National Audit Office

Ofwat – Meeting the demand for water

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL | HC 150 Session 2006-2007 | 19 January 2007

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SUMMARY

1 The Water Services Regulation Authority (Ofwat) is the economic regulator of the supply and demand for water in England and Wales. Its broad purpose in this area is to regulate in a way that enables companies to secure sustainable supplies at the lowest cost to the consumer. To achieve this it needs to:

- collect relevant and reliable information to underpin its regulatory decisions (findings a, b and c);
- have a regulatory framework that provides incentives for water companies to meet future demands (findings d, e and f); and
- take appropriate enforcement action if companies do not respond to Ofwat's incentives (finding g).

2 We found that:

a There are inherent weaknesses in information on demand for water and leakage. Ofwat has secured better data on leakages. But calculations of leakage still depend on estimates of actual consumption. Consumption figures, even within the same region, range between 124 and 177 litres per person per day. It is not currently clear how much of this difference is due to socio-economic or other factors affecting water use as opposed to inconsistencies in consumption estimations, nor the impact that these differences may have on the aggregate projections of demand (paragraphs 2.3–2.9).

b The evidence on the results of water efficiency projects is growing. Ofwat has co-funded research which it hopes will produce more reliable evidence and has published a good practice register. However, the evidence does not yet enable Ofwat to say which projects are most effective in helping consumers waste less water, despite a specific Committee of Public Accounts recommendation in 2002. Given the lack of evidence, Ofwat's public reporting of water companies' water efficiency measures focuses mainly on the number of consumers reached by a project rather than the water savings generated. (Paragraphs 2.20–2.26 and 4.3–4.4).

c Metering can provide better quality data on actual consumption and therefore leakage. Available research suggests installation of meters also reduces household consumption. But there is a cost in installing meters and there is a risk that poorer families may not be able to afford the water they need for health and hygiene (paragraphs 2.17–2.19 and 3.17).

d Existing water supplies may be shared regionally by transferring water from areas with a surplus to areas with a deficit. Water companies have a strong incentive to make their own water networks as joined up as possible and can also agree to supply water to neighbouring water companies. A transfer of water from the North to the South East of England is however estimated to cost up to £15 billion to construct and cause significant environmental damage (Paragraphs 3.5–3.10).

e Ofwat's approach to setting leakage targets is sensible and supported by 62 per cent of consumers surveyed. Companies have to bring down leakage to the level where the cost of saving another unit of water through fixing a leak is the same as the cost of providing a unit of water through a new supply. Allowing a level of leakage which is economic rather than reducing leakage levels to zero prevents charges to customers from rising unnecessarily. All companies included social and environmental costs in their leakage calculations in 2004, but because some water companies found this a challenging exercise, Ofwat is updating its guidance (paragraphs 3.11–3.14).

f Evidence from the 2006 drought demonstrates that companies and consumers respond to non-financial incentives during a drought. For example, Anglian Water adopted a policy of prioritising all visible leaks, and consumer demand in the Thames region was 8 per cent less than the norm for the middle of summer. In the *Using Water Wisely* research[1], 62 per cent of consumers in water-stretched areas stated they would be more likely to conserve water if water companies conserved water (Paragraphs 3.18–3.19).

g The legally binding undertaking given by Thames Water to Ofwat to increase investment in response to the company's poor performance on leakage benefited the consumer. But, given Thames' persistent failures on leakage since 2000, customers would have benefited if Ofwat had been able to obtain such an undertaking earlier (paragraphs 4.8–4.10).

Recommendations

3 Ofwat needs to take a proactive and long term approach to respond to future challenges in the water industry and to ensure that it contributes to sustainable development.

A) Ofwat should continue to press companies for improved data on leakage and consumption by:

- working with key stakeholders, in particular the Environment Agency, to ensure any regional differences in water usage and leakage figures reported by companies are investigated, understood and explained. It should also consider the impact of the unreliability of demographic data which quickly become out of date as people move and new homes are built. Water companies must also manage an ongoing uncertainty about the location and number of new-build homes, particularly in the South East; and
- continuing to co-ordinate the work of the independent reporters, who verify the regulatory information provided to Ofwat, to ensure consistency in their reporting.

B) Ofwat should take the lead in ensuring that there is reliable evidence for the results of water efficiency projects. It should:

- encourage companies to propose appropriate water efficiency projects at the next price review through promotion of its good practice register and publication of guidance. Ofwat should provide clearer criteria by which it will judge whether to incorporate assumptions of additional expenditure for water efficiency projects in price limits; and
- regularly review and update its good practice register, to include more robust evidence as it becomes available. Ofwat should also try to include information on cost effectiveness as well as potential savings.

C) Ofwat should assess companies' progress on water efficiency on the basis of the quality of the project, its costs, and the water it saves, as well as the number of consumers reached. Ofwat could set out criteria for an effective water efficiency project and assess activity against it. Projects should be: based on a comprehensive understanding of consumer needs and priorities; targeted at the areas where most value can be added; aimed towards achievable, measurable goals; and demonstrably cost effective. Projects should also be evaluated for water saved and the effect on the consumer experience, with their outcomes disseminated to all stakeholders. The findings from the Consumer Council for Water's research into consumer attitudes and perceptions to water may help provide a useful basis for undertaking water efficiency projects.

D) Ofwat should build on its current approach and press for a long term and sustainable approach to leakage management. This will require companies to improve how environmental and social benefits and costs are included in the economic level of leakage calculation and to base costings on new guidance currently being produced by Ofwat. The impact of public perceptions of leakage, particularly in a drought, should also be considered.

E) Ofwat should improve its system of incentives by:

- exploring the introduction of a cap on the revenues a company may earn, as well as a cap on the prices it may charge, to discourage companies from promoting higher use of water to metered customers as more meters are installed; and
- investigating ways in which companies can be incentivised further to share water on a regional basis where this makes economic sense (including competition law concerns) and is environmentally sound.

F) Ofwat should build on its consumer focused approach to enforcement and ensure its interventions are timely and effective. To do so it should continue to keep its approach under review to identify any lessons that can be learned and applied to future enforcement activities. This is particularly important as it gains more experience of its new powers to fine companies, and should include examining its approach to leakage problems at Thames. Ofwat will need to act quickly and firmly against any breach of the undertaking as it monitors Thames' compliance.

PART ONE

Security of supply

1.1 This part describes Ofwat's statutory role and its main processes for ensuring security of supply, the rationale and the scope and methodology of the report. It shows that:

- demand for water is expected to increase in parts of England and Wales and there are pressures to reduce the level of water abstractions;
- Ofwat is responsible for setting price limits that enable efficient water companies to meet future demands; and
- in regulating security of supply, Ofwat has to work with a number of partners, principally the Environment Agency.

Water scarcity

1.2 Overall demand for water is predicted to be stable over the next four to five years, but eleven of the twenty two water companies in England and Wales predict demand for water in their region will increase in this period. This increase is due to predicted growth in the number of households and an increase in average consumption. The majority of those companies predicting an increase are in the South East of England.

1.3 At the same time, there is also pressure to reduce water abstraction from ground and surface water sources. The EU Habitats Directive and Water Framework Directive, which are aimed at protecting the environment, could reduce the amount of water companies can abstract.

1.4 The Environment Agency has predicted that in the longer term this combination of increased demand and reduced abstraction will cause future demand to exceed supply in many parts of England and Wales unless action is taken.

Water companies' role

1.5 There are 22 principal water companies[2] in England and Wales **(See Figure 1 overleaf)**. These companies are responsible for meeting all reasonable demands for water[3], while limiting environmental impacts.

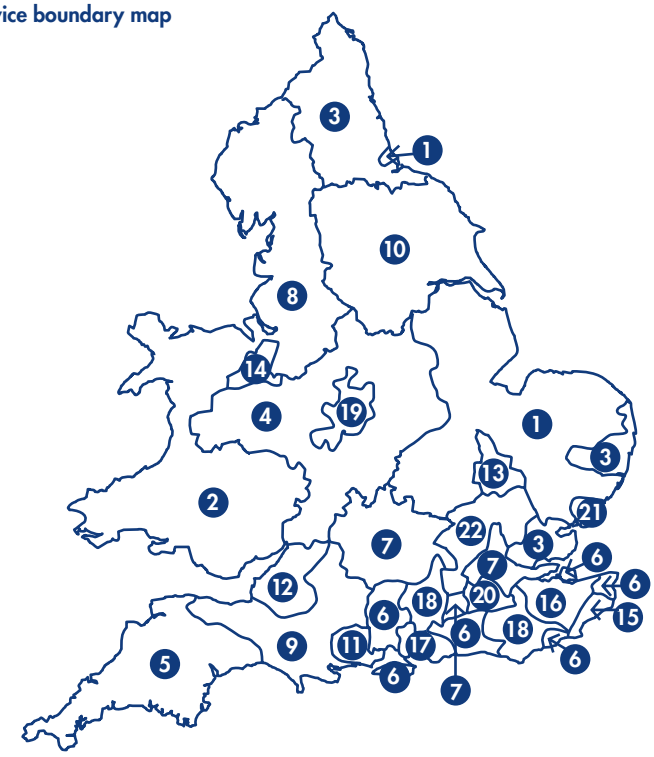
Ofwat's role

1.6 Ofwat sets the maximum price limits each company may charge its customers. Each company has a level of service for security of supply, expressed in terms of the frequency and duration of restrictions on use (such as hosepipe bans) that it expects it will need to impose to ensure that essential supplies are maintained. Every five years Ofwat evaluates business plans submitted by each company to determine whether the proposed expenditure is necessary to deliver required services, including security of supply, and therefore whether it will allow the investment to be reflected in charges to the customer. Some companies set the level of service with reference to customers' willingness to pay, but not all at present do this. The effect on water customer's bills of the most recent price review is set out in **Figure 2 overleaf**.

