers. It is calculated as follows:

Total allowable operating expenditure	=
Baseline operating expenditure ³⁹ (step 1)	±
Assessed changes in baseline operating expenditure (step 2)	-
Efficiencies in baseline operating expenditure ⁴⁰ (steps 3, 4 and 5)	+
New operating expenditure ⁴¹ (step 6)	-
Efficiencies on new operating expenditure (steps 3, 4 and 5)	+
Public Private Partnership (PPP) operating expenditure (step 7)	+
The impact of annual inflation on all of these components (step 8)	

We no longer refer to a monetary value for the total efficiencies required. However, if stakeholders wish to 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:

- efficiencies in baseline operating expenditure; and
- efficiencies in new operating expenditure for each year and then adjust for annual inflation.

It is important to note that because Scottish Water did not provide information on the operating costs required to improve the level of customer service performance, we have had to set milestones for improvement in customer service. If this information had been provided, we would have increased the scope for efficiency to reflect the significant difference in the level of customer service performance that currently exists.

Detailed process for calculating allowable operating expenditure

We followed the steps outlined below to determine our initial conclusions on the allowed for operating expenditure for Scottish Water. Each step is discussed in more detail in later chapters of this volume.

- Step 1 Establish base operating expenditure (Chapter 6).
- Step 2 Assess whether there are likely to be any changes to base operating expenditure (Chapter 6).
- Step 3 Use reported total operating expenditure in 2003-04 (which we have used as the base year for this draft determination) to assess the extent of the efficiency gap that exists between Scottish Water and the companies in England and Wales (Chapters 8, 9, and 10).

³⁹ See Chapter 6 for more detail on the calculation of baseline operating costs and any necessary adjustments.

⁴⁰ See Chapters 8, 9 and 10 for more detail on the calculation of the efficiency gap.

⁴¹ See Chapter 7 for more detail on new operating costs.

Step 4 Review the evidence on factors specific to Scotland that we should take into account and which would alter our assessment of the efficiency gap (Chapters 11, 12 and 13). These factors include:

- differences in levels of service provided to customers with those provided in England and Wales;
- differences in the scope of activities compared with England and Wales; and
- factors relating to Scotland's geography.

Step 5 Given the size of the adjusted efficiency gap, review the evidence on:

- the scope for improvement in the water and waste water 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 (Chapter 14).

Step 6 Assess the forecast level of new operating expenditure and the level of efficiency savings that could be applied to such expenditure (Chapter 7).

Step 7 Assess the forecast level of Public Private Partnership expenditure (Chapters 8 to 11 of Volume 5).

Step 8 Apply our assumptions of annual inflation to the results of Steps 5, 6 and 7.

This process has allowed us to assess a maximum level of operating expenditure that we believe Scottish Water

should require in 2009-10. In completing our analysis we have taken account of responses to our methodology consultation. Most stakeholders considered that Scottish Water should be expected to match the efficiency of the companies south of the border.

Setting separate minimum acceptable levels of performance for different areas of the business

In the Strategic Review of Charges 2002-06, we set efficiency targets for Scottish Water as a whole, i.e. for all water and waste water services, together with its non-core services. This approach was different from that which Ofwat adopts 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 waste water services.

There are three main changes that have affected the way we have set the maximum allowed level of operating expenditure in this draft determination. First, our legal remit changed in 2002 to cover only the core activities of Scottish Water – broadly those activities required by statute. Scottish Water's maximum allowed level of operating expenditure does not, therefore, include its 'non-core' activities.

Second, we have sought to make charges more cost reflective than in the past. Customers pay separately for water and waste water services, so it appears sensible to set separate maximum levels for water and waste water operating expenditure⁴². Ofwat also follows this approach.

The Water Services etc. (Scotland) Act 2005 provides for the separation of the wholesale and retail parts of Scottish Water's business. It is therefore necessary to set separate minimum acceptable performance levels for the wholesale and retail parts of the business.

Summary

We want to ensure that the performance levels that we set for Scottish Water are clear. We believe that setting a minimum acceptable level of operating expenditure will

⁴² Our monitoring will focus on performance relative to the total (water and waste water) level of operating costs incurred by Scottish Water.

ensure that there is less scope for disagreement about whether the targets have been achieved.

Our eight-step process for establishing Scottish Water's allowable operating costs provides a robust and transparent mechanism which increases Scottish Water's accountability to customers and stakeholders.

In the following chapters we describe each step of the process in more detail. Our draft determination for the maximum allowed level of operating expenditure is set out in Chapter 15.

Section 2: Lessons learned from the Strategic Review of Charges 2002-06

Chapter 5: Monitoring performance on operating expenditure

Introduction

In this chapter, we describe how we will monitor Scottish Water's performance on operating expenditure 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 summarising the information that we will use to monitor operating expenditure over the period 2006 to 2010 and how we will report progress. The chapter closes by outlining how we will monitor levels of service to customers so that we can be sure that Scottish Water does not compromise service delivery in order to achieve the required levels of performance.

Monitoring framework

Our role as regulator is to set challenging, achievable levels of performance for Scottish Water which promote customers' interests. It is not for us to direct how this performance should be achieved. This is a matter for the board and management of Scottish Water.

It is our role, however, to monitor progress against the level of total operating costs that we have allowed for, 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 the levels of performance set out in the final determination of charges;
- publishing reports; and
- 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 for 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 includes:

- their June 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, 9 and 10.

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 levels of performance that we establish in the final determination. 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.

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 for 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 covers the following⁴³:

- total allowed for operating costs;
- year on year progress relative to the total allowed for level of operating costs;
- progress on the capital programme relative to that in the final determination;
- progress on baseline operating costs relative to England and Wales; and
- Public Private Partnership (PPP) operating expenditure.

Our sources of information for monitoring Scottish Water's progress against the required levels of performance and its performance relative to the companies in England and Wales will include the regulatory returns shown in Table 5.1. Much of this framework is already in place and we use it to monitor progress against existing targets. We have also introduced regulatory accounts to enhance the consistency of regulatory reporting year on year.⁴⁴

Table 5.1: Framework for monitoring operating expenditure⁴⁵

Sources of information	Operating expenditure			Relative performance
	Baseline	New	PPP	Baseline and new ⁴⁶
Scottish Water				
Annual Return	✓	✓	✓	✓
Regulatory accounts (from 2005)	✓	✓	✓	✓
Monthly operating expenditure returns	✓			
Quarterly investment returns ⁴⁷		✓		✓
Independent comments by Scottish Water's Reporter	✓	✓	✓	✓
England and Wales				
Companies' annual returns				✓
Company regulatory accounts				✓
Independent comments by Reporters in England and Wales				✓
Ofwat published annual reports				✓
Reporting progress				
	↓			
	Costs and performance reports			

These sources of information are described in more detail in Volumes 1, 2 and 3 of our methodology consultation, 'Our work in regulating the Scottish Water Industry'.

Monitoring levels of service

We monitor the level of Scottish Water's customer service performance by using the overall performance assessment (OPA) that was developed by Ofwat. As explained earlier, we have had to set targets for improved levels of customer service in this draft determination. We have set these relative to the OPA.

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:

⁴³ Chapters 6 and 7 define and explain baseline and new expenditure, respectively. Chapters 11-14 of Volume 5 discuss PPP in detail.

⁴⁴ See Volume 4: Framework and Approach, Chapters 8-12.

⁴⁵ The components of operating expenditure are defined in earlier chapters of this volume and are summarised in Chapter 2.

⁴⁶ Comparisons of relative performance exclude PPPs as there is no direct parallel in the water and sewerage industry in England and Wales.

⁴⁷ We use the quarterly investment returns to help monitor new operating expenditure because this expenditure is driven largely by Scottish Water's capital investment.

- water supply – pressure, supply interruptions and drinking water quality;
- waste water 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.

We discuss this in more detail in Chapter 13. We also monitor performance against Scottish Water’s Guaranteed Minimum Standards (GMS). They are minimum standards of service agreed with us in October 2000 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.

It is, however, important to note that the Guaranteed Minimum Standards do not cover all aspects of customer service. Our monitoring therefore focuses primarily on the OPA.

Table 5.2 sets out our framework for monitoring levels of service performance.

Table 5.2: Framework for monitoring levels of service performance

Sources of information	Guaranteed Minimum Standards	Overall Performance Assessment
Scottish Water		
Annual Return	✓	✓
Customer Service Performance Return	✓	✓
Quality Performance Assessments	✓	
Independent comments by Scottish Water’s Reporter	✓	✓
England and Wales		
Companies’ annual returns		✓
Independent comments by Reporters in England and Wales		✓
Reporting progress	↓	
	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.

Scottish Water, in order to inform stakeholders and encourage discussion and debate. These reports will pay particular attention to performance relative to the levels of service milestones that we have set.

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 annual 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 will continue to use the first two of these information sources to monitor Scottish Water's levels of service to its customers during 2006-10. We expect that the Water Customer Consultation Panels may begin to audit Scottish Water's handling of complaints.

Summary

We believe that our framework for monitoring Scottish Water's performance is robust. The introduction of regulatory accounts will further strengthen this framework for the Strategic Review of Charges 2006-10. We will continue to publish reports on progress made by

Section 3: Setting the allowed for level of operating costs

Chapter 6: Establishing a baseline for operating costs

Introduction

This chapter outlines the process by which we have established the baseline level for operating expenditure for Scottish Water for the 2006-10 regulatory control period. In Chapter 4 we set out an eight-stage process by which we set the allowed for level of operating costs for Scottish Water. Setting the baseline for operating costs is stage one.

The baseline level of operating costs is the expenditure incurred in the base year for this draft determination. We assess the scope for efficiency savings, and monitor performance against the baseline.

In this chapter, we set out clearly what is meant by the baseline and the assumptions that underpin it. This should minimise uncertainty when measuring progress towards the level of performance that is required by the determination of charges.

Baseline operating costs reflect the specific level of service that was delivered in the baseline year. The baseline needs to reflect the actual underlying level of operating costs for the core business. We therefore have to make adjustments to take account of exceptional or atypical costs incurred in the base year. We also check that the reported operating costs in the base year do not include non-core operating costs. Any non-core costs must be deducted from the baseline. We have also adjusted the baseline to include any unavoidable costs that we consider Scottish Water may face during the 2006-10 regulatory control period. We asked Scottish Water to identify such costs in its draft business plans.

This chapter begins by explaining our choice of base year for the Strategic Review of Charges 2006-10. We also outline our assessment of the scope for future changes in additional costs which we have included in Scottish Water's baseline operating expenditure. Finally, we provide the baseline figures that we have set for each year of the regulatory control period.

Establishing the base year

For each regulatory control period we need to identify one base year. We then monitor performance in each year of the regulatory control period against the level of service delivered in that base year. It is important, therefore, that the base year is one that is relatively stable.

In the previous Strategic Review of Charges 2002-06 we used 2000-01 as the base year.

In our methodology consultation⁴⁸ we explained that it was not appropriate to use 2002-03 as the base year because this was the first year after the three former water authorities had merged. This left two options for the base year for this draft determination:

- to continue to use the year 2000-01; or
- to use 2003-04 as the base year for the draft determination in June 2005 and 2004-05 as the base year for the final determination.

We explained that continuing to use 2000-01 as the base year had many disadvantages. The Scottish water industry has made significant progress since the last Strategic Review. The three former water authorities have merged to become Scottish Water and Scottish Water has made significant progress in consolidating all aspects of its business (including accounting practices) and reducing costs. In addition, the baseline for 2000-01 included adjustments (such as inter-authority trading between the three authorities) that are no longer required.

The baseline for operating expenditure is likely to be more transparent if adjustments can be kept to a minimum. If Scottish Water did not apply its capitalisation policy consistently, or if its policy was different from that which the companies south of the border use, it would also have been necessary to make an adjustment to the amount of cost capitalised.

⁴⁸ See Volume 4 of our methodology consultation, 'Our work in regulating the Scottish water industry: The scope for operating cost efficiency' Chapter 6, page 61.

The second option uses two separate base years: 2003-04 for this draft determination and 2004-05 for the final determination. We are unable to use 2004-05 as the base year for this draft determination because Annual Return information is not yet available.

Using two base years in this way does make it more complicated to monitor Scottish Water's progress towards its efficiency targets for the remainder of the 2002-06 regulatory control period. Our monitoring of Scottish Water's progress towards its efficiency targets up to March 2006 may require us to make adjustments to ensure that our comparisons are on a like with like basis. Any such adjustments will not impact the baseline for operating expenditure that we have established for the 2006-10 regulatory control period. It is possible, however, that there will be a difference between the level of operating expenditure that we use for monitoring purposes (for the remainder of the 2002-06 regulatory control period) and the baseline operating expenditure for the 2006-10 regulatory control period.

Following our methodology consultation, we have decided to use 2003-04 as the base year for this draft determination. We believe that this should make our monitoring more transparent. It also provides a baseline which better reflects Scottish Water's current operating environment and uses the most up-to-date operating costs available.

Establishing baseline operating expenditure for 2006-10

We have used information from Scottish Water's regulatory accounts for 2003-04 and the June 2004 Return to calculate the level of baseline operating costs in 2003-04. Total reported operating expenditure for water services was £209.7 million. Total reported operating expenditure for waste water services was £152.4 million (excluding PPP costs).

To establish the level of baseline operating costs for 2003-04 we:

- take reported core costs;

- adjust for atypical costs (or savings);
- remove exceptional costs; and
- ensure that cost allocation practices are consistent with those in England and Wales.

Reported core costs

The Strategic Review of Charges 2002-06 set operating cost efficiency targets for all of the operating costs incurred by the three former water authorities in 2000-01. The Water Industry (Scotland) Act 2002, however, limits our role to promoting the interests of customers of the core business only. Our assessment of baseline operating costs for 2003-04 therefore includes only core operating costs.

Our regulatory accounting project developed new reporting requirements for Scottish Water that separate core and non-core costs. Scottish Water reported on this basis in May 2005 for the financial year 2003-04. Core operating costs were reported as £198.4 million (water) and £150.9 million (waste water), excluding PPP costs. Non-core operating costs were reported as £11.4 million (water) and £1.5 million (waste water). Non-core operating costs have been excluded from our analysis.

Adjusting for atypical costs (or savings)

We also take account of the impact that any atypical costs have on the baseline level of operating cost. These are costs (or savings) that are one-off in nature, but which are not classed as 'exceptional' under accounting standards. Examples of atypical costs would include costs associated with the Foot and Mouth outbreak or savings resulting from pension holidays. Such atypical costs (or savings) increase (or reduce) the normal ongoing operating costs of an organisation. If we are to ensure that our performance monitoring reflects genuine like-for-like comparisons it is important that we do not include any atypical costs (or savings) in the baseline level of operating cost.

This is fully consistent with the approach that Ofwat takes. It excludes atypical costs (and savings) incurred by the water and waste water companies in England and

Wales. The water and waste water companies are required to identify any such atypical costs (or savings) in their annual information submissions.

In its June 2004 Return, Scottish Water reported no atypical costs for the base year. It amended its view during the clarification and query process that follows the submission of an annual return. It claimed that it had incurred atypical costs of around £1 million as a result of the exceptionally dry summer in 2003. Scottish Water claimed that these additional costs related to a number of factors including increased pumping costs, letter drops to customers and supplying water by tanker.

We accept that Scottish Water may have incurred additional costs in respect of its water services due to the dry summer. However, our analysis shows that it should have made corresponding operating cost savings in its waste water service. Scottish Water did not provide any information about any such atypical savings. These savings would have related primarily to lower pumping costs as a result of having to treat lower volumes of waste water.

We believe that the savings on waste water are likely to have been broadly equivalent to the atypical water operating costs. We have not, therefore, allowed for any atypical costs in the base year.

Removing exceptional costs

In its June 2004 Return, Scottish Water claimed that exceptional costs of £52.8 million had been incurred in 2003-04 (£31.6 million for the water service and £21.2 million for waste water service). Scottish Water explained that these costs related to redundancy packages for staff leaving the organisation. We accepted Scottish Water's explanation of these exceptional costs and deducted them from the base year costs.

Ensuring consistent cost allocation

Accounting practices and policies can affect the way in which operating expenditure is reported in regulatory returns. For example, an increase in the capitalisation of operating costs will reduce reported operating costs but

increase investment costs. Any such changes in the way operating costs are reported do not affect the company's actual efficiency. In monitoring performance, we have to ensure that performance is properly measured and reported on a like-for-like basis.

We have examined Scottish Water's regulatory returns and compared the cost allocation procedures with those of the English and Welsh companies. We did not find any differences in cost allocation practices that warranted an adjustment to the base year costs.

Calculating the baseline from the base year costs

The baseline expenditure calculations are illustrated below.

Table 6.1: Calculation of base operating expenditure 2003-04

Water operating expenditure		£m
Less:	PPP costs	£198.4m
	Exceptionals	£0.0m
		£31.7m
		<hr/>
		£166.7m
		<hr/>
Sewerage operating expenditure		£262.4m
Less:	PPP costs	£111.5m
	Exceptionals	£21.2m
		<hr/>
		£129.8m
		<hr/>
Atypicals		£0.0m
Capitalisation adjustments		£0.0m
		<hr/>
Base operating expenditure		£296.5m
		<hr/>

This adjusted total operating expenditure forms the baseline for this draft determination. We expect that the new Commission will update our analysis of baseline expenditure to 2004-05 in the final determination.

Projections of operating expenditure for 2005-06

In our methodology consultation we discussed a number of possible approaches to estimating 2005-06 costs⁴⁹. We explained that two issues were key in deciding which approach to use.

There is a need for consistency between review periods. Our projections for 2005-06 should ideally be consistent

⁴⁹ See Volume 4 of our methodology consultation, 'Our work in regulating the Scottish water industry: The scope for operating cost efficiency' Chapter 6, page 62.

with the targets set in the Strategic Review of Charges 2002-06.

Consistency has to be balanced by a review of Scottish Water's actual performance during the 2002-06 regulatory control period. We needed to be sure that there was no reason to believe that Scottish Water's actual performance would be materially different from the agreed target.

If Scottish Water falls short of its target it will face a more demanding starting point than we have assumed in this draft determination. In this case, it would be more difficult for Scottish Water to deliver the required level of service within the total allowed for level of operating cost.

Conversely, if Scottish Water beats its 2005-06 target, then it could face a less demanding challenge and customers' bills would be higher than they needed to be.

In the methodology consultation⁵⁰, we outlined the following five options for estimating the 2005-06 operating expenditure.

- 1) Assume a flat level of expenditure in 2004-05 and 2005-06 (in real terms, ie with inflation stripped out of the figures).
- 2) Assume that Scottish Water meets the operating expenditure level for 2005-06 targeted in the Strategic Review of Charges 2002-06.
- 3) Assume that Scottish Water fails to meet the level of operating expenditure for 2005-06 targeted in the Strategic Review of Charges 2002-06.
- 4) Assume that Scottish Water has improved its operating expenditure to a greater extent than we targeted in the Strategic Review of Charges 2002-06. In this case, we would need to consider how this outperformance should be shared with customers. We would also need to make an assumption about the extent of the outperformance.
- 5) Use the expenditure forecasts that Scottish Water includes in its business plan submissions.

Following our consultation, we decided to use option 5. One respondent expressed concern about using 2003-04 as the base year to calculate efficiency targets, then applying these efficiency targets to 2005-06 operating costs. He argued that this could overstate the efficiency gap, especially where a company was quickly closing the gap on the frontier company. This is a misunderstanding of how the scope for efficiency is assessed. We identify frontier performance and judge the level of improvement that is required towards that frontier from the baseline by the end of the regulatory control period. Consequently, our method of setting targets benefits a company that is improving its efficiency quickly towards the end of a regulatory control period.

Our decision to set a total allowed level of operating expenditure addresses this issue. We have calculated the efficiency gap and the total allowed level of operating expenditure for 2006-10 using reported information for 2003-04. We have also ensured that the profile of operating costs for 2006-10 is reasonable given Scottish Water's forecasts of its expected performance in 2005-06.

Factors influencing the future baseline

Our baseline for operating costs has also taken account of potential changes in costs during the regulatory control period. We take account of any such potential changes that can be outside the control of management and not reflected in consumer price inflation. Examples of such changes include the following.

- Non-domestic rates. The basis on which Scottish Water's assets are valued will change in 2005. The impact of this change is not yet known.
- Pension 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.
- Energy costs.

⁵⁰ See our methodology consultation Volume 4, Chapter 6, for further details.

We have analysed these factors carefully to ensure that Scottish Water has sufficient resources to deliver an appropriate level of service. We used the following criteria to assess potential changes in underlying costs.

- 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 they regulate?

In its second draft business plan, Scottish Water projected changes in operating costs set out in Table 6.2:

Table 6.2: Operating cost changes from Scottish Water's second draft business plan (2003-04 prices)

Factor:	Claimed costs			
	2006-07	2007-08	2008-09	2009-10
Non-domestic rates	£4.2m	£5.7m	£7.3m	£7.3m
Pension costs	£5.1m	£5.1m	£5.1m	£5.1m
Energy costs	£2.4m	£2.4m	£2.4m	£2.4m
Bad debt	£4.5m	£10.8m	£19.5m	£30.2m
Retail business operating costs	£2.5m	£3.4m	£8.6m	£8.7m
Other costs eg the landfill tax	£1.6m	£1.9m	£2.2m	£2.5m
SEPA	£4.6m	£4.6m	£4.6m	£4.6m
Total	£24.9m	£33.8m	£49.6m	£60.8m

We discuss each of these claims in turn.

Non-domestic rates

The basis on which Scottish Water's assets are valued for the purposes of non-domestic rates changed in April 2005. Scottish Water anticipated that it could face a substantial increase in its non-domestic rates bill. In its second draft business plan, Scottish Water claimed that it would incur additional costs of £4.2 million (in 2003-04 prices) in 2006-07, rising to £7.3 million by 2009-10.

In our analysis we noted that this increase exceeded 12.5% in real terms. Scottish Water is therefore entitled to benefit from transitional arrangements. This means that the increase in rates would be phased in over the period to 2008-09.

We have, therefore, allowed for an adjustment as set out in Table 6.3.

Table 6.3: Non-domestic rates (2003-04 prices)

	2006-07	2007-08	2008-09	2009-10
Non-domestic rates	£3.8m	£5.2m	£6.7m	£6.7m

This amounts to £22.5 million over the period (in 2003-04 prices).

Pension costs

In its first draft business plan, Scottish Water indicated that it would have to increase its pension contributions. It claimed that this would cost £5.6 million (in 2003-04 prices⁵¹) a year.

In its second draft business plan, Scottish Water changed this estimate to £5.1 million per annum (in 2003-04 prices).

Following analysis of this claim, we have allowed for an adjustment of £5.1 million per annum. Our analysis included obtaining actuarial valuations from Scottish Water to substantiate its claim.

Energy costs

In its first and second draft business plan, Scottish Water claimed that it was likely to face increased energy costs of approximately £2.4 million per annum in 2003-04 prices.

⁵¹ To convert to 2003-04 prices we have used RPI. Note that in Scottish Water's first draft business plan they used CPI as an inflation factor. In their second draft business plan they used RPI. We have used RPI in both cases for consistency when reporting business plan numbers.

We looked at this claim carefully and allowed Scottish Water £1.0 million per annum for additional energy costs. Our assessment took account of the actual increase in energy costs from 2003-04 to 2004-05 reported by Scottish Water and its claim for increased costs in 2005-06.

Retail business operating costs

In its second draft business plan, Scottish Water claimed additional operating expenditure as a result of running a licensed retail business. The business plan divided these costs into those belonging to the core business and those that would impact the new licensed retail business. The most significant additional cost within the core business is for billing and credit management and the most significant cost in the retail business is for the development and operation of market mechanisms.

Our base operating costs reflect the costs of a vertically integrated Scottish Water. We make a separate series of adjustments to both operating and financing costs to set an appropriate wholesale price cap. This is reported in Volume 7 of the draft determination.

It is therefore not appropriate to make any adjustment to base operating costs.

Other costs

Scottish Water claimed in its first and second draft business plans that it would be required to pay additional landfill tax during the 2006-10 regulatory control period. The additional cost claimed is £8.1 million (in 2003-04 prices) over the period 2006-07 to 2009-10.

On analysing this claim, we did not consider that the cost increases would be as great as were claimed by Scottish Water. We also noted Ofwat's view in its 2004 price review that most companies in England and Wales intend to take action to avoid the tax by adopting a more sustainable approach. Taking these two factors together, we have therefore rejected this claim.

