

## 2. Why are bills rising?

Table 6 sets out the change in customers' bills arising from our price limits and the elements of expenditure that are driving this change.

**Table 6 What is driving the changes in bills?**

<b>Average household bill in 2004-05</b>		<b>£249</b>
<b>Less</b>	(1) past efficiency savings and outperformance	<b>(3)</b>
	(2) scope for reduction through future efficiency improvements <sup>1</sup>	<b>(13)</b>
<b>Plus</b>	(3) maintaining base services	<b>18</b>
	of which (a) changes in revenue	(6)
	(b) changes in operating costs	10
	(c) changes in capital maintenance	7
	(d) changes in impact of taxation	5
	(e) financing <sup>2</sup>	2
	(4) maintaining security of supplies to all customers <sup>3</sup>	<b>11</b>
	(5) the impact of improvements in services <sup>3</sup>	<b>33</b>
	of which (a) drinking water quality	9
	(b) environmental improvements	21
	(c) service performance	3
<b>Average household bill in 2009-10</b>		<b>£295</b>
<b>Change from 2004-05 to 2009-10</b>		<b>£46</b>

- 1 This is the effect of our future efficiency assumptions for all the cost elements; ie base service, maintaining security of supply and improvements in services.
- 2 This is the impact of the change in the cost of financing the base service.
- 3 These lines show the impact of improvements in services. Where companies need additional revenue for financeability (net of taxation included in line 3(d)) it is allocated in this table across these improvements because it is this new investment which puts the extra pressure on companies' financial position.

Overall our price limits will lead to a £46 real terms increase in the average household bill for the industry, to which the effects of inflation over five years (currently expected to be around 2.5% per year) will be added.

The extent to which overall bills will increase following this review depends on a number of factors – not least of which is efficiency. In an incentive-based regime, the impact of past and future efficiencies assumed is a key element. Past and future efficiency improvements will lead to a reduction in average bills of £16 by 2009-10. However, day-to-day running costs and the costs of maintaining the water and sewerage system will increase by around £18. Maintaining the security of supply to customers will add a further £11 to bills.

New outputs, over and above items funded as part of base costs, have to be paid for and it is these items that contribute most to increases in customers' bills. Where companies are financially stretched, it costs even more to produce these new outputs because the marginal cost of finance will be greater. New capital investment requires additional finance either from shareholders or new borrowing in addition to that already undertaken by the companies to finance the existing programme.

At the 1999 price review past outperformance and future expected efficiency placed a downward pressure on bills that offset the upward pressure on bills of service, environmental and quality improvements. The situation is very different at this price review.

Companies have invested heavily to improve their drinking water quality and their environmental performance and as a consequence have had to finance this investment. Expenditure, including the cost of servicing the cost of finance for capital investment, exceeds revenue. In these circumstances it costs even more for companies to finance new outputs. The further improvements now required, in aggregate, will add £33 before efficiency factors to the average household bill by 2009-10.

We describe each of the factors that contribute to the change in bills and the approach we have taken to them in arriving at our price limits.

## **2.1 Efficiency savings and outperformance**

### **Past efficiency savings and outperformance**

The water companies have achieved a great deal over the last 15 years. The quality of the services they deliver to their customers is at an all-time high. The pollution impact of the industry on the environment reduces every year. Improving levels of efficiency mean that more has been delivered for less. The industry has embraced new technology, and new approaches to management and service delivery to customers. Our joint drive with the industry for better quality data both for management and regulation has also helped.