1.7 One of Ofwat's main duties is to secure that the functions of each water company, including meeting future demands for water, are properly carried out. To ensure companies can fulfil their duty to maintain water supplies Ofwat uses the concept of 'headroom'. Headroom is the difference between available water supplies and expected demand. Water companies calculate how much headroom they will need in a 'normal' and a 'dry' year. Ofwat uses these calculations to assess the overall security of supply for each water company (See Appendix 4 for companies' security of supply for 2005-06).

1 Water companies in England and Wales

Water service boundary map



Water and sewerage companies

1 Anglian
2 Dŵr Cymru
3 Northumbrian
4 Severn Trent
5 South West
6 Southern
7 Thames
8 United Utilities
9 Wessex
10 Yorkshire

Water only companies

11 Bournemouth & West Hampshire
12 Bristol
13 Cambridge
14 Dee Valley
15 Folkestone & Dover
16 Mid Kent
17 Portsmouth
18 South East
19 South Staffordshire
20 Sutton & East Surrey
21 Tendring Hundred
22 Three Valleys

Source: Ofwat

NOTES

1 The area covered by Cholderton water company is too small to display on this diagram. We excluded Cholderton from our analysis as it only serves less than 1,000 domestic customers.

2 Essex and Suffolk Water is part of Northumbrian water (Number 3) and is therefore treated as one company. Hartlepool Water is part of Anglian Water (Number 1) and is also treated as one company.

2 Effect of the 2004 price review on average customer bills (all in 2004-05 prices)

Effect on household bills	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**
Average annual household bill						
Water (£)	117	130	134	137	139	140
Sewerage (£)	132	140	144	148	152	155
Total (£)	**249**	**270**	**278**	**285**	**291**	**295**

Source: Ofwat Future Water and Sewerage Charges 2005-10: Final Determination

Ofwat's key partners

1.8 Ofwat shares the responsibility for ensuring companies meet demand with its principal partner, the Environment Agency (EA). The EA is responsible for companies' long term water resource planning, ensuring they have 25 year water resource plans that will enable demand to be met. It also manages the abstraction of water through a licensing system. More information on the interactions between Ofwat and the Environment Agency is given in Appendix 3.

1.9 Other key partners are the Consumer Council for Water (CC Water), which represents water and sewerage consumers, the Department for Environment, Food and Rural Affairs (Defra) and the Welsh Assembly Government. Defra has overall policy responsibility for water and sustainable development in England. In 2005, Defra created the Water Saving Group which brought together water industry stakeholders, including Ofwat, to promote water efficiency in households. Appendix 3 gives more details of these other key parties.

Sustainability

1.10 Since April 2005, Ofwat has had a duty to exercise and perform its duties in the manner best calculated to contribute to the achievement of sustainable development. In February 2006, Ofwat published a consultation document on its new duty. This described its role as 'to promote value for customers, not just in the narrow sense of their water bills, but also in the wider sense of value for the environment, for achieving social objectives and for the economy'. Ofwat's response was published in November 2006.[4]

1.11 In October 2006 HM Treasury published the Stern Review examining the impact of climate change on the UK and world economy.[5] There is now a growing body of research examining the effects that climate change may have on the UK weather. Ofwat, the Environment Agency and the water companies all have a role to play in ensuring that future water supplies and demand for water are planned for in the context of climate change. This should be reflected in water companies' next set of water resource plans which project over a 25 year time horizon. We found that some companies had reflected the expected impact of climate change in their current water resource plans, but others felt they had insufficiently detailed information and had not attempted to do so.[6]

Audit rationale and scope

1.12 The recent dry winters of 2004-05 and 2005-06 have put pressure on water resources, particularly in the South East of England. During the summer of 2006 most water companies in the South East of England had hosepipe bans in force, three had been granted non-essential use drought orders[7], one of which was implemented in part. Separately, as part of its long-term water resource planning, Folkestone and Dover was granted the ability by Defra to impose metering on all its customers.

1.13 In June 2006, the House of Lords Science and Technology Committee published its Eighth Report, *Water Management*, which examined a wide range of issues across the water industry, including resource development; water efficiency; leakage reduction; and water transfer.[8] The Institute for Public Policy Research also published a report, *Every Drop Counts*, which made recommendations on metering and a water efficiency commitment.[9]

1.14 Ofwat is responsible for setting price limits that enable efficient companies properly to carry out their functions, including meeting future demand. In 2002 the Public Accounts Committee made a series of recommendations on Ofwat's approach to leakage and water efficiency, both key elements of managing the supply/demand balance. We therefore decided to examine Ofwat's processes for ensuring that companies manage the water supply/demand balance.

1.15 The overall value for money of Ofwat's approach to regulating the supply/demand balance depends on the extent to which it regulates water companies to ensure that they secure sustainable supply at the lowest cost to the consumer.

1.16 To achieve this Ofwat needs to:

- collect robust and relevant information to underpin its regulatory decisions (Part 2);
- have a regulatory framework that incentivises water companies to meet future demands (Part 3); and
- take appropriate enforcement action where companies are not responding to Ofwat's incentives (Part 4).

1.17 More information on methodology and audit criteria is given in Appendix 1. More information on Ofwat's progress against the Public Accounts Committee's recommendations is given in Appendix 2.

PART TWO

Regulatory information

2.1 To determine price limits that enable water companies to deliver the required outputs, Ofwat requires information on the characteristics of supply and demand. This section examines available information on the supply of and demand for water, considers the robustness and reliability of this information and identifies any gaps. It shows that:

- there are inherent weaknesses and inconsistencies in information on demand for water and leakage. Ofwat has ensured that companies have improved data on leakage but needs to do more to address the underlying uncertainties; and
- there is no robust evidence on the results of water efficiency projects and as a result Ofwat does not know which projects are most effective in helping consumers waste less water.

Water supply

2.2 Each company's management of water resources is dependent on information on available water supplies, both in the present and into the future. To carry out its duties, Ofwat needs to ensure that this information is robust in three key areas:

- Leakage levels – Ofwat sets, monitors and enforces companies' leakage targets. It therefore needs to ensure that leakage data provided by companies is robust;
- Consumption data – predictions of future demand rely on reliable consumption data, as do leakage calculations[10];
- Costs and benefits of new water supply options – to ensure that the most sustainable solution to a supply and demand deficit is selected.

Leakage and consumption data

2.3 To ensure that water companies have achieved their leakage targets, Ofwat must make certain that the leakage figures that companies report are robust. As a leak can occur at any point on a water company's underground piping, leakage levels cannot be measured directly. To produce a reliable estimate of the water leaked from its system, a water company needs to know how much water they put into the system and the amount of water that has been consumed. The difference between these two amounts is leakage.

2.4 Water companies are able to measure with relative certainty the amount of water that they put into their systems[11], but they are unable to measure the water that is consumed as precisely. This is because only 28 per cent of households pay for their water on a metered basis. Leakage is therefore calculated using 'top down' and 'bottom up' approaches. The 'bottom up' approach measures night time water use in certain districts, allows for an estimate of likely night time consumption and assumes that the balance is leakage. The 'top down' approach measures the total water that enters the system, estimates total consumption based on per capita consumption and demographic information, with the balance being leakage. Ofwat challenges material and unexplained changes in water balance components and rejects the submissions from companies where there is more than a five per cent difference between the 'bottom-up' and 'top-down' numbers.

2.5 In its 2002 report, *Ofwat: Leakage and Water Efficiency*, the Committee of Public Accounts expressed concerns that the information underpinning Ofwat's approach to leakage was imprecise and variable and recommended that Ofwat should examine with companies how estimates of leakage and the economic level of leakage could be made with more consistency and precision.[12] In August 2002, Ofwat produced a 'tripartite' report with Defra and the Environment Agency which included best practice for the calculation of the economic level of leakage.

2.6 In our water company survey, companies told us that they are content that the methodology for assessing both leakage and customer usage is reliable. 17 out of 22 companies said that the methodology for assessing leakage is robust. 18 thought that the methodology for assessing per capita consumption is robust. However, eight out of 22 companies commented that per capita consumption estimates were not calculated consistently across the industry.

2.7 Consumption figures reported by companies vary widely. This is illustrated in **Figure 3**, which shows that average household consumption reported by companies in the South East varies between 124 and 177 litres per person per day. These differences cannot be fully explained by variances in demography or metering levels[13]. Some companies told us that there is a lack of consistency across companies in the methodology for calculating per capita consumption, and that there are reporting issues such as small sample sizes and the unreliability of demographic data which quickly become out of date as people move and uncertainties about the location and number of new-build homes, particularly in the South East. There are also likely to be variances due to differing levels of metering. Ofwat consider that the consistency of a company's data over time is also important and has commissioned a study investigating differences in per capita consumption.

2.8 Ofwat uses a system of Reporters, who have a duty of care to Ofwat, to help verify the data which water companies provide. Reporters are independent professionals appointed by each water company to ensure that company regulatory information is consistent, comparable, reliable and accurate. Assumptions and estimates on supply and demand are particularly complex, requiring specialist expertise. The water balance methodology is common to all companies. Reporters check that the assumptions made and the methodologies used to derive the water balance and its components are sound and reasonable, and they indicate with a confidence grade where the methodologies or data quality are limiting the value of the output. They are not asked to assess whether an approach is comparable – rather if it is suitable for the purpose to which it is put in the context of that company.