We anticipate that Scottish Water will incur the costs of the Reporter from 2006-07. We have allowed £0.3 million per year for this item.

Summary

We have allowed for the additional baseline operating costs included in Table 6.4 in this draft determination.

Table 6.4: Allowed for additions to base operating cost combined service

Combined service				
	Allowed for costs (2003-04 prices)			
Factor:	2006-07	2007-08	2008-09	2009-10
Non-domestic rates	£3.8m	£5.2m	£6.7m	£6.7m
Pension costs	£5.1m	£5.1m	£5.1m	£5.1m
Energy costs	£1.0m	£1.0m	£1.0m	£1.0m
Bad debt	£0.0m	£0.0m	£0.0m	£0.0m
Retail business operating costs	£0.0m	£0.0m	£0.0m	£0.0m
Other costs eg the landfill tax	£0.0m	£0.0m	£0.0m	£0.0m
SEPA	£0.0m	£0.0m	£0.0m	£0.0m
Reporter ⁵²	£0.3m	£0.3m	£0.3m	£0.3m
Total	£10.2m	£11.6m	£13.1m	£13.1m

Baseline operating costs for 2006-10

Table 6.5 summarises the baseline that we have established and the adjustments that we have allowed to reflect new costs incurred by Scottish Water that are outside the control of management.

Table 6.5: Summary of the operating cost baseline for 2006-10

	2006-07	2007-08	2008-09	2009-10
Base operating costs (water)	£166.7m	£166.7m	£166.7m	£166.7m
Increase in operating costs – water	£7.5m	£8.9m	£10.4m	£10.4m
Base operating costs – waste water	£129.7m	£129.7m	£129.7m	£129.7m
Increase in operating costs – waste water	£2.8m	£2.8m	£2.8m	£2.8m

Conclusions

This chapter has outlined the factors that we have taken into account in setting a baseline for Scottish Water's operating expenditure in this draft determination.

⁵² Reporter costs were initially paid for by this Office. The Scottish Executive provided us with grant-in-aid to cover these costs.

We have used 2003-04 as the base year for this draft determination and we expect the new Commission to use 2004-05 as the base year for the final determination.

We apply the scope for efficiency to this baseline. This baseline has taken account of Scottish Water's estimate of the operating costs that it will incur in the remainder of the current regulatory control period.

We have adjusted reported operating expenditure in the base year to take account of: non-core operating costs, exceptional costs and atypical costs. This has enabled us to identify the underlying level of operating costs that Scottish Water incurs. This is the cost of maintaining services at existing levels.

We also assessed the extent to which Scottish Water may face additional operating costs (outside the control of management) in the 2006-10 regulatory control period and have made allowances for these costs where appropriate. This has included increased costs for non-domestic rates and pensions.

Section 3: Setting the allowed for level of operating costs

Chapter 7: New operating costs

Introduction

This chapter sets out how we have dealt with new operating expenditure in this draft determination. In Chapter 6 we described how we have 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, over the 2006-10 regulatory control period, Scottish Water will incur new operating expenditure to deliver improvements in:

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

It is important that we scrutinise carefully Scottish Water's claims for new operating costs before they are included in price limits.

In this chapter we examine Scottish Water's claims for new operating costs for 2006-10 and describe the criteria we have used to assess them. We then present the level of new operating expenditure we have allowed for in this draft determination. In Chapter 14 we discuss the scope for efficiency that we have identified.

Defining new operating expenditure

New operating expenditure arises from the following:

- Improved environmental compliance

Examples of environmental obligations include the Urban Waste Water Treatment Directive and the Bathing Waters Directive. In common with other water and waste water providers in Europe, Scottish Water has to comply with such legislation. In many cases, compliance will be achieved through capital expenditure on new or upgraded waste water treatment plants. These upgraded plants may have higher operating costs. For example, secondary

activated sludge treatment ensures higher levels of compliance, but uses more power than primary treatment and therefore may lead to higher operating costs.

- Improved drinking water compliance

Examples of drinking water obligations include the cryptosporidium regulations and legislation 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. Meeting these obligations may 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 water authorities⁵³ 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. In our second draft business plan guidance we asked Scottish Water to identify any such new operating costs that it felt it would require to narrow the gap in customer service performance. We would have allowed any such claim that was tied to a measurable improvement in performance.

- The supply/demand balance

Maintaining an appropriate supply/demand balance ensures that there is sufficient capacity (of both water and waste water) 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 waste water services by building new water treatment and sewage treatment works. In the short term, however, increased demand can often

⁵³ East of Scotland Water Authority, North of Scotland Water Authority and West of Scotland Water Authority.

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 may increase operating costs.

Each of these factors would lead to increases in operating expenditure. We are interested specifically in the net new operating expenditure. This is best illustrated with an example.

New legislation requires a water and waste water undertaker to achieve higher standards of effluent discharge. A waste water treatment works is already in place, but the treatment processes employed will not meet the new required standards so the plant needs to be replaced. Currently, the works incurs £50,000 a year in operating expenditure. The new compliant treatment processes will incur £75,000 per year in operating expenditure. The new operating expenditure is the difference between the post-investment level of operating expenditure and the pre-investment level (ie £75,000 less £50,000). Net new operating expenditure is therefore £25,000 per year.

Over the past 15 years, the companies in England and Wales have incurred significant new operating expenditure. This is in large part due to their investment programme. The ten water and waste water companies have incurred annual new water operating expenditure of almost £24 million since 1997-98 and annual new waste water operating expenditure of £163 million since 1997-98.

The companies in England and Wales have also invested in improving the supply/demand balance. By 2002-03, new operating expenditure on the supply/demand balance had increased by £26 million per year for the water and waste water companies since 1997-98.

New operating expenditure represented approximately 10% of total operating expenditure in the water and waste water companies in England and Wales in 2002-03. This includes new operating expenditure related to improved levels of service to customers.

How we deal with new operating expenditure

New operating expenditure can place an upward pressure on customers' bills. It is therefore important that Scottish Water provides a clear justification for any new operating costs that it expects to incur, and that any claims for new operating expenditure undergo careful scrutiny. Customers should not be expected to pay for unnecessary or inefficient levels of new operating expenditure.

We asked Scottish Water to detail claims for new operating claims in its second draft business plan. We assessed Scottish Water's claims for new operating costs against the same criteria that we used in the Strategic Review of Charges 2002-06. These were outlined in Chapter 2.

We asked the Reporter and an independent panel of engineers to scrutinise carefully the capital investment programme and the claims for new operating costs contained in Scottish Water's second draft business plan. In particular, we reviewed whether proper minimum whole life cost solutions⁵⁴ had been adopted.

New operating expenditure 2006-10

In its second draft business plan, Scottish Water submitted a total claim for new operating expenditure of £37 million by 2009-10, before efficiencies. This claim is set out in Table 7.1. It included new operating costs for both water and waste water, and covered seven separate areas of service phased across the 2006-10 regulatory control period⁵⁵.

⁵⁴ Whole life cost: this calculates the total cost in today's money of building and operating an asset over its entire life. Future costs have a lower present value than up front costs.

⁵⁵ All expenditure is reported at 2003-04 prices, before efficiencies. Total may not add due to rounding.

Table 7.1: Scottish Water's claimed new operating expenditure (pre-efficiency) 2006-10

	2006-07	2007-08	2008-09	2009-10
Water:				
Drinking water quality enhancements	£0.7m	£3.5m	£5.1m	£26.5m
Supply and demand balance	£0.2m	£0.7m	£1.1m	£1.5m
Leakage ⁵⁶				
Customer service	£0.0m	£0.0m	£0.1m	£0.1m
Water subtotal	£0.9m	£4.2m	£6.3m	£28.1m
Waste water:				
Environmental compliance	£0.1m	£0.1m	£0.4m	£2.8m
Supply and demand balance	£0.5m	£1.6m	£2.6m	£3.7m
Customer service ⁵⁷	£1.3m	£1.6m	£2.1m	£2.5m
Waste water subtotal	£0.7m	£2.1m	£3.9m	£7.9m
Total	£1.6m	£6.3m	£10.2m	£36.0m

We have assessed each claim individually using the criteria listed in Chapter 2. We discuss each in turn.

Water service

Drinking water quality enhancements

Scottish Water's second draft business plan estimates that it will incur the new operating expenditure in delivering water quality improvements set out in Table 7.2.

Table 7.2: Scottish Water's claimed new operating expenditure (pre-efficiency) to deliver drinking water quality enhancements 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.7m	£3.5m	£5.1m	£26.5m

This claim is before Scottish Water's assumption of an annual 1.85% improvement in efficiency.

We have concluded that Scottish Water should receive less new operating expenditure as a result of improvement to drinking water quality. We have reached this conclusion for the following reasons:

- The companies in England and Wales in 2003-04 were already delivering these enhanced quality standards. The cost to the companies of meeting

these standards is already included in the benchmark baseline for Scottish Water.

- Our independent panel of engineers concluded that the nature and scope of technical solutions to meet the Ministers' objectives for drinking water quality would suggest that less operating costs are likely to be incurred.
- Our analysis of the expected completion dates of projects indicate that operating expenditure will be incurred less quickly.

Our analysis indicates that the pre-efficiency allowance for new operating expenditure set out in Table 7.3 would be appropriate.

Table 7.3: Allowed for level of new operating cost (pre-efficiency) to deliver water quality enhancements 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.1m	£0.3m	£0.9m	£6.0m

Supply and demand balance (water)

Table 7.4 outlines the new operating expenditure arising from the supply and demand balance for water that Scottish Water included in its second draft business plan.

Table 7.4: Scottish Water's claimed new operating expenditure (pre-efficiency) for the water service supply and demand balance 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.2m	£0.7m	£1.1m	£1.5m

This claim is before Scottish Water's assumption of an annual 1.85% improvement in efficiency.

Our analysis has again indicated that Scottish Water requires less new operating costs. We have reached this conclusion for the following reasons:

- The Reporter advised that the projected profile could be reduced.

⁵⁶ Scottish Water states that its measures to reduce leakage will actually reduce operating expenditure marginally.

⁵⁷ This includes Scottish Water's claim for sewer jetting costs of £1.2 million per year.

- Our independent panel of engineers concluded that the nature and scope of technical solutions to meet the Minister's objectives for releasing development constraints would suggest that less operating costs are likely to be incurred.
- Our analysis of the expected completion dates of projects to release development constraints indicates that operating costs will arise later than estimated.

Our analysis indicates that the allowance for pre-efficiency new operating expenditure set out in Table 7.5 would be appropriate.

Table 7.5: Allowed for level of new operating cost (pre-efficiency) for the water service supply and demand balance 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.1m	£0.3m	£0.5m	£0.5m

Leakage

Scottish Water states that its planned measures to reduce leakage will reduce operating expenditure by £0.1 million by 2009-10. This reduction is not material to charges.

Customer service improvements (water)

In its second draft business plan, Scottish Water claimed total new operating expenditure to improve customer service for the water service of £0.1 million by 2009-10.

This claim is small and is not material to overall charges. We have accepted the claim, although it will be reduced to reflect the scope for efficiency (discussed in Chapter 14).

In Chapter 13, we discuss the improvements in Scottish Water's levels of service to customers that we have assumed will be delivered. These improvements in customer service are an integral part of this draft determination of charges.

Scottish Water declined to provide estimates for the cost that it would incur to meet the standards in England and Wales for unplanned supply interruptions, drinking water

quality compliance and hosepipe restrictions. Scottish Water also returned estimates of zero costs for the response to billing queries, written complaints and telephone contacts. Unfortunately, this has meant that we could not include the difference in the level of service in water provided to customers in our assessment of Scottish Water's relative efficiency.

Waste water service

Environmental compliance (waste water)

Table 7.6 outlines the new operating expenditure arising from environmental compliance that Scottish Water included in its second draft business plan.

Table 7.6: Scottish Water's claimed new operating expenditure (pre-efficiency) for waste water environmental compliance 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.1m	£0.1m	£0.4m	£2.8m

This claim is before Scottish Water's assumption of an annual 1.75% efficiency improvement.

Once again our analysis has suggested that Scottish Water should incur lower operating costs. We reached this conclusion for the following reasons:

- Our independent panel of engineers concluded that the nature and scope of technical solutions to meet the Ministers' objectives for environmental compliance would suggest that less operating costs are likely to be incurred.
- Our analysis of the expected completion dates of projects would suggest that less operating costs are likely to be incurred.

We have concluded that the pre-efficiency costs set out in Table 7.7 should be allowed for.

Table 7.7: Scottish Water’s allowed for new operating expenditure (pre-efficiency) for waste water environmental compliance 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.0m	£0.0m	£0.4m	£2.5m

Supply and demand balance (waste water)

Table 7.8 outlines the new operating expenditure arising from the supply and demand balance for waste water that Scottish Water included in its second draft business plan.

Table 7.8: Scottish Water’s claimed new operating expenditure for the waste water service supply and demand balance 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.5m	£1.6m	£2.6m	£3.7m

This claim is before Scottish Water’s assumption of an annual 1.75% improvement in efficiency.

Once again our analysis suggested that Scottish Water should incur lower operating costs. We have reached this conclusion for the following reasons:

- The Reporter advised that Scottish Water’s estimates were too high.
- Our independent panel of engineers concluded that the nature and scope of technical solutions to meet the Ministers’ objectives for releasing development constraints should require less operating costs.
- Our analysis of the completion dates of projects to release development constraints assumed in the business plan indicated that less operating costs should be incurred.

We have concluded that the pre-efficiency costs set out in Table 7.9 should be allowed for.

Table 7.9: Scottish Water’s allowed for new operating expenditure (pre-efficiency) for the waste water service supply and demand balance 2006-10

	2006-07	2007-08	2008-09	2009-10
Operating expenditure	£0.2m	£0.8m	£1.2m	£1.2m

Customer service improvement (waste water)

In its second draft business plan, Scottish Water claimed total new operating expenditure to improve customer service for the waste water service of £1.4 million by 2009-10.

This claim is small and is not material to overall charges. We have accepted the claim, although it will be reduced to reflect the scope for efficiency (discussed in Chapter 14).

We have also allowed for Scottish Water’s claim of £1.2 million per year for sewer-jetting costs.

In Chapter 13, we discuss the improvements in Scottish Water’s levels of service to customers that we have assumed will be delivered. Again, these improvements in customer service are an integral part of this draft determination of charges.

Scottish Water declined to provide estimates for the cost of maintaining the same standards as in England and Wales for flooding (due to overloaded sewers and other causes), waste water treatment works compliance, category 1 and 2 pollution incidents, and category 3 pollution incidents. Scottish Water returned estimates of zero costs for the response to billing queries, written complaints and telephone contacts, and unsatisfactory sludge disposal. Unfortunately, this has meant that we could not include the differences in the level of service in waste water provided to customers in our assessment of Scottish Water’s relative efficiency.

Overall level of allowed new operating expenditure

Scottish Water claimed that annual new operating expenditure of £37.2 million would be incurred by 2009-10. Our detailed analysis of this claim has led us to

conclude that we should allow annual new operating expenditure of £12.2 million (in 2003-04 prices) by 2009-10. This is detailed in Table 7.10.

expenditure. Given Scottish Water's efficiency gap⁵⁹ we see no reason why it should not be able to emulate these companies' performance.

Table 7.10: Allowed for level of new operating expenditure (pre-efficiency) 2006-10⁵⁸

	2006-07	2007-08	2008-09	2009-10
Water:				
Base	£0.0m	£0.0m	£0.0m	£0.3m
Drinking water quality enhancements	£0.1m	£0.3m	£0.9m	£6.0m
Supply/demand balance	£0.1m	£0.3m	£0.5m	£0.5m
Customer service	£0.0m	£0.0m	£0.0m	£0.0m
Water subtotal	£0.2m	£0.6m	£1.4m	£6.9m
Waste water:				
Base	£0.6m	£1.2m	£1.2m	£1.2m
Environmental enhancements	£0.0m	£0.0m	£0.4m	£2.5m
Supply/demand balance	£0.2m	£0.8m	£1.2m	£1.2m
Customer service	£0.1m	£0.3m	£0.5m	£0.5m
Waste water subtotal	£0.9m	£2.3m	£3.3m	£5.4m
Total	£1.1m	£3.0m	£4.7m	£12.2m

Conclusion

It is important that sufficient new operating expenditure is allowed for in the regulatory settlement to deliver the objectives set out by the Minister in his February statement. New operating expenditure increases customers' bills and it is therefore important that it is no higher than it needs to be.

We have assessed Scottish Water's claims for new operating expenditure against the same set of criteria used in the Strategic Review of Charges 2002-06. This has enabled us to ensure that where new operating expenditure is required, it is at an appropriate level. In Chapter 14 we discuss the scope for efficiency that we have identified.

Historically although the majority of companies south of the border have incurred significant new operating expenditure, they have been able to manage total operating expenditure such that it has remained stable or has fallen. This has been easier for companies where there is a pronounced efficiency gap in operating

⁵⁸ Totals may not add exactly due to rounding.

⁵⁹ This is set out in detail, using three different models, in Chapters 8-10.

Section 3: Setting the allowed for level of operating costs

Chapter 8: Establishing the operating cost efficiency gap – the Ofwat models

Introduction

This chapter sets out the methods that Ofwat has developed to assess the relative operating expenditure efficiency of the water and sewerage companies in England and Wales. We used these methods to assess the performance of Scottish Water and compare its performance with the companies in England and Wales.

The results of our efficiency analysis have been taken into account in the charge caps that we set in this draft determination. The level of operating costs has a direct impact on customers' bills. The scope for efficiency that we identify reduces operating expenditure and, consequently, the level of revenue that is required from customers.

This chapter sets out the following:

- A brief history of the development of Ofwat's operating expenditure econometric models.
- Details of the nine operating expenditure models.
- Criticisms of the econometric models that have been put forward by Scottish Water and the companies in England and Wales.
- Scottish Water's relative efficiency as calculated using these models.
- Details of the adjustments that we have made to the modelling results and the impact of these adjustments on Scottish Water's relative efficiency.

Development of the econometric models

Ofwat uses a top-down approach to benchmarking the English and Welsh companies and setting efficiency targets. It employs econometric modelling, a method that uses regression analysis 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.

The econometric models used by Ofwat were originally developed by Ofwat and Professor Mark Stewart of the University of Warwick in the early 1990s. They were used for Ofwat's 1994 price review. They were then reviewed in the late 1990s, again with input from Professor Mark Stewart, and the revised models were used for Ofwat's 1999 price review. Ofwat published the latter set of models in January 1999 and we used this version of the models to assess the efficiency of the Scottish water industry at the Strategic Review of Charges 2002-06. We have continued to use the Ofwat models to monitor Scottish Water's progress towards achieving its efficiency targets and we publish the results of this analysis in our annual 'Costs and Performance Report'.

The Ofwat models are also used to monitor the relative efficiency of the companies south of the border on an annual basis. The results of this analysis are published in Ofwat's annual report 'Water and sewerage service unit costs and relative efficiency'⁶⁰. This annual performance assessment will influence the share price of the water companies whose shares are quoted on the London Stock Exchange.⁶¹

In January 2005, Ofwat⁶² published the models that it used for its final determination. The models are broadly similar to those published by Ofwat in January 1999. There are nine models for operating expenditure:

- water resources and treatment;
- water distribution;
- water power;
- water business activities;
- sewer network;

⁶⁰ Further information regarding the development of the Ofwat models and reviews of the models by external parties is given in Chapter 8, Volume 4 of our methodology consultation, 'Our work in regulating the Scottish water industry: The scope for operating cost efficiency'.

⁶¹ In its response to our second open letter to Ministers, Scottish Water argued that annual performance should not be regarded as important. Such a position is not consistent with the scrutiny that investors give the companies south of the border.

⁶² A revised suite of models was originally published in January 2004, but these were subsequently revised in light of the companies' June 2004 submissions.

- large sewage treatment works;
- small sewage treatment works;
- sludge treatment and disposal; and
- sewerage business activities.

It is these models that we have used to benchmark Scottish Water.

The Ofwat econometric models

The purpose of each model is to establish a relationship between the costs reported by the companies and external cost drivers. These cost drivers have a significant impact on costs but are outside the control of the management of the company. By controlling the principal external cost drivers in the models, we can determine relative efficiency with a high degree of accuracy. The cost drivers and explanatory factors used to derive the current suite of models relate to the financial year 2003-04.

The models take different forms and are summarised in Table 8.1.

Table 8.1: 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 BOD5.
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.

Each of these models is detailed below.

Water resources and treatment

This model predicts the costs associated with water resources, the treatment process and the operating environment. Specifically, it takes into account economies of scale at water source level and the extra costs of treatment resulting from the proportion of supplies that are taken from rivers. Costs per head are modelled rather than volumetric unit costs. This is to avoid rewarding high leakage, or penalising companies that have minimised demand.

Table 8.2: Ofwat's model for water resources and treatment operating expenditure

Water resources and treatment		
Explanatory factors	Coefficient	Standard error
Modelled cost:	Resources and treatment functional expenditure (£m) less power expenditure (£m), less Environment Agency charges (£m), divided by resident population (millions)	
Constant	0.468	1.990
Number of sources divided by distribution input (Ml/d)	22.415	6.557
Proportion of supplies derived from river sources	5.933	2.487
Statistical indicators:	Number of observations: 22	R ² : 0.381

Water distribution

This model uses the ratio of the length of large mains to small mains as the cost driver. Repairs, maintenance and inspection of large mains are likely to incur much greater costs than those on small mains. The model also reflects the higher costs of operating in urban areas, where the density of underground services and traffic congestion can impair productivity. The unit costs are again expressed per head of population, rather than by volume of water. This reduces the potential to penalise companies with low leakage and/or low demand.

Table 8.3: 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 factors	Coefficient	Standard error
Constant	-5.213	0.158
Length of main greater than 300mm diameter/ total length of main	6.106	1.941
Statistical indicators:	Number of observations: 22	R ² : 0.331

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. The model recognises that economies of scale are available through pump maintenance and negotiation of electricity tariffs.

Table 8.4: Ofwat’s model for water power operating expenditure

Water power		
Modelled cost:	Log to base e of power expenditure (£m)	
Explanatory factors	Coefficient	Standard error
Constant	-8.930	0.265
Log to base e of (distribution input (Ml/d) x average pumping head)	0.929	0.024
Statistical indicators:	Number of observations: 22	R ² : 0.986

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. It recognises that there are economies of scale. Other potential cost drivers, for example the number of complaints, are within the control of management and so are not considered valid explanatory factors.

Table 8.5: Ofwat’s model for water business activities operating expenditure

Water business activities		
Modelled cost:	Log to base e of business activities expenditure (£m) plus doubtful debts (£m)	
Explanatory factors	Coefficient	Standard error
Constant	-3.646	0.270
Log to base e of number of billed properties (thousands)	0.917	0.042
Statistical indicators:	Number of observations: 22	R ² : 0.960

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 affects 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 takes account of the higher costs expected in regions with a significant holiday population.

Table 8.6: Ofwat’s model for sewer network operating expenditure

Sewer network		
Modelled cost:	Log to base e of sewer network functional expenditure (£m) less Environment Agency charges (£m), per kilometre of sewer for each area	
Explanatory factors	Coefficient	Standard error
Constant	-5.858	0.355
Log to base e of area of sewer district per kilometre of sewer	0.157	0.032
Log to base e of residential population per kilometre of sewer	0.776	0.187
Holiday population divided by resident population	1.550	0.487
Statistical indicators:	Number of observations: 64	R ² : 0.519

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 household and industrial, expressed in terms of the

number of household customers required to produce a similar strength and volume of sewage.

The model takes into account the sewage load reaching the treatment works; the type of treatment in place (activated sludge increases power costs); and the quality of the discharged effluent required to meet environmental standards. The model exhibits considerable economies of scale in the treatment of sewage at the level of individual works.

Table 8.7: 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 (£000) and terminal pumping costs (£000)	
Explanatory factors	Coefficient	Standard error
Constant	-1.813	0.245
Log to base e of total load	0.800	0.027
Activated sludge used	0.393	0.052
Tight effluent consent for both suspended solids and BOD5	0.057	0.048
Statistical indicators:	Number of observations: 367	R ² : 0.753

Small sewage treatment works

This model uses average unit costs across England and Wales. This is a necessary simplification given that there are thousands of small sewage treatment works. The cost matrix takes into account the size of the works – there are significant economies of scale – and the type of treatment process.