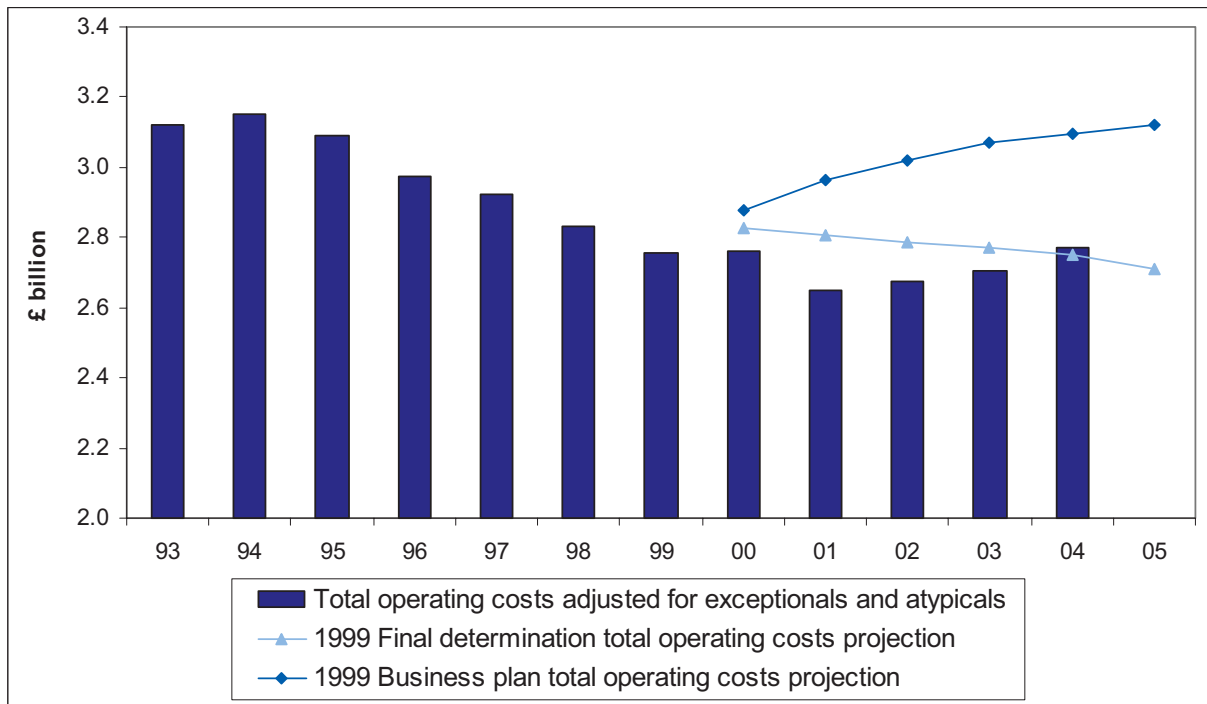
Each time price limits have been set we have included challenging efficiency assumptions, over and above the improvements achieved in the economy as a whole. Each time the industry has performed better than we assumed. Customers benefit from real improvements in efficiency, through bills being lower than would otherwise have been the case. To stimulate each company to improve further, we have established a series of rolling incentive mechanisms. These guarantee that a company will retain, for at least five years, the financial benefits of outperforming the efficiency improvements assumed in price limits.

The industry has continued to outperform during the current five-year period, although to a lesser extent than previously. The degree of outperformance varies between operating and capital expenditure and between the water and sewerage services. The latest position is summarised in our 'Financial performance and expenditure of the water companies in England and Wales – 2003-2004 report' (September 2004).

There is an interaction between the rate at which efficiency improves and cost shocks that can occur from time-to-time. Within our regulatory framework, we deal with the risks of cost shocks through our judgements on the appropriate cost of capital.

These links are best demonstrated by looking at the trends in operating expenditure since 1993, as set out in figure 1. The outperformance of our assumptions in 2001 has been eroded by increases in costs since 2002-03 – for the most part these have arisen from cost increases associated with increased National Insurance contributions, pension contributions and energy bills.

**Figure 1 Water and sewerage industry – operating costs 1993-2005**



### Future efficiency improvements

We recognise the past successes of the companies, but do not accept the view of some of them that there is little or no scope for further efficiency improvements relative to the economy as a whole. Our analysis of the relative efficiency of the 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 with the current performance of the best companies will deliver further real efficiency improvements by the industry. Additionally, work by our consultants (and others) as well as the considered judgements of some of the leading companies all support our view that there is still scope for the best performing companies to improve.

We have sought an evidence-based approach to the assessment of the overall scope for further efficiency improvements. Many reports have been commissioned on the subject, with no consensus emerging. We have thoroughly examined all of the arguments and assessments made by the water companies. We have updated and refined our analysis of the relative efficiency of each company for operations, capital maintenance and capital works. We have used the latest information from companies and have looked closely at assessments made by the leading water companies.

Our work and preliminary views have been subject to scrutiny by our consultants. We have considered carefully the position for both water and sewerage and each area of expenditure. We have tested our potential benchmarks, and are reassured that there are large companies at or near the benchmark for both the operating and capital maintenance efficiency rankings.

We have changed our assessment of the scope for operating efficiency since our draft determinations. We have taken account of the data provided in the 2004 June returns, and have considered the companies' representations, particularly those factors in a company's operating environment that are not reflected in our econometric cost models. We have also looked carefully at our benchmark companies to check whether their performance is unduly

influenced by special factors. This has resulted in a change for the sewerage service. In the light of representations, we have concluded that Thames' performance is still unduly affected by large London works that make it unreasonable to use them as the benchmark for operating performance. This change has made a material difference to the scope for operating catch-up improvements for the sewerage service.

We try to find an appropriate balance between incentives and the efficiency assumptions included in price limits. If we were to include the whole of the scope for improvements in price limits, companies would not have any incentive to outperform.

We have applied our published policy on the sharing of the overall scope for efficiency, by including only part of it in price limits (the 'stick') with the remainder being potential future outperformance (the 'carrot'). The common continuing efficiency factors and the ranges of catch-up efficiency factors we have used are set out in table 7. Overall, we have assumed only around half of the scope for efficiency savings in our price limits, the remaining half being potential outperformance for companies.

