

10. Efficiency and outperformance

- The scope for efficiency improvements is around 2.4% a year for operating expenditure and 3.6% a year for capital maintenance. We have assumed about half of this in price limits.
- There have been major improvements in efficiency in recent years, with all of the companies now in the top three relative efficiency bands compared with only half in 1999.
- There is still scope for many companies to catch up with the performance of the best.
- We have improved incentives to companies to encourage further progress. Twelve companies are eligible for the enhanced incentive in 2005-10.
- Two companies were significantly better performers in our overall performance assessment scores and two were significantly worse.

In this chapter we outline our policy on the balance between incentives on each company to improve its efficiency and overall performance. This is achieved through a framework that both stimulates successful and continuing outperformance of regulatory expectations, but challenges each company to improve year on year.

This chapter covers:

- incentives (for both costs and performance);
- the overall scope for improvements in efficiency;
- the assumptions in our final determinations; and
- the overall performance assessment.

10.1 Incentives

In the absence of a competitive market we use comparative competition and incentive mechanisms to drive the companies to achieve ever improving levels of efficiency and overall performance.

When we set price limits, we aim to provide each company with the right incentives, tailored to its circumstances, to improve its efficiency over time. If the incentives are right, managers of the companies will run their businesses as if they were operating in a competitive long-term market. Evidence from the last ten years suggests that generally the incentive balance has been about right. Drinking water quality and the services the industry delivers to its customers are at an all-time high. Pollution of the water environment by the industry is reducing year-by-year. This is coupled with improving levels of efficiency, from the position in the early 1990s, whereby generally more is being delivered for less. In achieving this transformation the industry has embraced new technology and new approaches to management and service delivery to customers.

The approach we follow strikes a balance between 'carrots' and 'sticks'. The 'carrots' take the form of encouragement and additional rewards for outperforming our cost assumptions. The 'sticks' take the form of our assumptions of efficiency savings that are included in price limits.

The positive incentives to companies (the 'carrots') are directly linked to our assumptions on the scope for efficiency savings and, crucially, the proportion of the scope for efficiency that we include in price limits. The smaller the proportion of the scope included in price limits, the greater the rewards for outperforming our assumptions. We couple this with mechanisms to allow companies to retain the benefits of this outperformance.

Current incentive mechanisms

In 1999 we introduced formal incentive mechanisms that allow a company to retain, for a minimum of five years, the benefits of outperforming our expectations on costs (incremental outperformance in the operating expenditure area and total outperformance in the capital expenditure area).

We applied these rules to the companies' performance during 1995-2000. In the price limits we have set, customers receive the full benefits of companies' efficiencies during 1995-2000. For the most part the mechanisms we introduced in 1999 have been used to assess the appropriate rewards (incentive allowance) for outperformance achieved during the current period 2000-05. These are included in our price limits. We consulted on the changes since the last price review prior to making our determinations.

We have reviewed the operating expenditure outperformance profiles for each company. In many instances early gains have been eroded by increases in costs later in the period, so there is no additional incentive allowance to include in future price limits. Two companies' outperformance profiles require an incentive allowance to be included in the assumptions underlying our determinations. This will ensure that they benefit from the full five years of their incremental outperformance. The companies benefiting are Northumbrian and Bournemouth & West Hampshire. This is fewer than at our draft determinations, largely because of the increased level of pension funding some companies face to deal with deficits and future contributions.

On the capital expenditure side, the majority of the outperformance in the 1995-2000 period was returned to customers in our price limits at the last review. Outperformance in the last year of that period (1999-2000) is taken into account in our price limits. Most companies have reported outperformance in the current period and this will be 'rolled on' on accordance with our approach, so that by 2009-10 all capital outperformance up to 2003-04 is reflected in these price limits.

Improving the incentive mechanisms

Last year we looked again at our incentive mechanisms. We consulted on our analysis, which highlighted the need for greater incentives for the leading companies and more clarity on how we deal with underperformance. We consulted on a series of changes that we considered would ensure that the mechanisms would be fit for purpose for the period 2005-10. In the light of comments made, we reviewed our proposals and set out our decisions in MD191 'Our conclusions on rewarding outperformance and handling underperformance' (March 2004). The key changes that we have made enhance rewards for future outperformance for those companies assessed as leading, but also set an upper limit on the risks of underperformance that companies carry.

Dealing with underperformance – shortfalls and cost overruns

A reduction in costs is not an efficiency improvement if it is achieved by a company not delivering its outputs or by delivering them late. Nor should it be achieved at the expense of a deterioration in services to customers.

In making our assessments we check whether there has been any deterioration in services, taking action with the company to restore these to a stable position as soon as is practicable.

For price limit purposes we adjust, in a cost neutral way, outputs that are not delivered. We term this a shortfall. Other regulatory action can result from a shortfall; for example, if an expected improvement in water quality or in the environment is not achieved, this might lead to prosecution of the company by one of the quality regulators. If there is a deterioration in levels of service, we might seek formal action plans to remedy the consequences of the shortfall in the shortest practical time.

Our aim is to make the shortfall adjustments match those that we would have taken at the last review if we had known the actual delivery date. Our adjustments would be the difference in costs arising from the assumed and actual delivery timetables and any necessary change to the regulatory capital value. These adjustments allow us to revise the regulatory baselines for both operating and capital expenditure that we use to assess the scale of any outperformance that needs to be rewarded further in future price limits, using the rolling incentive mechanisms. In some instances the delayed delivery of an output may result in any associated expenditure running into the next price limit period. Where this has occurred we have carried forward into price limits the costs assumed in our 1999 determinations. In this way the company retains the project risks associated with potential cost overruns, but also retains the scope to outperform.

In our review we have identified capital projects from 2000-05 which have been delayed with a total value of £476 million. These have occurred in ten companies.

Seven companies included cost profiles in their business plans which indicated that would be delays in some 2000-05 outputs. Some companies suggested that higher costs would now be necessary for this work than we assumed when the programme was confirmed in 1999. In these cases we have decided not to include the likely cost overruns in our determinations. This leaves the 1999 determination output expectations in place, with the risks of cost overruns remaining with the company.

We have dealt with other reported capital expenditure cost overruns in line with our published approach. The general policy assumes that the company carries all the risks of cost overruns in the delivery of the outcomes and outputs assumed in the price limit determinations.

Net additional costs associated with new requirements will be recognised by us as part of an interim determination or through our logging-up mechanism, on application by the company. We consider logging-up claims associated with cost overruns on their merits at each price review.