Table 8.8: 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 BOD ₅ /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	0.58	0.76	0.94	0.87	0.33	0.76	0.76	1.01	0.08	0.29
Size band 2	0.37	0.71	0.48	0.70	0.34	0.51	0.66	-	0.25	0.05
Size band 3	0.21	0.44	0.30	0.36	0.41	0.30	0.40	0.09	0.02	0.01
Size band 4	0.22	0.22	0.17	0.18	0.29	0.17	0.16	0.03	0.12	0.01
Size band 5	-	0.14	0.11	0.14	0.17	0.11	0.12	0.03	-	0.00
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. The unit cost approach is again a necessary simplification given the large number of sludge treatment and disposal facilities.

Table 8.9: 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 dry solids)							
	Farmland - untreated	Farmland - conventional	Farmland - advanced	Incineration	Landfill	Composted	Land reclamation	Other
£000/ttds	222.8	173.5	231.5	171.1	169.5	157.8	171.0	168.4
Number of observations: 80								

Sewerage business activities

This model uses an average unit cost per billed property across England and Wales. There are too few sewerage companies of sufficiently different size to allow economies of scale to be estimated.

Table 8.10: 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 12.43
Number of observations: 10	

addresses the use of econometric models in Scotland. It is worth noting that although the papers are critical of the models used by Ofwat, most (but not all) of them do not contain proposals for alternative ways to assess relative efficiency.

The criticisms that we consider are relevant to our analysis of Scottish Water’s relative efficiency are as follows:

- The choice of explanatory factors and type of model.
- The use of ordinary least squares regression, as opposed to other methods of assessing relative efficiency.
- The assumption that the residual represents inefficiency only and that this can then be used to set efficiency targets for the water and sewerage companies.
- The application of models to Scottish Water that were derived using information from the companies south of the border.

We address each of the criticisms in turn.

Criticisms of the Ofwat econometric models

As part of its first draft business plan, Scottish Water submitted a number of papers by academics and consultants criticising the Ofwat econometric models. The majority of the papers submitted by Scottish Water were written for the water and sewerage companies in England and Wales or Water UK, the industry trade body. The papers were submitted to Ofwat, two of them at the 1999 price review⁶³ and the remainder in the run up to the 2004 price review. Only one paper specifically

⁶³ Davidson 'Ofwat Efficiency Assessments Using Econometric Models: A comment', 1999 and Montgomery Watson 'Water distribution cost drivers', 1999.

The choice of explanatory factors

The most common criticism of the models is that they do not accurately reflect the true cost drivers in the water and sewerage industry. In particular, this criticism has been directed at the water distribution and water resources and treatment models. In September 2002, Ofwat held a workshop to review the water distribution model. At that workshop a number of concerns were raised regarding the water resources and treatment model. Ofwat reviewed the suggestions made at the workshop and derived and tested alternative models. Ofwat provided information to the companies on these alternatives, but concluded that any improvement in the explanatory power of the model was insufficient to justify a move away from the original model.

Ofwat remains confident that its models are fit for purpose and that it is not misusing the information it collects. In its final determinations⁶⁴, Ofwat states that it has not found any additional information that could materially improve its analysis. It also points out that it has worked with the companies to understand better the impact of company-specific factors. Indeed in 2003-04 Ofwat allowed 63 company claims for such factors⁶⁵. We have adopted the same approach towards company-specific factors for Scottish Water and this is discussed in Chapter 11 of this volume.

The use of ordinary least squares regression analysis

A number of commentators have criticised Ofwat's use of ordinary least squares (OLS) regression to assess relative efficiency. Ofwat commissioned Europe Economics to consider alternatives to the OLS approach. Europe Economics used data envelopment analysis (DEA) and stochastic frontier analysis (SFA). Ofwat noted that although the results of the alternative approaches were different in a number of respects, the overall picture was similar and in most cases there was a high degree of correlation between the results of all three methods⁶⁶.

Scottish Water also submitted a paper by Weyman-Jones⁶⁷, which is inconclusive on SFA. The author concludes that it is possible that either no inefficiency is present, or the company dataset is too small or too variable for SFA to converge on a result. However, the author recognises that regulators have to make judgements about the comparative efficiency of the companies they regulate.

We recognise that there is a potential role for other methods of assessing relative efficiency. In its reviews of the price limits of both Sutton & East Surrey and Mid Kent in 2000⁶⁸, the Competition Commission recommended that Ofwat should not rely solely on its suite of nine operating expenditure models⁶⁹. We took account of that recommendation in our Strategic Review of Charges 2002-06 and developed our own alternative model. Our alternative model is discussed more fully in Chapter 10.

Interpretation of the residual

The third key criticism of the models is that the residual from the econometric analysis should not be interpreted wholly as representing efficiency. In a report for Water UK⁷⁰, Professor Cubbin breaks the residual down between six factors: omitted variables, poor proxy, sampling error, measurement error, mathematical form and efficiency. The author carries out his analysis for each of the nine operating expenditure models and the nine capital maintenance expenditure models. He concludes that for the operating expenditure models, efficiency accounts for around 40% of the residual on the water service and around 50% of the residual on the sewerage service.

Ofwat reviewed the paper and concluded that uncertainties of this scale are unlikely under normal operating circumstances⁷¹. Ofwat also pointed out that it employs other mechanisms and checks which ensure that potential errors and uncertainties are taken into account.

⁶⁴ Ofwat, 'Future water and sewerage charges 2005-10: Final determinations', December 2004.

⁶⁵ Ofwat's water and sewerage service unit costs and relative efficiency 2003-04 report, page 59.

⁶⁶ Ofwat, 'Water and sewerage service unit costs and relative efficiency: 2001-02 report', December 2002.

⁶⁷ Weyman-Jones, 'Comparative efficiency analysis in the water industry', Fourth draft, December 2002.

⁶⁸ Competition Commission reports 'Sutton and East Surrey Water plc: A report of the references under sections 12 and 14 of the Water Industry Act 1991' (September 2000) and 'Mid Kent Water plc: A report of the references under sections 12 and 14 of the Water Industry Act 1991' (September 2000).

⁶⁹ In response, Ofwat developed a simple overall service model to be used as a check on the results of its efficiency analysis.

⁷⁰ Professor John Cubbin, 'Assessing Ofwat's efficiency econometrics', March 2004.

⁷¹ Ofwat, 'Future water and sewerage charges 2005-10: Final determinations', December 2004.

We agree with Ofwat’s view. Several elements of Ofwat’s approach should allay companies’ concerns regarding the results of the econometric models. First, Ofwat has recognised the potential for errors in information and has adjusted the residuals downwards in an effort to reduce the impact of these errors. It adjusts the water service residual by 10% and the sewerage service residual by 20%.

Ofwat also does not set efficiency targets to close 100% of the assessed efficiency gap. At both the 1999 and 2004 price reviews, Ofwat set targets to close 60% of the gap. Incentive-based regulation seeks to reward a determined management that can outperform its regulatory contract. There would be little opportunity to reward companies if targets were set at the theoretical maximum scope for improvement. It is not reasonable, therefore, to suggest that a target for gap closure of less than 100% indicates that the residual is not an accurate measure of the efficiency gap.

We have broadly followed Ofwat’s approach. We have taken a number of steps which we believe should mitigate Scottish Water’s concerns regarding the use of the residual as a measure of efficiency.

Applying the Ofwat models to Scottish Water

Only one of the papers submitted by Scottish Water specifically addresses our use of the Ofwat models to assess Scottish Water’s relative efficiency. This paper⁷², by Professor John Cubbin of City University, is an update of the earlier paper written for Water UK, which we discussed earlier. His analysis is extended to examine issues arising from the use of the Ofwat models to assess Scottish Water’s relative efficiency. The author concludes that using these models to assess Scottish Water’s efficiency could introduce errors into the results. He claims that this is because the models were developed specifically for the companies in England and Wales. The amount of the residual that is due to efficiency is therefore lower in Scotland than it is south of the border.

Professor Cubbin has examined each of the Ofwat models in detail and set out reasons why he thinks the

models are less suitable for application to Scottish Water. These reasons appear to relate to differences between the operating environment in Scotland and in England and Wales. Table 8.11 sets out the issues which he believes have an impact on each of the models.

Table 8.11: Issues raised by Professor Cubbin regarding the use of Ofwat’s econometric models to calculate Scottish Water’s relative efficiency

Model	Issues
Water distribution	Rurality: travel costs, electricity, number of service reservoirs
Water resources and treatment	Sources; size of treatment plant; raw water quality
Water power	Electricity distribution costs; non-pumping costs
Water business activities	Cryptosporidium testing; bad debt
Sewer network	Lateral sewers; possibly age and condition of assets
Large sewage treatment works	Possibly electricity costs
Small sewage treatment works	Very small works; deep rural effect; possibly septic tanks effect
Sludge treatment and disposal	Sparsity; specialised sludge treatment works
Sewerage business activities	Bad debt

Almost all of these potential problems were included as special factors in Scottish Water’s submission. We have adopted the same approach as Ofwat in our analysis of special factors. If Scottish Water has presented a robust claim for a company-specific factor, then we have reduced the calculated residual by the amount of that claim. We therefore consider that the models do not need to be altered to take account of these issues.

Professor Cubbin also stated that we could improve the models by including information from Scottish Water in re-estimated models. This would improve the models in two ways: it would increase the number of comparators and would produce what are perhaps more relevant models. We have re-estimated the Ofwat models including information from Scottish Water. These models are further discussed in Chapter 9. These re-estimated models also address any concerns that might remain about Scottish Water being set a slightly harder target using the Ofwat models because they did not use information from Scottish Water.

⁷² Professor John Cubbin, ‘How appropriate are Ofwat’s efficiency models for Scotland?’, October 2004.

Results from applying the Ofwat models to Scottish Water

We explained earlier that the Ofwat operating expenditure econometric models were developed using 2003-04 information from the water and sewerage companies in England and Wales. We have input information from Scottish Water into these models. We explained the use of each model in our methodology. We exclude the following costs from our benchmarking:

- Charges paid by the companies to the Environment Agency (for either water abstraction or discharge consents) and charges paid by Scottish Water to the Scottish Environment Protection Agency (for discharge consents).
- Local authority rates – these are set by local authorities and cannot be compared between Scotland, England and Wales.
- Third party costs – these comprise an assortment of costs imposed upon the companies and Scottish Water in respect of, for example, diversions of mains and sewers to accommodate new road schemes.
- The estimated operating costs of PPP works. Scottish Water estimated these costs to be £43.3 million, covering the operation of sewer networks, sewage treatment works and sludge treatment and disposal facilities. Of this £43.3 million, around £1.1 million is costs that Scottish Water incurs in managing its PPP contracts. We have included this £1.1 million in our efficiency analysis because we take the view that this element of costs is under the control of Scottish Water. The remaining £42.2 million is not under the direct control of Scottish Water and so is excluded from the analysis.

We also made an adjustment to reflect the small sewage works operated by Scottish Water.

The Ofwat matrix of unit costs for small sewage treatment works does not include unit costs for three types of works operated by Scottish Water. Some 3% of sewage load is treated at these works in Scotland. We used information

from Scottish Water to calculate unit costs for these three types of works. The unit costs and categories of works are outlined in Table 8.12.

Table 8.12: Additional small sewerage works unit costs

Works category	Unit cost £000/(kg BOD5/day)
Primary works size band 5	0.21
Sea preliminary works size band 2	0.02
Screened sea outfalls size band 5	0.01

Efficiency scores

The econometric models generate a series of efficiency scores (the residuals in the statistical analysis). We compare these residuals in order to establish the relative efficiency of Scottish Water and the companies south of the border.

We set out the results of our analysis of Scottish Water's efficiency in 2003-04 in Table 8.13. We present our results for the water and sewerage services separately and provide a combined result for the whole business. We do not report scores for the individual models. This is for two reasons.

1. Our efficiency targets are high-level targets. We do not set targets for individual components of expenditure.
2. Issues of cost allocation can arise at an individual model level, which would skew the results of individual models. Issues of cost allocation are not material at the higher, summary level. Any such problems are likely to balance out at a service level.

Table 8.13: Scottish Water's efficiency scores 2003-04

	Efficiency score
Water service	112
Sewerage service	130

We adjust the efficiency scores such that the average score in England and Wales is 100. These results do not take into account residual adjustments, any special

factors or differences in the level of service provided to customers.

The efficiency gap is calculated as follows: using the average water service as an example, Scottish Water's efficiency score is 112 and that of the average is 100. The gap is calculated as $((112-100)/112)*100$.

In its 'Water and sewerage service unit costs and relative efficiency 2003-2004 report', Ofwat reported that the benchmark company for the water service in England and Wales was Wessex Water. For the sewerage service, the benchmark company was Yorkshire Water. These two companies were used by Ofwat when it calculated the level of catch-up efficiency to include in companies' efficiency targets⁷³. We can use our results to calculate the efficiency gap between Scottish Water and these benchmark companies. Table 8.14 sets out the efficiency gaps between Scottish Water and the average company in England and Wales and the efficiency gap between Scottish Water and the two benchmark companies.

Table 8.14: Scottish Water's efficiency gap

	Efficiency gap
Average – water service	11%
Wessex – water service	30%
Yorkshire – water service	26%
Average – sewerage service	23%
Wessex – sewerage service ⁷⁴	39%
Yorkshire – sewerage service	34%
Average – combined ⁷⁵	16%
Wessex – combined	34%
Yorkshire – combined	29%

Table 8.14 shows that the efficiency gap between Scottish Water and the benchmark companies is around 30%.

Residual adjustments

We have already explained that Ofwat adjusts the companies' residuals by 10% on the water service and 20% on the sewerage service to take account of potential errors in its modelling. In our methodology consultation, we indicated that we had concerns about making adjustments to the residuals. We were concerned that the adjustment to Scottish Water's

residual would be considerably larger than the comparable adjustments in England and Wales. This is because Scottish Water has a relatively large residual. Such a large adjustment may have a disproportionate impact on customers' bills.

Although we continue to have reservations about these adjustments, Scottish Water's recent improvements in operating expenditure efficiency have slightly reduced our concerns. The adjustments to Scottish Water's residuals are now smaller. We have therefore decided to apply the same residual adjustments as Ofwat applies in assessing Scottish Water's relative efficiency. The impact of these adjustments on Scottish Water's relative efficiency is shown in Table 8.15.

Table 8.15: Scottish Water's efficiency score after residual adjustments

	Efficiency score
Water service	111
Sewerage service	124

We have adjusted the results in Table 8.15 such that the average in England and Wales is 100. The biggest difference is in the results for the sewerage service. This reflects the larger adjustment to the sewerage residual and Scottish Water's relatively poor performance in this area. These adjustments are applied to all companies rebalanced to the England and Wales average. Scottish Water's relative efficiency does not improve by as much as might have been expected. The efficiency gaps, however, are smaller. This is set out in Table 8.16.

⁷³ It is important to remember that Ofwat sets separate efficiency targets for the water and sewerage services.

⁷⁴ The reason that there is a larger efficiency gap to Wessex than Yorkshire on the sewerage service is that at this stage in our analysis, we have not taken into account either special factors or pension adjustments.

⁷⁵ We use the separate water and sewerage scores to calculate the combined efficiency gap for both services.

Table 8.16: Scottish Water’s efficiency gaps after adjustments of the residuals

	Efficiency gap
Average – water service	10%
Wessex – water service	28%
Yorkshire – water service	23%
Average – sewerage service	19%
Wessex – sewerage service	33%
Yorkshire – sewerage service	29%
Average – combined	14%
Wessex – combined	30%
Yorkshire – combined	26%

Table 8.16 shows that even after the adjustments to the residuals, the efficiency gap between Scottish Water and the average in England and Wales is around 14%. The gap between Scottish Water and the benchmark companies in England and Wales is above 25%.

Conclusions

In this chapter we have set out the methods that Ofwat uses to assess efficiency in operating expenditure for the water and sewerage companies in England and Wales. We have explained why we believe that its methods are robust and have addressed criticisms of the models from Scottish Water and other stakeholders.

We have applied the Ofwat models to Scottish Water’s operating expenditure, asset and customer information for 2003-04. This analysis shows that there is still a significant gap in efficiency between Scottish Water and the benchmark companies in England and Wales. Even after we adjust the calculated residuals, the efficiency gap between Scottish Water and the benchmark companies is above 25%.

These results help to inform our decisions on the level of efficiency targets to set for Scottish Water, which are considered in more detail in the chapters which follow.

Section 3: Setting the allowed for level of operating costs

Chapter 9: Establishing the operating cost efficiency gap – the modified Ofwat models

Introduction

In Chapter 8 we set out the methods that Ofwat has developed for assessing the efficiency in operating expenditure of the water and sewerage companies in England and Wales. We applied the Ofwat models to Scottish Water and reported the results of that analysis. This analysis indicated that a significant efficiency gap remains.

In this chapter we repeat the analysis using recalculated versions of Ofwat's econometric models. We have reworked the Ofwat models to include information from Scottish Water in 2003-04. The chapter covers the following issues.

- How we included information from Scottish Water to create a modified set of econometric models.
- The details of the modified models.
- The results of our analysis of Scottish Water's relative efficiency using the modified models.
- The adjustments that we made to the modelling results and our conclusions on Scottish Water's relative efficiency.

We believe that by recalculating econometric models that include information from Scottish Water, we have addressed many of the criticisms of the models that Scottish Water has raised.

Information from Scottish Water

The information from Scottish Water that we used to develop the modified set of models relates to the financial year 2003-04. Ofwat also used information from the companies in 2003-04 in developing its models. We received the necessary information from Scottish Water in its 2004 Annual Return⁷⁶. The water and sewerage companies in England and Wales submit a similar June Return to Ofwat. We have made every effort to ensure that we collect information on the same basis.

In 2003-04, the Reporter scrutinised Scottish Water's Annual Return for the first time. Where the Reporter raised issues about the accuracy and quality of information that Scottish Water had reported, we were able to discuss these issues with Scottish Water and to take account of its responses in our analysis.

In 2003-04, Scottish Water made a number of changes to the information provided in its Annual Return. These related primarily to operating expenditure. Scottish Water indicated that these changes reflected better information provided by its new financial reporting system.

Scottish Water has made good progress in improving the asset and customer information that we used in the modelling. Some issues remain relating to, for example, the information that is provided about how much water is put into the distribution system, and the amount of pumping necessary. We believe that these issues are not material to our assessment of the scope for efficiency.

PPP

We have excluded information about the costs, customers served and asset bases of Scottish Water's PPP contracts. We recognise that Scottish Water cannot control the operating costs at PPP works.

Developing the modified models

We used the same method that Ofwat uses in developing our models. The information that the companies in England and Wales provide to Ofwat is published on the Ofwat website. We also took account of the adjustments to costs that Ofwat had made. This included adjustments to the allocation of leakage expenditure, which were published in Ofwat's 'Water and sewerage service unit costs and relative efficiency 2003-2004 report'. We checked the consistency of the information that we used from the companies south of the border by ensuring that we could replicate Ofwat's calculations in every aspect.

⁷⁶ The Annual Return is an annual submission made to us by Scottish Water that covers all aspects of the business, including operating expenditure, asset information and customer information.

We then added information from Scottish Water to the information provided by the companies. We used regression analysis and unit cost calculations to develop the modified models. The results of our analysis are outlined below.

The modified models

We did not change the form of the Ofwat models, and developed a suite of nine operating expenditure models:

- 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.

Water resources and treatment

We developed the water resources and treatment model shown in Table 9.1.

Table 9.1: Modified model (including Scottish Water information) 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 or Scottish Environment Protection Agency charges (£m), divided by resident population (millions)	
Explanatory factors	Coefficient	Standard error
Constant	0.473	1.940
Number of sources divided by distribution input (M/d)	22.470	6.377
Proportion of supplies derived from river sources	5.920	2.422
Statistical indicators:	Number of observations: 23	R ² : 0.384

The information from Scottish Water has not had a significant impact on the coefficients of the model.

Water distribution

We developed the water distribution model shown in Table 9.2.

Table 9.2: Modified model (including Scottish Water information) 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 factors	Coefficient	Standard error
Constant	-5.221	0.151
Length of main greater than 300mm diameter/ total length of main	6.225	1.815
Statistical indicators:	Number of observations: 23	R ² : 0.359

The introduction of information from Scottish Water has again not had a significant impact on the coefficients of the model.

Water power

We developed the water power model shown in Table 9.3.

Table 9.3: Modified model (Scottish Water information included) for water power operating expenditure

Water power		
Modelled cost:	Log to base e of power expenditure (£m)	
Explanatory factors	Coefficient	Standard error
Constant	-8.968	0.267
Log to base e of (distribution input (M/d) x average pumping head)	0.934	0.024
Statistical indicators:	Number of observations: 23	R ² : 0.986

The information from Scottish Water has again not had a significant impact on the coefficients of the model.

Water business activities

We developed the water business activities model shown in Table 9.4.

Table 9.4: Modified model (Scottish Water information included) for water business activities operating expenditure

Water business activities		
Modelled cost:	Log to base e of business activities expenditure (£m) plus doubtful debts (£m)	
Explanatory factors	Coefficient	Standard error
Constant	-3.710	0.267
Log to base e of number of billed properties (thousands)	0.929	0.041
Statistical indicators:	Number of observations: 23	R ² : 0.961

The information from Scottish Water has not had a significant impact on the coefficients of the model.

Sewer network

We developed the sewer network model shown in Table 9.5.

Table 9.5: Modified model (Scottish Water information included) for sewer network operating expenditure

Sewer network		
Modelled cost:	Log to base e of sewer network functional expenditure (£m) less Environment Agency or Scottish Environment Protection Agency charges (£m), per kilometre of sewer for each area	
Explanatory factors	Coefficient	Standard error
Constant	-5.923	0.365
Log to base e of area of sewer district per kilometre of sewer	0.192	0.031
Log to base e of residential population per kilometre of sewer	0.701	0.192
Holiday population divided by resident population	1.238	0.502
Statistical indicators:	Number of observations: 68	R ² : 0.515

The information from Scottish Water has not had a significant impact on the coefficients of the model.

Large sewage treatment works

We developed the large sewage treatment works model shown in Table 9.6.

Table 9.6: Modified model (Scottish Water information included) 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 or Scottish Environment Protection Agency charges (£000) and terminal pumping costs (£000)	
Explanatory factors	Coefficient	Standard error
Constant	-1.744	0.244
Log to base e of total load	0.796	0.027
Activated sludge used	0.357	0.052
Tight effluent consent for both suspended solids and BOD5	0.016	0.048
Statistical indicators:	Number of observations: 388	R ² : 0.734

The information from Scottish Water has not had a significant impact on the coefficients of the model.

Small sewage treatment works

We developed the small sewage treatment works model shown in Table 9.7.

Table 9.7: Modified model (Scottish Water information included) 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	0.53	0.69	0.88	0.87	0.35	0.74	0.58	1.01	0.08	0.09
Size band 2	0.32	0.61	0.45	0.66	0.35	0.5	0.62	0.02	0.14	0.08
Size band 3	0.17	0.38	0.29	0.35	0.41	0.30	0.39	0.05	0.02	0.03
Size band 4	0.19	0.22	0.17	0.18	0.29	0.17	0.16	0.02	0.06	0.01
Size band 5	0.21	0.16	0.12	0.14	0.18	0.11	0.12	0.03	0.01	0.00

Adding in the information from Scottish Water does appear to have had an impact on the unit costs in the model. If we compare the unit costs in Table 9.8 with those of the Ofwat model in Table 8.8, we can see that a number of the unit costs have changed. In particular, many of the unit costs for the smaller size bands have decreased. This perhaps appears to be a surprising effect – we would generally expect smaller sewage treatment works to be affected by dis-economies of scale and to incur higher unit costs. Indeed, Scottish Water has argued that it incurs higher costs than the companies in England and Wales because it has a large number of small sewage treatment works. We would expect these higher costs to have been reflected in Scottish Water's reported costs, but this does not appear to be the case.

In the June Return we collect information from Scottish Water on the costs of running very small sewage treatment works. We split the existing Ofwat size band 1 works (population equivalent up to 250) into two bands:

- Size band 0 – population equivalent up to 100;
- Size band 1 – population equivalent 100-250.

At the Strategic Review of Charges 2002-06 we developed unit costs for these size bands. We applied our modified small works unit costs, ie Scottish size bands 0 and 1 unit costs and the Ofwat unit costs for size bands 2 to 5 in our analysis of the relative efficiency of the three Scottish water authorities.