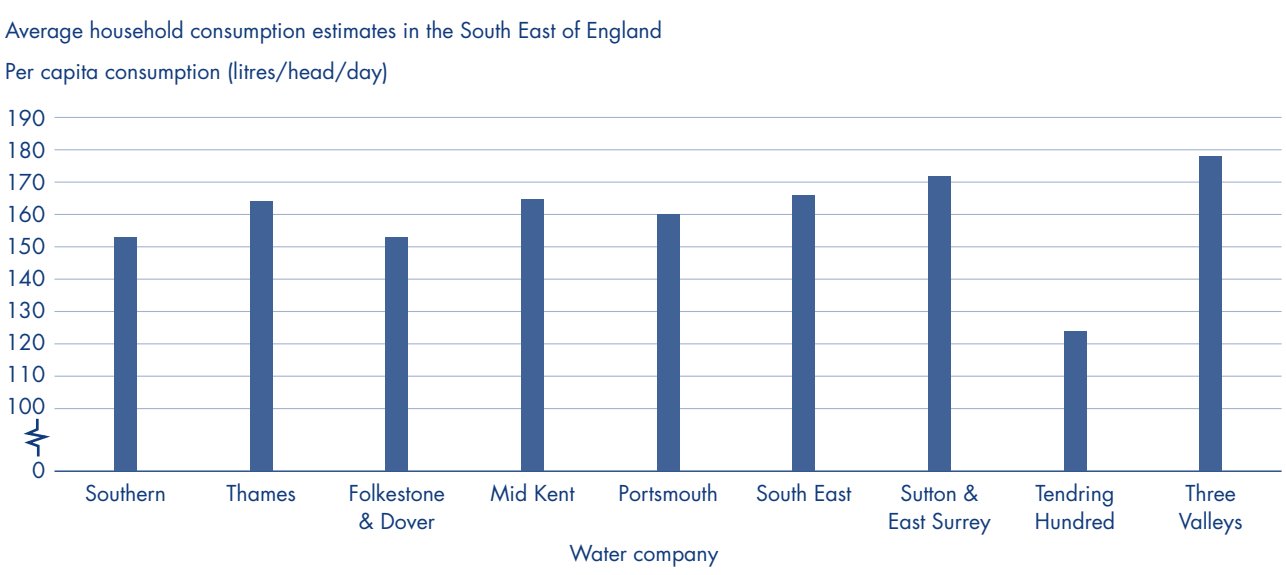
2.9 The Serious Fraud Office is currently carrying out an investigation into problems with leakage data provided by Severn Trent Water to Ofwat.

Developing new water resources

2.10 If a potential future problem with water supply is indicated, companies need to consider the options for making more resources available. Some of the main options include: drilling new boreholes; reducing the volume of water that leaks from pipes; building a new reservoir; obtaining water from other water companies; and demand management.

2.11 Information on the potential levels of water provided by each water supply option is robust. The information can be improved further, however, if it incorporates an assessment of the environmental and social costs of each proposed solution, estimating monetary impacts where possible. Estimating these costs is not straightforward although this could become easier as more projects take place.

3 Average household consumption for water companies in the South East 2005-06



Source: Ofwat, Security of supply, leakage and water efficiency report 2005-06

2.12 Under guidance from Ofwat and the Environment Agency, water companies are supposed to include environmental and social impacts in their analysis. Some companies told us that they had not been able to adequately incorporate environmental and social impacts into their options appraisals. In our survey of water companies 18 out of 22 water companies felt that Ofwat had not provided adequate input and support on how to conduct cost benefit analysis.

Demand management

2.13 Companies' management of water resources is dependent on information on consumer demand for water. Ofwat needs to ensure that this information is as reliable as possible in two key areas:

- consumer attitudes and perceptions; and
- the results of water efficiency measures, including metering, to ensure that their role is fully utilised in bringing supply and demand into balance.

2.14 Understanding and managing consumer demand for water is the responsibility of water companies. Other stakeholders, including Ofwat, Defra and the Welsh Assembly Government, the Environment Agency, the Consumer Council for Water, the water industry, property developers, manufacturers and water customers all have responsibility too. In 2005, Defra created the Water Saving Group which brought together the major stakeholders with a two year remit to design a practical programme of measures to promote the efficient use of water in households in England (see Appendix 3 for more information). However, as the economic regulator responsible for setting price limits, Ofwat has a vital role to play, for example in price setting, cost effectiveness and incentives.

Consumer research

2.15 Thirteen out of 22 water companies told us that Ofwat's regulation of supply and demand demonstrated a 'fairly strong' understanding of consumer attitudes to water. Ofwat, companies and others have carried out a range of surveys and other research. Prior to the last price control in 2004, Ofwat co-ordinated two national surveys aimed at establishing consumer preferences for a range of services, including the level of security of water supply.[14] This research showed that only three per cent of consumers considered reducing the number of hosepipe bans to be an urgent priority for improvement and only five per cent of consumers thought it worth paying more or a lot more to reduce hosepipe bans. This research did not, however, examine in any detail consumer attitudes to their own use and conservation of water. There has been little coordinated research on how much consumers are willing to pay for a particular level of service.

2.16 We found from our structured interviews that companies' opinions on consumer attitudes and behaviour have often been based on assumptions or beliefs rather than robust evidence. Lack of evidence in this area could lead to a lack of understanding on patterns of consumer demand, whether consumers are aware of the service level they have paid for, the impact of metering and tariffs and the results of water efficiency programmes. However, under the auspices of the Water Saving Group, with sponsorship from the National Audit Office, Ofwat, Water UK, the Environment Agency and Defra, the Consumer Council for Water has carried out a comprehensive research project, *Using Water Wisely*, looking at consumer attitudes and perceptions of water.[15]

Impact of metering

2.17 Research suggests that metering can have a significant impact on household demand. UKWIR[16] recently published a paper bringing together the findings of various research projects on the impact of metering on household demand both in the UK and in the rest of Europe. **Figure 4** shows that metering reduced household consumption by between nine and 21 per cent in the UK for those opting for a meter and between 10 and 15 per cent for those compulsorily metered. However, the *Using Water Wisely* research showed that consumers are sceptical about the impact of metering on future water use with only 34 per cent of consumers surveyed believing that metering would reduce their household's water use level, and 55 per cent believing water use would remain unchanged.

4 UKWIR report conclusions on effect of different types of metering on household demand

Type of trial	Demand reduction identified (per cent)
UK trials and compulsory metering	10–15
UK optant metering schemes	9–21
European compulsory metering	9–30

Source: UKWIR (2006), 'Critical review of relevant research concerning the effects of charging and collection methods on water demand, different customer groups and debt'

2.18 We found a varying degree of analysis of the impact of metering by water companies. Some had very little information beyond the overall per capita consumption figures for metered consumers. However, some companies had attempted detailed analysis of metered consumers' behaviour. For example, Mid Kent Water investigated how much consumers used before and after they were metered and analysed the results by rateable value of the relevant household.

2.19 Where consumers are metered, demand can be managed by the use of flexible tariffs. Recent research by UKWIR suggests that seasonal tariffs can reduce water consumption during the summer by 12.1 per cent.[17] 18 out of 22 companies told us that volumetric-based or seasonal tariffs would be useful in managing demand. However, 15 out of 22 companies felt there is insufficient research on the impact on demand of alternative charging structures. Consumers surveyed for the *Using Water Wisely* project were largely unsupportive of increasing water prices at times of high demand (55 per cent). However, when asked if they would adjust their usage if water prices fluctuated at different times of the year, consumers were evenly divided. 38 per cent stated they would be very or fairly likely to adjust and 38 per cent felt they were fairly or very unlikely to change behaviour.

Water efficiency programmes

2.20 Water efficiency programmes cover a wide range of initiatives with the aim of encouraging households and businesses to make better use of water. The initiatives range from consumer education and publicity to the installation of toilet cistern devices which reduce the amount of water used when a toilet is flushed[18].

2.21 In 2002, the Committee of Public Accounts recommended Ofwat take the lead in identifying the most effective measures for helping customers waste less water and encouraging companies to act on their findings.[19] Five years after the publication of PAC's report, this information is not yet available, but Ofwat is working with companies to ensure this information is available for the next periodic review. The UKWIR cost effectiveness of demand management projects, initiated in 2000 and which Ofwat has co-funded and participates in, have not yet provided results which can be used with confidence in making resource planning and investment decisions. Ofwat are hopeful that findings from the more recent stages of the project will be able to feed into water resource planning and expenditure for the next price control (due to start in 2010). Finally, Ofwat sponsors the 'Economic Research and Innovation' category in the Water Efficiency Awards with the intention of encouraging improved understanding of the economics of water efficiency.

2.22 At present, there is a lack of information on the water savings generated by water efficiency schemes and their effect on the experience of consumers. In our structured interviews with companies, the majority told us that water savings generated from water efficiency projects are both uncertain and likely to be insubstantial. This uncertainty is reflected in the water efficiency figures reported by companies in their 'June returns' to Ofwat. In 2004-05, 17 out of the 22 companies reported low confidence in the reliability and accuracy of the information they provided on total water savings.[20] Without the supporting evidence, companies and Ofwat are reluctant to risk placing reliance on water efficiency programmes to help meet the supply/demand balance.

2.23 Evidence from international water efficiency projects indicates that substantial savings can be made. For example, Sydney Water subsidised householders to fit water efficient devices in their homes.[21] This programme has provided savings of, on average, 20,900 litres per household, per year, sustained over the first four years of the project. To date over 300,000 households have taken part in the programme. The programme costs around 0.016 pence per litre of water saved, and is selected by Sydney Water as one of its preferred options under least cost planning. UKWIR's cost effectiveness of demand management steering group is currently examining the transferability of international water efficiency projects to the UK.

2.24 Sixteen out of 22 companies in our survey believe that Ofwat has not been very effective in encouraging them to promote water efficiency, with 10 companies citing confusion over Ofwat's approach to assuming additional expenditure for water efficiency projects in price limits. In its most recent price review, Ofwat assumed additional expenditure in the price limits for six specific water efficiency projects from the twelve put forward by companies. These projects estimated combined water savings of around four mega litres per day. Ofwat provided general guidance to companies requiring them to show that water efficiency projects were economic. Ofwat also provided feedback to individual companies on their plans. Companies told us that both the guidance and the feedback could explain more clearly why Ofwat viewed some projects positively and others less positively.

2.25 Under the Water Saving Group action plan, Ofwat has been assigned responsibility for creating a good practice register of water efficiency projects. It has recently published a good practice register of water efficiency activity, which brings together available evidence on the effectiveness of alternative water efficiency measures and includes some data on potential water savings that could be used in planning for the next price review period. However, data on cost effectiveness of measures is not included in the register.

2.26 The *Using Water Wisely* research showed that Ofwat would be consumers' second most trusted source of advice on water efficiency after the water companies (35 per cent and 39 per cent respectively). This suggests a possible role for Ofwat, alongside others, in disseminating information on water efficiency directly to consumers. For example, Ofwat could enhance the water efficiency section on its website.