We consider the issue of cost overruns separately for the water and sewerage services. This ensures uniform treatment between water only and water and sewerage companies. We do not carry forward into future price limits the financing costs of any cost overruns unless these exceed our underperformance threshold (as set out in MD191). This is 10% of the turnover for the five-year period for that service. Where the cost overruns exceed this threshold we do reflect in future price limits the full amount of the cost overrun that is above the threshold.

We assume that a prudent company would write off unremunerated cost overruns. Seven companies have incurred capital expenditure cost overruns in the period 2000-01 to 2003-04. One company (Thames in its water service) has exceeded the underperformance threshold.

Improving overall performance – the OPA scheme

Following the 1994 review we developed an aggregate measure of a company's performance across a wide range of services, the overall performance assessment (OPA). In the main this was a comparative measure used to identify both the leaders and those who fared less well in overall performance year by year. As with other comparative measures the publication of the resulting league tables is a strong spur for the worst performers to catch up and for others to strive to be at or near the top.

To increase the effect of these assessments in the lead up to the 1999 review we decided, after consultation, to provide the leading companies with a financial reward (up to +0.5% on price limits) and to penalise the worst performers (down to -1.0% on price limits) in the first year of price limits. The combination of annual OPA league tables and the reward/penalty rules we apply at price reviews has proved to be a strong incentive for improving performance in the current period.

In 2002, we consulted on the next steps for the OPA and the range of price adjustments we intended to use for this review. We confirmed our approach in our methodology paper. Our analysis of overall performance and the resulting rewards and penalties we have used in our price limits are set out later in this chapter.

An integrated package

We consider the incentive mechanisms described above are an integrated package. The package comprises:

- the rolling outperformance mechanisms;
- our approach to shortfalls and underperformance;
- our overall performance assessment – with its rewards and penalties; and
- the proportion of the scope for improving efficiency that we include in price limits.

The package has worked well to date. We have updated it so that each company is challenged to outperform in both efficiency and service performance during the 2005-10 period. Companies will continue to carry the risks of cost overruns but with the safety net of our underperformance threshold. In our view this is a balanced package that is consistent with our judgements on the appropriate cost of capital for the water companies.

10.2 The overall scope for improvements in efficiency

Each time price limits have been set, we have included challenging efficiency improvement factors over and above those achieved in the economy as a whole (which are reflected in net terms in the retail price index). Our overall efficiency factors have two components:

- the catch-up improvement factor that challenges a company to make progress towards the top performing companies; and

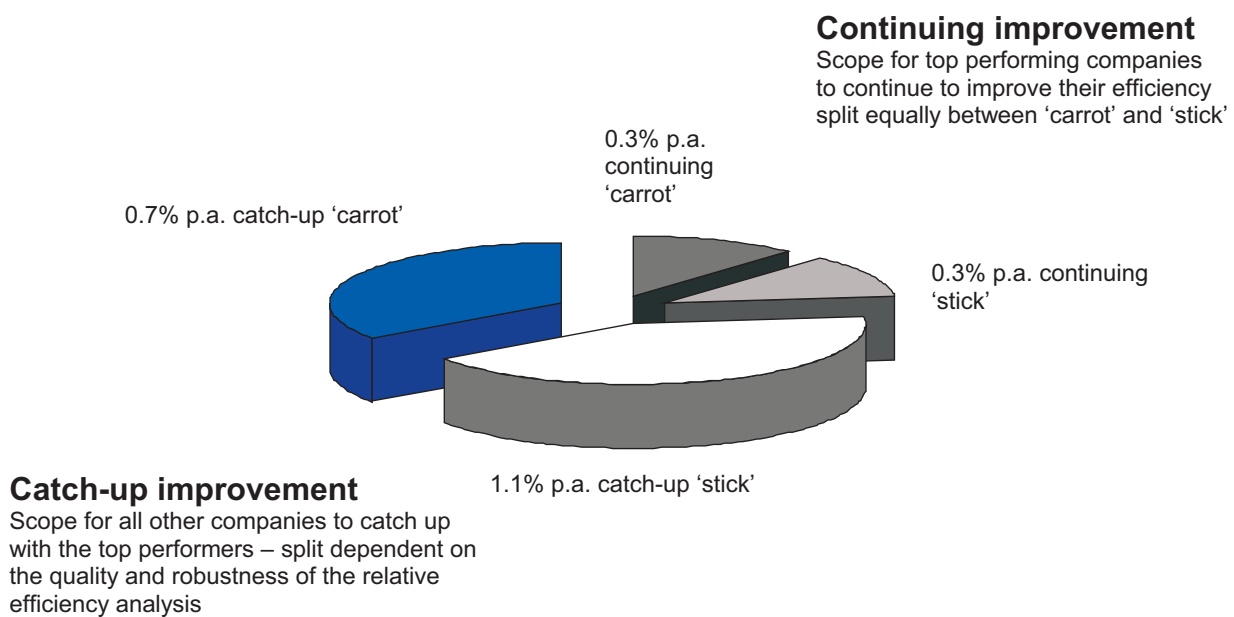
- the continuing improvement factor that is linked to the performance of the top performing companies.

These factors ensure customers benefit, through lower bills than would otherwise be the case, from real improvements in efficiency as they occur, with the balance of the benefits delayed as the companies retain these under the incentive mechanisms outlined earlier.

Figure 9 shows how our assessment of efficiency improvements for base operating costs for the water service build to an assumption on the overall scope for operating efficiency improvements of around 2.4% each year, the overall size of the 'pie' is our example. This is split into 0.6% each year for continuing improvement and 1.8% for the catch-up. We have included only half of the scope for continuing efficiency in price limits 0.3% and just over half of the scope for catch-up 1.1%. The balance represents the potential for outperformance for the companies.

Figure 9 Improving efficiency – the 'carrot and stick' model

Example: scope for improvements in efficiency – water service base operating expenditure



10.3 Companies' views on the scope for improving efficiency

We asked each company to set out its views on the prospects for future efficiency in its business plan. Their views varied widely. Some companies assumed that there was still considerable scope, including some of the top performing companies. Others took a more cautious view (some more cautious than they had indicated in their draft business plans). A few companies argued that they faced a period of significantly lower productivity than the economy as a whole. These companies argued that not only should we make specific allowances for increased costs but that we should also assume a general increase in operating and capital costs as a whole – a reduction in total factor productivity.

In their final business plans companies put forward proposals for future operating efficiency improvements ranging from 0 to 0.5% each year for water and sewerage continuing efficiency and 0 to 2.4% each year for catch-up efficiency. This compares with draft business plan estimates of 0 to 1% for continuing efficiency and 0 to 3.1% for catch-up factors. The change in companies' estimates is linked to new studies on the scope for future efficiency rather than any new evidence on future costs and technology.