Table 7 illustrates the balance of carrots and sticks. For example, for water base operating costs we assess the overall scope for efficiency improvements as 2.4% a year. This is split into 0.6% a year 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 over half of the scope for catch-up (1.1%). The balance represents the potential for outperformance for the companies.

Our assessment of the overall scope for efficiency is a continuing annual efficiency of around 0.6% and 1.0% for operating expenditure and capital maintenance respectively in the water service. For the sewerage service the equivalent figures are 1% and 1.2%. Taken together with the potential for companies to catch up, this would imply a scope for efficiency over the five years of around 2.4% a year for operating expenditure and around 3.6% for capital maintenance. In line with our policy on carrots and sticks we have included just over half of these assumptions in price limits. The corresponding scope for efficiency assumed at the last price review was over 3.7% a year for operating costs and about 5.6% for capital maintenance.

Further details on our approach to efficiency are set out in chapter 10.

**Table 7 Improving efficiency – the ‘carrot and stick’ model**

Operating expenditure – annual average rate of improvement	Efficiency improvement factors assumed in our final 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%	<b>1.4%</b>	0.7%	0.3%	<b>1.0%</b>	<b>2.4%</b>
Water service – enhancements	1.4%	0.45%	<b>1.85%</b>	0.4%	0.45%	<b>0.85%</b>	<b>2.7%</b>
Sewerage service – base	0.8%	0.5%	<b>1.3%</b>	0.5%	0.5%	<b>1.0%</b>	<b>2.3%</b>
Sewerage service – enhancements	1.0%	0.75%	<b>1.75%</b>	0.3%	0.75%	<b>1.05%</b>	<b>2.8%</b>
Capital expenditure – cumulative improvement over the period 2005-10	Efficiency improvement factors assumed in our final 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%	<b>7.9%</b>	6.6%	2.5%	<b>9.1%</b>	<b>17.0%</b>
Water service – capital enhancements	8.2%	3.7%	<b>11.9%</b>	2.6%	3.7%	<b>6.3%</b>	<b>18.2%</b>
Sewerage service – capital maintenance	6.2%	3.0%	<b>9.2%</b>	6.6%	3.0%	<b>9.6%</b>	<b>18.8%</b>
Sewerage service – capital enhancements	8.5%	4.4%	<b>12.9%</b>	2.7%	4.4%	<b>7.1%</b>	<b>20.0%</b>

The greater efficiency of the companies has enabled customers’ bills to be markedly lower than they would otherwise have been. We estimate that overall efficiency improvements since privatisation to 2004-05 have reduced bills by around £90. Our price limits allow bills to reduce by a further £16 to reflect both past outperformance since the last review and future efficiency improvements to be achieved by the companies by 2009-10.

### Stimulating future outperformance

On average companies are currently outperforming our assumptions for the period 2000-04 by about 1% a year for capital maintenance, which is about half the estimated carrot for this period. The outperformance recorded so far for the capital enhancement programme is noticeably higher in the sewerage service; 2.1% a year for water enhancement projects and 4.7% a year for sewerage enhancement projects. This suggests that there is a higher scope for efficiency in this area.

Although they do not directly influence the changes in bills in the period under review, the improved incentive mechanisms we have put in place should stimulate individual companies to strive to outperform our assumptions. We set out our proposals on the enhanced mechanisms in MD187, ‘PR04 – A further consultation on incentive mechanisms’ (June 2003) and published our decisions in MD191, ‘Our conclusions on rewarding outperformance and handling underperformance’ (March 2004). These mechanisms will provide additional rewards for future outperformance by the current leading companies.

Our latest relative efficiency analysis has identified 12 companies that would meet our criteria on operating expenditure outperformance or capital expenditure (and in three cases both).

These companies would qualify for the enhanced rewards for future outperformance. This is set out in section 10.9 of chapter 10.

Customers will start to see the benefits of future outperformance in their bills from 2010, following the price review in 2009. In the meantime the rewards of outperforming our expectations will stay with the individual company through higher returns and profitability. As we set out in MD187, even with the enhanced rolling incentive mechanisms customers gain most from these arrangements over the long term.

## 2.2 Revenue

At a price review, our assumptions about future revenues take account of what has actually happened to each company's customer base over the past five years. The starting point for our assumptions is the companies' current revenue base, which incorporates the number of customers they currently supply and the level of income they receive from them. Companies are now receiving more revenue than we forecast when we set price limits in 1999, and this allows for bills to be adjusted downwards.

At an industry level, companies have collected slightly more revenue than we assumed in the price limits set in 1999. This resulted from a combination of:

- higher demand than forecast for drinking water and disposal of sewage from existing domestic and business customers;
- a larger number of new customers connecting to the water and sewerage networks than expected; and
- a lower uptake of optional metering, which tends to reduce revenues, than forecast in 1999.