We have estimated separate size band 0 and band 1 unit costs for Scottish Water. The water and sewerage companies do not split their works into these size bands and we have had to rely on Scottish Water's reported costs and loads for these works. The results of our analysis are shown in Table 9.8.

Table 9.8: Unit costs for size band 0 and size band 1 sewage treatment works

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 0	0.12	0.35	0.26	1.74	0.55	0.90	-	-	-	0.07
Size band 1	0.17	0.35	0.26	0.38	-	0.26	0.22	-	-	0.06

Our analysis shows that many of the calculated unit costs for the split bands are lower than those for Ofwat's band 1.

We examined Scottish Water's residual on small sewage treatment works using the single size band 1 (Table 9.8) and the two band options (Table 9.9). We found that Scottish Water's residual was higher when we applied the separate size band unit costs. Scottish Water appeared to be more inefficient if we used the two size bands. We have therefore decided to use the unit costs in Table 9.8 to measure Scottish Water's relative efficiency in operating small sewage treatment works.

Sludge treatment and disposal

We developed the sludge treatment and disposal model shown in Table 9.9 when we included information from Scottish Water.

Table 9.9: Modified model (Scottish Water information included) 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 dry solids)							
	Farmland - untreated	Farmland - conventional	Farmland - advanced	Incineration	Landfill	Composted	Land reclamation	Other
£000/ttds	222.8	174.9	235.7	171.1	191.1	213.9	191.7	165.7
Number of observations: 88								

Three of the unit costs in Table 9.10 are significantly higher than those in the Ofwat model (Table 8.9). These are the unit costs for landfill, composted and land reclamation. This is likely to be an indication that

Scottish Water incurs relatively high costs in its treatment and disposal of sludge.

Sewerage business activities

We developed the sewerage business activities model shown in Table 9.10 when we included information from Scottish Water.

Table 9.10: Modified model (including information from Scottish Water) 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 12.81
Number of observations: 11	

The information from Scottish Water has resulted in a slight increase in the unit cost.

Calculation of Scottish Water's relative efficiency: The modified models

We have used the modified set of econometric and unit cost models to assess Scottish Water's relative efficiency. We used 2003-04 information for both Scottish Water and for the companies south of the border in our analysis.

We have treated third party, Environment Agency, Scottish Environment Protection Agency, local authority rates and PPP costs in the same way in this revised analysis⁷⁷.

Results of our analysis

The results of our analysis are shown in Table 9.11. This table also includes the results of our original analysis using the Ofwat models. We show Scottish Water's relative efficiency in water service, sewerage service and water and sewerage combined.

Table 9.11: Results of our relative efficiency modelling

	Efficiency score – Ofwat models	Efficiency score – modified models
Water service	112	112
Sewerage service	130	127

The results of our analysis have been adjusted such that the average score is 100. These results do not include any residual adjustments nor do they include special factors or any differences in the levels of service provided to customers.

Scottish Water's level of efficiency appears slightly better when we use the modified models. However, the more important comparison is not the absolute improvement but Scottish Water's performance relative to the benchmark companies.

Table 9.12 shows the efficiency gap between Scottish Water and the average in England and Wales and between Scottish Water and the two benchmark companies. (Wessex Water for the water service and Yorkshire Water for the sewerage service). Table 9.12 also includes the results of our analysis from Chapter 8.

Table 9.12: Scottish Water's efficiency gap

	Efficiency gap ⁷⁸ – Ofwat models	Efficiency gap – modified models
Average – water service	11%	11%
Wessex – water service	30%	30%
Yorkshire – water service	26%	26%
Average – sewerage service	23%	21%
Wessex – sewerage service ⁷⁹	39%	38%
Yorkshire – sewerage service	34%	33%
Average – combined ⁸⁰	16%	15%
Wessex – combined	34%	33%
Yorkshire – combined	29%	29%

Table 9.12 shows that the efficiency gap between Scottish Water and the benchmark companies is still around 30%, even when we use the modified models.

⁷⁷ For further information, see Chapter 8.

⁷⁸ The efficiency gap is calculated as follows: using the average water service as an example, Scottish Water's efficiency score is 112 and that of the average is 100. The gap is calculated as $((112-100)/112)*100$.

⁷⁹ The reason that there is a larger efficiency gap to Wessex than Yorkshire on the sewerage service is that at this stage in our analysis, we have not taken into account either special factors or pension adjustments.

⁸⁰ We use the separate water and sewerage scores to calculate the combined efficiency gap for both services.

Residual adjustments

We have already explained that Ofwat adjusts the companies' residuals by 10% on the water service and 20% on the sewerage service to take account of potential errors in the information and in its statistical processes.

As explained previously, we have decided to apply the same residual adjustments to Scottish Water as Ofwat applied to the companies in England and Wales. The impact of these adjustments on Scottish Water's relative efficiency is shown in Table 9.13.

Table 9.13: Scottish Water's efficiency score after residual adjustments

	Adjusted efficiency score – Ofwat models	Adjusted efficiency score – modified models
Water service	111	111
Sewerage service	124	122

The results in Table 9.13 have been adjusted such that the average is 100. The adjustments to residuals are applied to all companies and the modelled results are adjusted to set the average company at 100. Scottish Water's relative efficiency improves but there is still a significant gap. Our results are shown in Table 9.14.

Table 9.14: Scottish Water's efficiency gaps after residual adjustments

	Efficiency gap – Ofwat models	Efficiency gap – modified models
Average – water service	10%	10%
Wessex – water service	28%	27%
Yorkshire – water service	23%	23%
Average – sewerage service	19%	18%
Wessex – sewerage service	33%	32%
Yorkshire – sewerage service	29%	28%
Average – combined	14%	13%
Wessex – combined	30%	29%
Yorkshire – combined	26%	25%

Table 9.14 shows that, even after the adjustments to residuals, the efficiency gap between Scottish Water and the average in England and Wales is around 14%. The gap between Scottish Water and the benchmark companies in England and Wales is around 25% to 30%.

Conclusions

In this chapter we have explained how we developed modified versions of the Ofwat econometric models using information from Scottish Water. We outlined why we believe these revised models address some of the criticisms that Scottish Water has made of our use of the Ofwat econometric models.

We used the modified models to assess Scottish Water's operating expenditure efficiency in 2003-04. We concluded that these models also indicate that a significant efficiency gap exists between Scottish Water and the benchmark companies in England and Wales.

Section 3: Setting the allowed for level of operating costs

Chapter 10: Establishing the operating cost efficiency gap – our alternative model

Introduction

Chapter 8 set out our assessment of the relative efficiency of Scottish Water using the models that were developed and used by Ofwat as part of its 2004 price review. Chapter 9 repeated this assessment using revised Ofwat models. We developed these revised models using information both from Scottish Water and from the companies in England and Wales. In both cases we concluded that there remains a significant efficiency gap.

We have also therefore sought to assess the scope for efficiency using a different approach. In this chapter we discuss the results of our analysis using an alternative unit cost model that we have developed. This chapter sets out:

- how the alternative model was developed;
- the structure of the alternative model;
- the results of our analysis of Scottish Water's relative efficiency using the alternative model;
- our conclusions regarding the robustness of our efficiency assessments.

Development of the alternative model

We originally developed the alternative model as part of the Strategic Review of Charges 2002-06. The alternative model was developed in response to the view expressed by the Competition Commission that Ofwat should not rely solely on its suite of nine operating expenditure models to assess relative efficiency⁸¹. The alternative model also provided a useful check on the results of our econometric modelling. We have continued to use the alternative model and have reported the results of our benchmarking analysis in our 2001-02 and 2002-03 Costs and Performance reports.

In preparation for this draft determination we reviewed both the cost drivers included in the model and the structure of the model. We developed two versions, both of which use information from 2003-04. The first version of the model was developed using information from the ten water and sewerage companies in England and Wales. This is the same approach that we used for the Strategic Review of Charges 2002-06. At that time, we were unable to incorporate cost allocation information from the three water authorities in our development of the alternative model. We are pleased to note that Scottish Water has made considerable progress in improving its management information. This has allowed us to develop a version of the alternative model that incorporates management information from Scottish Water.

We have used both versions of the alternative model to assess Scottish Water's relative efficiency. The first version of the alternative model uses information from the same companies as the Ofwat econometric models. The second version uses information from the same companies as our modified version of the Ofwat econometric models.

Structure of the alternative model

In developing an alternative model we took particular care to use a different approach to Ofwat's econometric models. We needed an approach that could provide an independent check on the results given by the econometric models. The value of the alternative model as an independent check would clearly have been reduced if the basis of the model differed only slightly from the econometric models.

Both versions of the alternative model have the same structure and are based on the premise that most running costs are driven by asset use, volumes and/or customers. The model calculates the impact of each of these cost drivers separately for a number of activities.

⁸¹ The Competition Commission's consideration of the price limits for Mid Kent Water and Sutton & East Surrey Water in 2000.

Alternative model activities

The alternative model splits the water and sewerage business into ten different activities:

- water abstraction and treatment;
- water distribution;
- business activities (water);
- bad debt (water);
- sewage collection;
- simple sewage treatment;
- complex sewage treatment;
- processing sludge;
- business activities (sewerage); and
- bad debt (sewerage).

For each of these activities, we determine the principal factors that would affect comparisons of operating costs between Scottish Water and the water and sewerage companies in England and Wales. As with the econometric models, we populate the model with published information from the annual returns of Scottish Water and the companies south of the border. We use this information to predict what it would cost, on average, to carry out each activity. We are primarily interested in the total predicted costs for the water service, the sewerage service and the combined services. The results of our modelling allow us to compare total predicted costs with actual reported costs. This comparison indicates the likely scope for improvement.

Cost drivers

Tables 10.1 and 10.2 set out the cost drivers (for water and sewerage respectively) that we identified for each activity.

Table 10.1: Alternative model – cost drivers by activity for the water service

Activity	Cost drivers used in the model, associated with each activity				
	Assets operated	Asset attribute	Customers served	Volume	Other
Abstraction and treatment	Impounding reservoirs and lochs	Number and average size of each asset type		Annual distribution input	Average pumping head in abstraction and treatment
	Boreholes and springs				
	River and burn abstraction				
	Simple water treatment works				
	Complex water treatment works				
Water distribution	Large diameter water mains	Length of network	Number of connected customers	Annual distribution input	Average pumping head in the distribution system
	Small diameter water mains				
	Water pumping stations	Number and average size of each asset type			
	Service reservoirs				
Business activities			Number of billed water customers – household (unmeasured, measured) and non-household (unmeasured, measured)		Annual number of water samples taken
Bad debt					Annual revenue billed

Table 10.2: Alternative model – cost drivers by activity for the sewerage service

Activity	Cost drivers used in the model, associated with each activity				
	Assets operated	Asset attribute	Customers served	Volume	Other
Sewage collection	Sewers	Length of network	Number of connected customers		Size of area served
	Pumping stations	Number and average size			
	Storm outfalls	Number			
Simple sewage treatment	Sea outfalls – screened and unscreened	Number and average size		Load treated	
	Preliminary treatment works				
	Primary treatment works				
	Public septic tanks	Number			
Complex sewage treatment	Secondary treatment works using i) activated sludge processes and ii) biological processes	Number and average size		Load treated	
	Tertiary treatment works using i) activated sludge processes and ii) biological processes				
Processing sludge	Own sludge works and sludge treatment centres	Number and average size		Tonnes disposed (dry weight)	
Business activities			Number of billed sewerage customers – household (unmeasured, measured) and non-household (unmeasured, measured)		
Bad debt					Annual revenue billed

We use information from Scottish Water and from the water and sewerage companies for each of the cost drivers listed above. The aim is to build up a set of predicted costs associated with each driver, and to add

up each of the predicted costs to obtain a prediction of the total cost of each activity. We also need to take account of any economies of scale. This is discussed below.

Economies of scale

In order to calculate each element of predicted cost, we could adopt an approach whereby we simply multiply each of the cost driver measures by a unit cost. For example, we could calculate a unit cost for a water treatment works and multiply that unit cost by the number of works to arrive at a predicted cost for each company.

However, for many activities, the bigger the asset, the lower the unit cost of operation. These economies of scale at asset level can be significant in the water industry. In the alternative model, we are particularly interested in economies of scale that are a function of the type and size of the assets. We have used information from the annual returns of the companies and of Scottish Water to estimate economies of scale associated with different types of assets. As far as possible, we have sought to ensure that our estimates of economies of scale are appropriate. For example, we have different estimates of economies of scale for simple sewage treatment works and complex sewage treatment works.

The impact of economies of scale is set out more fully in Chapter 9 of Volume 4 of our methodology consultation. In simple terms, we use information about the size of the assets that are operated by each water and sewerage company, and our estimates of the economies of scale, to determine a 'standard' size for each type of asset within the model. We are then able to calculate how many such 'standard' size assets each water and sewerage service provider has in its asset base. This allows us to calculate a single unit cost for each asset type. We multiply the number of 'standard' assets by the appropriate unit cost to calculate the predicted costs of operating each company's assets.

We assume that economies of scale do not apply to non-asset costs. The model simply uses the information relating to customer numbers, volumes and so on that is provided by the companies and Scottish Water.

Results of applying the alternative model

When we use the model to assess relative efficiency, we excluded the same costs as in Chapters 8 and 9 from our analysis.

Relative efficiency

The results of our analysis are set out in Table 10.3. This table includes the results of our analysis for both versions of the alternative model. It also includes the results for the water and sewerage services separately and combined.

Table 10.3: Scottish Water – analysis of performance using the alternative model

	Efficiency score – England & Wales based alternative model	Efficiency score – alternative model including Scottish Water
Water service	110	115
Sewerage service	130	129

We have presented the results such that the average performance in England and Wales is 100. This assessment does not take into account either special factors or any differences in the level of service provided to customers. It is interesting to note that on the water service, Scottish Water's performance appears to be slightly worse when we make the comparison using the Scottish version of the model, although its performance is similar on the sewerage service. Including information from Scottish Water in the development of the model has had an impact on the industry 'standard' size of assets and on the estimated economies of scale for each asset type. The reason this impact is less on the sewerage service is probably because we have excluded the PPP works from our analysis.⁸²

The results of this analysis would suggest that the absolute performance of Scottish Water is slightly worse when we use the alternative model, although the difference is not significant. However, our analysis focuses on Scottish Water's efficiency relative to the companies in England and Wales. Table 10.4 shows the efficiency gap between Scottish Water, the average in

⁸² The PPP sewage treatment works in Scotland treat around 45% of sewage load, so excluding these works from our analysis lessens the impact that the remaining works have upon industry standard sizes and economies of scale.

England and Wales and the two benchmark companies – Wessex Water on the water service and Yorkshire Water on the sewerage service⁸³. Table 10.4 also shows the results of our analysis using the revised Ofwat econometric models⁸⁴.

Table 10.4: Scottish Water’s efficiency gap

	Efficiency gap – revised Ofwat econometric models	Efficiency gap – alternative model including Scottish Water
Average – water service	11%	13%
Wessex – water service	30%	39%
Yorkshire – water service	26%	24%
Average – sewerage service	21%	22%
Wessex – sewerage service	38%	39%
Yorkshire – sewerage service	33%	40%
Average – combined	15%	17%
Wessex – combined	33%	39%
Yorkshire – combined	29%	31%

The results set out in Table 10.4 show that Scottish Water’s relative performance appears to be worse for both the water service and the sewerage service when we assess its performance using the alternative model. This is particularly true when we compare Scottish Water against Wessex Water for the water service and Yorkshire Water for the sewerage service. The difference is smaller when we look at relative performance for both water and sewerage together.

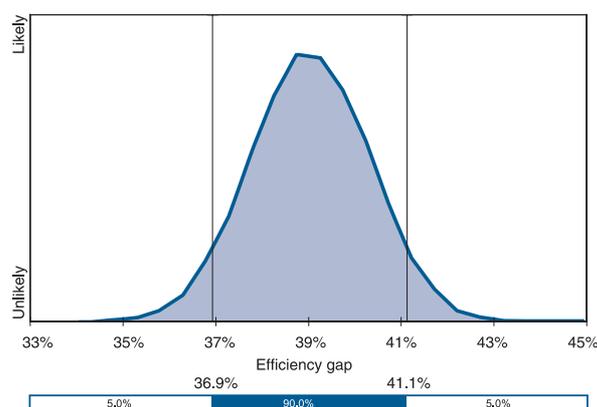
Risk analysis

We used a standard risk analysis software package to assess the effect of a change in any of our assumptions on the results calculated by the model. This analysis allowed us to check the sensitivity of our modelling to the assumptions on unit cost and economies of scale that we included in the model. We considered that this was important because some of our estimates of unit costs cannot be calculated directly from published information. Although our estimates of economies of scale are based on published information, we felt that it was important to check the effect of the values that were input to the model.

We used prudent ranges around our estimates and used a risk analysis software to assess whether changes within these ranges would have a significant impact on the size of the efficiency gap. The output from that analysis shows that the calculated efficiency gaps in the alternative model are reasonable.

Figure 10.1 shows the results of this analysis for our estimate of the efficiency gap between Scottish Water and Wessex Water, for the water and sewerage services combined. There is a 90% probability that the efficiency gap is within 2.1% of our central estimate of 39%, allowing for the uncertainties in our modelling assumptions.

Figure 10.1: Risk analysis results for the efficiency gap between Scottish Water and Wessex Water



Conclusion

In this chapter we outlined the alternative model that we have developed to assess Scottish Water’s efficiency in operating expenditure relative to that of the water and sewerage companies in England and Wales. We originally developed this model for the Strategic Review of Charges 2002-06 in response to the suggestion from the Competition Commission that regulators should not rely on one method for establishing relative efficiency.

The results of our analysis using the alternative model are not materially different from those we obtained using both the Ofwat and the revised Ofwat econometric

⁸³ Ofwat identified Wessex Water and Yorkshire Water as its chosen benchmark companies in its 'Water and sewerage service unit costs and relative efficiency 2003-2004 report'.

⁸⁴ In order to show the results of the approaches on a like-for-like basis, this table does not take account of adjustments to the residuals from the econometric models.

models. The alternative model indicates that there is a significant efficiency gap of more than 30% between Scottish Water and the benchmark companies in England and Wales. The analysis we carried out using our alternative model has reassured us that the results we obtained using the econometric models are robust.

Section 3: Setting the allowed for level of operating costs

Chapter 11: Adjustments to our models for special factors

Introduction

In Chapters 8 and 9, we explained how we use benchmarking to assess Scottish Water's relative operating cost efficiency. Our approach is 'top down'. It looks at the overall level of costs that Scottish Water incurs and compares this with the costs incurred by the companies south of the border. The approach recognises that costs are influenced by the conditions in which a company operates and provides services. It measures the impact of factors that are outside the control of managers on the level of costs incurred.

It is not possible to include every factor that may have an impact on companies' costs. Even if we could identify every factor that influences a company's costs, such an approach would be impractical. The models would become too complex and many of the factors are likely to add little to our understanding.

We are keen that our analysis is as complete as possible and compares like with like. It is important, therefore, that we identify any factors (outside management control) that affect Scottish Water's operating costs (either causing them to be higher or lower) which are not included in the models. We asked Scottish Water to draw such factors to our attention.

This chapter begins by defining 'special factors' and providing an overview of the special factors that have been applied to companies south of the border. It continues by describing the criteria that we use to assess special factors. We then consider the special factors that have been advanced by Scottish Water.

Scottish Water raised a number of special factors in its June 2004 Annual Return and in its first and second draft business plans. We asked the Reporter to comment on these special factors. The chapter concludes with an outline of the special factors that we have accepted and their impact on Scottish Water's relative efficiency.

Definition of special factors

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 Scotland⁸⁵. We believe that the fact that the Ofwat models have been successfully applied to companies as different as Severn Trent Water and South West Water, and to both large and small water and sewerage companies as well as to the small water only companies, confirms that the models can reasonably be applied to Scottish Water.

Ofwat's econometric models provide a simple explanation of water and sewerage company costs. Not every factor that might determine costs is included in the models. The factors that are included are the principal cost drivers. They are relevant to explaining the costs of the companies south of the border and Scottish Water. For an individual company, it is possible that there are additional factors that are not included in the models, but which determine costs. These are known as 'special factors' because they may be relevant to just one or two companies. A special factor may increase or decrease a company's costs, although companies tend to concentrate on those that increase costs when explaining their efficiency to regulators. We take account of the special factors that are material and outside the control of management by adjusting the results of the benchmarking models.

The opportunity for a company to bring special factors to the attention of the regulator is a strength of our approach to assessing relative efficiency. This ensures that in adjusting the results of the models we have taken all reasonable steps to measure efficiency accurately. For this reason it is quite appropriate to assess Scottish Water's efficiency relative to that of the companies in England and Wales.

⁸⁵ See, for example, J Findlay 'Financing the Scottish water and sewerage industry' paper to the Scottish Trade Union Conference, April 2004.

Overview of special factors for companies in England and Wales

In order to assess the relative efficiency of the companies in England and Wales for its 2003-04 report⁸⁶, Ofwat asked the companies to submit their claims for special factors.

Table 11.1 summarises the special factors that Ofwat took into account in its assessment of relative efficiency.

Table 11.1: Successful special factors claims by companies in England and Wales

Operating expenditure	Number of companies
Water resources (including bulk supplies)	9
Water quality	2
Water treatment	6
Leakage	4
High level of meter penetration	5
Sewage treatment and sludge	3
Location	
Regional salaries and construction costs	8
Regional power costs	4
Debt	5
Coastal sewage treatment works	2
Traffic congestion	2
Burst rate	2
Location (other)	2
Welsh language obligations	1
Size and number of assets (including rurality)	3
Company size (small companies)	2
Accounting for depreciation	1
Impact of large industrial customers on the econometric models	2
Total operating expenditure	63
Capital maintenance expenditure	
Shared water resources	1
Water treatment	1
Tight ammonia discharge consent	1
Number of meter replacements	1
High seasonal tourist population	1
Regional price adjustment	9
Impact of reservoir safety	1
Impact of coal mining	1
Company size (small companies)	2
M6 toll road	1
Total capital maintenance expenditure	19

Ofwat considered over 150 claims for special factors from 21 companies; just 63 were accepted.

Criteria for assessing special factors

In assessing special factors for Scottish Water we used the same approach as Ofwat. Scottish Water had to provide evidence in the following areas in order to justify a special factor⁸⁷.

- What is the justification of the special circumstances that demonstrate a material difference from industry norms? Scottish Water has to have explained how the special 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 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?

Scottish Water's special factors

Evidence from Scottish Water

Scottish Water provided us with three submissions, which claim that special factors result in higher operating costs than those predicted by our econometric models. The three submissions are:

- Scottish Water special factors submission, June 2004;
- special factors submitted with Scottish Water's first draft business plan, October 2004; and

⁸⁶ 'Water and sewerage service unit costs and relative efficiency 2003-04 report', Ofwat.

⁸⁷ These questions are adapted from Ofwat's letter to Regulatory Directors, RD35/98, 1998, available at: www.ofwat.gov.uk.

- special factors submitted with the second draft business plan, April 2005.

Scottish Water special factors submission, June 2004

Scottish Water provided its initial evidence on special factors in its 2003-04 Annual Return. Scottish Water argued that the following special factors caused it to incur a higher level of operating expenditure than could be justified by our benchmarking.

Geographical

- **Travel costs:** Due to the size of Scottish Water's service area, employees working on the assets have to travel long distances. In addition, personnel from areas such as customer service and business, laboratory 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 with the companies south of the border.
- **'Flashy'⁸⁸ supplies:** Scottish Water claimed 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 claimed 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 indicated that it had to transport sludge longer distances than is the norm in England and Wales (from small rural areas to dedicated sludge treatment centres).

Asset base

- **Leakage:** Scottish Water argued that it has inherited an asset base with a leakage rate that is much higher than in England and Wales. According to Scottish Water, this has an impact on its costs (due to the need to treat relatively more water per inhabitant) but the model does not take this into account.

Economic

- **Household bad debt, billing and metering:** Scottish Water argued 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 that are outside its control.
- **Purchase of materials:** Scottish Water claimed 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). In England and Wales these are the responsibility of the customer.
- **Freedom of Information Act:** Scottish Water argued that it has to comply with the Freedom of Information Act whereas the privatised water and sewerage companies do not.
- **Enquiries from politicians:** Scottish Water argued that as a public body it receives a larger number of enquiries from politicians than the companies in England and Wales so incurs additional costs in this area.
- **Removal of phosphorus and nitrates:** Scottish Water indicated that it has to incur higher costs to remove phosphorus and nitrates from sewage effluent than the companies south of the border. This is due to tighter consent conditions imposed by the Scottish Environment Protection Agency.