For capital maintenance expenditure, companies estimated in their business plans that they could improve their annual efficiency by up to 1.0% a year. Seven companies estimated that they could improve by at least 0.5% a year, with one company considering that greater efficiencies could be gained for enhancement expenditure in the sewerage service. However, some believed that costs would increase by up to 1.1% a year.

We categorise capital investment to deliver improvements to companies' assets as capital enhancement expenditure. This is investment over and above that needed to continue to deliver the current quality standards and levels of service to customers, assuming current volumes of water supply and sewage disposal. Companies identified the scope for improvements in efficiency in quality improvements as equivalent to 3.6% of the cost of their programme for the water service on average and 2.9% for the sewerage service. This reflects in part the historical trend whereby companies have made substantial savings on past capital enhancement expenditure projections assumed in both business plans and our earlier determinations.

Most recently (and after the submission of the final business plans) the industry, through Water UK, commissioned NERA to look at the potential for future cost savings and productivity. NERA concluded that after taking into account differences in the total factor productivity for the industry compared with the general UK economy, together with differences in input prices for the industry and the economy, unit costs would rise by around 1.1% per year. While the methodology used by NERA was helpfully explicit, its conclusions are sensitive to the key assumptions in the areas of future costs and industry productivity. We do not agree with NERA's approach to moving from industry productivity figures to assumptions on real unit cost reductions. We do not believe that it is necessary to take specific account of productivity as we are both assessing water industry productivity and making an allowance for water industry specific input cost changes.

In their business plans many companies put forward well-founded and robust arguments on productivity and factor prices that would lead to very different conclusions from those reached by NERA.

10.4 Our assessment of the scope for improving efficiency

We have considered how costs will change in the next price review period. We have continued the approach adopted at previous price reviews and sought the advice of consultants with expertise in this field. We asked them to consider the prospects for future efficiency.

We see clear evidence that the industry has shown consistently higher levels of operating and capital procurement cost productivity than the economy as a whole. We made challenging efficiency assumptions in 1999 and the industry has risen to them. This is unsurprising given the environment of investment and regulatory incentives. While there is some tail-off in operating productivity growth in recent years this relates to recent changes in input prices, that disproportionately affect the water and sewerage industry compared with

the general economy. We see no reason not to expect a similar productivity margin during the next five years.

We recognise the past successes of the companies; however, we find little evidence to support the view, of some companies, that there is reduced or no scope for further efficiency improvements relative to the economy as a whole. Our analysis of the relative efficiency of the individual companies highlights that there is still considerable variation in performance with companies improving at different rates. Stimulating those companies that are not the most efficient to catch up to the current performance of the benchmark companies will deliver real efficiency improvements by the industry. Work by our consultants (and others), as well as the considered judgements of some of the leading companies, all support the view that there is still scope for the best performing and benchmark companies to make further real efficiency improvements.

One of the key questions for us is how these trends will continue into the future. In the last two years we have commissioned Europe Economics, London Economics, and Stone & Webster to look at the issue. The industry trade body, Water UK, commissioned NERA to investigate, and companies have employed other consultants, including OXERA and Frontier Economics, to look at aspects of this issue. At the same time Ofgem, the energy regulator, in carrying out the price review for electricity distribution companies, commissioned Cambridge Economic Policy Associates (CEPA) to look at the prospects for the electricity industry. CEPA, as part of its review, also looked at the water industry. A range of industry productivity growth forecasts has emerged, from 0.4% per annum (NERA) to 2.6% per annum (CEPA).

We have reviewed these reports carefully. We have examined thoroughly all of the arguments and assessments made by water companies. We have updated and refined our analysis of the relative efficiency of each company in its operations, in capital maintenance and in capital works, using the latest information from companies. We have looked closely at assessments made by the leading water companies.

While the opportunities for the extensive labour productivity gains of the early years will be fewer in the future, this will continue to be in part offset by the continuing major capital investment programmes.

There is also evidence that the scope for efficiency may be higher for the sewerage service than for the water service. In part this reflects the opportunities for synergies between the large environmental programme and expenditure on operations and capital maintenance. We take account of this in our assumptions of continuing efficiency.

Using this information, the work submitted by companies in their business plans, and our study of companies' cost trends, we have been able to take a view on the overall scope for future improvements in efficiency. Our consultants have provided advice, but these are our decisions based on all the evidence available.

Most of the evidence we see confirms the general view we took in 1999. We see no reason for the industry not to continue to exhibit higher than average productivity growth. In particular, the enhancement programmes are continuing at broadly the same level for most companies. So we think that it is prudent to assume a positive productivity differential, and we see no convincing evidence to support the negative assumption proposed by NERA and some companies.

When we look more closely at the factors contributing to productivity in the past we find that some, such as the legacy from pre-privatisation days, have declined. Others, such as the investment in new environmental and water quality standards, continue unabated. In other areas, drivers of higher costs are no longer significant. For example, there is not the same

need to provide the transitional investment to reach higher customer service standards that there was in 1999. Additionally, most companies are now at an economic level of leakage.

In their responses to our draft price limits many companies reiterated the concerns included in their business plans. They said that our approach to efficiency was not well founded. Since our draft determinations we have revisited our assessment of relative efficiency using the latest data. We conclude as a result of our direct analysis of real costs that the scope for future base operating efficiency is around 2.4% a year for water and slightly less for sewerage. This is within the range of recent estimates summarised in NERA's paper for Water UK and is less than we assumed in 1999. Most companies' circumstances will continue to be similar to the current period, and we have made realistic adjustments for input prices. We see no reason why companies' productivity growth should stop or reverse.

Our overall assessment of the scope for improvements in operating efficiency is a continuing annual efficiency of around 0.6% for the water service and 1% for the sewerage service. Taken together with the potential for companies to catch up, this would imply an overall scope for efficiency over the five years of around 2.4% a year.

The reduction in our view on the scope for future efficiency relates to two factors. First, we have used the more up-to-date data provided in the 2004 June return. This shows a reduced range of performance. Secondly, we have accepted the arguments made by some companies that the particular circumstances of Thames' sewerage operations precluded its use as the benchmark.

The scope for capital maintenance and capital enhancement efficiency continues to benefit from the synergies available with a large environmental and water quality programmes. Companies can also drive down costs and make significant efficiencies in planning of capital works.

If companies can achieve our outputs in a different way, at a lower cost, they benefit from the efficiencies for five years. This ongoing challenge to outperform our assumptions has been a driver for increased efficiency and innovation in capital procurement in the water industry. We believe that the incentive for the companies to continue to outperform is strong and this is demonstrated by the outperformance so far for the period 2000-05.