There is also some scope to reduce the increase in price limits because of the way in which we profiled price limits in 1999. Our assumptions matched costs and revenues over the entire 2000-05 period, but not precisely in each individual year. We assumed slightly higher revenues towards the end of the period 2000-05. This factor allows for a small downward adjustment at the start of the following five-year period.

Companies forecast little change in their revenue to 2010. Most companies expect that housing growth will increase their customer base, and therefore their revenues. But this is largely offset by the effects of increased numbers of metered customers and declining industrial demand in depressing revenues. Metering tends to reduce revenues because, on average, it is customers with above average rateable values and with relatively low demand who have taken up optional meters as a way of reducing their annual bills. Further details on our assumptions on companies' revenues are set out in chapter 14.

Overall these factors lead to a reduction in the average household bill, at the industry level, of £6 by 2009-10.

## 2.3 Operating costs

Companies have set out the need for significant increases to their base operating expenditure in the 2005-10 period in their business plans. We have allowed for some of these costs in price limits.

We have taken account of pension costs, but not the full increases that companies proposed. Some companies considered that a proportion of the existing pension scheme deficits would be recovered over time. The allowances we assume in price limits include recovery of half of any past deficit and all future employers' contributions. This approach requires the companies to shoulder part of the risk in this area as they would if they were not regulated monopolies.

We accept that energy costs will rise disproportionately for the water companies which are high users of power, particularly electricity. However, the rise in energy costs will also be reflected in general inflation, and we have factored this into the change in energy costs included in the price limits. We expect energy costs to rise by 40% in the next two years. However, because we expect this to lead to an increase in inflation of around 0.5% a year we have reduced the increase in companies' price limits accordingly.

Companies' business plans included significant rises in the costs of bad debt and debt management. Responses from companies and stakeholders to our draft determinations reiterated their concerns that bad debt will increase further during 2005-10. We consider that companies should pursue customer debts efficiently and have not adjusted their future operating costs. However, we will continue to keep the cost of bad debts and debt management as a notified item for an interim determination. We have amended the wording of the notified item to soften the link to the loss of disconnections following the Water Industry Act 1999. Chapter 16 on uncertainties covers this.

From 2005, the Government will reassess the charges for non-domestic rates for parts of the companies' business. Estimates of these are available and we have included these in price limits.

Companies also argued for increases in costs arising from the new Landfill Tax and the potential changes to the system of charging for water abstraction. We consider that efficient companies will be able to absorb or mitigate the impact of the Landfill Tax.

We have not made an allowance for Environment Agency charges rising faster than inflation because there is considerable uncertainty about the probability and scale of the increases. However, we have put a notified item in place to protect companies that face material increases in Environment Agency charges.

Overall, the assumed changes in operating costs at an industry level will increase average household bills by £10 by 2009-10 before applying our efficiency assumptions. Further details on our approach are set out in chapter 11.

## **2.4 Capital maintenance**

Most companies anticipate spending more on maintaining their existing assets in future. We generally accept that a higher level of maintenance is required to maintain services to customers.

Since privatisation, around £50 billion has been invested in new assets and in the maintenance of existing assets. This has funded drinking water quality and environmental improvements. The improvements made have a higher proportion of shorter life assets than in the past, for example IT and telemetry systems. These assets have to be replaced more often and many of the short and medium life assets installed during the 1990s will need to be replaced or modernised by 2010. Capital maintenance will have to increase to retain the substantial improvements brought about by the quality improvement programmes.

However, companies should invest at the right level and at the right time. Our assessments challenge the level of capital maintenance expenditure the companies set out in their business plans to maintain or achieve stable serviceability, now and in the future. We have carefully assessed the quality of companies' proposals for the future. Where a company clearly understands the risk profile of its assets and is able to assess accurately the investment it needs to maintain serviceability, then we have accepted this element of the plan.

Our assumptions on the level of capital maintenance will allow companies to deal with new sewer flooding incidents and some additional mitigation of nuisance, including odour from sewage treatment works.

Expenditure on capital maintenance is not directly reflected in price limits, or customers' bills, in the year in which it is spent. Instead, the expenditure is spread over the useful life of the assets through capital charges. It is the capital charge for maintenance that directly changes customers' bills. Capital maintenance expenditure for above ground assets (such as treatment works) and underground assets (such as sewers and pipes) contributes to the capital charges in customers' bills in different ways.

- Capital maintenance expenditure on above ground assets is paid for in bills over the life of the investment through depreciation charges (on a current cost basis).
- Capital maintenance expenditure on the underground network (sewers and pipes) is averaged over a 15-year period (2000-15). It is this average, the infrastructure renewals charge, which is paid through customers' bills. This approach means that, where we assume increasing levels of capital maintenance on the underground networks for 2010-15, ie beyond the current review period, then the infrastructure renewals charge assumed in price limits for 2005-10 will be higher.