⁸⁸ 'Flashy' conditions is where a greater than or equal to a four fold change in colour in a 12 hour period can occur.

- **Cryptosporidium standards:** Scottish Water argued 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.

First draft business plan special factors submission, October 2004

We received Scottish Water's first draft business plan in October 2004. Scottish Water also provided a 'First draft special factors submission'. This set out a revised view of the special factors that might apply to Scottish Water.

The special factors suggested by Scottish Water were summarised in their business plan⁸⁹:

- inherited asset base,
- geography and environment, and
- legal.

Scottish Water discussed each factor in turn. It repeated many of the special factors suggested in June 2004. In some cases it provided additional evidence to support particular special factors. Scottish Water also identified some new special factors and withdrew others that it now considered to be immaterial.

Inherited asset base

- **Leakage:** Scottish Water repeated the argument that its higher level of leakage has an impact on costs that is not taken into account by the benchmarking models. It contrasted the situation in England and Wales with the situation in Scotland. In England and Wales companies have been under pressure to cut leakage since 1995 due to resource constraints. Scottish Water argued that there has not been the same pressure in Scotland because water resources were perceived to be plentiful. Scottish Water also argued that the economic level of leakage in Scotland is high due to the low marginal cost of water.

- **Central regulatory laboratory:** Scottish Water argued that the cost of its central regulatory laboratory is an additional operating cost that is not allowed for in the benchmarking models. This reflects the fact that in England and Wales the capital costs would be included within the current cost depreciation charge. In Scotland, the long-term financing arrangements for the laboratory mean that the cost is included within operating costs.

Geography and environment

- **Travel costs:** Scottish Water repeated the claim that it faces additional travel costs. This reflects the sparsity and distribution of the population and of the assets.
- **Service reservoirs and water towers:** Scottish Water argued that it has proportionately far more service reservoirs and water towers than the average for companies in England and Wales. It argued that this reflects the sparse population distribution, Scotland's topography and the assets it inherited from the previous water authorities.
- **Electricity charges:** Scottish Water repeated the argument that it incurs electricity costs above those predicted by the econometric models. As in its June submission, Scottish Water argued that electricity charges are higher in Scotland and that the use of electricity for non-pumping activities is also higher. It added to these arguments the claim that population sparsity dictates that Scottish Water must have a larger number of smaller assets. These assets must be connected to the low voltage network and therefore incur higher electricity distribution costs.
- **Supply of materials to rural locations:** Scottish Water argued that chemicals and materials cost more to supply to rural locations as a result of population sparsity within Scotland and the increased need for a larger number of operational sites.
- **Bad debt:** Scottish Water repeated the argument that it faces a higher level of customer bad debt than the companies south of the border. It argued that because

⁸⁹ Draft Business Plan summary available on our website.

local authorities issue bills to household customers, Scottish Water has limited control over the level of debt. It also suggested that the socio-economic make-up in Scotland makes bad debt more likely.

Legal

- **Sewer laterals:** Scottish Water argued that it faces an additional cost due to its legal responsibility for operating lateral sewers. This obligation is not faced by companies in England and Wales. Scottish Water argued that lateral sewers are more costly than main sewers to operate because of their small diameter, low flow and shallow depth.
- **Waterworks sludge disposal:** Scottish Water argued that it faces an additional cost due to the need to dispose of waterworks sludge to landfill rather than farmland. Scottish Water explained that it is not exempt from the Waste Management Licensing Regulations, unlike the companies in England and Wales.
- **Enquiries from politicians:** Scottish Water repeated the argument that its status as a public body leads to a larger number of enquiries by politicians than the companies in England and Wales.
- **Cryptosporidium:** Scottish Water repeated the argument that the sampling regime for cryptosporidium imposed by the Drinking Water Quality Regulator is more costly than the sampling regime imposed on the water and sewerage companies south of the border. This leads to additional costs.

Factors no longer included or given reduced importance

In its first draft business plan Scottish Water explained that it had undertaken further analysis and now considered the following factors to be insufficiently material to be considered:

- the additional costs associated with the high number of small treatment works;

- the additional costs associated with sludge treatment; and
- the costs for removing phosphorus and nitrates.

In addition, Scottish Water indicated that the following factors may not be as significant as it had originally thought and that it would review their significance before the second draft business plan:

- the 'Flashy' nature of water supplies in Scotland; and
- the Freedom of Information Act.

Second draft business plan special factors submission, October 2004

Scottish Water further revised and developed its claim for special factors in its second draft business plan. There were no changes to the operating expenditure special factors. Scottish Water did propose two new special factors that affected its level of capital maintenance expenditure. These special factors related to water resources and treatment, and service reservoirs.

Capital maintenance special factors

- **Water resources and treatment:** Scottish Water stated that due to the geography and number of remote communities in Scotland, it has to maintain a larger number of water resource and treatment assets per property than the companies in England and Wales. The profile of water resources is also different, with fewer groundwater sources in Scotland and more aqueducts, water treatment works, boreholes, river intakes and dams/impounding reservoirs. Scottish Water argued that the econometric models do not take into account the number and type of water resource and treatment assets, and that the form of the econometric models puts them at a disadvantage relative to the companies in England and Wales.
- **Service reservoirs:** Scottish Water stated that there are significantly more service reservoirs and water towers in Scotland than in England and Wales. They

argued that this is primarily the result of the sparsity of population, but is also influenced by topography. Scottish Water argued that whereas the capital maintenance expenditure model determines cost on the basis of total service reservoir volume, it is more appropriate to consider the number of service reservoirs and their surface area.

The second draft business plan also details other areas of capital expenditure where Scottish Water believes, but is currently unable to quantify, that a special factor may be appropriate. These areas are:

- bursts and leakage,
- membrane plants, and
- phosphorous and nitrates removal.

The cost of special factors claimed by Scottish Water

Scottish Water assessed the impact, in 2003-04 prices, of the special factors that it has proposed. Scottish Water's assessment of the impact of special factors on its benchmarked annual operating expenditure changed only marginally between the first and second draft business plans. This is shown in Table 11.2.

Table 11.2: The annual financial impact of special factors (2003-04 prices)⁹⁰

Special factor	First draft business plan - October 2004	Second draft business plan - April 2005
OPERATING EXPENDITURE		
Inherited asset base		
Leakage	£7.8m	£9.8m
Central regulatory laboratory	£0.7m	£0.7m
Geography and environment		
Travel costs	£16.8m	£11.4m
Service reservoirs and water towers	£1.9m	£2.1m
Electricity	£4.6m	£4.7m
Supply of materials to rural locations	£0.5m	£0.5m
Bad debt	£7.8m	£7.3m
Legal		
Sewer laterals	£10.0m	£11.7m
Waterworks sludge disposal	£2.3m	£2.3m
Political queries	£0.3m	£0.3m
Cryptosporidium	£1.7m	£2.0m
Operating expenditure total	£54.4m	£52.7m
CAPITAL MAINTENANCE EXPENDITURE		
Water resources and treatment	-	£17.4m
Service reservoirs	-	£1.0m
Capital maintenance total	-	£18.4m
TOTAL	£54.4m	£71.1m

In October 2004, Scottish Water estimated that it had to incur additional annual operating costs of £54.4 million. In April 2005 this estimate was revised downwards to £52.7 million. The second draft business plan advanced a claim for a further £18.4 million of annual capital maintenance expenditure due to special factors.

Our response to the special factors raised by Scottish Water

Scottish Water has claimed that there are 11 special factors which increase its operating costs and which are not taken into account by the econometric models. It has also claimed that there are two special factors that increase its capital maintenance costs. We reviewed each of these special factors in detail. We summarise our views below.

⁹⁰ Totals may not add exactly, due to rounding

Inherited asset base

Scottish Water included two special factors that relate to the asset base it inherited. Each year we publish an Investment and Asset Management Report which examines Scottish Water's investment performance (and formerly that of the three water authorities). We have published two Investment and Asset Management Reports⁹¹. The first covered the three former water authorities and the second looked at Scottish Water's performance. These reports considered historic investment in Scotland and looks at the condition and performance of Scottish Water's assets. The reports have shown that investment levels per property in Scotland have been broadly similar to those in England and Wales over the medium term. We have assessed Scottish Water's claims against this background.

Scottish Water has claimed that an allowance should be made for the higher levels of leakage that occur in Scotland. However, Scottish Water and the former authorities have been under sustained regulatory pressure to identify the true scale of leakage in Scotland and to reduce leakage levels⁹². We do not accept that the current level of leakage can properly be regarded as a factor that is outside managerial control.

Scottish Water has also claimed that leakage in Scotland is high because water resources are perceived to be plentiful in Scotland. It argues that the marginal cost of leaking water is low. We are not persuaded that the marginal cost of leaking water is low in Scotland. We note, however, that if the marginal cost of water was low and Scottish Water was at its economic level of leakage, then Scottish Water would certainly not be disadvantaged by the econometric model.

The second special factor associated with the inherited asset base relates to the 'central regulatory laboratory'. We accept that the capital costs of the central laboratory should be re-categorised as capital maintenance for the purposes of the benchmarking exercise.

Geography and environment

The first draft business plan extended the arguments made in the June 2004 Annual Return concerning population density. Population density continued to play a central role in the second draft business plan. Scottish Water made the following key points.

- The average population density for the whole of England and Wales is 3.46 persons per hectare, which is more than 5.3 times greater than that of Scottish Water.
- Scotland has a total population density that is less than half that of any of the water and sewerage companies in England and Wales.
- The North West operational area of Scotland is completely rural – 46% of the total area served by Scottish Water is in the North West operational area, but only 7% of the population.

Three of the 11 special factors for operating costs raised by Scottish Water relate to population density. Scottish Water has argued that low population density increases its direct operating costs, in particular travel costs and the operation of service reservoirs and water towers. It also argued that low population density increases its indirect operating costs by raising the costs of materials supplies to rural locations.

We are not persuaded by these arguments for two reasons. First, there are a number of companies in England and Wales with a similar population density. Ofwat makes no adjustment to the modelled efficiency scores of these companies. Second, there is an offsetting travel cost effect associated with a dispersed population. While dispersion may increase the average length of a journey, it is also likely to be associated with a reduction in congestion. A comparatively long journey in a sparsely populated area may be much quicker than a comparatively short journey in a large urban area. Table 11.1 reported that where Ofwat has made an adjustment for travel costs it has reflected congestion rather than dispersion.

⁹¹ 'Investment and Asset Management Report 2000-2002', March 2003, and 'Investment and Asset Management Report 2002-2003', April 2004.

⁹² In WIC 24, dated December 2001, we first asked the Scottish water industry to provide us with a leakage strategy.

Our analysis found that Scottish Water has not demonstrated that its portfolio of service reservoirs and water towers leads to costs that are not recognised by the models. We accept that Scottish Water may incur modestly higher travel costs and have allowed £6.55 million as a special factor.

Scottish Water has also claimed that it faces higher electricity charges than those faced by the companies in England and Wales. We accept that there are higher electricity charges in Scotland, but believe that Scottish Water has overestimated the differential. In a number of cases there are opportunities to offset the higher charges with cost savings. For example, there are opportunities to reduce leakage and so save electricity costs. Additionally Scottish Water may benefit from the introduction of the new electricity trading arrangements to Scotland. Given that these new arrangements may substantially reduce transmission charges in Scotland, we expect the new Commission may wish to revisit whether any uplift is justifiable in the final determination.

Finally, in the category of geography and environment, Scottish Water has argued that it is penalised by a high level of bad debt for domestic customers. Scottish Water has argued that this bad debt is outside managerial control. We believe that Scottish Water has the opportunity to exert control over the level of bad debt through the service level agreements negotiated with local authorities. Scottish Water has taken this approach with nine of the 32 local authorities in Scotland, but we believe that there is scope for further extending such agreements. It is also important to consider the overall cost of issuing bills, collecting money and the resulting bad debt. When we take all of these factors into account, we are not persuaded that Scottish Water is disadvantaged to the extent that it has argued. We do accept that Scottish Water incurs additional costs for bad debt and have allowed £2.6 million as a special factor.

Legal

Scottish Water has included four special factors relating to different legal requirements in Scotland.

Scotland has adopted broadly the same framework for regulating the water and waste water industry that exists

in England and Wales. The legal requirements faced by Scottish Water are also broadly the same as those faced by companies in England and Wales. This reflects the importance of European legislation. However, Scottish Water has claimed that there are a number of specific differences that are not reflected in the benchmarking models. We accept that an adjustment should be made to reflect the different legal obligations faced by Scottish Water in relation to sewer laterals and waterworks sludge disposal.

We have reviewed Scottish Water's claim that it faces higher costs because of the sampling regime for cryptosporidium imposed by the Drinking Water Quality Regulator. While we accept that the regime in Scotland will require Scottish Water to increase the number of samples that it takes, we do not accept that this will lead to costs that are outside the observed range of costs in England and Wales. The number of water samples taken and analysed by Scottish Water in 2003-04 was considerably less than a typical company and there is no evidence that increased sampling in Scotland would disadvantage Scottish Water. We have therefore not allowed this special factor claim.

Scottish Water has claimed that it faces a large number of enquiries by politicians compared with the privatised industry south of the border, and that this leads to additional costs. Scottish Water does not seem to have recognised the extent of the costs that are incurred by a privatised company in dealing with shareholders, multiple debt providers and credit rating agencies. We consider that managing external relations is a task that all companies must undertake and that Scottish Water does not face exceptional costs in this area.

Other

We have allowed Scottish Water a special factor of £0.8 million for the efficient costs of operating public septic tanks. There are more than 1,200 of these in Scotland, but very few exist in England and Wales. Scottish Water did not claim for any such special factor.

Capital maintenance

Population dispersion lies behind both of the special factors for capital maintenance costs. Scottish Water claims that it must maintain a larger number of water resource and treatment assets per connected property and a larger number of service reservoirs per connected property than companies in England and Wales. Our analysis shows that Scottish Water maintains a greater number of water assets per connected property than the average for England and Wales. However, the number of assets per connected property lies within the range for England and Wales. In the case of service reservoirs, we note that Scottish Water maintains a greater storage capacity per head of population, suggesting that rationalisation may be possible as leakage is reduced.

Scottish Water also argues that it maintains a different mix of water resource assets, and that this is not taken into account in the econometric models. However, Scottish Water provides no evidence of different capital maintenance needs associated with the different mix of assets.

Table 11.3: Summary of our response to special factors

Special factor	Our response	Allowance made
OPERATING EXPENDITURE		
Inherited asset base		
Leakage	No allowance	
Central regulatory laboratory	Re-categorisation of central regulatory laboratory costs	£0.7m
Geography and environment		
Travel costs (including supply of materials to rural locations)	Partial allowance	£6.5m
Service reservoirs and water towers	No allowance	
Electricity	Partial allowance	£2.0m
Bad debt	Partial allowance	£2.6m
Legal		
Sewer laterals	Partial allowance	£3.9m
Waterworks sludge disposal	Partial allowance	£0.9m
Political queries	No allowance	
Cryptosporidium	No allowance	
Other		
Public septic tanks	Partial allowance	£0.8m
Operating expenditure total allowance		
CAPITAL MAINTENANCE EXPENDITURE		
Water resources and treatment	No allowance	
Service reservoirs	No allowance	
Capital maintenance total allowance		
TOTAL ALLOWANCE		£17.4m

Summary

We are keen to ensure that our analysis of the relative efficiency neither advantages nor disadvantages Scottish Water. We have analysed carefully the evidence on special factors presented by Scottish Water.

This chapter has summarised the claims made by Scottish Water and our response. We have found that some of the claims for special factors either are not material or are not outside managerial control. However, we have accepted some of the special factors that Scottish Water identified and have made appropriate adjustments to our benchmarking.

We have found no evidence to support the claim for an adjustment to benchmarked capital maintenance costs. In the case of operating expenditure, benchmarked costs have been adjusted by £17.4 million a year in 2003-04 prices.

Section 3: Setting the allowed for level of operating costs

Chapter 12: Adjustments for differences in the scope of activities

Introduction

In order to make an accurate assessment of Scottish Water's efficiency relative to that of the companies south of the border, we need to take account not only of special factors but also of the scope of activities that Scottish Water undertakes and the level of service it provides. In the previous chapter we considered a number of special factors that may influence the costs incurred by Scottish Water. In this chapter we consider differences in the scope of activities that Scottish Water must undertake.

Scottish Water is owned by the Scottish Executive and, unlike the companies in England and Wales, operates in the public sector. This has implications for the way that Scottish Water operates. For example, the Scottish Executive has made a policy decision that household customers should pay for their water and sewerage service according to the Council Tax band of their property. Metering of household customers is much less common in Scotland than in England and Wales.

Scottish Water is also subject to a different legal framework than the companies in England and Wales. The Scottish legal framework defines the activities that Scottish Water is and is not obliged to carry out. In this chapter we focus on the legal differences that narrow the scope of activities that Scottish Water has to deliver. In the previous chapter we also considered the legal differences that might widen the scope of activities that Scottish Water has to deliver.

In this chapter we outline the adjustments we have made to the allowed for level of operating expenditure to take account of differences in the scope of activities. We describe the differences and our reasons for making the adjustments. The chapter concludes with a summary of the effect of these adjustments on the level of operating expenditure that we have allowed for.

Differences in the scope of activities

Our approach at the Strategic Review of Charges 2002-06

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 activities that is carried out by the companies south of the border, nor did we take account of the levels of service provided to customers. Our targets did not seek to quantify the additional costs incurred by the companies south of the border in providing these extra activities or enhanced levels of service.

At that time we had only just begun to collect information from the three authorities and we were not able to draw robust conclusions about the cost benefit of a reduced scope of activities in Scotland. In effect, we overstated the relative efficiency of Scottish Water because we were unable to define fully the differences in scope.

Our approach at this Review

In England and Wales the companies provide a broadly equivalent level of service to their customers. The scope of activity each company provides is also comparable. In general, therefore, Ofwat does not have to adjust the result of its models to reflect any differences in the scope of activities or the level of service between companies.

In Scotland, by contrast, the scope of activities and the levels of service provided to customers is different from that provided in England and Wales. Such differences matter to customers, impacting not only on the service they receive, but also on the prices they pay.

We now have much better information about Scottish Water's activities and about the quality of service it provides. In this draft determination we have taken

account of both of these factors in assessing the scope for improvement in Scottish Water's efficiency. We discuss how we have had to take account of differences in the level of service to customers in the next chapter.

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

Activities where the scope of activity in Scotland is greater

- Scottish Water is responsible for lateral sewers (sewer pipes connecting properties to main sewers). In England and Wales most lateral sewers are the responsibility of customers.
- Scottish Water is responsible for public septic tanks. These are common in Scotland but rare in England and Wales.

Activities where the scope of activities in Scotland is smaller

- Around one-quarter of all households in England and Wales are metered, compared with around only 0.03% in Scotland, thus adding to the cost of support activities such as meter reading.
- Sophisticated water treatment processes to remove agricultural nitrate and pesticide pollution are much more commonly required in England and Wales than in Scotland.
- 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.
- Reporters are used in Scotland and in England and Wales to scrutinise the regulatory returns. In Scotland the Scottish Executive pays for the Reporter. In England and Wales the companies meet these costs.

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 these differences.

Approach to differences in scope

In Volume 4 of our methodology consultation, we consulted on seven different approaches we might use to take account of differences in the scope of activities carried out by Scottish Water⁹³. We assessed each approach on: the availability of information; its accuracy and reliability; and its cost. Following our consultation we have decided to use company information to place a monetary value on the difference in levels of service and scope of activities. This was Option 1 in the consultation.

We selected this approach because we were able to identify reliable information from the industry south of the border on the costs of specific activities⁹⁴.

Our chosen approach did not require us to adjust Scottish Water's reported operating expenditure. We assessed the extent to which the costs of the comparator companies in England and Wales would reduce if they did not carry out certain activities. We considered each activity individually and deducted the appropriate costs from the modelled operating expenditure of the companies south of the border.

In this chapter we present our analysis of the impact of the scope of activities on Yorkshire Water, one of our two leading comparator companies. This analysis illustrates the effect of differences in the scope of activities between Scottish Water and Yorkshire Water on our assessment of Scottish Water's efficiency gap in 2003-04 (our base year)⁹⁵. Specifically, for each activity where there is a difference in scope between England and Wales and Scotland we have:

- quantified the difference in scope for the particular activity;
- considered any information on the costs of the activity that is published by Ofwat, the companies in

⁹³ 'Our work in regulating the Scottish water industry: The scope for operating cost efficiency' (October 2004), pp. 92-93.

⁹⁴ 'Our adjustment for Reporter costs relied solely on information from the Scottish industry'.

⁹⁵ We have also examined the impact on Wessex Water, the other leading comparator company.

England and Wales, Scottish Water and any other sources;

- considered whether there are any counter arguments or mitigating costs that would render the difference in scope immaterial; and
- modelled the reduction in costs that would occur if Yorkshire Water did not perform the activity.

We describe each adjustment below.

Metering

We have made two separate adjustments to costs for differences in the level of metering between Scotland and England and Wales. The first adjustment was for household metering, the second was for non-household metering.

Household metering

Household metering is much more prevalent in England and Wales than in Scotland⁹⁶. Since 1999, the water companies in England and Wales have had a statutory duty to install meters free of charge for any household customers who request a meter⁹⁷. The meters installed in households in England and Wales represent a capital cost to the companies. However, operating costs are incurred through support activities such as meter reading.

Very few of Scottish Water’s household customers are metered. In 2003-04, 0.03% of water customers and 0.01% of waste water customers were metered⁹⁸. This compares with an industry average of almost a quarter of household customers in England and Wales. Yorkshire Water metered 25.1% of its household customers for water and 24.8% for waste water.

In 2003, Ofwat calculated that the annual operating cost for a household meter was £4 per year per service⁹⁹. We have used this cost to calculate the reduction in Yorkshire Water’s modelled operating expenditure if it

metered only 0.03% of its household water customers and 0.01% of its household sewerage customers. For each service, we calculated the annual operating cost associated with this estimated number of meters.

Table 12.1: Adjustment to Yorkshire Water’s modelled operating costs for household metering

Water	£
Cost of operating at Yorkshire number of meters	1,886,520
Cost of operating at Scotland number of meters	2,250
Difference	1,884,270
Waste water	
Cost of operating at Yorkshire number of meters	1,876,800
Cost of operating at Scotland number of meters	757
Difference	1,876,043

We therefore reduced Yorkshire Water’s operating expenditure for 2003-04 by:

- £1.9 million for water; and
- £1.9 million for waste water.

Scotland is expected to continue to have low levels of household metering in the period to 2010. We have therefore applied this adjustment in setting the allowed for level of operating expenditure for the period 2006-10.

Non-household metering

A larger proportion of Scottish Water’s non-household customers have meters, although this is still much lower than the proportion served in this way by Yorkshire Water. In 2003-04, 58.6% of Scottish Water’s non-household water customers, and 51.5% of Scottish Water’s non-household waste water customers were metered. Yorkshire Water, in contrast, had 85.3% and 80.3% of non-household water and waste water customers respectively.

In ‘Paying for water services 2006-2012: A consultation on the principles of charging for water services’, the Scottish Executive indicated its intention that Scottish Water

⁹⁶ The Water Act 1989 established a prohibition on the use of rateable value as a basis for charging.
⁹⁷ See Water Industry Act 1999. Under the provisions of the Act, companies can only refuse to install a meter where it would cost more than reasonable expense to do so.
⁹⁸ Measured waste water customers do not usually have an effluent meter; instead, their waste water charge is based on their water meter.
⁹⁹ See RD 30/03, ‘Measured/unmeasured tariff differential’, Ofwat, 22 August 2003.

should move to full metering of non-household customers over the next few years. As a result, we expect the number of non-household customers who are metered to increase over the coming regulatory control period.

Operating costs for non-household meters are generally higher than those for household meters. This is because non-household customers with large consumption may require more than one meter to be installed and for these meters to be read more frequently. In its second draft business plan, Scottish Water proposed full metering of all non-household customers. It stated that this would add £1.1 million to operating expenditure in 2009-10¹⁰⁰. In 2003-04, 138,700 non-household customers of Scottish Water were unmeasured for water or waste water services. This implies an operating cost of £8.17 per metered service (water or waste water). We have used this figure to calculate the reduction in Yorkshire Water's modelled operating costs if it had the same proportion of non-household metered customers as Scottish Water in 2003-04. The results of this analysis are outlined in Table 12.2.