We have assumed the same scope for continuing annual efficiency for capital works as in our draft determinations. The catch-up improvement factors for both the capital maintenance and capital enhancement programmes are slightly lower. We have changed this for a number of reasons including representations on the cost base unit costs; our allowance for special factors; and our adjustment of econometric bands to reflect the revised capital expenditure programme. These assumptions are set out in table 20 in this chapter.

10.5 Efficiency improvements assumed in price limits

As set out earlier, our approach to incentives seeks to achieve an appropriate balance between carrots and sticks. Consequently, we have not included the whole of the scope for productivity in price limits. In overall terms, our price limits have included under 60% of our views on the scope for improving efficiency in base service with slightly more in the enhancements area.

Operating cost efficiency

Table 19 sets out the overall scope for efficiency and the efficiency assumptions included in the price limits for operating expenditure for both the base service and that related to service improvements.

Table 19 Operating expenditure efficiency

| Operating expenditure – annual average rate of improvement | Efficiency improvement factors assumed in our draft determinations | | | Potential outperformance incentive | | | Likely overall scope |
|--|--|-------------------------------|----------------------------------|------------------------------------|----------------------------|--------------------------------|----------------------|
| | ‘Sticks’ | | | ‘Carrots’ | | | |
| | Catch-up improvement factor | Continuing improvement factor | Total ‘stick’ improvement factor | Catch-up out-performance | Continuing out-performance | Total out-performance ‘carrot’ | |
| Water service – base | 1.1% | 0.3% | 1.4% | 0.7% | 0.3% | 1.0% | 2.4% |
| Water service – enhancements | 1.4% | 0.45% | 1.85% | 0.4% | 0.45% | 0.85% | 2.7% |
| Sewerage service – base | 0.8% | 0.5% | 1.3% | 0.5% | 0.5% | 1.0% | 2.3% |
| Sewerage service – enhancements | 1.0% | 0.75% | 1.75% | 0.3% | 0.75% | 1.05% | 2.8% |

In price limits, we have assumed the frontier shift or continuing efficiency factor is 0.3% a year for the water service and 0.5% a year for the sewerage service. This is around half of the possible scope for continuing efficiency.

The catch-up factors vary from company to company but in aggregate amount to 1.1% a year for base operating costs for the water service and 0.8% a year for the sewerage service. Our analysis of catch-up factors is set out later in this chapter.

We expect all companies to achieve the efficiency factors included in our price limits. We believe that the incentives in place make it worthwhile to achieve all the ‘carrot’ element and to seek to move beyond this. But to achieve all of the scope – stick plus carrot – is a real challenge which not all companies will be able to achieve.

We have provided in the price limits for certain increases in base operating expenditure. These would increase base operating costs by around £200 million or 7.2% before applying efficiency improvement factors. More detail is provided in chapter 11.

The reasons for this increase are two-fold. First, the circumstances surrounding base operating costs in recent years – such as rising energy costs and higher pension scheme contributions – have led to upward trends. Secondly, the capital schemes put in place to enhance the environment and improve water quality bring with them higher operating costs.

Overall, our assessment of efficiency improvements and our approach to changes in input prices leads to broadly stable base operating costs over the 2005-10 period. On a comparable basis, this is not inconsistent with the views of consultants and many companies.

We published earlier our rationale and policy for applying higher improvement factors for forecast increases in operating expenditure arising from the improvement and enhancement programmes. We have assumed continuing improvement factors for operating enhancement expenditure will be 0.45% a year for the water service and 0.75% a year for the sewerage service. This is half as much again as the continuing improvement factor assumed for base

operating expenditure. Catch-up factors average 1.4% a year for water and 1.0% a year for sewerage.

Capital maintenance efficiency

For capital works we believe that there is more scope for continuing efficiency than in operating costs due to the effect of the continuing large capital programme and the history of companies becoming more efficient in this area. The majority of the future capital programme relates to the sewerage service, so we have assumed a slightly higher scope in this area for capital maintenance projects. The capital maintenance efficiency assumptions for both continuing efficiency and the catch-up element for the industry are set out in table 20.

Table 20 Capital expenditure efficiency

| Capital expenditure – cumulative improvement over the period 2005-10 | Efficiency improvement factors assumed in our draft determinations | | | Potential outperformance incentive | | | Likely overall scope |
|--|--|-------------------------------|----------------------------------|------------------------------------|----------------------------|--------------------------------|----------------------|
| | ‘Sticks’ | | | ‘Carrots’ | | | |
| | Catch-up improvement factor | Continuing improvement factor | Total ‘stick’ improvement factor | Catch-up out-performance | Continuing out-performance | Total out-performance ‘carrot’ | |
| Water service – capital maintenance | 5.4% | 2.5% | 7.9% | 6.6% | 2.5% | 9.1% | 17.0% |
| Water service – capital enhancements | 8.2% | 3.7% | 11.9% | 2.6% | 3.7% | 6.3% | 18.2% |
| Sewerage service – capital maintenance | 6.2% | 3.0% | 9.2% | 6.6% | 3.0% | 9.6% | 18.8% |
| Sewerage service – capital enhancements | 8.5% | 4.4% | 12.9% | 2.7% | 4.4% | 7.1% | 20.0% |

We have assumed continuing improvement factors of 2.5% for water over the five years for capital maintenance expenditure and 3.0% over the five years for sewerage – in each case half of the possible scope for improvement.

At the 1999 review, our assessment of the overall scope for efficiency in capital maintenance was higher. It was also well above the estimate of improvement in general capital productivity for comparable industries, which our consultants considered was 5-10% for the five years to March 2005. For the water service we assumed that out of the total scope available, during the five years, of 24.7% companies would achieve at least 13.4% efficiency improvements. The corresponding figures for the sewerage service was 28.5% and 14.9%. These comparisons are set out for both operating costs and capital maintenance in figures 10 and 11.

Although companies regarded these assumptions as challenging at the time, they have outperformed the sticks in the first four years of the current period. The average annual outperformance for the water service is 1.0% and 1.2% for the sewerage service. This suggests that if the current trend continues companies will have improved efficiency by about three-quarters of the overall scope that we assumed at the last review.

The way that the capital maintenance catch-up element efficiency is calculated is company-specific. It depends on each company’s econometric and cost base submissions. This is set out later in this chapter.

Capital enhancement efficiency

Capital enhancement continuing efficiency factors are 50% more challenging than the capital maintenance assumptions. This reflects the enhanced scope for efficiency in planning and implementing new projects compared with the more repetitive work associated with maintenance. There is a historical trend of substantial outperformance of previous regulatory assumptions that also supports the adoption of higher factors. During the four years 2000-04 companies have outperformed our combined improvement factors, on average, by about 2.1% a year for water and about 4.7% for sewerage enhancement projects. Furthermore, there is no evidence that an apparent systematic bias towards overestimating the costs of improvements has been corrected by the industry. Like capital maintenance, we have assumed a slightly higher scope for the sewerage service because of its greater share of the capital programme.