Balancing supply and demand

2.27 When planning future water resources, new resource schemes, leakage reduction programmes and demand management projects must all be considered together in order to ensure the most sustainable solution to a supply/demand deficit is adopted.

2.28 Ofwat needs to ensure that companies evaluate all potential solutions to a water resource deficit to ensure that the best possible value is obtained for the consumer. An important part of this process is building up an understanding of how much consumers are willing to pay for the service they receive, including the value placed upon avoiding environmental damage or unwanted social implications, and how willing consumers are to use water more efficiently. Ofwat and the Environment Agency also need to ensure that companies' water resource plans take account of the economic, social and environmental costs and benefits and whether or not they impact directly upon the companies' choice of solutions.

PART THREE

Regulatory incentives

3.1 Incentives are central to Ofwat's system of regulation. This section evaluates whether companies are incentivised to meet long term water demands in the most efficient and sustainable way. It shows that:

- Ofwat has incentivised investment in new resources while protecting the consumer against inefficient or poor quality investment decisions;
- there are incentives to transfer water between water networks within a company and also to transfer water between companies at a regional level;
- Ofwat's approach of allowing a level of leakage which is economic is sensible but there are areas that could be improved; and
- the 2006 drought highlighted the importance of non-regulatory incentives on both companies and consumers.

Ofwat's system of incentives

3.2 There are a range of incentives on water companies:

- **Price setting:** Ofwat bases the price limits water companies can charge on an estimate of the costs an efficient company should incur in delivering required services. If a company can deliver these services at lower cost, it can retain the benefit.
- **Overall Performance Assessment:** Ofwat measures each company's performance against a range of service categories, including leakage and hosepipe bans. The overall score for a company feeds into the prices it can charge.
- **Reputational incentives:** This includes Ofwat's security of supply assessment, which categorises each company's position into one of four bands (see Appendix 4) and the perception of its customers.

3.3 Consumers are also subject to incentives, for example metered customers have the ability to save money by using less water.

Incentives on capital investment

3.4 Investing in new supply can involve expensive, long term projects. A new reservoir will typically take around 20 years between proposal and completion. There is a risk that the five year price review period could create a lack of certainty for companies and a disincentive to invest in new resources. Ofwat has partially mitigated this risk with the creation of an 'early start' programme, which allows companies to put forward proposals outside of the price control timetable. In our water company survey 15 out of 22 companies told us that the current process had allowed them sufficient certainty when managing their supply and demand balance, although 10 companies did express concerns over arrangements for funding long-term investments that span more than one price review period.

Incentives to use water capacity more efficiently

3.5 Existing water supplies may be used more efficiently by transferring supplies from an area with a surplus of water to an area with a deficit. There are three ways that this can be done:

- Joining up water networks within a company.
- Transferring water between companies.
- National water transfers.

Joining up networks within a company

3.6 Within their own areas, companies have an incentive to make their water networks as joined-up as possible. **Figure 5 overleaf** illustrates how Yorkshire Water has done this.

5 Case study of Yorkshire water

In the summer of 1995, Yorkshire Water faced a crisis when reservoirs in the region fell to below 20 per cent of total capacity. As part of the drought contingency plan non-essential use of water was banned throughout the region, standpipes (public water taps serving streets or neighbourhoods) were considered, customers were warned of 'rota cuts' (periodic cut offs in domestic water supply) and a large scale reservoir refilling operation was undertaken using road tanker trucks to transfer water.

As a result of these problems the company took the decision to create a 'grid' system which allows it to transfer water from one part of the region to another. Due to the considerable investment made in its 'grid' system, Yorkshire Water is now in an excellent position to deal with prolonged dry spells.

Source: National Audit Office

Transferring water between companies

3.7 Transferring water between companies is known as bulk supply. Companies negotiate bulk supply agreements and Ofwat only intervenes where it is necessary for securing the efficient use of water. In 2006, for example, Ofwat intervened to determine the terms of a bulk supply agreement between Southern Water and South East Water. Ofwat also participates in the 'Water Resources in the South East Group',[22] which considers opportunities for sharing water resources in the region. Since its inception in 1997, the group has agreed and implemented four new bulk supplies.

3.8 In our survey the water companies gave a lower preference rating to bulk supplies as a resource management solution than to development of new resources. The volume of water transferred through bulk supplies has remained fairly stable over the last decade, even in the South East of England. Ofwat sought to strengthen incentives for bulk supply at the last price review by allowing companies to retain any surplus revenue from a bulk supply for five years.

National water transfers

3.9 In September 2006, the Environment Agency published a review into the feasibility of transferring water from the North to the South East of England. The review found that it would cost up to £15 billion to build five pipelines large enough to carry 1,100 megalitres a day some 560 kilometres from the northern Pennines to London.

3.10 On the basis of this high level costing the Environment Agency and Ofwat do not consider large scale transfers to be a viable option. This suggests that joining up networks within companies or sharing water between regions, alongside other solutions like reducing leaks, encouraging water efficiency and building new supply may be more sustainable.

Incentives to manage leakage at an appropriate level

3.11 The main regulatory incentive on leakage is the concept of an 'economic level of leakage'. The economic level is the point at which the cost of saving a unit of water through fixing a leak is the same as the cost of providing a unit of water through a new supply.

3.12 The concept of an 'Economic level of leakage (ELL)' is sensible. It provides certainty for companies; is targeted on a particular area of performance; and makes the company accountable through setting a level of performance. 15 of 22 water companies in our water company survey told us that they thought the methodology for assessing ELL is robust. And 62 per cent of consumers surveyed for *Using Water Wisely* supported a leakage investment strategy based on achieving an economic level of leakage. However, the ELL may not currently promote a fully sustainable level of leakage because the inclusion of environmental and social costs and benefits in companies' calculations could be improved[23].

3.13 Ofwat are currently reviewing the future approach to leakage target setting for water companies in England and Wales, including guidance on environmental and social costs, managing leakage in a drought and consumer attitudes to leakage. Ofwat and the EA are currently working with other stakeholders, including companies, to consider how companies should cost the carbon impact (and other climate change emissions) of different water supply options.

3.14 The 2006 drought highlighted the strength of non-financial 'reputational' incentives on leakage management. Many water companies took additional action on leakage to demonstrate to customers their commitment to maintaining security of supply. Anglian Water, for instance, adopted a policy of prioritising all visible leaks, while Southern Water, introduced the following initiatives:

- Doubling the size of the company's leak detection task force to 120 staff;
- Increasing investment in new technology to help detect leaks more quickly;
- Widely promoting a 24-hour Leakline for customers to report leaks.

This approach to leakage management is supported by the findings from *Using Water Wisely* which showed that 62 per cent of consumers in water stretched areas stated they would be more likely to conserve water if water companies conserved water.

Incentives on consumers

Metering

3.15 Domestic consumers pay for water in one of two ways. 72 per cent pay a fixed sum regardless of how much water they use as they do not have a meter. They are not therefore incentivised financially to use water efficiently. 28 per cent with water meters pay for the volume of water they use and do have incentives to use water efficiently. **Figure 6** sets out the incentives depending on whether consumers are metered or unmetered.

3.16 There is no evidence to suggest that water companies are promoting increased consumption of water to metered consumers. However, as the percentage of metered consumers rises the economic incentive may become stronger. One solution to this risk is for a company's income from customers to include a cap on the total revenues a water company may earn as well as a cap on the average prices it charges.

3.17 There are a number of disincentives on companies to promote metering. The Water Saving Group found that companies perceived the application for water scarcity status, which allows compulsory metering, to be complicated and time intensive and that companies feared that forcing metering on their consumers would be unpopular.[24] The *Using Water Wisely* research showed that 53 per cent of consumers are willing to support the compulsory installation of water meters in water scarce areas, if water companies have exhausted other options. 46 per cent of consumers thought that charging consumers based on how much they used was the fairest approach. However, 49 per cent felt that consumers should be able to choose. In our structured interviews, companies also expressed concerns about the transitional costs of metering and the potential impact of compulsory metering on low income customers who use large volumes. Under the Water Saving Group action plan, Defra and the Environment Agency are looking at ways to overcome barriers to metering.

Consumers without a meter

3.18 Consumers without a meter pay a fixed sum for water supply and do not have any financial incentive to use water efficiently. Nevertheless, there is evidence that customers responded positively to the drought in 2006. For example, following the withdrawal of their application for a non-essential use drought order in September 2006, Thames Water reported that customers saved 258 mega litres a day in July, a fall in demand of eight per cent compared to the norm for the middle of summer[25]. Sixteen water companies surveyed believed that a hosepipe ban is effective in reducing consumer demand, citing savings of between one and 15 per cent. The *Using Water Wisely* research indicates that if consumers believe that their water company is doing all it can to save water 80 per cent will accept hosepipe bans and 61 per cent bans beyond hosepipes. Companies suggested that it may be the publicity given to drought by the hosepipe bans that was the main factor in reducing demand. **Figure 7 overleaf** shows the water restrictions placed on consumers during the water shortages of 2005 and 2006.

3.19 Consumers in areas without water restrictions also changed their behaviour, but in different ways. For example, in 2006 Bournemouth and West Hampshire Water was experiencing a drought, but despite there being no restriction on water use consumption fell compared to a normal year **(Figure 8 overleaf)**. However, Dŵr Cymru Cyfyngedig which did not face a drought in 2006 told us that consumer demand was higher in 2006 than in previous summers.

6 Economic incentives on the consumer and company

	Incentive on consumer	Incentive on water company
Metered consumers	**Conserve water** The less a metered consumer uses the less they pay.	**Sell more water** The more water a consumer uses the more revenue the company receives.
Unmetered consumers	**Consume freely** The consumer pays a fixed charge for water regardless of how much they use. Therefore there is no financial incentive to conserve water.	**Conserve water** The company receives a fixed sum from the consumer but bears the cost of treating the water consumed. The company therefore has an incentive to encourage the consumer to use less water, as costs will fall but revenue remains constant. Where water consumption is increasing there may also be a cost of investing in additional infrastructure.