Table 12.2: Adjustment to Yorkshire Water's level of operating costs for non-household metering

Water	£	% of customers
Cost of operating at Yorkshire number of meters	923,210	85.3%
Cost of operating at Scotland number of meters	634,360	58.6%
Difference	288,850	26.7%
Waste water		
Cost of operating at Yorkshire number of meters	741,836	81.1%
Cost of operating at Scotland number of meters	475,453	52.0%
Difference	266,383	29.1%

We have therefore reduced Yorkshire Water's modelled operating costs by:

- £0.3 million for water; and
- £0.3 million for waste water.

In its second draft business plan, Scottish Water aims to meter all non-household customers by 2010. However, it is proposing not to charge on a metered basis until

2010-11 and therefore will not incur the costs of meter reading and billing. We have therefore applied this adjustment in setting the allowed for level of operating expenditure for the period 2006-10.

Nitrate and pesticide removal

In England and Wales, intensive farming methods have resulted in the pollution of watercourses with nitrates and pesticides. In order to meet water quality standards, water companies incur greater treatment costs to remove these pollutants. We understand that there are far fewer incidences of such pollution in Scotland.

In 2003-04, the industry in England and Wales as a whole incurred total additional operating expenditure of £35.3 million to remove nitrates and pesticides¹⁰¹. For Yorkshire Water, the cost in 2003-04 was £1.6 million. Scottish Water did not report any additional treatment costs for nitrates and pesticides in 2003-04.

We have therefore deducted £1.6 million from Yorkshire Water's modelled operating expenditure.

Scottish Water has previously indicated to us that it believes that its small rural water sources exhibit 'flashy'¹⁰² conditions. Although this may be more common in Scotland, Scottish Water did not submit a special factor claim for any additional treatment costs resulting from these unusual conditions.

We have therefore assumed that any additional costs incurred are immaterial and do not require an adjustment to be made.

Leakage

Leakage is an issue common to the industries both sides of the border. In England and Wales, the water and waste water companies are required to keep leakage at an economic level. Since 1998-99, Ofwat has set mandatory leakage targets for the companies. In Scotland, no such requirement currently exists. This difference is reflected in the approaches taken to tackling leakage by Scottish Water and by the companies.

¹⁰⁰ At 2003-04 prices. Scottish Water stated that it intended to read and service meters during 2009-10 but to only start billing these properties on a volumetric basis from 2010-11.

¹⁰¹ Ofwat June Return 2004 for 1997-98 to 2003-04 and ERM, 'Assessing current levels of cost recovery and incentive pricing', Report to DEFRA, 2004.

¹⁰² 'Flashy' conditions is where a greater than or equal to a four fold change in a 120 hour period can occur.

- Scottish Water reported that it adopted a passive leakage control policy in 2003-04. This means it reacted to and repaired bursts as they occurred.
- Companies in England and Wales adopt active leakage control policies. They proactively seek out leaks and repair them as a preventative measure. They also practice passive control policies and respond to bursts when required.

All companies regard passive leakage control as an operating cost. However, it is not as straightforward to allocate active leakage control costs. Active leakage control can involve extensive improvement or upgrade to the network and can therefore be classified as a capital cost. Some of these costs are classified as operating expenditure because they are incurred in maintaining the operational performance of the network.

In practice, the companies in England and Wales divide their active leakage control costs between operating and capital expenditure. Ofwat scrutinises this allocation and compares company accounts to ensure that cost allocation has been made on a consistent basis between companies. Where necessary, Ofwat will make adjustments to this allocation.

In 2003-04, Ofwat made such an adjustment to Yorkshire Water's costs. It reallocated £6.8 million of leakage control costs to operating expenditure. We have therefore assumed that, as a minimum, Yorkshire Water spent £6.8 million on active leakage control.

We have deducted £6.8 million from Yorkshire Water's modelled operating costs in order to take account of differing leakage control policies.

In its second draft business plan, Scottish Water states that tackling leakage will lead to a slight reduction in operating costs. We have allowed £40 million of capital investment to enable Scottish Water to reduce leakage. We have therefore assumed that Scottish Water will not require additional operating expenditure to tackle leakage, and we have applied this adjustment in setting the allowed for level of operating expenditure for the period to 2010.

Legal duty to promote efficient water use

The Water Industry Act 1991¹⁰³ requires the water companies in England and Wales to encourage their customers to use water efficiently. Ofwat enforces this provision by requiring the companies to submit water efficiency plans. These plans detail the steps the companies intend to take to promote more efficient water use. There is no such legal duty on Scottish Water.

In 2003-04, the water industry in England and Wales as a whole spent £6.3 million of operating expenditure on promoting efficient water use¹⁰⁴. While we recognise that this represents a cost burden on the English and Welsh industry that is not taken account of in our benchmarking, the additional costs borne by Yorkshire Water in 2003-04 were only £64,200. This amount is not material to our analysis, and we have not applied an adjustment.

We have therefore not deducted the cost of promoting efficient water use from Yorkshire Water's modelled operating costs.

Reporter costs

There are two types of Reporter costs:

- external costs, which are the contract costs of paying the Reporter and his/her team for their time, skills and expenses; and
- internal costs, which are incurred by the regulated company in dedicating staff and resources to liaise with Reporters.

External costs

In England and Wales, water and waste water companies pay the costs of their Reporters themselves. The cost is reported as part of each company's annual operating expenditure. In Scotland, this Office meets the external costs of Reporters through a grant from the Scottish Executive¹⁰⁵. There is therefore no impact on Scottish Water's operating expenditure.

¹⁰³ Section 93a.

¹⁰⁴ Taken from the relevant water efficiency plans.

¹⁰⁵ This arrangement was agreed as Principle 4 of the Ten principles, which were agreed between the Scottish Executive, Scottish Water and this Office. See Volume 2 of our methodology consultation, 'Our work in regulating the Scottish water industry: Background to and framework for the Strategic Review of Charges 2006-10', p84.

In 2003-04, annual external Reporter costs in Scotland were £0.3 million. We have assumed that these costs are approximately the same as would be incurred by a company in England and Wales. It is possible that this assumption understates actual Reporter costs in England and Wales. It is likely that the costs faced by the companies south of the border were higher in 2003-04 since this was the base year for Ofwat's 2005-10 price determination. The Reporter undertakes extra work in scrutinising business plans in the run-up to a price determination.

We have assumed a 50:50 apportionment of these costs between water and waste water. We have therefore reduced Yorkshire Water's modelled operating expenditure by £0.15 million for water and £0.15 million for waste water.

The arrangements for funding the work of the Reporter are set to change in 2006, with costs being borne by Scottish Water. We have therefore allowed an additional £0.3 million per year in Scottish Water's baseline from 2006-07.

Internal costs

Reporters require access to members of staff, additional information and support services from the regulated company. Dedicating additional staff and resources to assist Reporters can increase operating costs. We do not think that there is likely to have been any material difference between the costs incurred by Yorkshire Water and those incurred by Scottish Water.

We have therefore made no adjustment to Yorkshire Water's modelled operating costs for internal Reporter costs.

Overall adjustments to allowed operating costs

In the previous chapter we took account of special factors that are outside the control of Scottish Water's management and justifiably increase Scottish Water's operating expenditure. This reduced the scope for improvement in efficiency.

The adjustments to reflect differences in the scope of activities have reduced Yorkshire Water's modelled operating costs. Scottish Water's operating costs appear higher in comparison. This widens the efficiency gap, and suggests that there is greater scope for efficiency.

Our analysis of differences in the scope of activities enables us to draw more accurate conclusions about Scottish Water's relative performance. In Tables 12.3 and 12.4 we summarise the adjustments we have made to reflect differences in scope.

Table 12.3: Summary of adjustments to the allowed for level of operating expenditure to reflect differences in the scope of activities for the water service¹⁰⁶

Water activity	Effect on Scottish Water's allowed operating costs	Value of adjustment to Yorkshire Water's operating costs
Household metering	Decrease	£1.9m
Non-household metering	Decrease	£0.3m
Leakage	Decrease	£6.8m
Nitrate removal	Decrease	£1.6m
Legal duty to promote efficient water use	None	Immaterial
Reporter costs	Decrease	£0.15m
Total	Decrease	£10.8m

Table 12.4: Summary of adjustments to the allowed for level of operating expenditure to reflect differences in the scope of activities for the waste water service¹⁰⁷

Waste water activity	Effect on Scottish Water's allowed operating costs	Value of adjustment to Yorkshire Water's operating costs
Household metering	Decrease	£1.9m
Non-household metering	Decrease	£0.3m
Reporter costs	Decrease	£0.15m
Total	Decrease	£2.3m

In the previous chapter, which discussed special factors, we allowed for the extra costs that Scottish Water incurs in dealing with lateral sewers and public septic tanks.

Our adjustments for scope of activities affect Yorkshire Water's modelled operating expenditure as follows:

¹⁰⁶ Totals may not add exactly due to rounding.

¹⁰⁷ Totals may not add exactly, due to rounding.

Water service

Modelled operating expenditure ¹⁰⁸	=	£91.3m
LESS net adjustments for scope	=	£10.8m
Implied Yorkshire Water operating expenditure	=	£80.6m

The adjustment represents approximately 12% of Yorkshire Water’s modelled water operating cost¹⁰⁹.

Waste water service

Modelled operating expenditure	=	£85.1m
LESS net adjustments for scope	=	£2.3m
Implied Yorkshire Water operating expenditure	=	£82.8m

The adjustment represents approximately 3% of Yorkshire Water’s modelled waste water operating cost¹¹⁰.

We calculated the adjustment to the operating costs of Yorkshire Water in 2003-04 that is required to account for these differences. We assume that the differences in scope, with the exception of Reporter costs, will continue throughout the review period.

Table 12.5: Summary of adjustments to Yorkshire Water’s modelled operating cost for differences in the scope of activities

	Adjustment to modelled operating cost
Water	10.8
Waste water	2.3
Total	13.1

Conclusion

It is important that we take account of special factors and differences in the scope of activities. This helps us to ensure that we are comparing like-for-like and provides a more complete assessment of Scottish Water’s relative operating cost efficiency.

In this chapter we recognised that differences in the scope of activities increase the costs borne by the companies in England and Wales.

We have reviewed the scope of activities performed by Scottish Water and the companies south of the border. This analysis has led us to conclude that we should reduce the modelled operating cost of Scottish Water’s comparator companies, Wessex Water and Yorkshire Water. This has the effect on the efficiency gap as shown in Table 12.6. In our base year, 2003-04, these adjustments resulted in an efficiency gap of 32% for the water service and 24% for the waste water service.

Table 12.6: Summary of the impact of special factors and differences in scope of activities on Scottish Water’s efficiency gap

	Water ¹¹¹	Waste water ¹¹²
Initial gap	27%	28%
Gap after adjustments for special factors	25%	23%
Gap after adjustments for scope	32%	24%

¹⁰⁸ The derivation of modelled operating expenditure is set out in Chapter 6.

¹⁰⁹ The corresponding analysis for Wessex Water shows a reduction of 11%. This is a conservative estimate, as our analysis does not take account of the limited economies of scale and scope for metering that are available to Wessex Water, the smallest of the water and sewerage companies.

¹¹⁰ The corresponding analysis for Wessex Water also shows a reduction of 3%. This is a conservative estimate, as our analysis does not take account of the limited economies of scale and scope for metering that are available to Wessex Water, the smallest of the water and sewerage companies.

¹¹¹ The water service gap is with respect to Wessex Water.

¹¹² The waste water service gap is with respect to Yorkshire Water.

Section 3: Setting the allowed for level of operating costs

Chapter 13: The level of service provided by Scottish Water

Introduction

It is essential that Scottish Water does not seek to live within its charge cap by reducing the level of service it provides to customers. In this chapter we review the levels of service provided by Scottish Water in 2003-04 and compare these with the levels of service provided by the companies in England and Wales. We then set out the levels of service that we expect Scottish Water to achieve during the regulatory control period. Achieving this level of service is an important part of the regulatory contract.

Regulating levels of service in Scotland

In our methodology consultation, we sought stakeholders' views about how we should take the levels of service provided by Scottish Water into account when we set maximum charges. We plan to use benchmarking to monitor the level of customer service provided by Scottish Water. We can use the framework developed by Ofwat, and information from the companies south of the border, to monitor both Scottish Water's absolute and relative performance.

In our guidance for the second draft business plan, we asked Scottish Water to provide estimates of the operating expenditure that it would require to improve its levels of service to that of the average performance of the companies in England and Wales. We planned to use these estimates to adjust Scottish Water's operating expenditure and make a more accurate assessment of the efficiency gap relative to the companies south of the border. Clearly, if Scottish Water required more operating expenditure to match levels of service achieved south of the border, this would imply that the operating expenditure efficiency gap in 2003-04 would be greater than that calculated by the econometric models.

Unfortunately, Scottish Water did not provide this information, and we have not been able to adjust our estimate of the efficiency gap in 2003-04. We therefore

expect Scottish Water to make significant progress in the level of service that it provides to customers. Our allowed for level of operating costs includes the costs of the enhanced level of service that the companies provide to their customers.

Since Scottish Water did not provide the information that we required, we have had to adjust our approach. We have set clear milestones for improvement in the level of service provided to customers. It is important that Scottish Water achieves these milestones.

We have therefore opted not to adjust our calculation of the scope for efficiency to reflect the difference in levels of service.

Measuring levels of customer service

Our methodology consultation explained how we monitor and report on the levels of service provided by Scottish Water. We set out the following information in our annual Customer Service Report:

- Scottish Water's overall performance assessment (OPA) score – this is a single measure of performance that combines a number of separate measures of performance;
- Scottish Water's performance on each of the measures included in the OPA (provided Scottish Water collects the necessary information); and
- Scottish Water's performance on the measures for which it publishes a Guaranteed Minimum Standard (GMS).

The overall performance assessment

We use the OPA, which was developed by Ofwat, to measure the performance of Scottish Water.¹¹³ This allows us to compare the performance of Scottish Water with that of the companies in England and Wales. The OPA takes account of performance across a range of

¹¹³ Ofwat's approach to the OPA is set out in 'Linking service levels to prices'.

activities that affect the level of service provided to customers.

To calculate the OPA score, we convert the company's performance in each service area to a score out of 50 points¹¹⁴. The better a company's performance, the higher the score it receives. For each measure and for each company, we define the maximum and minimum performance (based on the company's performance for the measure in previous years). If a company's performance is better than the maximum, it will receive a score of 50 points. Performance below the minimum receives a score of 5 points.

Once all of the individual customer service measures have been converted to scores out of 50, they are weighted according to the importance of each measure to customers. These weightings were assessed based on market research¹¹⁵.

Scottish Water's response to our second open letter¹¹⁶ suggested a misunderstanding of the way that the OPA is calculated. Scottish Water stated "OPA scores will vary from year-to-year based on relative performance with the water companies in England and Wales". In fact, Scottish Water's OPA score will vary from year-to-year over the regulatory control period only in response to changes in Scottish Water's own customer service performance. The performance of the comparator companies in England and Wales will have no effect on Scottish Water's OPA score.

For each component of the OPA, Scottish Water's performance is measured against a possible 'best' and 'worst' performance that were set out by Ofwat in 'Linking service levels to prices' (February 2002). This allows us to assess Scottish Water's current performance and to determine milestones for future performance on a consistent basis. When we compare Scottish Water's actual performance during this regulatory control period we will use the same baseline. This allows us to measure both Scottish Water's absolute and relative customer service performance.

¹¹⁴ The formula for doing this is $\left[\frac{\text{company score} - \text{range minimum}}{\text{range maximum} - \text{range minimum}} \times 45 \right] + 5$.

¹¹⁵ We discussed this issue in our Customer Service Report 2002-03. The same weightings have been used in Scotland and England and Wales. This is because our review of a number of market research projects showed strong similarities between customer preferences either side of the border.

¹¹⁶ May 2005, available on our website.

¹¹⁷ Throughout our analysis, we have used the definitions that appear in 'Linking service levels to prices'.

Individual performance measures

The overall performance assessment depends on each company's performance in each of fifteen individual performance measures. We can also compare performance for each individual measure. The individual measures are outlined below¹¹⁷.

Inadequate pressure

Customers expect their supplier to provide a supply of water at a pressure that is sufficient for their needs. The assessment used for this measure of service is the percentage of connected properties at risk of receiving pressure below the reference level. At the reference level pressure, a 9-litre bucket should be filled within one minute.

Scottish Water collects information on inadequate pressure. We can therefore compare Scottish Water's performance with that of the companies south of the border.

Supply interruptions

From time to time incidents on the network, such as a burst water main, can mean that customers temporarily lose their water supply. This assessment is based on the number of properties experiencing unplanned supply interruptions in excess of 6, 12 and 24 hours. Interruptions lasting longer than 24 hours are given a double weighting.

We now receive information from Scottish Water that allows us to compare performance with the companies south of the border.

Hosepipe restrictions

Hosepipe restrictions are an indicator of how secure the supply is. This assessment is based on the average number of person weeks of hosepipe restrictions imposed over the most recent five-year period. Restrictions for each of the five years are weighted, to give more significance to recent years.

Scottish Water can provide this information for the last two years and we can use this to compare performance with that of the companies south of the border.

Drinking water quality

The assessment for drinking water quality is based on the Drinking Water Inspectorate's (DWI) Operational Performance Indicator (OPI). This assesses compliance with respect to iron, manganese, aluminium, turbidity, faecal coliforms and trihalomethanes.

We do not have the same information for Scottish Water as is available for the companies in England and Wales. However, the DWI also collects information on the percentage of tests complying with quality parameters. We can compare performance using this information.

Sewer flooding – overload

This measure looks at the percentage of all properties connected to a company's sewer network that have been affected by an incident of internal sewage flooding caused by the overload of a sewer. This measure excludes incidents caused by severe weather.

Equivalent information on sewer flooding caused by overloaded sewers is collected for Scotland. We can therefore compare the performance of Scottish Water with that of the companies in England and Wales.

Sewer flooding – other causes

This measure looks at the percentage of all properties connected to a company's sewer network which have been affected by an incident of internal sewage flooding caused by equipment failure or sewer blockage or collapse.

We have the same information available in Scotland. We can therefore compare the performance of Scottish Water with that of the companies in England and Wales.

Sewer flooding – at risk

This measure looks at the percentage of all properties connected to a company's sewer network that are

considered to be at risk of flooding by sewage, caused by overload, more frequently than once in ten years.

We collect the same information for Scotland. We can therefore compare the performance of Scottish Water with that of the companies in England and Wales.

Customer contact

Ofwat's customer contact measure is based on four equally weighted aspects of the companies' contact with customers:

- percentage of all billing contacts received that are answered within five working days;
- percentage of all written complaints received that are answered within ten working days;
- percentage of bills to metered customers that are based on a meter reading (as opposed to an estimated reading); and
- percentage of calls received that are answered within 30 seconds.

In Scotland, information regarding billing contacts, written complaints and calls answered within 30 seconds is available. However, we do not currently collect information on the number of bills for metered customers that are based on meter readings.

We can construct a combined 'customer contact' measure using the three individual measures.

Assessed customer service

This aspect of the OPA measures the quality of customer service delivered by the companies in England and Wales. It is based on assessments of seven aspects of customer service, including complaint handling and services for disabled and elderly customers. WaterVoice (the customer representative organisation in England and Wales) carries out these assessments.

Ofwat does not publish information for the companies in England and Wales on 'assessed customer service'.

Unfortunately we cannot, therefore, collect information on the quality of customer service on a consistent basis.

Sewage treatment works consent compliance

This measure looks at the percentage population equivalent served by sewage treatment works that do not comply with the conditions of their discharge consents. Treatment works that are not complying with discharge consents may be causing environmental damage.

We collect the same information in Scotland and can, therefore, compare performance with that of the companies south of the border.

Sewage sludge disposal

This assessment looks at the percentage of total sewage sludge that is disposed of in an unsatisfactory manner.

We collect the same information in Scotland. We can therefore compare the performance of Scottish Water with that of the companies in England and Wales.

Category 1 & 2 pollution incidents (sewage)

This measure looks at the number of 'category 1 and 2' pollution incidents resulting from sewage collection and treatment activities, per million population equivalent served.

In Scotland, the number of 'category 1 and 2' incidents is recorded, but the definition of the categories is not the same as for the companies in England and Wales. The category 1 and 2 incidents recorded by Ofwat are based on definitions used by the Environment Agency in England and Wales. In Scotland, the Scottish Executive has defined category 1 and 2 incidents differently. As a result, we cannot include this factor in our comparison of performance.

Category 3 pollution incidents (sewage)

This measure is similar to that for category 1 and 2 incidents.

Again, there is a difference in the definition of an incident between Scotland and England and Wales. We cannot, therefore, include this factor in our comparison of performance.

Category 1 & 2 pollution incidents (water)

This measure is similar to that for category 1 and 2 waste water incidents. These are incidents arising from treatment and distribution of water.

Again, there is a difference in the definition of an incident between Scotland and England and Wales. This precludes the use of this factor in our comparisons of performance.

Leakage

This assessment considers the difference between current levels of leakage from water mains and the economic level of leakage (ELL). The measure is based on the percentage difference between the ELL target for the year and the actual level of leakage recorded. This measure relies on targets having been set for leakage and on leakage being measured on an annual basis.

Scottish Water does not currently have specified targets for reducing leakage. However, we expect that the new commission will wish to have a target in place by December 2007 at the latest.

Guaranteed minimum standards

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);

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

Clearly, the GMS do not cover every situation in which poor levels of service arise. While we regard Scottish Water's performance in meeting its GMS as important, we believe that the OPA provides a more comprehensive picture of the level of service provided to customers.

As with financial performance we share Ofwat's view that it is important to monitor the level of service provided to customers on an annual basis. Annual monitoring allows us to take any steps necessary to ensure that customers receive value for money.

The performance of Scottish Water

The overall performance assessment (OPA)

We have included as many of the measures that are used by Ofwat as possible in our assessment of the OPA score for Scottish Water. Table 13.1 sets out the measures that we have included.

Table 13.1: Components of the OPA assessment

OPA component	Included or not	Basis and comparability of measure
Inadequate pressure	Included	Actual performance, equivalent measure
Supply interruptions	Included	Actual performance, equivalent measure
Hosepipe restrictions	Included	Assumed performance
Drinking water quality	Included	Actual performance, some difference in definition of measure
Sewer flooding (overloaded sewers)	Included	Actual performance, equivalent measure
Sewer flooding (other causes)	Included	Actual performance, equivalent measure
Sewer flooding (at risk)	Included	Actual performance, equivalent measure
Company contact (3 out of 4 measures)	Included	Actual performance, equivalent measure
Assessed customer service	Not included	
Sewage sludge disposal	Included	Actual performance, equivalent measure
Sewage treatment works compliance	Included	Actual performance, equivalent measure
Category 1 & 2 pollution incidents (sewerage)	Not included	
Category 3 pollution incidents (sewerage)	Not included	
Category 1 & 2 pollution incidents (water)	Not included	
Leakage	Included	Assumed performance

Although we have had to make assumptions about performance in some areas, our view is that this does not materially impact on the assessment of Scottish Water's overall performance.

Scottish Water's OPA score for 2003-04 is 159, based on the measures set out in Table 13.1. Table 13.2 compares this with the equivalent scores for the water and sewerage companies in England and Wales¹¹⁸.