Again, the scope for continuing efficiency is split in half and only half of the scope is included in price limits. The enhancement expenditure efficiency assumptions for both continuing efficiency and the catch-up element for the industry are set out in table 20. We have assumed continuing improvement factors for capital enhancement expenditure will be 3.7% over the five years for the water service and 4.4% for the sewerage service.

For some types of work, we compared unit capital and operating costs between companies. Where we applied a challenge based on these comparisons between companies, the catch-up assumptions for capital and operating costs were discounted from the unit costs challenge.

10.6 Comparison of efficiency assumptions at this review and the 1999 review

A number of companies made representations that the efficiency assumptions we made are unreasonable or even unachievable. In general, companies assumed lower efficiency factors in their business plans than we have.

In the past companies have made similar representations but have generally managed to outperform our challenging targets. We acknowledge the companies' achievements in continuing to become more efficient and the benefits that this has given to customers in terms of lower bills.

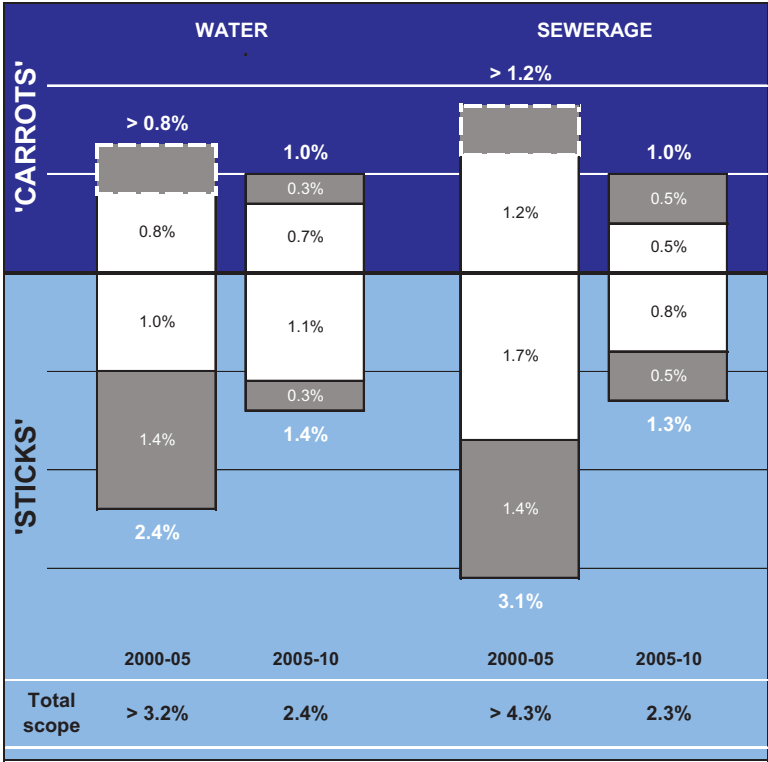
We accept that the rate of improvement in efficiency may not be as large as it was immediately after privatisation. This is reflected in the lower overall scope for efficiency that we have assumed at this review compared with the review in 1999. We have also given companies an increased incentive to outperform our catch-up targets by increasing the proportion of the 'carrot' available.

A number of stakeholders wanted to compare our current assumptions on future efficiency with those made in 1999. While we did not characterise our decisions in 1999 in terms of 'carrots' and 'sticks' it is possible to make some meaningful comparisons. Figures 10 and 11 show the efficiency assumptions for operating costs and capital maintenance made at this review compared with those in 1999. This is sub-divided into 'carrots' and 'sticks' and into our assumptions for catch-up and continuing efficiency.

It is not possible to separate out the continuing efficiency 'carrot' for operating expenditure at the 1999 review. In figure 10, we have indicated this lack of certainty by using a 'dotted' area.

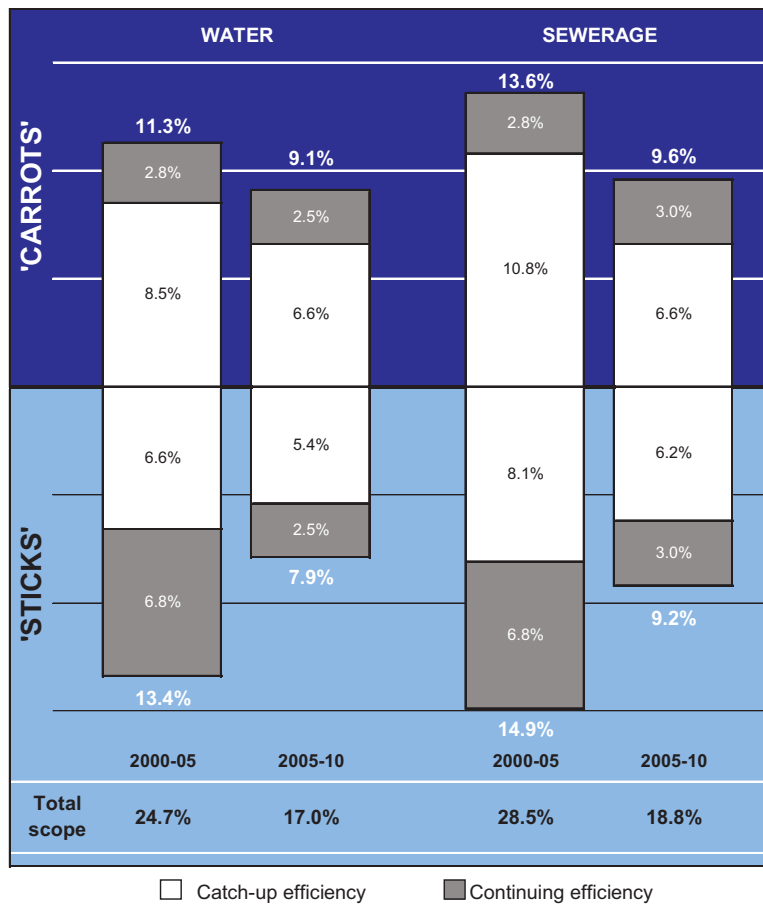
However, it is clear that this element is unlikely to be zero because we specifically stated at the time that we had included only the minimum continuing efficiency factor in price limits.

Figure 10 Operating cost efficiency assumptions at this and the 1999 review



Catch-up efficiency
 Continuing efficiency
 Unquantified assumption made on the 'carrot' element of continuing efficiency at the 1999 review.