Source: National Audit Office

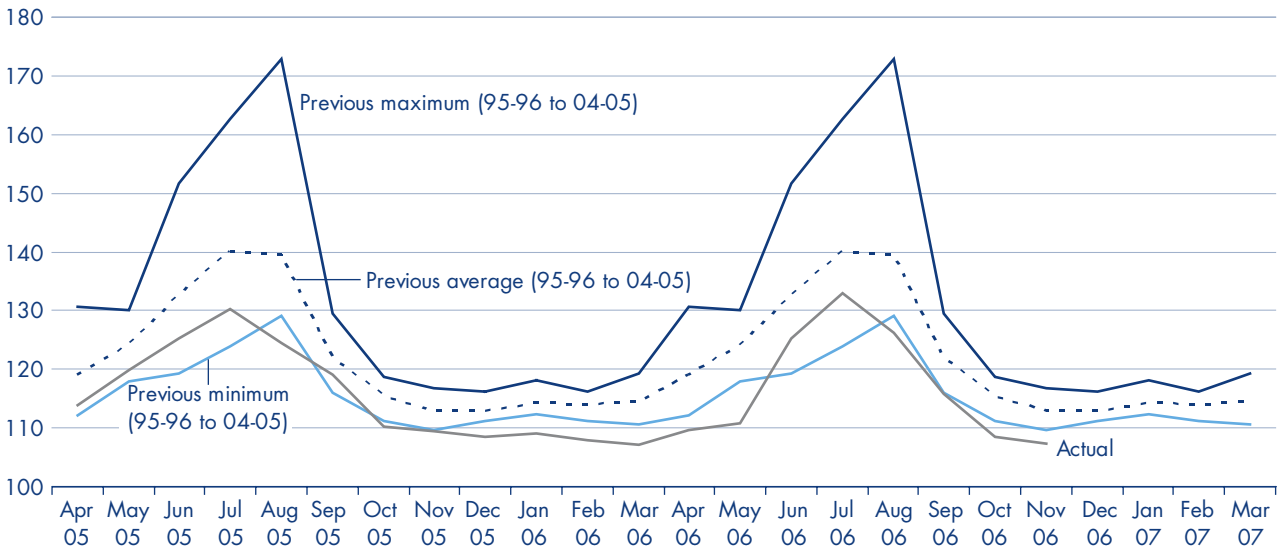
7 Water restrictions on consumers

	2005	2006
Ban on sprinklers and unattended hose use	Sutton and East Surrey	
Full hosepipe and sprinkler ban	Southern (in Sussex and Kent)	Southern
		Thames
	South East (in East and West Sussex and West Kent)	South East
	Mid-Kent	Mid Kent
		Sutton & East Surrey
		Three Valleys
		Folkestone & Dover
		Cholderton & District
Non-essential use drought order granted but not implemented		Southern (Kent and Sussex)
		Mid-Kent
		Thames applied for a non-essential use drought order for London but withdrew its application and an order was not granted
Non-essential use drought order granted and implemented in part		Sutton & East Surrey

Source: National Audit Office

8 Bournemouth and West Hampshire Water

Demand since April 2005 Mega litres per day



Source: Bournemouth and West Hampshire Water

NOTE

This figure excludes a large business customer based in Fawley in order to show domestic demand only.

PART FOUR

Enforcement

4.1 Where a water company fails to deliver the required level of service, Ofwat must take enforcement action to ensure that companies fulfil their duties. The Water Act 2003 added to Ofwat's power to revoke a water company's licence[26] by enabling it to fine companies up to ten per cent of their turnover.

4.2 This section evaluates whether Ofwat is using enforcement action appropriately to protect consumers. It shows that:

- Ofwat enforces water companies' duty to promote water efficiency, however it bases its assessment principally on the number of consumers reached by a project rather than the actual water saved;
- in 1995 Ofwat identified leakage as an area where it might need to take enforcement action. It subsequently introduced leakage targets in 1997 and leakage levels fell as a result. Leakage levels have risen slightly since 2000, mainly due to a rise in leakage levels reported by Thames Water; and
- Ofwat has used its new powers to ensure that Thames Water puts in place plans to reduce leakage, securing a legally binding undertaking from the company which should result in a better outcome for the consumer.

Enforcing the companies' duty to promote water efficiency

4.3 Ofwat monitors companies' progress in promoting water efficiency annually through the June returns process and reports its findings in its November report, *'Security of supply, leakage and the efficient use of water'*. In this report it names companies which are not fulfilling their duty satisfactorily. For example, in 2005-06 it named Sutton and East Surrey and Dee Valley. Ofwat looks at four criteria when assessing whether companies fulfil their duty:

- Is there an efficient pricing framework, providing metered customers with appropriate incentives to use water wisely?
- Is there a long-term education programme to sustain customer awareness of the need for sensible water use?
- Is the level of company activity on efficient use of water economic?
- Is promotion directed to those customers who will benefit most?

4.4 The information which Ofwat asks for and reports when judging companies' progress is almost entirely based around the number of consumers reached – for example, the number of water audits completed or the number of cistern displacement devices distributed. Ofwat does not look in the same detail at the amount of water saved or assess the quality of the project itself – for example by examining whether a proper evaluation of results was undertaken.

Use of regulatory targets and sanctions to reduce leakage

4.5 If a company fails to meet the required service standards for which it has been funded Ofwat needs to take enforcement action. Following the drought of the summer of 1995, in which high levels of leakage contributed to serious difficulties in maintaining water supplies, Ofwat introduced leakage targets and developed a range of sanctions in the event of failure to achieve targets **(Figure 9 overleaf)**. From 1 April 2005 they have had the additional power to fine water companies up to 10 per cent of turnover where a company fails to meet statutory requirements, performance standards, or licence requirements including leakage targets.

4.6 **Figure 10** shows that the introduction of leakage targets in 1997 coincided with considerable reductions in the level of reported leakage. However, since 2000-01 leakage levels have risen. This rise is mainly due to an increase in reported leakage levels at Thames Water.

4.7 Ofwat has ensured that the majority of water companies achieve their leakage targets. However, a minority of water companies have failed to hit their targets on one or more occasions. Two water companies, Thames Water and United Utilities, have failed to achieve targets repeatedly. Of these, the most serious failings were by Thames Water.

9 Regulatory sanctions

Naming and shaming – applies to every company failing to achieve its leakage target. The failure is detailed in Ofwat's annual report 'Security of supply, leakage and water efficiency' and may also be highlighted in a separate press release.

Extra reporting – companies usually report their performance on leakage annually. However, Ofwat can require more regular reporting outside the annual system. This step has been taken against a number of water companies including Anglian, South East, Thames and United Utilities.

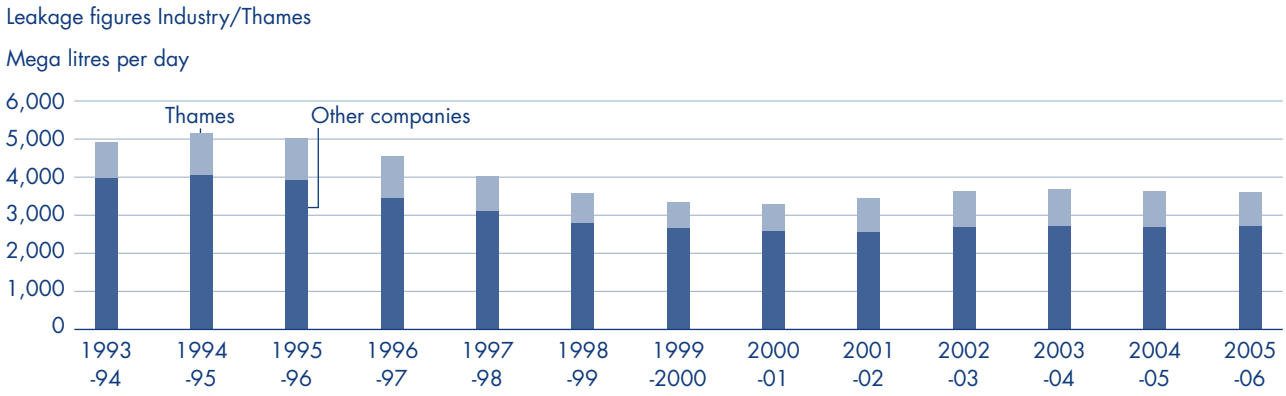
Investigations – involves detailed examination of a company's performance and data quality. For example, Severn Trent, Southern and Thames have been subject to investigations relating to customer service data.

Enforcement order – under the 1991 Water Industry Act enforcement orders can be made against companies. This major sanction has never been used.

Fines (power introduced 1 April 2005) – This is a relatively new power and has not yet been used although Ofwat has now published its intent to apply fines following recent investigations.

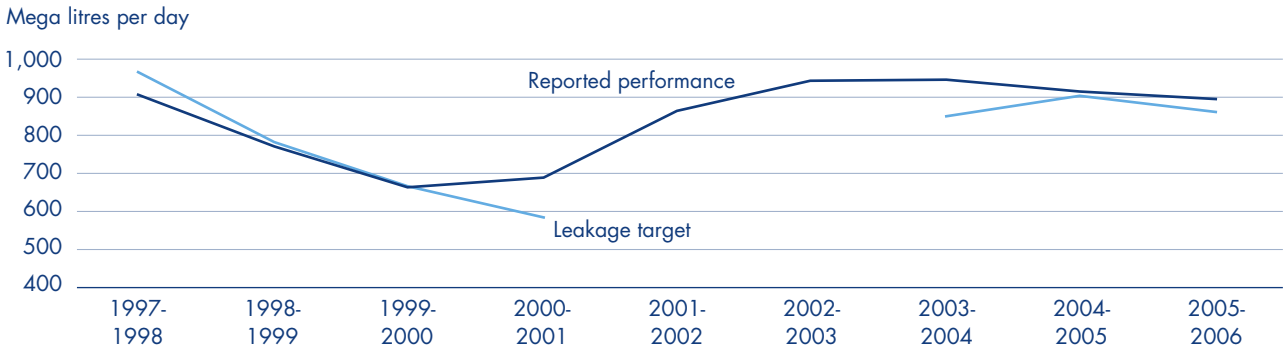
Source: Ofwat

10 Total industry leakage 1993-94 to 2005-06



Source: Ofwat

11 Thames Water leakage: target and performance



Source: Ofwat

Thames Water leakage performance

4.8 Thames Water has not managed to hit the annual leakage target set by Ofwat since 2000. Two factors that have contributed to poor performance are:

- Quality of Thames' leakage performance data: Targets had to be suspended by Ofwat in 2001-02 and 2002-03 due to the poor quality of the cost and economic data which Thames was collecting on its own performance; and
- Failure to use industry best practice to estimate leakage levels – Ofwat believes that Thames did not use industry best practice to estimate leakage and therefore underestimated the levels of leakage between 1999 and 2003.