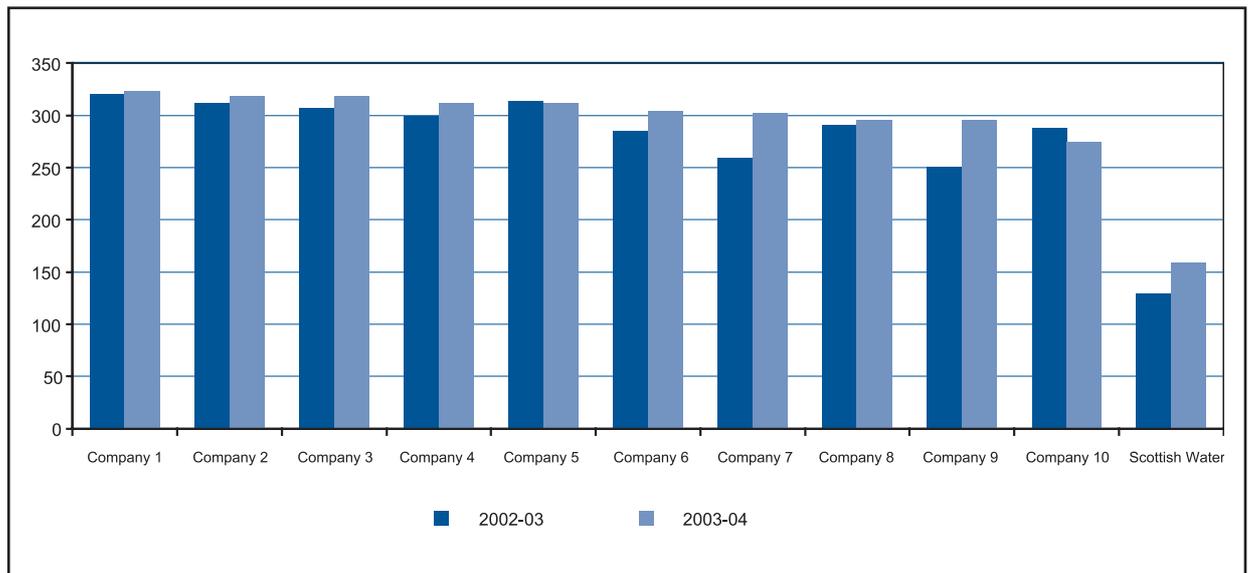
¹¹⁸ Adjusted to reflect the parameters that we are able to measure on an equivalent basis in Scotland.

Table 13.2: OPA scores 2003-04

	2003-04 OPA score based on our measures
Scottish Water	159
Company 10	274
Company 9	295
Company 8	296
Company 7	302
Company 6	304
Company 5	312
Company 4	312
Company 3	318
Company 2	318
Company 1	323

Figure 13.1 also shows the scores for both 2002-03 and 2003-04¹¹⁹.

Figure 13.1: OPA scores for 2002-03 and 2003-04



Scottish Water’s overall performance was relatively poor. Its score is 58% of that of the worst performing company in England and Wales and 49% of the best performing company’s score.

Individual performance measures

We now consider each of the individual performance measures in turn. This will show which areas of performance are most in need of improvement.

¹¹⁹ We did not collect a sufficient breakdown of information for supply interruptions for 2002-03 for Scottish Water, instead we base 2002-03 performance on 2003-04 scores.

Inadequate pressure

In 2003-04, 0.52% of the properties connected to Scottish Water's network experienced pressure below the reference level. Table 13.3 shows Scottish Water's performance relative to that of the companies in England and Wales.

Table 13.3: Properties below reference levels for pressure in 2003-04

	Percentage of properties below reference level of pressure in 2003-04
Scottish Water	0.52%
Anglian	0.06%
Dwr Cymru (England and Wales best)	0.02%
Northumbrian	0.02%
Severn Trent (England and Wales median)	0.03%
South West (England and Wales median)	0.03%
Southern	0.05%
Thames (England and Wales worst)	0.07%
United Utilities	0.03%
Wessex	0.05%
Yorkshire	0.01%

Just 0.07% of properties served by the worst performing company in England and Wales suffered from low pressure. Just 0.01% of properties served by Yorkshire Water suffered from low pressure.

Supply interruptions

In 2003-04, more than 60,000 Scottish Water customers experienced interruptions lasting up to 24 hours. A total of 2,266 customers suffered longer periods without water. Of all properties served by Scottish Water, 2.63% experienced supply interruptions that lasted longer than four hours (customers who experienced interruptions of longer than 12 hours are given a greater weight in the calculation).

Table 13.4: Percentage of properties suffering supply interruptions in 2003-04

	Weighted percentage score for properties receiving unplanned interruptions
Scottish Water	2.63%
Anglian	0.65%
Dwr Cymru (England and Wales best)	0.03%
Northumbrian	0.18%
Severn Trent (England and Wales median)	0.28%
South West (England and Wales median)	0.32%
Southern	0.38%
Thames (England and Wales worst)	2.46%
United Utilities	0.08%
Wessex	1.40%
Yorkshire	0.19%

Scottish Water's performance is marginally worse than that recorded by Thames Water. However, the performance of both of these companies are much worse than that of Wessex Water, which in turn lags considerably behind all of the other companies.

Hosepipe restrictions

This measure considers hosepipe restrictions imposed during the most recent five years. We know that Scottish Water has imposed no such restrictions in the last two years (2002-03 and 2003-04), but we do not have information for the three preceding years. We have assumed that there have been no such bans in the last five years.

No company in England and Wales has had a hosepipe ban in the past five years to March 2005. All companies (including Scottish Water) have therefore performed equally well in this measure.

Drinking water quality

Ofwat normally uses a measure of drinking water quality that is not available in Scotland. We have used the percentage of non-compliant samples (i.e. the percentage of water samples that did not meet the required level of quality).

Table 13.5 shows the percentage of non-compliant samples for every company (including Scottish Water). For this measure, Scottish Water's performance lags behind that of all of the companies in England and Wales.

Table 13.5 also shows the performance indices that are normally used by Ofwat to determine the appropriate score for the companies in England and Wales. There are small but relatively insignificant differences between the two measures. We have therefore compared Scottish Water's performance on non-compliant samples with the performance index for the companies in England and Wales.

Table 13.5: Drinking water quality measures 2003-04

	Percentage of non-compliant samples	Performance index (as a percentage)	Difference
Scottish Water	98.97%		
Anglian (England and Wales best)	99.70%	99.95%	-0.25%
Dwr Cymru	99.85%	99.81%	0.04%
Northumbrian (England and Wales worst)	99.92%	99.70%	0.22%
Severn Trent	99.83%	99.94%	-0.11%
South West	99.92%	99.72%	0.20%
Southern (England and Wales median)	99.86%	99.87%	-0.01%
Thames	99.91%	99.95%	-0.04%
United Utilities	99.82%	99.72%	0.10%
Wessex	99.93%	99.90%	-0.03%
Yorkshire (England and Wales median)	99.95%	99.86%	0.09%

Scottish Water would appear to be the poorest performer in terms of drinking water quality.

Sewer flooding – overload

In 2003-04, Scottish Water reported that 40 of its connected properties were flooded due to insufficient capacity in the sewerage system. One of these cases was caused by extreme weather conditions.

Table 13.6 compares Scottish Water's performance in sewer flooding caused by overload with that of the water and sewerage companies in England and Wales.

Table 13.6: Percentage of properties flooded (insufficient capacity) 2003-04

	Percentage of connected properties flooded (insufficient capacity)
Scottish Water	0.0016%
Anglian (England and Wales best)	0.0006%
Dwr Cymru	0.0039%
Northumbrian	0.0073%
Severn Trent (England and Wales median)	0.0022%
South West	0.0059%
Southern	0.0010%
Thames	0.0010%
United Utilities (England and Wales worst)	0.0103%
Wessex	0.0012%
Yorkshire (England and Wales median)	0.0030%

Scottish Water performed well in this measure, with a score higher than the average score achieved by the water and sewerage companies in England and Wales.

Sewer flooding – other causes

In 2003-04, Scottish Water reported 298 incidents of sewer flooding caused by equipment failure (4); blockages (283) or collapses (11). This equated to flooding of 0.0126% of all properties connected to Scottish Water's sewerage network. We can compare this performance with that of the companies south of the border.

Table 13.7: Percentage of properties flooded (other causes) 2003-04

	Percentage of connected properties flooded (other causes)
Scottish Water	0.0126%
Anglian (England and Wales best)	0.0046%
Dwr Cymru	0.0096%
Northumbrian (England and Wales median)	0.0102%
Severn Trent	0.0162%
South West (England and Wales median)	0.0126%
Southern	0.0130%
Thames	0.0081%
United Utilities (England and Wales worst)	0.0162%
Wessex	0.0073%
Yorkshire	0.0136%

Scottish Water's performance for this measure of sewer flooding is just below that of the England and Wales average and in line with the median performance.

Sewer flooding – at risk

In its 2003-04 Annual Return, Scottish Water reported that approximately 1,100 properties were at risk of being flooded. This suggests that 0.0434% of the properties connected to Scottish Water's sewerage network were at risk from flooding in 2003-04. Again we can compare this performance with that of the water and sewerage companies in England and Wales.

Table 13.8: Percentage of properties at risk of sewer flooding 2003-04

	Percentage of properties at risk of sewer flooding
Scottish Water	0.0434%
Anglian	0.0350%
Dwr Cymru	0.0150%
Northumbrian	0.0175%
Severn Trent (England and Wales median)	0.0309%
South West (England and Wales median)	0.0261%
Southern	0.0185%
Thames	0.0548%
United Utilities	0.0335%
Wessex (England and Wales worst)	0.0573%
Yorkshire (England and Wales best)	0.0135%

Scottish Water performs better than both Thames Water and Wessex Water. However, almost three times as many of its properties are at risk of sewer flooding than the best performing company.

Customer contact

We have focused on performance in three areas: responses to billing contacts; responses to written complaints; and calls answered within 30 seconds.

Table 13.9: Customer contact measures 2003-04

	Percentage of billing contacts dealt with within 5 days	Percentage of written complaints dealt with within 10 days	Percentage of telephone calls answered within 30 seconds
Scottish Water	80.7%	99.8%	84.5%
Anglian	99.6%	100.0%	92.3%
Dwr Cymru	100.0%	99.9%	94.5%
Northumbrian	98.7%	99.8%	91.8%
Severn Trent	100.0%	100.0%	98.9%
South West	100.0%	100.0%	95.1%
Southern	99.3%	100.0%	95.3%
Thames	99.2%	99.6%	81.6%
United Utilities	99.1%	99.9%	93.2%
Wessex	100.0%	100.0%	97.0%
Yorkshire	100.0%	99.8%	94.8%

Scottish Water's performance in dealing with billing contacts is much poorer than that of the companies south of the border.

Scottish Water's performance in responding to written complaints is better. It has dealt with 99.8% within ten working days. This is poorer than the England and Wales average, but better than the worst performer in England and Wales.

Performance in answering telephone calls within 30 seconds varied considerably between companies, with the best performer achieving the standard for 98.9% of telephone calls and the worst for 81.6% of telephone calls. Scottish Water's performance is relatively poor, with only one company in England and Wales performing less well.

Sewage treatment works consent compliance

In its 2003-04 Annual Return, Scottish Water reported that 6.5% of its population equivalent was served by treatment works failing their consent conditions. We can compare this performance with that of the companies in England and Wales.

Table 13.10: Percentage population served by works failing consent conditions

	Percentage of equivalent population served by a works failing its consent condition
Scottish Water	6.5%
Anglian	0.4%
Dwr Cymru	0.1%
Northumbrian	1.1%
Severn Trent	0.1%
South West	1.3%
Southern	0.1%
Thames	0.1%
United Utilities	0.3%
Wessex	0.0%
Yorkshire	0.2%

Scottish Water's performance in this measure is considerably poorer than that of the companies operating in England and Wales.

Sewage sludge disposal

In its 2003-04 Annual Return, Scottish Water reported that no sludge was disposed of unsatisfactorily. This is also true for each company in England and Wales. Each company therefore performed equally well in this measure.

Leakage

Ofwat measures the leakage performance of companies in England and Wales against their target for the economic level of leakage. We do not yet have the information to allow us to calculate an economic level of leakage for Scottish Water. It is not possible, therefore, to compare its leakage performance to that of the companies south of the border.

Estimates of leakage¹²⁰ from Scottish Water's supply pipes suggest that it is greater than that for other water companies (at 48.0%, compared with 32.9% for Thames Water, the worst performing company in England and Wales). It is highly likely that Scottish Water's level of leakage exceeds the economic level. There is no evidence to suggest any improvement in leakage levels

since 1997, when targets were introduced in England and Wales. This suggests that Scottish Water's leakage is likely to be relatively high.

We have therefore assumed that Scottish Water's leakage performance is at or below the minimum of the range for this measure, and have given it the minimum score for this measure.

A low starting score for this measure gives Scottish Water an opportunity to record a significant improvement on this measure and improve its absolute and relative performance score.

Milestones for improving levels of service

Scottish Water clearly has considerable room for improvement in the level of service it provides to its customers. We have set maximum charges in this draft determination such that Scottish Water's customers should expect to see improving service during the regulatory control period. Our assumption is that Scottish Water's performance by the end of this regulatory control period should be broadly equivalent to the current performance of the companies south of the border.

Since we were unable to make adjustment to Scottish Water's operating costs, we have set milestones to monitor improvements in the level of service provided by Scottish Water each year. These milestones will help us to gauge whether Scottish Water is making good progress in closing the level of service gap. These milestones will also allow us to confirm that efficiency targets¹²¹ are not being met at the expense of customer service.

It is likely that the companies south of the border will continue to improve their level of service to customers. We therefore need to set milestones which will ensure that Scottish Water closes the performance gap. For example, if Scottish Water were to improve its OPA so that at the end of the regulatory control period it matches that of the poorest performing company in England and

¹²⁰ Information from Ofwat June Return 2004 and Scottish Water's Annual Return 2003-04.

¹²¹ These efficiency targets would have been increased if we had been able to adjust operating costs to take account of the differences in the level of service provided to customers.

Wales in 2003-04, it is likely that there would still be a gap in performance. We need to establish milestones that would bring Scottish Water’s performance at least in line with the scores achieved currently by the average¹²² companies in England and Wales if we want to be sure that the level of service will approach that available south of the border by the end of the regulatory control period.

Table 13.11 shows the milestones that we expect Scottish Water to achieve.

Table 13.11: Milestones for the overall performance assessment

Year	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
OPA	159	159	159	195	232	268	305

Conclusion

At the current time, Scottish Water’s overall performance assessment score is just above 50% of that of the poorest performing company south of the border. This draft determination has set price caps that are consistent with a significant improvement in the level of service provided by Scottish Water to its customers. In order that we can gauge Scottish Water’s progress in improving its level of service, we have set annual milestones. These milestones are set in terms of the overall performance assessment framework and allow us to check that reductions in cost are not being achieved by cutting corners on the level of service provided.

It is important to emphasise that we have had to take this approach because we have not been able to adjust Scottish Water’s relative operating cost efficiency to take account of the current differences in the level of service provided. It is therefore vital that these targeted improvements are realised. The OPA milestones are an important part of this draft determination.

¹²² The arithmetic average of the OPA scores for the companies south of the border in 2003-04 is 305.4.

Section 3: Setting the allowed for level of operating costs

Chapter 14: Required improvement in Scottish Water's performance

Introduction

In Scotland, a direct result of Scottish Water's inefficiency is that customers have had to pay more for the water and sewerage services they have received than they otherwise would have done.

In this draft determination, we have set charges which should ensure that customers in Scotland begin to see the benefit of the lower cost of capital that the public sector industry enjoys. Our analysis has allowed us to assess the efficiency gap that currently exists between Scottish Water and the companies in England and Wales.

It is necessary for us to understand the efficiency gap that could exist in the future. In its 2004 price review, Ofwat has set prices that require all of the companies south of the border to improve their absolute level of efficiency. It has also identified that there is scope for well-managed companies to out-perform.

We have therefore assessed the scope for improvement in the efficiency of Scottish Water relative to both the current efficiency gap and the industry's overall scope for improvement.

This chapter reviews the evidence on the industry's scope for improvement. We use this evidence and the information on current performance to set the allowed for level of operating cost.

Ofwat's approach

In England and Wales, Ofwat has used econometric modelling to assess the relative operating cost efficiency of the companies south of the border at each of its three price reviews.

Ofwat also takes account of the overall improvement in efficiency that the industry is likely to achieve. The expectations made by Ofwat when setting prices for the companies south of the border comprise two elements:

- an overall improvement in the efficiency of the industry; and
- a 'catch-up' factor, by which all companies (except, of course, the leading company) have to narrow the gap to the leading company.

Ofwat's 1999 price review

For its 1999 price review, Ofwat asked Europe Economics and Professor Nick Crafts of the London School of Economics to complete a detailed study of the potential for improving operating cost efficiency.¹²³ They concluded that there was scope for efficiency savings in operating expenditure of around 2.5% to 3.5% a year. The results of that study support the hypothesis that efficiency gains can be large and can be achieved quickly until a company nears the efficiency frontier.

Ofwat assumed that all of the companies should make a minimum efficiency saving of 1.4% a year for the five years 2000-05 in their base operating expenditure. This target reflected the scope for improvement that resulted from improved technology and innovation. Some of the more efficient companies had also suggested that this level of improvement was realistic. The targeted 1.4% a year improvement allowed scope for the best companies to out-perform.

Ofwat concluded that all of the companies (except the frontier company) should have to narrow the gap to the frontier company. Ofwat set this 'catch-up' factor at 60% of the initial efficiency gap over the regulatory control period.

Ofwat required the companies to improve their efficiency by an equal amount each year.

Ofwat's 2004 price review

In December 2004, Ofwat published its final determinations for the 2004 price review¹²⁴. This review covered the period 2005-10. Ofwat accepted that the

¹²³ 'Water and sewerage industries general efficiency and potential for improvement', Ofwat, October 1998.

¹²⁴ 'Future water and sewerage charges 2005-10 – Final determinations', Ofwat, December 2004.

scope for the industry as a whole to improve may have fallen. In this review, it again set the 'catch-up' factor at 60%.

Ofwat again commissioned a study by Europe Economics to look at the potential scope for efficiency improvement in the water industry. Europe Economics updated the work it had carried out for Ofwat as part of the 1999 price review. The study, published in March 2003¹²⁵, compared 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.

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 by around 3% a year.

Ofwat set prices that reflected the scope for the industry to improve its efficiency at approximately 0.6% a year for the water service and 1% a year for the sewerage service.

Incentives to out-perform Ofwat's assumptions

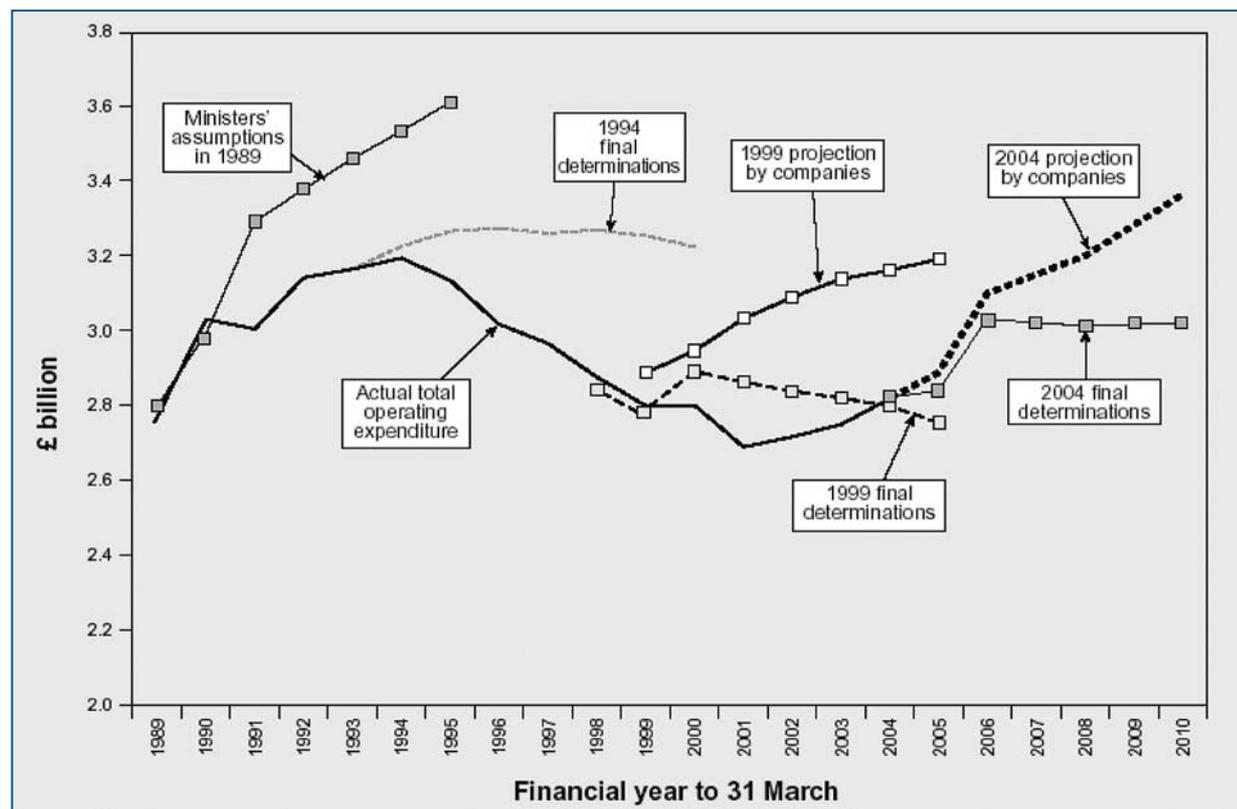
In 2004, Ofwat divided the scope for efficiency improvement into 'carrots' and 'sticks'. The carrot is the scope for efficiency that has not been included in the price limit. The stick is the scope for efficiency that has been included in the price limit.

Incentive-based regulation works by providing an incentive for a company to work hard to out-perform its regulatory contract. Any such out-performance is reclaimed for the customer at the next price review, and the next set of targets are more demanding than would otherwise have been the case. This ratchet approach is

in the long-term interests of customers. The success of the companies south of the border in out-performing their regulatory contracts is illustrated in Figure 14.1.

¹²⁵ Available at www.ofwat.gov.uk.

Figure 14.1: Comparison of total operating costs for the water and sewerage industry in England and Wales (2003-04 prices)¹²⁶



Implications of Scottish Water's progress against the targets set for 2002-06

Scottish Water has made good progress towards the targets set in the Strategic Review of Charges 2002-06. We expect baseline operating costs for the core business to reduce from £296 million in 2003-04 to around £271 million in 2004-05¹²⁷ and around £248 million in 2005-06, in 2003-04 prices. This is consistent with the forecasts contained in Scottish Water's business plans.

Since Scottish Water is improving rapidly we are able to set an allowed for level of operating cost for the 2006-10 regulatory control period based on a much lower baseline for operating costs than would be implied by our analysis of performance in 2003-04.

Our approach to setting prices for 2006-10

The assessment of relative efficiency

We have assessed Scottish Water's relative efficiency in a number of ways. Our analysis reviewed the results of:

- the Ofwat econometric models;
- the modified Ofwat econometric models;
- the WICS alternative model; and
- the modified WICS alternative model.

¹²⁶ From Ofwat's 'Water and sewerage service unit costs and relative efficiency 2003-04 report', p10.

¹²⁷ This estimate is based on latest regulatory returns for 2004-05 but is not yet confirmed in full regulatory accounts. Including inflation, it is £281 million.

Scottish Water's assessment of relative efficiency

In its draft business plans, Scottish Water claimed that its relative operating cost efficiency was around the average for England and Wales in 2003-04. It claimed to be very close to the frontier company for the water service, and had to reduce sewerage costs by only 9% to become the frontier company for the sewerage service. We have reviewed these claims carefully.

Scottish Water looks likely to have reduced its operating costs by around 9% in real terms during 2004-05. If we combine that improvement with the relative efficiency position claimed in the second draft business plan, Scottish Water would be the clear frontier company for the water service and would be very close to the frontier for sewerage.

Scottish Water has also said that it expects to make similar significant improvements in 2005-06. If Scottish Water's analysis of relative efficiency were accurate, these improvements would make Scottish Water the frontier water and sewerage service provider in Britain, by a significant margin. This would not be consistent with the past asset knowledge that Scottish Water references in its draft business plans.

Scottish Water's assessment of its relative efficiency takes account of its £52.7 million claim for special factors. We discussed Scottish Water's claims for such special factor costs in Chapter 12. Our assessment is that special factors account for £17.4 million, or around 6%, of Scottish Water's operating costs.

In our view, Scottish Water's assessment also takes insufficient account of the differences in the scope of activities compared with the companies in England and Wales. We discussed this in Chapter 13.

Our analysis of Scottish Water's operating efficiency indicates that it would need to reduce costs by 32% and 24% from 2003-04 levels¹²⁸ to achieve frontier efficiency for the water and sewerage service, respectively.