Figure 11 Capital maintenance efficiency assumptions at this and the 1999 review



10.7 Assessing relative efficiency

Each year we publish our most recent assessment of relative efficiency in our report on water and sewerage service unit costs and relative efficiency. The improvement in relative efficiency since 1999 is striking. We now see companies clustering around the industry frontier for operating costs and capital expenditure, with several companies showing at or near best in class performance in both operating and capital maintenance efficiencies.

We make a separate assessment for the water service and the sewerage service for both operating efficiency and capital maintenance efficiency. When setting prices we use these assessments as the basis for company-specific assumptions on future efficiency.

We considered carefully the position for each service (water and sewerage) and each area of expenditure. We carefully tested our potential benchmarks to assure ourselves that these are not mutually incompatible and take some comfort from major companies being at or near the benchmark for both operating and capital maintenance efficiency.

Operating expenditure relative efficiency

Our approach to assessing relative efficiency uses statistical modelling and is based on companies' audited cost data. We also take account of costs that are unusual for particular companies or groups of companies. We make adjustments to data where there are clear cost allocation problems, and we take account of the possibility of errors arising from the sample size limitations and the particular modelling process. We have also taken account of the increase in future pensions contributions when we have assessed relative efficiency.

We have improved our processes since 1999. We have, in consultation with the industry, tested and debated the merits of alternative models. Our understanding of the industry and its cost structure improves with better data year on year and from our continuing debate with individual companies. We publish our analysis to allow a constructive dialogue. However, there is still some criticism from some companies. The key areas of concern are as follows.

- In using separate frontiers for operating expenditure and for capital maintenance expenditure we run the risk of creating unrealistic cost expectations.
- The apparent differences in the outputs from the models are more due to data error than to differences in efficiency.
- The models developed from the data do not reflect the reality of the industry.
- There is too much dependence on a single approach to assessing relative efficiency.
- 'Non-controllable' costs are not excluded from the analysis.

We have considered and investigated each of these concerns. On the first point we think that the demonstrated level of performance for the most recent year, 2003-04, where a number of companies were at the frontier for both operating and capital maintenance expenditure, should allay these concerns. Clearly, if one or more companies are at the frontier for both operating and capital expenditure then it is difficult to argue that there is a possibility that the combination of costs represented by the two frontiers is in some way unrealistic.

We have introduced for the first time a specific adjustment to the model outputs to take some account of the underlying error term in the model residuals. We make a reduction to the residual of 10% for water and 20% for sewerage (where we have fewer companies to compare). In addition, we have carefully considered a critical analysis of our approach but we remain confident that when considered as a whole it deals appropriately with the uncertainty that surrounds any use of statistical tools for decision making.

Over the past three years we have worked with the industry to test and redesign the models, to identify and improve our knowledge of company-specific factors, and to test alternative approaches. We have considered all the points raised by companies and tested each of them. We have thought carefully about how the models relate to the reality of providing services to customers. We are confident that we are not misusing the data we collect and that we are interpreting real and material differences in performance. We have not found any items of data that we do not collect that would materially improve our analysis.

Finally, we have used, as we did in earlier reviews, alternative approaches to test our results. We have prepared a single whole service model to test the overall results, and we have looked at our data using alternative modelling techniques such as stochastic frontier analysis and data envelopment analysis. Each confirms the general dispersal of companies' results.

Our assessment of relative operating efficiency is not based on econometric and unit cost modelling of all operating costs. We find that the quality of the model outputs is improved if we exclude certain costs which do not scale with the key model driver. These costs include local authority rates, Environment Agency charges and third party costs. We do not exclude these costs from the modelling because we think that they are not controllable – we see scope for managers to challenge and reduce all these costs.

Capital expenditure – relative efficiency

For capital expenditure we analyse relative performance using both econometrics and capital works unit costs – ‘the cost base’. We use a combination of these techniques to set the efficiency factors for capital maintenance. We use the procurement efficiency derived from the cost base only to arrive at the capital enhancement efficiency factors.

We described our econometric modelling approach in our ‘Water and sewerage service unit costs and relative efficiency – 2002-03 report’ (January 2004). We have adjusted the published method of allocating companies into econometric efficiency bands for this review to take account of the projected expenditure for the six years, 2004-05 to 2009-10. Combined with the actual expenditure recorded for the six years 1998-99 to 2003-04, this gives a 12-year period of actual and projected costs. We believe that this gives a better estimate of the relative efficiency for the purpose of assessing the scope for catch-up improvements. We have included an explanation of this approach in appendix 3.

The cost base comprises a set of capital cost estimates referred to as standard costs. We compare these costs company by company to assess the relative capital cost efficiency. We have included an explanation of the approach in appendix 4.

Although these standard approaches are applied to each company, as with our econometric work on operating efficiency, we recognise that some companies have special factors. We have taken account of these in our analysis. Since the draft determinations we have revised our approach to calculating a regional price adjustment for the costs of companies which operate in relatively higher cost areas, such as the south-east of England. We apply strict rules to assess our frontier performance benchmarks for both the econometrics and the cost base.

The current position on relative efficiency

Tables 21 and 22 show both the operating expenditure and capital maintenance expenditure assessments of relative efficiency used in our determinations for water and sewerage respectively. The clustering towards best performance is clear, as is the evidence that some companies still have considerable scope to improve their efficiency if they are to achieve the performance of the best.

However, this shows that there have been major improvements in efficiency, with all companies now in the top three relative efficiency bands compared with only 50% at the last review in 1999.

Table 21 Relative operating and capital maintenance efficiency – water

| | | | | | | |
|---|--|--|--|--|--|---|
| Operating efficiency banding (2003-04) | A Within 5% of benchmark | | | Southern | Severn Trent, Wessex, Cambridge | Yorkshire, Bournemouth & W Hampshire, Portsmouth, South Staffordshire |
| | B Between 5% and 15% of benchmark | | | Dee Valley | Anglian, Dŵr Cymru, United Utilities, Mid Kent, Sutton & East Surrey, Tendring Hundred | Northumbrian, South East, Three Valleys |
| | C Between 15% and 25% of benchmark | | | | Bristol | South West, Thames, Folkestone & Dover |
| | D Between 25% and 35% of benchmark | | | | | |
| | E Greater than 35% of benchmark | | | | | |
| | E Greater than 40% of benchmark | D Between 30% and 40% of benchmark | C Between 20% and 30% of benchmark | B Between 10% and 20% of benchmark | A Within 10% of benchmark | |
| Capital maintenance efficiency banding (2003-04) (combined) | | | | | | |

The most efficient company on operating cost efficiency is Portsmouth. The most efficient company on capital maintenance based on the combined results of the cost base and econometrics is Yorkshire.