4.9 After Thames Water failed to meet their 2005-06 target, Ofwat faced an important judgement. The maximum fine Ofwat could have imposed on Thames was £66.4 million, 10 per cent of relevant turnover. Thames' profit in 2005-06 was £347 million, so the fine would have represented about a fifth of its annual profit for that year. Ofwat decided instead to accept a legally binding undertaking under section 19 of the 1991 Water Industry Act which provides that:

- Thames will accelerate its programme of mains replacement. It will now be completed by 31 March 2009 rather than 31 March 2010;
- In addition, Thames will renew a further 368 km of pipes, at an estimated cost of £150 million. The cost of this programme will be funded by Thames' shareholders and not passed on to customers;
- Thames will improve its security of supply position to band A (no deficit against target headroom in any resource zone) by 31 March 2010 subject to approval of their proposed desalination plant;
- Thames leakage targets were amended **(see Figure 12)**.

Ofwat retains the ability to fine Thames if it breaches any of these requirements.

4.10 Fining Thames would have sent a clear message to the water companies that Ofwat intends to take a strong approach to licence breaches and to encourage water company shareholders to press for swift management action when leakage problems persist. However, by adopting the alternative solution of an undertaking, Ofwat has ensured that Thames addresses other issues of concern, such as its low security of supply, as well as tackling its leakage problems. The level of investment that Ofwat has secured is much higher than the fine that it could have levied so this agreement directly benefits consumers even after allowing for the slightly reduced leakage targets.

12 Thames Water's amended leakage targets

	2006-07	2007-08	2008-09	2009-10
Original (ML/d)	805	770	745	725
Amended (ML/d)	840	785	745	720

Source: Ofwat

APPENDIX ONE

Study Rationale

The recent dry winters of 2004-05 and 2005-06 have put pressure on water resources, particularly in the South East of England. During the summer of 2006 most water companies in the South East of England had hosepipe bans in force and three had been granted non-essential drought orders.[27] Ofwat calculates that in many areas, there is a risk that restrictions on water use are more likely to occur than has been promised by companies in their agreed levels of service (see Appendix 4 figure (d) for its security of supply table). In addition, Folkestone and Dover has been granted the ability to impose metering on all its customers as part of its long term water resource planning and in order to help it meet long-term customer demand.

Ofwat is responsible for setting the price limits that companies may charge customers for water and that the companies can fund their water resource plans. Furthermore in 2002 the Public Accounts Committee made a series of recommendations on Ofwat's approach to leakage and water efficiency, both key elements of managing the supply/demand balance. We therefore decided to examine Ofwat's processes for ensuring that companies manage the water supply/demand balance.

Study Scope and Audit Criteria

This report focuses on Ofwat's role in regulating the balance of supply and demand for water. We have focussed on the supply of water to domestic consumers rather than businesses. Consumers have no choice over their water provider and do not have the influence and buying power of businesses. The report examines Ofwat's performance and does not consider in detail the role of other organisations such as the Environment Agency although the Agency was consulted at all stages during production of the report. The NAO has reported previously on the efficiency of the Environment Agency's role in water resources management.[28]

The overall value for money of Ofwat's approach to regulating the supply/demand balance depends on the extent to which it secures future sustainable supply at the lowest cost to the consumer. To achieve this Ofwat needs to:

- collect robust and relevant information to underpin sustainable regulatory decisions (part 2);
- have a regulatory framework that incentivises water companies to meet future demands sustainably (part 3); and
- take appropriate enforcement action where companies are not responding to Ofwat's incentives (part 4).

We have evaluated Ofwat's approach against these three areas to determine value for money.

Methodology

The key elements of our study methodology are set out below:

Seeking the views of the water industry

We conducted a survey of all 22 principal water companies. The survey was completed by the most relevant individual in each water company, in most cases the regulation manager or water resources manager. The survey was designed to obtain the views of the industry on Ofwat's role in regulating each aspect of the supply/demand balance. Results of the survey are given at Appendix 6.

We carried out semi-structured interviews with the person responsible for regulation or asset management at all 22 principal water companies as well as at Cholderton Water, which has less than 1,000 domestic consumers, and Albion Water which has none. The purpose of these interviews was to explore in more detail companies' views on the regulation of the supply/demand balance.

We held a discussion session with several water companies at a meeting of Oxera's Water Regulation Group and presented to water companies at two Water UK seminars.

Seeking the views of Ofwat and other stakeholders

We conducted interviews with Ofwat and other key stakeholders involved in maintaining the balance of supply and demand of water, including:

- Environment Agency
- Consumer Council for Water
- Water UK
- UKWIR
- Water Saving Group
- Waterwise
- HM Treasury
- English Nature

Seeking the views of consumers

We liaised with the Consumer Council for Water as they carried out their *Using Water Wisely* research into consumer attitudes and perceptions to water, providing partial sponsorship for the two-part project:

- a quantitative survey of 2,000 consumers; and
- a qualitative deliberative forum to explore consumer perceptions and attitudes in depth.

A full report on the *Using Water Wisely* research can be found on the National Audit Office website (www.nao.org.uk).

Process mapping and data analysis

We mapped out the processes that Ofwat has in place to regulate the supply/demand balance. This work was carried out in conjunction with Ofwat through a series of workshops.

We reviewed copies of water companies' business plans, containing the investment plans for the period 2005-10, and water resource plans. We also examined the individual performance indicators Ofwat gathers for each company on measures such as leakage, per capita consumption and customer numbers.

Economic analysis

We commissioned Oxera economic consultants to conduct an analysis of Ofwat's framework for regulating the supply/demand balance, in particular the incentives on companies to meet long term water demands in the most efficient and sustainable way.

APPENDIX TWO

Conclusions and recommendations from the Committee of Public Accounts report, Ofwat: Leakage and Water Efficiency (HC 397– 4 January 2002)

This appendix details the conclusions and recommendations from the Committee of Public Accounts report. We have evaluated progress made by Ofwat since the report and included our findings in the boxes following each of the main recommendations – given in paragraph 4.

Office of Water Services (Ofwat): Leakage and Water Efficiency

Introduction and Summary of Conclusions and Recommendations

1 Reducing the level of leakage and promoting the efficient use of water by customers can reduce the costs of water companies and hence the charges paid by customers, for example by delaying the need to develop new sources of water supply. It can also help water companies maintain a safe margin between the demand for water and the amount they can supply, without damaging the environment.

2 The Office of Water Services (Ofwat) regulate the economic activities of the 22 principal water companies in England and Wales. Ofwat are responsible for enforcing the companies' duties to develop and maintain an efficient and economical system of water supply and in doing so they have a duty to seek to promote economy and efficiency on the part of water companies and to protect the interests of customers.

3 The importance of controlling leakage became apparent in 1995 when Yorkshire Water experienced severe difficulties in maintaining supplies to their customers in West Yorkshire. At that time, across England and Wales over 30 per cent of the water put into supply was being lost through leakage. In 1997 the Government stressed the importance of reducing leakage and promoting the efficient use of water by customers, and presented a ten-point plan which included the setting by Ofwat of mandatory leakage targets.

4 On the basis of a report by the Comptroller and Auditor General, we examined: the quality of information available to Ofwat to set leakage targets; Ofwat's success in securing reductions in leakage; how Ofwat take the environmental impact of leakage into account; and progress on encouraging the efficient use of water. Four main points emerge from our examination:

- **OFWAT focus on reducing leakage to the point where the costs of further reductions exceed the benefits (the economic level of leakage), but the information under-pinning this approach is imprecise and variable.** Estimates of the economic level of leakage used by Ofwat are set for companies as a whole, rather than on the basis of the zones within each company's area used to assess the adequacy of water resources. Company estimates of the long run marginal cost of supplying water, a key component of the estimated economic level of leakage, vary considerably. Ofwat should examine with companies how estimates of leakage and the economic level of leakage can be made with more consistency and precision.

Ofwat produced a tripartite report with Defra and the Environment Agency in 2002 which included guidance on costing the economic level of leakage.

- **In any event, most companies have still not achieved their economic level of leakage.** Leakage has fallen by a third since 1995, and the risk to customer supplies has fallen too. Some companies have reduced leakage to what Ofwat accepts is the economic level. But 18 of 22 water companies have not reached their estimated economic levels of leakage. And several of the companies with the highest levels of leakage, notably Thames Water, operate in areas where water is in potentially short supply. Ofwat should press such companies to fulfil their duties to customers by reducing leakage.

Most companies have reached their economic level of leakage. Ofwat has used its enforcement powers against Thames Water for missing its leakage targets.

- **Where reducing leakage would enable environmental damage to be reduced Ofwat should consider setting companies targets below their economic level of leakage.** Leakage increases the amount that needs to be put into supply and hence can be environmentally damaging, for instance because rivers dry up or reservoirs have to be built. Ofwat have not set targets below the estimated economic level of leakage, although these estimated levels do not take environmental impacts fully into account. Ofwat should consider, in consultation with the Environment Agency, the case for setting lower leakage targets where this can be justified to protect the environment.