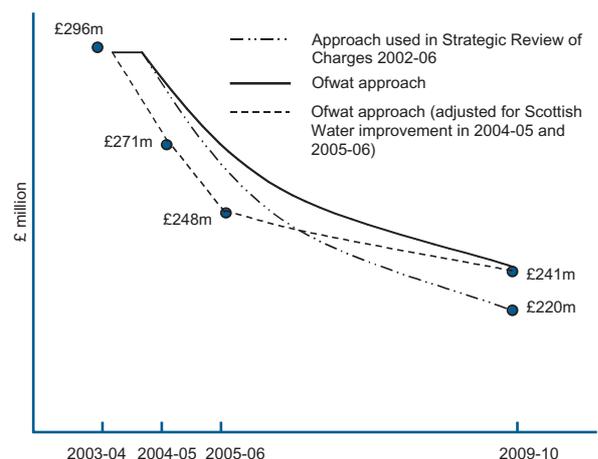
Our assessment of the scope for Scottish Water to improve

In our methodology consultation, we explained that there were a number of ways in which we could assess the scope for Scottish Water to improve its efficiency. We considered the following four approaches:

- retain the approach that we used in the Strategic Review of Charges 2002-06;
- adopt Ofwat's approach using a 2003-04 baseline;
- adopt Ofwat's approach using a 2003-04 baseline, but take account of continuing improvements by Scottish Water in 2004-05 and 2005-06;
- determine the required pace of improvement that would bring Scottish Water's performance in line with the companies over the period to 2014.

Figure 14.2 shows the impact of the first three of these options on Scottish Water's baseline operating costs.

Figure 14.2: Scope for improvement in operating costs (in 2003-04 prices)



We decided to adopt the approach used by Ofwat, adjusted to take account of the rapid improvement that Scottish Water has confirmed it expects to make in the last

¹²⁸ Relative to Wessex Water for the water service and Yorkshire Water for the waste water service.

two years of the current regulatory control period. Ofwat's approach has the advantage that it is well understood by stakeholders. Since the efficiency challenge required by this approach is less than the 80% gap closure that we used in the last Strategic Review of Charges, Scottish Water has greater opportunity to outperform.

Accepting Scottish Water's view on its likely improvement over the remainder of this regulatory control period affects the level of operating costs that we have allowed in the earlier years of the regulatory control period. It does not affect the overall closure of the operating cost efficiency gap achieved by 2009-10.

Implications for Scottish Water

Table 14.1 shows the profile of base operating cost. It does not include either new operating costs or any additions to the baseline. We have phased the improvement from 2006-07 in line with Scottish Water's estimate of its performance in 2004-05 and 2005-06. All costs are in 2003-04 prices¹²⁹.

Table 14.1: Profile of costs if Scottish Water closes 60% of the base operating expenditure efficiency gap¹³⁰

	2003-04 (base year)	2004-05 (estimated performance)	2005-06 (expected performance)	2006-07 (phased)	2007-08 (phased)	2008-09 (phased)	2009-10 (60% gap closure)
Water	£166.7m	£152.6m	£139.3m	£135.6m	£134.6m	£133.7m	£132.7m
Sewerage	£129.7m	£118.8m	£108.3m	£107.9m	£108.0m	£108.1m	£108.2m
Total	£296.5m	£271.4m	£247.6m	£243.5m	£242.6m	£241.8m	£240.9m

Scottish Water has scope to outperform the costs set out in Table 14.1. Indeed, if the full scope for efficiency were to be realised, the profile of expenditure would be as shown in Table 14.2. Again, all costs are in 2003-04 prices.

Table 14.2: Profile of costs if Scottish Water closes 100% of the operating expenditure efficiency gap

	2003-04 (base year)	2004-05 (estimated performance)	2005-06 (expected performance)	2006-07 (phased)	2007-08 (phased)	2008-09 (phased)	2009-10 (100% gap closure)
Water	£166.7m	£152.6m	£139.3m	£130.0m	£123.3m	£116.7m	£110.0m
Sewerage	£129.7m	£118.8m	£108.3m	£104.3m	£100.7m	£97.1m	£93.6m
Total	£296.5m	£271.4m	£247.6m	£234.3m	£224.1m	£213.8m	£203.6m

¹²⁹ The costs presented in this chapter are on a different basis to those that were published as targets in the Strategic Review of Charges 2002-06. For example, they exclude non-core activities and inter-authority trading. They are therefore not comparable with previously published targets.

¹³⁰ Totals in Tables 14.1 to 14.9 may not add up due to rounding.

The scope for outperformance in the period 2006-10 is the difference between the profiles in Tables 14.1 and 14.2. This is shown in Table 14.3, in 2003-04 prices.

Table 14.3: Scope for Scottish Water to outperform targeted 60% closure of the operating expenditure efficiency gap

	2006-07	2007-08	2008-09	2009-10
Water	£5.6m	£11.3m	£17.0m	£22.7m
Sewerage	£3.6m	£7.3m	£11.0m	£14.6m
Total	£9.2m	£18.6m	£27.9m	£37.3m

Scope for improvement in allowed additions to baseline operating expenditure

In Chapter 6 we set out the additions to the baseline of operating costs that we have allowed in this draft determination. We assume that there is the same scope to improve the efficiency of additional as baseline operating costs. This is consistent with the approach adopted by Ofwat at the 2004 price review.

Table 14.4 sets out the additional costs that we have added to the baseline. The table assumes that Scottish Water closes 60% of the operating cost efficiency gap by 2009-10.

Table 14.4: Profile of additions to baseline operating costs, assuming that Scottish Water closes 60% of the efficiency gap

	2006-07	2007-08	2008-09	2009-10
Water	£6.8m	£7.7m	£8.6m	£8.3m
Sewerage	£2.6m	£2.5m	£2.4m	£2.3m
Total	£9.4m	£10.2m	£11.0m	£10.6m

Scottish Water again has scope to out-perform the assumptions in Table 14.4. Indeed, if the full scope for efficiency were realised, the profile of additions to the operating expenditure baseline would be as shown in Table 14.5. All costs are in 2003-04 prices.

Table 14.5: Profile of allowed additions to baseline operating costs, assuming that Scottish Water closes 100% of the efficiency gap

	2006-07	2007-08	2008-09	2009-10
Water	£6.3m	£6.9m	£7.4m	£6.8m
Sewerage	£2.4m	£2.3m	£2.1m	£2.0m
Total	£8.8m	£9.2m	£9.6m	£8.8m

Scope for improvement in allowed new operating expenditure

In Chapter 7, we explained the pre-efficiency new operating costs that we have allowed for. In its 2004 final determinations, Ofwat set targets for improvement in the efficiency of new operating costs. Table 14.6 sets out Ofwat's assumptions.

Table 14.6: Ofwat's assumptions for annual efficiency improvements in new operating expenditure

	Target annual improvement	Potential annual out-performance	Total scope for annual improvement
Water service – baseline operating expenditure	1.4%	1.0%	2.4%
Water service – enhancements	1.85%	0.85%	2.7%
Sewerage service – baseline operating expenditure	1.3%	1.0%	2.3%
Sewerage service – enhancements	1.75%	1.05%	2.8%

Ofwat believes that there is greater scope for efficiency improvements in new operating expenditure than in baseline operating expenditure. It considers that the 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.

We share Ofwat's view that it is easier for an organisation to improve the efficiency of new operating expenditure than baseline operating expenditure. We have assumed that Scottish Water closes 75% of the efficiency gap on new operating expenditure. We have also assumed that the frontier performance of the

industry will improve at a rate that is 50% greater than for baseline operating costs. This is consistent with the approach used by Ofwat.

Table 14.7 sets out the profile of new operating costs, assuming that Scottish Water closes 75% of the efficiency gap by 2009-10.

Table 14.7: Profile of allowed for new operating costs, assuming that Scottish Water closes 75% of the efficiency gap

	2006-07	2007-08	2008-09	2009-10
Water	£0.2m	£0.5m	£1.1m	£5.1m
Sewerage	£0.8m	£2.0m	£2.7m	£4.2m
Total	£1.0m	£2.6m	£3.8m	£9.3m

Scottish Water has scope to outperform the assumptions in Table 14.7. Indeed, if the full scope for efficiency were realised, the profile of new operating costs would be as shown in Table 14.8. All costs are in 2003-04 prices.

Table 14.8: Profile of allowed for new operating costs, assuming that Scottish Water closes 100% of the efficiency gap

	2006-07	2007-08	2008-09	2009-10
Water	£0.2m	£0.5m	£1.0m	£4.5m
Sewerage	£0.8m	£1.9m	£2.5m	£3.8m
Total	£0.9m	£2.4m	£3.5m	£8.2m

Summary

Evidence from the water and sewerage companies in England and Wales shows that savings can be sustained over a number of years. We therefore expect Scottish Water to continue to improve its performance.

We have adopted Ofwat's approach of targeting a 60% closure of the efficiency gap for baseline operating expenditure and additions to baseline operating expenditure. Our improvement profile reflects Scottish Water's expected performance in 2005-06. We have adopted Ofwat's annual continuing improvement assumptions of 0.3% for the water service and 0.5% for the sewerage service.

Our approach on new operating expenditure is again consistent with that adopted by Ofwat. It assumes that Scottish Water closes 75% of the efficiency gap, and that the assumed improvement is 0.45% and 0.75% a year for the water and sewerage services respectively. Again, our improvement profile reflects expected performance in 2005-06.

The total scope for outperformance is shown in Table 14.9.

Table 14.9: Total scope for out-performance in operating costs 2006-10

	2006-07	2007-08	2008-09	2009-10
Water	£6.1m	£12.2m	£18.3m	£24.7m
Sewerage	£3.8m	£7.6m	£11.4m	£15.4m
Total	£9.9m	£19.8m	£29.7m	£40.1m

Scottish Water's rapid improvement in 2004-05 and 2005-06 means that it is well placed to out-perform the regulatory contract over the period 2006 to 2010. Our approach to setting the allowed for level of operating costs provides Scottish Water with significant and increasing scope to outperform, year on year. Similarly, the risks of underperformance are small, as the allowed for level of baseline operating costs reduces only slightly by 2009-10 from the level that Scottish Water expects to achieve in 2005-06. This should motivate Scottish Water to generate additional savings that will ultimately benefit customers.

Section 3: Setting the allowed for level of operating costs

Chapter 15: Allowed for level of operating expenditure

Introduction

In this draft determination, the allowed for level of operating expenditure accounts for some 40% of customers' bills.

We have set a total allowed for level of operating expenditure for Scottish Water. This level of operating expenditure is sufficient for Scottish Water to deliver Ministers' objectives for the water industry.

Our view is that it is easier for stakeholders to understand a total level of operating expenditure than efficiency targets. We will measure and monitor performance against this allowed for level of operating expenditure using the regulatory accounts. We will make adjustments to reported information where necessary, to ensure that our comparisons are made on a like-for-like basis.

The level of operating cost that we have allowed for provides the same scope for Scottish Water to outperform as Ofwat would normally make available to the companies south of the border. In the previous chapter we indicated the potential scope for such outperformance. The allowed for level of operating cost is therefore the minimum level of performance by Scottish Water that we would consider acceptable. In our view, Scottish Water should seek to incur lower operating costs than the level we have allowed for. At the same time, we expect Scottish Water to provide a better level of service to its customers.

In order to set the allowed for level of operating cost, we followed an eight-step process. At each step we have reviewed various aspects of Scottish Water's operating costs to ensure that they are no higher than they need to be. Earlier chapters in this volume have discussed each of these steps in detail.

This chapter summarises how we have set the total allowed for level of operating expenditure.

Components of the total allowed for operating expenditure calculation

Establishing a baseline

We established a baseline level of operating expenditure to which we applied future efficiency targets. In this draft determination we have used 2003-04 as a base year. Our analysis considered the following:

- The baseline level of operating expenditure as reported for 2003-04.
- Whether there are changes to this baseline, which are outside the control of Scottish Water's management during the 2006-10 regulatory control period.

To establish the level of baseline operating costs for 2003-04 we:

- take reported core costs;
- adjust for atypical costs (or savings);
- remove exceptional items; and
- ensure that cost allocation practices are consistent with those in England and Wales.

We then assessed whether there were any changes in operating costs that were beyond the control of Scottish Water, which could affect this baseline during the 2006-10 regulatory control period. We took account of the following costs:

- **Non-domestic rates.** The basis on which Scottish Water's assets are valued for non-domestic rates purposes changed in April 2005. As a result of this change it was anticipated that Scottish Water could face a substantial increase in its non-domestic rates bill. We have allowed for an increase in baseline costs of £22.5 million (in 2003-04 prices) over the period 2006-07 to 2009-10.

- **Pensions costs.** In its second draft business plan, Scottish Water indicated that it needed to increase the level of company pension contributions to meet its pension obligations. Following the receipt of actuarial valuations from Scottish Water to substantiate this claim, we have allowed for £20.4 million (in 2003-04 prices) over the period 2006-07 to 2009-10 of additional costs.
- **Power costs.** In its second draft business plan, Scottish Water indicated that it would face increased power costs over the period to 2010. We have analysed this claim, and allowed for £4.1 million (in 2003-04 prices) over the period 2006-07 to 2009-10.
- **Reporter costs.** We anticipate that Scottish Water will incur the costs of the Reporter from 2006-07. We have allowed for £0.3 million per year for this item.

Table 15.1 illustrates the 2003-04 baseline and adjustments.

Table 15.1: 2003-04 baseline and adjustments (2003-04 prices)

	2006-07	2007-08	2008-09	2009-10
Base operating expenditure	£296.5m	£296.5m	£296.5m	£296.5m
Assessed change to baseline for				
Non-domestic costs	£3.8m	£5.2m	£6.7m	£6.7m
Pension costs	£5.1m	£5.1m	£5.1m	£5.1m
Power costs	£1.0m	£1.0m	£1.0m	£1.0m
Reporter costs	£0.3m	£0.3m	£0.3m	£0.3m
Total	£306.7m	£308.1m	£309.6m	£309.6m

The initial efficiency gap

We define the efficiency gap as the difference between Scottish Water's actual costs and those that would be incurred if it operated at the same efficiency level as either the average or the best performing water and sewerage company in England and Wales. We have calculated the difference using four separate models:

- the standard Ofwat econometric models;
- the standard Ofwat econometric models, revised to include information from Scottish Water;

- the alternative model developed by this Office; and
- the alternative model, revised to include information from Scottish Water.

Our analysis assessed the relative performance of all of the water and sewerage companies. We rebased our results such that the average company achieved a score of 100. This simplifies the presentation of relative efficiency. A score of greater than 100 indicates inefficiency relative to the average performer.

Table 15.2 illustrates Scottish Water's efficiency score using the four models. The score from the Ofwat models is stated after all adjustments to the residual.

Table 15.2: Scottish Water's efficiency score

	Ofwat models	Modified Ofwat models	WICS alternative model	Modified WICS alternative model
Water service	111	111	110	115
Waste water service	124	122	130	129

We focus on comparing Scottish Water's performance with the companies south of the border. In 2003-04, the benchmark company in England and Wales for the water service was Wessex Water. For the waste water service it was Yorkshire Water. Ofwat used these companies when it calculated the scope for other companies to improve.

We have used the results from our four modelling exercises to calculate the efficiency gap between Scottish Water and the benchmark companies. We have also calculated the gap between Scottish Water and the average in England and Wales. This is illustrated in Table 15.3.

Table 15.3: Scottish Water’s efficiency gap

	Ofwat models	Modified Ofwat models	WICS alternative model	Modified WICS alternative model
Average: water service	10%	10%	9%	13%
Wessex Water: water service	28%	27%	38%	39%
Yorkshire Water: water service	23%	23%	18%	24%
Average: waste water service	19%	18%	23%	22%
Wessex Water: waste water service	33%	32%	39%	39%
Yorkshire Water: waste water service	29%	28%	40%	40%
Average: combined	14%	13%	15%	17%
Wessex Water: combined	30%	29%	38%	39%
Yorkshire Water: combined	26%	25%	28%	31%

Table 15.3 shows that the combined efficiency gap between Scottish Water and the benchmark companies (Yorkshire Water and Wessex Water) under all four sets of models is between 25% and 39%. This result indicates that Scottish Water would need to reduce its operating costs by between 25% and 39% to be at the same level of efficiency as the benchmark companies. The models generate broadly similar results.

This analysis does not take account of a number of factors that could affect the size of the efficiency gap. We have adjusted our calculation of the efficiency gap to take account of special factors and differences in the scope of services provided.

Impact of special factors

In this draft determination we have reviewed evidence on Scotland-specific factors that we should take into account in our assessment of the efficiency gap. These special factors are company specific, so cannot be incorporated into Ofwat’s econometric models. They must be beyond management control.

We have carefully reviewed the evidence provided by Scottish Water and have decided that allowances for the following special factors are justified:

- central regulatory laboratory;

- travel in rural areas;
- electricity charges;
- bad debt;
- sewer laterals;
- waterworks sludge recycling; and
- public septic tanks.

We have adjusted the efficiency gap calculated using the modified Ofwat models. We believe that the modified models provide a more accurate indication of Scottish Water’s relevant efficiency than the model that excludes Scottish information. It is not possible to apply the adjustment using the alternative models because we do not have disaggregated information on special factors for the English and Welsh companies. Table 15.4 sets out the adjusted efficiency gap.

Table 15.4: Efficiency gap adjusted for special factors

	Modified Ofwat models
Average: water service	11%
Wessex Water: water service	25%
Yorkshire Water: water service	19%
Average Waste water service	15%
Wessex Water: waste water service	27%
Yorkshire Water: waste water service	23%
Average: combined	13%
Wessex Water: combined	26%
Yorkshire Water: combined	21%

Impact of differences in scope

The overall effect of adjustments to reflect differences in scope on the efficiency gap is illustrated in Table 15.5.

Table 15.5: Efficiency gap adjusted for differences in scope

	Modified Ofwat models ¹³¹
Wessex Water: water service	32%
Yorkshire Water: water service	28%
Wessex Water: waste water service	29%
Yorkshire Water: waste water service	24%
Wessex Water: combined	31%
Yorkshire Water: combined	26%

We have not been able to adjust Scottish Water's measured efficiency to reflect its poorer customer service. Instead we have had to set milestones for customer service improvement during the regulatory control period.

Adjusted efficiency gap – scope and timeframe for improvement

Our adjustments for differences in the scope of activities and special factors have ensured that we have made a robust assessment of the efficiency gap. We also considered the extent to which this gap could be closed during the 2006-10 regulatory control period.

At its 2004 price review, Ofwat assumed that companies should close 60% of the efficiency gap to the frontier company. Our view is that this also represents a reasonable target for Scottish Water. We have also adopted the Ofwat assumption on the pace of improvement that should be achieved by the best performing companies.

Scottish Water continues to improve its operating cost efficiency performance. We have set the allowed for level of operating cost for the first year of the new regulatory control period, 2006-07, to reflect the improvement that Scottish Water expects to have achieved by 2005-06.

New operating costs 2006-10

Scottish Water will incur 'new' operating expenditure in meeting the Ministers' objectives for the industry for the next regulatory control period:

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

We have carefully scrutinised Scottish Water's estimates of new operating expenditure. Ofwat's view is that it is easier for an organisation to deliver efficiency savings in new operating expenditure than in baseline operating expenditure. We agree with this view, as it should be easier to identify the lowest cost approach for a new activity than to find ways to reduce an existing cost. We have therefore set higher efficiency targets (in percentage terms) for new operating expenditure than for baseline operating expenditure.

We have allowed for the new operating expenditure for the 2006-10 regulatory control period outlined in Table 15.6¹³².

Table 15.6: Allowed for new operating expenditure 2006-10 (2003-04 prices)

	2006-07	2007-08	2008-09	2009-10
New operating expenditure	£1.1m	£3.0m	£4.7m	£12.2m

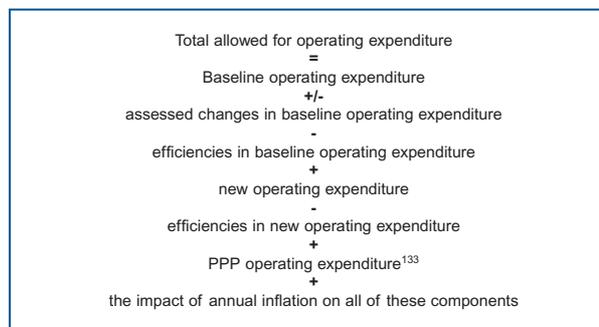
Total allowed for operating expenditure

The total allowed for operating expenditure is calculated as set out in Figure 15.1.

¹³¹ It is not possible to calculate the efficiency gap adjusted for differences in scope relative to the average company in England and Wales. This is because the information required is unavailable for some English and Welsh companies.

¹³² The new operating expenditure allowances shown here are before efficiencies.

Figure 15.1: Calculating the allowed for level of operating costs



We have set the profile for Scottish Water’s allowed for level of operating expenditure for the 2006-10 regulatory control period outlined in Table 15.7.

Table 15.7: Summary of allowed for total operating costs for 2006-10¹³⁴

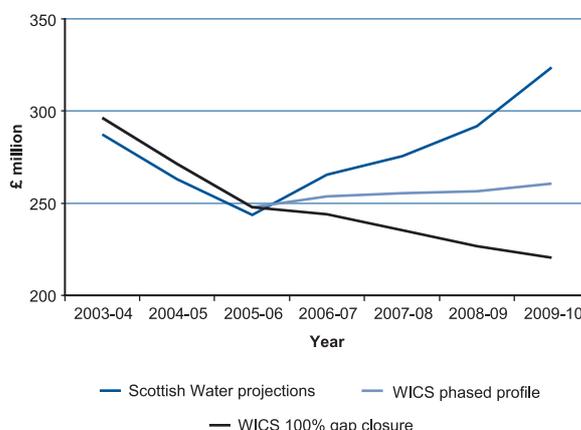
		2006-07	2007-08	2008-09	2009-10
	Baseline operating expenditure	£296.5m	£296.5m	£296.5m	£296.5m
Less	Efficiencies in the baseline	£53.0m	£53.8m	£54.7m	£55.6m
Plus	Assessed changes to baseline operating expenditure	£10.2m	£11.6m	£13.1m	£13.1m
Less	Efficiencies in assessed changes to the baseline	£0.9m	£1.4m	£2.1m	£2.6m
Plus	New operating expenditure	£1.1m	£3.0m	£4.7m	£12.2m
Less	Efficiencies in new operating expenditure	£0.1m	£0.4m	£0.9m	£2.9m
Equals	Sub total operating expenditure	£253.9m	£255.4m	£256.6m	£260.8m
Plus	PPP operating expenditure	£116.0m	£116.0m	£117.9m	£121.3m
Plus	Inflation ¹³⁵ from 2003-04	£22.6m	£30.6m	£39.0m	£48.2m
Equals	Total allowed operating expenditure	£392.5m	£402.0m	£413.5m	£430.3m

Comparison with Scottish Water’s projections of operating costs

In its second draft business plan, Scottish Water said that it would incur a significant increase in its operating costs. Figure 15.2 illustrates the difference between its

forecast level of operating costs and the level of operating cost that we have allowed for. We also show the scope that we believe Scottish Water has to outperform our assessment. The scope for this outperformance has been calculated with reference to the expected performance of the benchmark companies.

Figure 15.2: Comparison between the allowed for operating cost, the scope to outperform and Scottish Water’s projection¹³⁶ (in 2003-04 prices)



Conclusion

We have set total allowed for operating expenditure (excluding PPP and inflation) of £254 million in 2006-07, rising to £261 million by 2009-10. The allowance for 2009-10 is some 20% less than Scottish Water said that it needed in its second draft business plan. We consider, however, that the level of operating expenditure we have set is sufficient for Scottish Water to deliver Ministers’ objectives for the water industry in the 2006-10 regulatory control period. It also provides scope for management to out-perform and, as such, achieving this level of operating cost represents the minimum level of performance by Scottish Water that we would consider to be acceptable.

¹³³ PPPs have also made an important contribution to Scottish Water’s capital programme. This contribution is discussed more extensively in Volume 5, Chapters 11-14.

¹³⁴ Numbers may not add exactly, due to rounding.

¹³⁵ We have assumed annual inflation of 2% between 2003-04 and 2009-10.

¹³⁶ We have used Scottish Water’s regulatory accounts for 2003-04 to calculate operating expenditure in that year. This figure is higher than that reported by Scottish Water in its business plan submission, which is why our figures for 2003-04 to 2005-06 are higher than Scottish Water’s.

In preparing this draft determination, we have drawn on the work of the Office of Water Services in England and Wales.
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