Table 22 Relative operating and capital maintenance efficiency – sewerage

| | | | | | | |
|---|--|--|--|--|-------------------------------------|----------------------------------|
| Operating efficiency banding (2003-04) | A Within 5% of benchmark | | | | Severn Trent | Thames, Wessex, Yorkshire |
| | B Between 5% and 15% of benchmark | | | Southern, United Utilities | South West | Anglian, Dŵr Cymru, Northumbrian |
| | C Between 15% and 25% of benchmark | | | | | |
| | D Between 25% and 35% of benchmark | | | | | |
| | E Greater than 35% of benchmark | | | | | |
| | E Greater than 40% of benchmark | D Between 30% and 40% of benchmark | C Between 20% and 30% of benchmark | B Between 10% and 20% of benchmark | A Within 10% of benchmark | |
| Capital maintenance efficiency banding (2003-04) (combined) | | | | | | |

The most efficient company on operating cost efficiency is Thames. The most efficient company on capital maintenance based on the combined results of the cost base and econometrics is Wessex.

10.8 Our assumptions for catch-up improvement factors

Operating expenditure

The operating expenditure catch-up factor assumes that a company will catch up 60% of the assessed efficiency gap from its current performance to the frontier performance in 2009-10, with equal improvement steps in each year. For the water service we have set the frontier at Wessex's performance even though this is exceeded by both Portsmouth and South Staffordshire. This is consistent with our policy of using a single larger company or a series of smaller companies that in aggregate are equivalent to more than 2% of the national turnover for the water service. We have maintained our linear five-band model, A to E, with each band being divided into an upper and lower part. The appropriate catch-up improvement factors for these bands are set out in table 23.

For the sewerage service we have set the frontier at Yorkshire’s performance. Thames has better relative efficiency results, but these are influenced by a significant number of local factors including its large London works. In our draft determinations we used Thames as the benchmark company but have reconsidered this in the light of representations. This is consistent with the 1999 review when we also decided not to use Thames as the frontier because of this. This has improved the relative performance and hence bandings for the other water and sewerage companies.

Table 23 Operating expenditure – performance bands and associated catch-up improvement factors

| Operating efficiency Performance bands | | Assumed catch-up improvement factors (five-year total) (%) | |
|---|--------------------|---|------------------|
| | | Water service | Sewerage service |
| A | Frontier or better | 0 | 0 |
| | Lower | 1.5 | 1.5 |
| B | Upper | 4.5 | 4.5 |
| | Lower | 7.5 | 7.5 |
| C | Upper | 10.5 | 10.5 |
| | Lower | 13.5 | 13.5 |
| D | Upper | 16.5 | 16.5 |
| | Lower | 19.5 | 19.5 |
| E | Upper | 22.5 | 22.5 |
| | Lower | 25.5 | 25.5 |

We have reviewed the results of our 2003 relative efficiency analysis to check whether the ranking and bands are consistent with the position reported for 2003-04. For final determinations we have used 2003-04 costs as a basis for future costs and as the data source for our relative efficiency modelling.

The catch-up factors range between 0% and 2.7% a year for water and between 0% and 1.5% a year for sewerage in our final determinations.

Capital maintenance expenditure

Our relative efficiency analysis shows that there is still a significant gap between the most efficient companies and the less well performing companies for capital maintenance expenditure. The most efficient company for the water service is Yorkshire. For the sewerage service the most efficient company is Wessex.

We combine the efficiency targets generated from the cost base and from econometrics, with equal weightings, to arrive at our assessment of the appropriate catch-up factor for each company. We have followed our published policy and assumed in our factors that the less efficient companies will improve their efficiency, and reduce the efficiency gap by between 40% and 50%. We assume a 40% catch-up factor to the econometric benchmark and a 50% catch-up to the cost base benchmark. We assume that this improvement will be achieved in three equal steps over the first three years of the 2005-10 period, rather than in one year as we did at the last review.

In our price limits, the catch-up factors range between 0% and 3.6% for both the water and sewerage services for each of the three years 2005-06 to 2007-08.

Econometrics and the cost base catch-up factors for capital maintenance projects are set out in appendix 3 and appendix 4 respectively.

Capital enhancement expenditure

The company-specific catch-up element for enhancement projects is based on a comparative assessment of the cost base submission only. The cost base includes examples of standard enhancement programmes and uses a representative sample of a company's investment programme for the period 2005-10 to generate the catch-up factors. The capital enhancement cost base factors are set out in table 56 in appendix 4.

As previously, and in line with our published policy, we have made similar judgements on the scope for the least efficient companies to catch up with the most efficient ones. Our assumption is that the less efficient companies can catch up 75% of the gap between themselves and the benchmark companies in each year over the five years to 2009-10. We have applied these catch-up factors to the whole capital enhancement programme. In these price limits, the catch-up factors range from 1.7% to 26.2% over the five years for water and between 1.8% and 15.9% over the five years for sewerage.

10.9 Incentives

As set out earlier in this chapter we intend to enhance the incentives for the leading companies at the 2009 review. This does not impact on the price limits for 2005-10 but should stimulate the leading companies in that period.

Our latest relative efficiency analysis has identified a number of leading companies that meet our criteria. These companies would qualify for the enhanced rewards for future outperformance if their position is confirmed in our final analysis. The current qualifying companies are set out in table 24.

Five companies qualify for the higher multiple on future operating expenditure outperformance and four on capital expenditure. This includes Wessex who qualify for the higher multiple on the water service for both operating and capital expenditure. Five companies qualify for the lower multiple on operating expenditure and four on capital expenditure. Table 24 shows that Wessex and Severn Trent qualify for a multiplier in all of the efficiency assessments.