Overall, the increase in average household bills expected from the higher levels of capital maintenance investment (and hence higher capital charges allowed in price limits) is around £7 (before applying our efficiency assumptions).

## 2.5 Maintaining security of supply

### Maintaining the balance between supply and demand

Maintaining a balance between supply and demand for water and sewerage services is implicit in companies' statutory duties. They have duties to meet demand for their services and to connect new premises to their networks, whilst ensuring no deterioration in environmental compliance. Companies must invest to comply with these requirements. Water companies plan the development of water resources on a long-term basis to ensure the continued security of public water supplies. They extend their networks in areas of housing growth.

The rate of investment in the supply/demand balance across England and Wales is around 60% higher than that allowed in the 1999 determination. While demand for water is not rising sharply at the industry level, there are significant changes in the distribution of demand. This is particularly so in areas of housing growth in the south and east of England. Similarly, the companies extend and increase the capacity of their sewage treatment works and sewerage assets as sewage flows grow, for example due to increased property connections and dealing with run-off from more paved surfaces.

Most of this investment should be offset by receipts from developers through infrastructure charges and contributions. But despite additional revenues from new connections, the additional costs of new assets place an upward pressure on bills.

We have examined companies' plans carefully to ensure that the work proposed is clearly set out and required as part of an efficient long-term strategy to maintain the balance between supply and demand. We have also carefully scrutinised costs and checked to ensure consistency with forecasts of demand and revenues.

For the sewerage service, we have closely assessed the sewerage and sewage treatment improvements proposed by companies and the associated costs.

### **Enhanced security of supply**

We have allowed for significant improvements to the security of public water supply where warranted. The most significant of these is in London. Our determination allows for a substantial programme of both mains renewal to reduce leakage and water resource enhancements to improve the security of supply sought by Thames.

### **Metering**

Companies are required to meet household customers' demands for free meters. Metering has an immediate capital cost made up of the cost of the meter and its installation, and the ongoing costs of meter reading and maintenance, which must be reflected in price limits. In addition, a number of companies have proposed selective metering programmes, usually on change of occupancy, to accelerate meter penetration and improve demand management. We have accepted most companies' forecasts in these areas as part of a balanced approach to the management of water resources. By 2009-10, we expect around 36% of household customers to have metered supplies compared with 24% in 2003-04.

### **Impact on customers' bills**

In aggregate, expenditure on metering, enhancing security of supply and maintaining the balance between supply and demand for water and sewerage services is expected to add £11 to the average household bill by 2009-10, before applying our efficiency assumptions.

Further details on our overall approach to maintaining the security of supplies to customers and the supply/demand balance is set out in chapter 12.

## **2.6 The quality improvement programme**

Ministers set out in their principal guidance in March 2004 the policies and programmes for improvements to drinking water and the environment that the companies are required to deliver in 2005-10. The DWI and the Environment Agency worked with the companies to translate these requirements into a list of schemes for inclusion in the companies' final business plans. Since our draft determinations, in August, the companies and quality regulators have provided more supporting information to allow projects we excluded from our draft determinations to be included in price limits. Ministers have also published their final guidance, which was informed by our draft determinations, new information and developments in policy.

We have scrutinised all proposals where new information is available and included only those projects in price limits that meet our five criteria:

- It is required by the quality regulators, and confirmed by Ministers, or is a new obligation under current legislation.
- It delivers a measurable defined output, which is enforceable.
- It has a clearly defined timetable and due date for delivery in line with regulations or other legislation.
- There are defined asset improvements or changes to operational procedures to deliver the output.
- It has identified costs – the solution must have been challenged and validated by the company's reporter.

Where we have excluded projects, the change protocol can be used to take account of those projects that go ahead within the period 2005-10.

Table 8 summarises the numbers and costs of the projects that we have included in our price limits. A number of projects in companies' final business plans were excluded from our draft determinations, as the proposals were insufficiently defined or costed. Some of these are included in our final determinations, where new information has satisfied our criteria. Some projects that were in our draft determinations are not included in our final determinations; for example projects that are no longer supported by the quality regulators, usually where the investigations have shown that they are not needed in the next five years. Final ministerial guidance also indicated that the costs associated with reductions in abstraction licences should not be included directly in price limits, but should be funded through the compensation route laid down in the Water Resources Act 1991. We consider that some projects, put forward by companies as part of the quality programme, are more appropriately dealt with in other areas, such as capital maintenance. Equally, we have treated some work proposed by companies elsewhere in their business plans as part of the quality programme.