Ofwat has worked with Defra and the Environment Agency to produce guidance on including sustainability costs in the economic level of leakage calculation. Some water companies have found this exercise challenging and Ofwat and the Environment Agency have embarked on a further review.

- **Ofwat should identify which water efficiency measures are the most effective in helping customers waste less water, and share this information with water companies.** Customers, such as schools, who pay for the amount of water they use can obtain substantial benefits by wasting less water. Although reducing waste can benefit all customers in areas where water is in short supply, the cost effectiveness of individual measures to improve the efficient use of water such as fitting cistern devices is uncertain, and guidance supplied by water companies to their customers is variable. Ofwat should take the lead in identifying which measures are the most cost-effective, and do most to encourage water companies to act on their findings.

Despite work undertaken to date, Ofwat still has progress to make to achieve this recommendation. Detailed comments are contained in part 2 of this National Audit Office report.

APPENDIX THREE

Water Industry Stakeholders

This section provides key information on the main organisations responsible for policy and regulation in the water industry:

- Ofwat
- Environment Agency
- Drinking Water Inspectorate
- The Consumer Council for Water
- Defra and Welsh Assembly Government
- Water Saving Group
- Water companies

Water Services Regulation Authority (Ofwat)

Resource Information:

2005-06 Expenditure	£10,571,000
2005-06 Average number of staff	188

Relevant legislation:

Section 2 of the Water Industry Act 1991 as updated by section 39 of the Water Act 2003.

Main duties:

- protect the interests of consumers, wherever appropriate by promoting effective competition;
- secure that the functions of each water company are properly carried out and that they are able to finance their functions; and
- secure that companies with water supply licences properly carry out their functions.

Other duties:

- promote economy and efficiency by companies in their work;
- secure that no undue preference or discrimination is shown by companies in fixing charges;
- secure that consumers' interests are protected where companies sell land;
- ensure that consumers' interests are protected in relation to any unregulated activities of companies;
- contribute to the achievement of sustainable development; and
- have regard to the principles of best regulatory practice.

The Environment Agency

Main duties: (with respect to water resources)

- Protect the water environment and habitats
- Grant abstraction licences which control:
  - who can abstract water;
  - where it can be abstracted from; and
  - how much can be abstracted.
- Maintaining and improving the quality of fresh, marine, surface and underground water in the UK.

Interaction with Ofwat

- To ensure that water companies meet the demand for water, Ofwat works alongside its principal partner, the Environment Agency (EA). The EA has statutory responsibility for water resource planning. Its aim is to ensure that there is enough water for people to use, and that this water is taken in a way that prevents long-term environmental damage. The EA is responsible for making sure water companies have long-term water resource plans that will enable this. The EA also manages water resources through abstraction licences, which regulate abstractions from sources including rivers, lakes, canals and underground aquifers so as to minimise damage to the environment.

Drinking Water Inspectorate

Main duties:

- Checks that the water companies in England and Wales supply water that is safe to drink and meets the standards set in the Water Quality Regulations. Inspections through technical audits of each water company. These audits have two main parts:
  - an annual assessment of the quality of drinking water supplied by the companies; and
  - inspections of the individual companies.
- Investigates complaints from consumers and incidents which affect or could affect drinking water quality. Investigations of incidents can lead to water companies being prosecuted.

The Consumer Council for Water

Main duties:

- Represents water and sewerage consumers in England and Wales, including:
  - providing advice and information to and about consumers; and
  - handling and investigating consumer complaints about water and sewerage companies and investigating other matters of interest to consumers.

Department for Environment, Food and Rural Affairs (Defra) and the Welsh Assembly Government

- Defra is responsible for all aspects of water policy in England, including water supply and resources, and the regulatory systems for the water environment and the water industry. In Wales these responsibilities lie with the Welsh Assembly Government.
- Defra has a main aim of sustainable development.

Water Saving Group

A stakeholder group run by Defra with a two year remit to design a practical programme of measures to promote the efficient use of water in households. The two year action plan is given overleaf.

Water companies

The Water Industry Act specifies the following:

- Section 37 – Every water supplier must develop and maintain an efficient and economical system of water supply in its area;
- Section 52 – The water supplier must provide a supply of wholesome water sufficient for domestic purposes; and
- Section 55 – The water supplier must provide a supply of water.

The Environment Act specifies:

- Schedule 22, Section 102 – It shall be the duty of every water undertaker to promote the efficient use of water by its customers.

Water Saving Group two year action plan

Work stream	Lead body	Actions	Progress
Measuring Success	Environment Agency	■ Identify water stressed areas ■ Make recommendations on measures of success for water efficiency initiatives	■ Will carry out public consultation on a water scarcity map of England (underway) ■ Work on establishing measures of success will be undertaken with the help of consultants in 2007
Information needs: gaps, priorities and funding	Waterwise	■ Build a database of UK and international water efficiency projects ■ Identify information gaps and design pilot projects to fill the gaps	■ Database being compiled ■ Encouraging companies to undertake pilot water efficiency projects
Best practice in water company promotion of water efficiency: identifying it and applying it.	Ofwat	■ Produce a good practice register of water efficiency projects ■ Develop incentives for companies to improve the promotion of water efficiency	■ 'Good practice register – water efficiency' published alongside security of supply report (November 2006) ■ Infrastructure charges working group set up to consider the potential of incentivising housing developers to install water efficiency in new developments ■ Work on developing incentives to be taken forward with the Environment Agency, Waterwise and Defra in 2007
Understanding and changing customer perceptions and raising awareness	Consumer Council for Water	■ Carry out research into consumer attitudes to water ■ Use research to educate consumers and update and improve current sources of information and advice	■ High level findings from both quantitative and qualitative research available ■ 'Using Water Wisely' reports published in November 2006
Policy and Regulatory Framework	Defra and DCLG	■ Take forward targeted action for increasing metering in water stressed areas, and improve the understanding and delivery of metering generally ■ Pursue options for introducing a product labelling scheme ■ Promote water efficiency of new buildings and developments	■ In short term, working to streamline the process for applying for water scarcity status; waiting for agreement on definition of water scarce areas before proceeding ■ Will consult on allowing applications to seek compulsory customer metering to be embedded in water companies' 25-year water resource plans if their area is identified as seriously water stressed ■ Currently consulting on base water efficiency requirements in the Code for Sustainable Homes and Part G of the Building Regulations ■ Working on Regulatory Impact Assessment for a labelling scheme

APPENDIX FOUR

Individual company performance information

This appendix provides comparative information on the 22 principal water companies in England and Wales. Albion Water and Cholderton & District Water are excluded due to lack of comparability. (Cholderton & District serves less than 1,000 domestic customers, and Albion Water currently has no domestic customers at all.) Essex and Suffolk Water is part of Northumbrian, after a merger in 2000. However, where relevant we have chosen to show their data separately. The appendix gives information on:

- Domestic customer base
- Average water bill
- Per capita consumption estimates
- Security of Supply
- Leakage figures

a) Size of Water Company's Domestic Customer Base 2005-06 (greatest number of households first)

Company	Households billed for water	Percentage of industry total
Thames	3,221,331	14.9
Severn Trent	3,055,428	14.1
United Utilities	2,756,620	12.7
Yorkshire	1,896,796	8.7
Anglian	1,831,442	8.4
Northumbrian (including Essex & Suffolk)	1,733,004	8.0
Dŵr Cymru	1,181,990	5.5
Three Valleys	1,166,914	5.4
Southern	938,529	4.3
South West	656,986	3.0
South East	549,858	2.5
South Staffs	500,197	2.3
Wessex	484,951	2.2
Bristol	443,069	2.0
Portsmouth	272,468	1.3
Sutton & East Surrey	248,230	1.1
Mid Kent	220,492	1.0
Bournemouth & West Hampshire	173,430	0.8
Cambridge	111,511	0.5
Dee Valley	105,596	0.5
Folkestone & Dover	66,473	0.3
Tendring Hundred	66,001	0.3
Industry total	**21,681,316**	**100.0**

Source: Ofwat

b) Average water bill prices for water services[29] by company 2005-06 and 2006-07 (highest 2005-06 bills first)

Company	Average bill 2005-06 (£)	Average bill 2006-07 (£)	Bill increase (£)	Percentage bill increase
Tendring Hundred	164.57	166.82	2.25	1.36
Folkestone & Dover	154.92	166.48	11.56	7.46
South East	153.62	160.22	6.60	4.30
Thames	152.68	161.33	8.65	5.67
South West	149.69	169.04	19.35	12.92
Mid Kent	146.82	151.61	4.79	3.27
Sutton & East Surrey	143.38	148.69	5.31	3.71
Wessex	143.31	159.45	16.14	11.27
Northumbrian – Essex & Suffolk	143.19	151.87	8.68	6.06
Dŵr Cymru	140.80	146.46	5.66	4.02
Three Valleys	140.30	145.31	5.01	3.57
United Utilities	135.70	145.60	9.90	7.30
Anglian	135.26	139.89	4.63	3.42
Severn Trent	129.25	135.06	5.81	4.49
Bristol	128.98	135.39	6.41	4.97
Bournemouth & West Hampshire	128.51	132.49	3.98	3.09
Yorkshire	126.40	134.47	8.07	6.38
Dee Valley	114.31	114.03	-0.28	-0.24
Northumbrian – North East	111.14	117.74	6.60	5.95
Southern	106.14	112.46	6.32	5.95
Cambridge	103.73	106.04	2.31	2.22
South Staffs	101.28	106.38	5.10	5.04
Portsmouth	79.06	80.34	1.28	1.62
Industry average	**134.20**	**141.69**	**7.49**	**5.58**

Source: Ofwat

c) Company per capita consumption estimates 2005-06 (highest average household consumption first)

Company	Average household (l/head/day)	Unmeasured household (l/head/day)	Metered household (l/head/day)	Unmeasured to measured range (l/head/day)
Three Valleys	177	182	158	24
Sutton & East Surrey	171	177	143	34
South East	166	166	166	0
Mid Kent	165	174	143	31
Thames	164	167	154	13
Portsmouth	160	161	149	12
Northumbrian – Essex & Suffolk	160	163	151	12
Bournemouth & West Hampshire	158	159	155	4
Bristol	155	162	130	32
South West	154	165	139	26
Folkestone & Dover	153	162	139	23
Southern	153	157	139	18
Wessex	151	157	136	21
Dŵr Cymru	150	154	129	25
South Staffordshire	148	152	127	25
Cambridge	148	154	141	13
Northumbrian – North East	148	148	143	5
Dee Valley	146	159	118	41
Yorkshire	145	148	134	14
Anglian	144	160	128	32
United Utilities	142	144	132	12
Severn Trent	132	137	118	19
Tendring Hundred	124	135	116	19
Industry average	**151**	**155**	**136**	**19**

Source: Ofwat

NOTES

1 The figures above use daily estimations on an average household.

2 The difference in average consumption between the highest and lowest estimate is 53 litres per household per day – across the year this suggests that companies are estimating a difference of 19,345 litres in consumption depending on the area of the country.