Table 24 Companies likely to be eligible for enhanced rewards for future outperformance

| | Companies at the efficiency frontier 50% uplift (1.5 multiplier) | Companies within 5% of the efficiency frontier 25% uplift (1.25 multiplier) |
|---|---|--|
| Water – operating expenditure | South Staffordshire, Portsmouth, Wessex | Bournemouth & W Hampshire, Cambridge, Severn Trent, Southern, Yorkshire |
| Water – capital expenditure | South West, Wessex, Yorkshire | Dŵr Cymru, Folkestone & Dover, Severn Trent |
| Sewerage – operating expenditure | Thames, Yorkshire, Wessex | Severn Trent |
| Sewerage – capital expenditure | Severn Trent | Dŵr Cymru, Wessex |

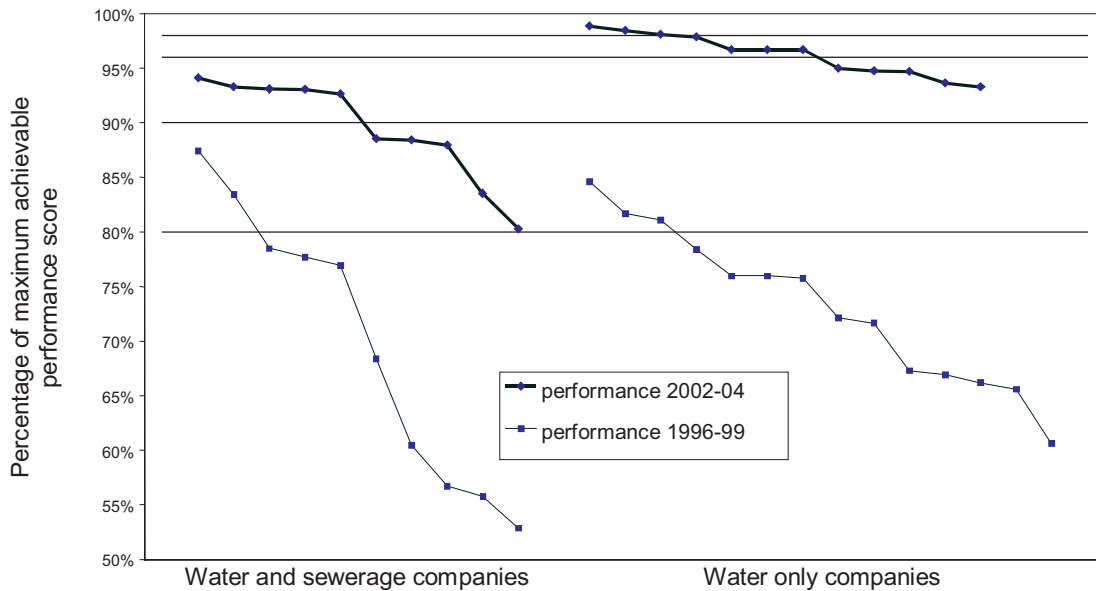
10.10 Improving performance – the OPA rewards and penalties

We set out our general approach to service performance adjustments in ‘Linking service levels to prices’ (February 2002).

- The OPA price adjustment is intended to be a comparative incentive mechanism, although there is an element of measurement against absolute performance to provide a degree of predictability for each company’s score.
- For this price review the adjustments are based on companies’ OPA performance in the years 2002-03 and 2003-04.
- The one-off adjustment is applied to the first year of price limits after all other decisions on price limits are made.
- The range of adjustments is between +0.5% and -1.0%, using a graduated scale.
- We have rewarded (or penalised) companies who are significantly better (or worse) than the rest, whilst not making artificial distinctions between companies where performance is close.

At the last price review, companies’ OPA performance covered a large range of scores and the ‘best’ and ‘worst’ companies could be clearly defined. At this review, company performance has improved considerably, with companies’ scores converging towards the maximum. Figure 12 shows both the earlier percentage performance scores of the companies and the current position.

Figure 12 Comparison of overall performance assessment as a percentage of maximum achievable score



In light of the much-improved position, we have decided at this review to revise our approach to take account of the high level of absolute performance whilst retaining the comparative assessment.

We have used a percentage of the maximum achievable score to take account of the absolute level of performance. (The percentage of maximum score is calculated by dividing a company's OPA score by the maximum possible OPA score.) We believe that it is reasonable to expect the water and sewerage companies to be assessed in the same way as the water only companies. We have reflected this by using the same performance bands for all companies. Adjustments are graduated within these absolute performance bands and combined with a comparative assessment, which is added to strengthen incentives on those companies which are significantly better or worse. This is set out below.

- Within the 90% to 100% performance band, potential adjustments range from 0.1% to 0.5%, including an additional positive adjustment for any companies that are significantly better than the rest.
- For the performance band between 90% and 70%, potential adjustments range from 0 to -0.5%, with negative adjustments only applied to companies that are significantly worse than the rest.
- For performance below 70% we could make negative adjustments between -0.5% and -1.0%. However, no companies fall into this band.
- Significant difference is determined as more than one standard deviation from the mean average performance.

We have set graduated scales to recognise that improvements to very high scores are difficult and should be rewarded accordingly, but also that low performance is unacceptable and, hence, the consequent penalties are worse.

Some representations made suggestions about future OPA incentives. These will be useful when we consult on whether the period between price reviews should be changed for the next review and any resulting impact on the use of the OPA. Meanwhile, it should not be assumed that the bands used for this price review will apply in the future.

In their representations, three companies challenged our view that it is fair to compare water and sewerage companies on the same performance scale as water only companies. We have considered these comments and the operation of the OPA methodology and are satisfied that our assessment is fair.

The water and sewerage companies are assessed against more measures than the water only companies, reflecting the wider range of services they provide. Allowances are made in their price limits to deliver all those services. However, the OPA methodology has been set up in a way that means that it is not inherently harder for the water and sewerage companies to achieve the higher performance levels. For example:

- the comparative data ranges for the water and sewerage company OPA measures are based on past performance;
- where appropriate, some of these performance ranges allow for a low level of failure. For example, a company with a small number of properties affected by unplanned interruptions to supply would still score the highest possible score in this measure. In other words, perfection is not required to achieve high scores; and
- the measures have all been set after extensive consultation to broadly reflect the elements of performance that are within the companies' control. For example, we take severe weather into account before assessing flooding caused by overloaded sewers.

Some companies questioned why we had not used the full range of potential price adjustments. We did not do this because the range of company performance does not merit using a wider range of adjustments.

The price adjustments that follow are unchanged from those included in our draft determinations.

Overall, we have applied a range of adjustments from +0.4 to -0.1. The adjustments are described in more detail in table 25.

Table 25 Adjustments to price limits to reflect overall performance

| Performance band (percentage of maximum achievable overall performance score) | Adjustment to K factors in 2005-06 | Company |
|--|---|---|
| >98% and significantly higher than average | 0.4 | South Staffordshire, Tendring Hundred |
| >98% and within average | 0.3 | Folkestone & Dover, Portsmouth |
| >96% | 0.2 | Bristol, Cambridge, South East |
| >90% | 0.1 | Anglian, Dŵr Cymru, Severn Trent, Wessex, Yorkshire, Bournemouth & W Hampshire, Dee Valley, Mid Kent, Sutton & East Surrey, Three Valleys |
| <90% and within average | 0 | Northumbrian, Southern, Thames |
| <90% and significantly lower than average | -0.1 | South West, United Utilities |