**Table 8 The quality improvement programme for 2005-10**

	Companies' business plans		Draft determinations		Final determinations	
	No. of projects	Capital expenditure £ million	No. of projects	Capital expenditure £ million	No. of projects	Capital expenditure £ million
<b>Water service</b>						
Drinking water and other obligations	357	2,200	327	1,877	348 <sup>1</sup>	2,014
Environmental investigations and solutions with ministerial support	218	136	181	60	183	47
<b>Water service total</b>	<b>575</b>	<b>2,336</b>	<b>508</b>	<b>1,937</b>	<b>531</b>	<b>2,061</b>
<b>Sewerage service</b>						
Environment Agency environment programme for 2005-10 with ministerial support and other new obligations	2,967	3,974	2,660	2,435	2,731	2,631
Completion of 2000-05 programme	668	542	689	708	658	819
<b>Sewerage service total</b>	<b>3,635<sup>2</sup></b>	<b>4,516</b>	<b>3,349<sup>2</sup></b>	<b>3,143</b>	<b>3,389</b>	<b>3,450</b>
<b>Total</b>	<b>4,210<sup>2</sup></b>	<b>6,852</b>	<b>3,857<sup>2</sup></b>	<b>5,080</b>	<b>3,920</b>	<b>5,512</b>

1 Includes further projects submitted by companies since our draft determinations.

2 196 projects included in our draft determination have been excluded as they do not have any costs or outputs in 2005-10.

In response to comments on our draft determinations we have changed the format for this table. For the sewerage service, other new obligations for 2005-10 and the environmental programme for 2005-10, supported by Ministers, are added together. This is consistent with tables 33 and 38 in chapter 13.

### Drinking water quality and other new obligations

In their business plans companies included £2.2 billion expenditure for improvements to drinking water quality and other new obligations affecting the supply of a safe, secure supply of drinking water. This included improvements to 230 water treatment works and 13,475 km of distribution mains and for cleaning another 35,600 km of mains.

We examined companies' plans and assessed whether their proposals met our criteria for inclusion in price limits. The majority did so. The costs of companies' proposals to continue to supply high-quality drinking water varied across companies. One small company required no further expenditure while, at the other end of the scale, another company stated it needed to invest £350 million. Most of this work is driven by the introduction of new standards, or the interpretation and enforcement of existing standards. Some companies also need to install new equipment to deal with the pollution of some of their water sources that supply drinking water, notably by nitrates from agriculture.

We reviewed companies' proposals against our criteria; 12 projects (with an estimated gross cost of £115 million) still do not meet our criteria. Also we considered seven projects affecting

water quality as part of capital maintenance expenditure (£22 million) rather than as a quality improvement.

Final ministerial guidance supported the programme of work to improve consumer acceptability of drinking water. We reviewed our approach to the funding of proposals for cleaning the distribution system, and have incorporated some of them in the quality improvement programme. The projects incorporated include those with defined outputs associated with completion of the 1989 programme of work to renovate the distribution system. We also consider that work on cleaning and relining large diameter trunk mains for consumer acceptability is more suitable for monitoring within the quality enhancement programme. We have considered the rest of the work on cleaning the distribution mains alongside the companies' proposals for maintaining the water distribution network.

Overall, our determinations assume that the programme of work required to improve drinking water quality and comply with other new obligations will be delivered for capital expenditure of £2.0 billion, with associated net additional operating costs of £29 million per year by 2009-10.

Of this work, £230 million for 62 schemes has already been confirmed so that companies can make an early start. This allowed companies to plan their programmes ahead of final determinations and mitigates the inefficient 'rollercoaster' pattern of investment seen in previous pricing periods.

### **Environmental obligations affecting the water service**

The environmental regulators, particularly English Nature and the Countryside Council for Wales, are concerned that water abstraction for the public water supply is affecting some important nature conservation sites. These are sites of special scientific interest (SSSIs) or sites of European importance, which are affected either by depleted groundwater or low flows in water courses.

The companies included 218 projects in their final business plans. These were projects to continue with their investigations on the potential impact of their activity, and also (where appropriate) proposals to alleviate identified problems. We have examined each company's proposals alongside the work programmes defined by the Environment Agency. Much of this work is still at the investigation stage.

We have included 167 investigations/options appraisals in these price limits. Some of these are very extensive, and where appropriate we have only allowed the first stage. This will allow a thorough reappraisal of the way forward where initial research has indicated there is scope for further work. We have included 16 projects to alleviate some of the environmental impact of water abstraction, such as fish passes and protection screens at water abstraction intakes.

Final ministerial guidance set out the legal developments in this area. Projects to provide replacement water where abstraction licences need to be reduced to alleviate the environmental impact of water abstraction have not been included in our final price limits. We understand that the projects identified so far will remain on the Environment Agency's list of work that is needed. These will be dealt with under the compensation route laid down in the Water Resources Act 1991. Companies will need to carry out the work, but will be compensated for this by the Environment Agency. The costs will be recovered from the abstraction charges levied on all abstractors, not just the water companies.

Overall, our determinations assume that the programme of work required to investigate and carry out confirmed work or options appraisals on the environmental impact of water

abstraction will be delivered for capital expenditure of £47 million, with associated net additional operating costs of £2.4 million per year by 2009-10.

### **Sewerage service environmental obligations and other new obligations**

Companies included proposals for 3,635 projects in their final business plans for quality improvements to the sewerage service. Companies adopted an integrated approach; for example, work at sewage treatment works is often planned to deal with more than one obligation. These proposals dealt with around 4,200 different quality obligations as well as providing maintenance and supply/demand benefits. These projects include a number of investigations proposed by the Environment Agency, English Nature and the Countryside Council for Wales for companies to assess the impact of their activities on the environment and to appraise any options for addressing them.

The majority of this work was proposed to meet the expectations set out in Ministers' guidance. Companies also need to carry out other quality enhancements, such as work planned for 2000-05, that continues into 2005-10 including work where delays have been experienced. We have ensured that companies have not benefited financially from any delays and that only the reasonable costs of completing these schemes are included in our determinations.

Having reviewed the scope of the work, we scrutinised and challenged the companies' proposals. Overall we have included capital expenditure of more than £3.4 billion in our price limits for quality improvements for the sewerage service. This includes £113 million capital expenditure for 235 projects confirmed at the end of 2003, including 20 projects for supply demand balance as the early start initiative for environmental improvements. A few projects included in the early start programme did not receive support in final ministerial guidance and companies have agreed to them not being included in final price limits.

### **Regulatory impact assessment**

The principal ministerial guidance in England issued in March 2004 required Defra to carry out a regulatory impact assessment on projects in five policy areas that were not required by national or European legislation. Final ministerial guidance confirmed that certain projects in these policy areas should proceed.

We have assessed the projects proposed against our criteria and the majority are included in price limits. Details are given in chapter 13.

### **Further improvements**

We have only included projects in our price limits that meet our criteria. However, the excluded projects can be added to the improvement programme during the 2005-10 period using the change protocol. There is also potential for the need for new projects to arise during 2005-10. These could arise, for example, from the Habitats, Urban Waste Water Treatment, Bathing Water or Water Framework Directives. Any of these might require increased capital investment. Although there is considerable uncertainty, a plausible upper limit on all these obligations could require the industry to invest a further £1.5 billion in the 2005-10 period. This is on top of the £5.5 billion included in price limits for quality and environmental improvements. We are aware that for United Utilities some environmental obligations are likely to be confirmed for the early part of 2005-10. These are not yet sufficiently defined to include in price limits, but could lead to a significant upward pressure on bills.

## **Overall impact of the quality improvements programme on customers' bills**

Overall, our determinations imply that a rise of £30 in the average household bill by 2009-10 is needed to pay for the quality improvement programme – £9 for drinking water quality and £21 for improvements to the environment. These figures are before applying our efficiency assumptions to new investment to improve drinking water quality and the environment. The figure is £27 once efficiencies have been applied. Further details on the quality improvement programme are set out in chapter 13.

## **2.7 Other service improvements**

Since 1991, the industry's performance has steadily improved across the range of service level indicators we monitor. Performance is now stabilising at levels that represent a good level of service to the majority of customers. This is demonstrated by the joint stakeholder research and reflected in our overall performance assessment (OPA) scores. Against this background very few companies included proposals to improve service levels in areas other than sewer flooding. Some proposals were included to address specific, localised problems with low water pressure and the taste, odour and hardness of drinking water.

We have scrutinised companies' proposals against a number of criteria, including customer need and willingness to pay higher bills for the proposed improvements. We also expect schemes to deliver a clear improvement in levels of service to customers in a cost-effective way.

At an industry level our determinations include a total of £0.6 billion for enhanced service levels, which will deal with low flow and water pressure; improve the taste and odour of the drinking water; reduce the hardness of drinking water; and solve known and newly emerging problems of internal and external sewer flooding. Further expenditure on sewer flooding of £0.4 billion is included as part of the supply/demand balance and capital maintenance.

These service improvements would add approximately £3 to bills by 2009-10 (before applying efficiency assumptions). Further details are set out in chapter 13.

### **Linking service to prices**

The OPA measures companies' performance across all service areas. It provides an incentive to companies not just to be efficient, but to deliver first class service to customers. At price reviews we take account of comparative company performance, as measured by the OPA. We allow companies with the best performance to charge their customers slightly more and those with comparatively worse performance slightly less. At this price review we have applied adjustments to price limits ranging from +0.4% to -0.1% in the first year of price limits. This is set out in table 25 in chapter 10.

## **2.8 Financial issues**

### **Cost of capital and financeability**

Efficient companies must be able to finance their functions. A company which is efficiently managed and financed should be able to earn a return at least equal to the cost of capital, and its revenues, profits and cashflows should allow it to raise finance on reasonable terms in the capital markets. We refer to this second element as financeability. The continuing large capital programme places a financing strain on the companies and has made our approach to financeability and the cost of capital a critical issue at this review.

The cost of capital is a significant element within the determination of price limits because it is applied to the entire capital base of each company, not just new investment. If the cost of capital is set too low then companies may experience difficulties in financing their mandatory investment programmes. If it is set too high, shareholders may earn windfall returns.

Assessing the cost of capital is not a mechanical process, in part because it concerns market perceptions about the future. Much of the evidence about the cost of capital since the last review has been difficult to interpret because of the considerable volatility in the capital markets over that period. These uncertainties mean that we cannot place too much weight on one tool for assessing the cost of capital, such as the capital asset pricing model, as was the case at previous reviews. We have therefore assessed a wide range of evidence including that from other models (such as the dividend growth model), direct market data, valuations from corporate transactions, and from talking to investors.

At an early stage in the review, we indicated to companies that the evidence pointed to a basic cost of capital no lower than 5.0% post-tax in real terms, compared with 4.75% used at the last review. This recognised that the companies have enjoyed a period of historically low interest rates since the last review but also took into account indications that this will not persist. There is also evidence to suggest that the return required by equity investors may have risen since the last review in 1999.

Water and sewerage companies in their final business plans argued for a post-tax cost of capital ranging from 5.0% to 5.5% in real terms. The range for the water only companies is wider at 5.7% to 6.5%.

We believe that our approach to setting price limits should create conditions under which the additional investment required could come from debt or equity sources. We believe that the returns allowed should provide shareholders with sufficient incentives to commit additional funds, either in the form of retained earnings or new equity injections where this is appropriate, to enable companies to make new investment. Efficient companies should be able to retain stable credit quality going forward.

Taking all this into account we have assumed a cost of capital of 5.1% post-tax in real terms in our determinations. This is equivalent to 7.3% on a fully pre-tax basis (assuming a 30% marginal tax rate). We have also allowed for a small company premium for the water only companies. This ranges from 0.3% to 0.9% depending on the size of the company.

A consequence of requiring companies to undertake large capital programmes is persistent negative cashflow, ie companies spend more than they receive. This can lead to a deterioration in credit quality which could restrict companies' access to capital markets or significantly increase the cost of finance. Consequently, we have tested the financial projections underpinning the price limits against our financeability criteria. In our assumptions reflected in the price limits, we believe that we have reached an outcome that balances the position for customers, without jeopardising efficient companies' ability to access capital markets and to finance their functions.

The constraints of the capital programme impact in the later years of the period, as may be expected given that its effect is cumulative. In aggregate, price limits include around 1.0% for 2007-08 rising to 1.3% by 2009-10 to maintain financeability.

This approach coupled with any outperformance of our assumptions could give rise to higher returns in the later years of the period. Given the potential capital programme beyond 2010, we would expect prudent companies to retain an appropriate proportion of earnings to alleviate the financial strain. If this is not the case, then the argument that large capital programmes increase financial strain could not be sustained at future reviews.

## **The regulatory capital value**

When we assess the return that a company needs to finance its functions, we need to consider the capital base as well as the cost of capital. We have continued to use the well understood concept of the regulatory capital value (RCV) as the measure of the capital base.

Our price limits assume that the industry aggregate RCV will grow from just under £35 billion at March 2005 to almost £41 billion by March 2010.

## **Impact on customers' bills**

The impact of changes to the regulatory capital value, the cost of capital and any additional impact of financeability directly affects the cost to customers of existing as well as new investment.

To maintain base services, the net impact of our decisions in these areas is expected to add around £2 to the average household bill by 2009-10.

As noted in section 2.6, the cost of improvements to drinking water quality and the environment will increase average household bills by 2009-10. The cost of capital and financeability are a large component of this increase.

## **2.9 Taxation**

Water companies, like other industries, need to pay business taxes. Our price limits therefore include an assumption about the level of tax which the companies will have to pay. The corporation tax positions of the companies vary, but the impact of companies' tax payments could be significant for the price limits of some companies.

Up to 1995, the effective current tax rate, ie the proportion which the tax charges bear to profits, was low – averaging less than 2% across the industry. This is now rising and, in the price limits, effective current tax rates rise to around 26% by 2009-10 on average across the industry.

One of the reasons for this is that a special agreement with the Inland Revenue comes to an end in April 2005. The way that the Inland Revenue will treat certain types of expenditure for tax purposes will change so that the treatment of water companies is brought into line with other sectors of the economy. This will lead to higher levels of business taxes on water companies, and places an upward pressure on bills.

For some companies, the increases in tax may be mitigated. Our approach assumes that price limits include a forecast of the companies' expected tax liabilities and not a notional tax liability linked to our assumptions on capital structures. For some companies with high levels of gearing, this means that their tax bills may be lower than experienced in 2000-05 despite the ending of the special agreement with the Inland Revenue.

Across the industry as a whole, the change in taxation is expected to add £5 to the average household bill by 2009-10.