3 On the basis of the Industry average, an unmetered household is estimated to utilise 6,935 more litres per year, than a metered one.

4 The widest variation in estimation between unmetered and metered household is 41 l/ph/pd – 14,965 litres per person per year.

5 Figures exclude underground supply pipe leakage.

d) Security of Supply Index scores 2005-06

Company	Security of Supply Index for planned levels of service	Security of Supply Index for reference levels of service	Rank[1]	Change in banding since 2004-05
United Utilities	A	A	1	=
Northumbrian – North East	A	A	1	=
Wessex	A	A	1	=
Yorkshire	A	A	1	=
Bournemouth & West Hampshire	A	A	1	=
Bristol	A	A	1	=
Cambridge	A	A	1	=
Dee Valley	A	A	1	=
Mid Kent	A	A	1	↑
Portsmouth	A	A	1	=
South Staffs	A	A	1	=
Sutton & East Surrey	A	A	1	=
Tendring Hundred	A	A	1	=
Three Valleys	B	A	14	=
South West	B	B	15	=
Anglian	B	B	16	=
South East	B	B	17	=
Northumbrian – Essex and Suffolk	C	C	18	↓
Severn Trent	C	C	19	=
Dŵr Cymru	C	C	20	=
Southern	C	C	21	=
Thames	D	D	22	=
Folkestone & Dover	D	D	23	=

Band	Number of companies
Band **A** = No deficit in any zone	13
Band **B** = Marginal deficit	4
Band **C** = Significant deficit	4
Band **D** = Large deficit	2

Source: Ofwat's 2005-06 'Security of supply, leakage and water efficiency' report

NOTE

1 Rank is based on planned levels of service.

e) Leakage figures by company (highest 2005-06 total leakage level first)

Company	2003-04 (Mega litres per day)	2004-05 (Mega litres per day)	2005-06 (Mega litres per day)
Thames	946	915	862
Severn Trent	512	502	542
United Utilities	479	500	477
Yorkshire	295	293	297
Dŵr Cymru	231	226	224
Anglian	216	214	214
Northumbrian – North East	160	155	157
Three Valleys	152	149	149
Southern	92	92	93
South West	84	83	84
South Staffs	71	74	73
Wessex	75	73	73
South East Water	69	69	69
Northumbrian – Essex & Suffolk	70	67	67
Bristol	53	53	53
Portsmouth	30	30	30
Mid Kent	30	29	28
Sutton & East Surrey	24	24	24
Bournemouth & West Hampshire	22	22	22
Cambridge	14	14	14
Dee Valley	10	11	11
Folkestone & Dover	8	8	8
Tendring Hundred	5	5	5
Industry total	**3,649**	**3,608**	**3,576**

Source: Ofwat

APPENDIX FIVE

Ofwat action on Thames Water leakage levels

The table below sets out Thames Water's annual performance on leakage since 1997 and Ofwat's response.

Year	Thames' estimate of leakage level (Mega litres per day (Ml))	Was target hit?	Ofwat's response
1997-98	906	Yes, by 60Ml	■ None as target achieved
1998-99	770	Yes, by 11Ml	■ Thames praised for large reduction in reported leakage
1999-00	662	Yes, by 3Ml	■ Despite Thames' large reduction in reported leakage, Ofwat express concern about the methods used. Thames was not using best practice. ■ Ofwat and Thames agree that the company will revise its methodology and that an investigation will be carried out into high leakage levels
2000-01	688	No, missed by 103Ml	■ Ofwat expresses concern that the leakage figure appears to be rising and that 191 mega litres per day (7.2 per cent of water put into supply) cannot be accounted for. ■ Ofwat states that Thames leakage levels are being underestimated – 832 mega litres per day is a better estimate. ■ Thames and Ofwat agree that a further investigation should be carried out into leakage levels. ■ Ofwat set out an action plan for Thames in which they should:- ■ Develop a robust Economic Level of Leakage (ELL) assessment ■ Achieve ELL by 2003-04 ■ Establish a robust water balance ■ Ofwat and Thames also agree that Thames should increase the level of district metering which allows leakage to be identified and located more quickly.

Year	Thames' estimate of leakage level (Million litres per day (Ml))	Was target hit?	Ofwat's response
2001-02	865	Targets suspended because Thames data quality is too unreliable	■ Ofwat again expresses concern that actual leakage is increasing, even after taking into account the increase in the reported estimate caused by an improved water balance and a better methodology being used for the calculation. ■ Ofwat reject the idea of taking enforcement action as 'the plans Thames Water has in place and the actions it is taking can deliver the improvements needed'
2002-03	943	Targets suspended because Thames data quality is too unreliable	■ Ofwat state that although leakage figures have risen again, Ofwat expect that 2002-03 will be the last year of rises.
2003-04	946	No, missed by 96Ml	■ Ofwat find that Thames has been carrying out fewer repairs than in previous years and state that it is not satisfied that Thames are doing all it can to reduce leakage. ■ Ofwat agrees with Thames that the company should commit to completing 60 per cent more repairs in 2004 than in 2003 and demonstrate that it has reduced the backlog of repairs.
2004-05	915	No, missed by 10Ml	■ Ofwat acknowledge that leakage has fallen for the first time in five years – but Thames has still missed its target. ■ Ofwat believes the failure is partly due to Thames failing to maintain a high rate of detection and repair for the entire period. ■ In December 2004, Ofwat included annual leakage targets for the period 2005-10 in its final determinations. This is the first time specific targets had been included as price review outputs.
2005-06	895	No, missed by 35Ml	■ On 1st April 2005 Ofwat gained the power to impose a financial penalty where a company contravenes its licence conditions. ■ In response to Thames' failure to meet their leakage target again, Ofwat secure a legally binding undertaking from Thames to replace additional leaking water mains at the expense of its shareholders. ■ Thames' investment will be £150 million, and will be met by the shareholders. Thames's profit for that year was £347 million, and the maximum fine that Ofwat could have charged is £66.4 million (10 per cent of relevant turnover). ■ Ofwat monitors Thames' compliance with its undertaking through a process of quarterly reports (quarterly reports are required by Ofwat where there are concerns over a company's leakage performance and/or reporting. Thames has provided quarterly reports to Ofwat since May 1997).

APPENDIX SIX

Results of the NAO Survey of Water Companies

Over the three months between July and September 2006, we conducted a survey of the 22 principal water companies.[30] Companies chose not to respond to all questions, resulting in some answers having less than 22 responses.

Does the current price review process allow your company sufficient certainty for optimal management of the supply and demand balance?

Yes	No
15	6

The companies are generally happy with the current price review process.

However one fifth of companies indicated that they were unhappy with the current system. Companies were then able further to clarify their response in this area. Ten of the respondents identified problems in funding long-term capital projects – for example the construction of a reservoir, which may span multiple price reviews.

We then sought further information in relation to individual methodologies used to calculate the supply/demand balance.

Is the methodology for assessing the following robust?

	Yes	No
Leakage	17	5
Economic Level of Leakage	15	6
Per Capita Consumption	18	4

The companies believe that the methodology for calculating information is robust.

As with the companies' views on the price review period, the majority of companies believe that Ofwat has adopted robust methodologies. However eight companies commented that the assumptions used when applying the methodology were uncertain and estimates were not calculated consistently across the industry.

How effective are current tariff arrangements in helping to manage the supply/demand balance?

Very effective	Fairly effective	Not very effective	Ineffective
0	5	10	7

Companies believe current tariffs are ineffective in controlling demand, and believe more research will be required.

In general companies identified that the absence of metering, coupled with a low price for water, prevented the current tariff structure from affecting demand. In subsequent questions they suggested seasonal tariffs would affect demand, but that more research was required to support such an assertion.

	Yes	No
Would volumetric-based or seasonal/peak tariffs be useful in managing demand for water?	18	3
Do you consider there is sufficient research to assess impact on demand of alternative metered charging structures?	7	15

Do you feel that a hosepipe ban is effective in reducing domestic consumption?

Effective	Not effective
18	3

Companies believe hosepipe bans to be an effective measure in curbing demand.

We asked companies to give an estimate of the effectiveness of hosepipe bans in reducing customers' demand for water. The range of estimates was between 3–10 per cent during peak periods. They also suggested that the benefits and impacts of a ban are hard to separate from the effect of increased publicity that hosepipe bans attract.

How effective has Ofwat been in enabling water companies to fulfil their duty to promote water efficiency?

Very effective	Fairly effective	Not very effective	Ineffective
0	6	14	2

Does Ofwat's regulation of supply & demand demonstrate strong understanding of consumer attitudes to water?

Very strong	Fairly strong	Fairly weak	Very weak
0	13	8	1

Companies feel that whilst Ofwat has demonstrated a strong understanding of customer attitudes towards water, they have not assisted companies in promoting water efficiency.

In commenting further on Ofwat's perceived ineffectiveness to enable companies to fulfil their duty to promote water efficiency, 10 companies cited confusion over Ofwat's approach to funding water efficiency projects. Other common comments included uncertainty over the potential savings from water efficiency projects.

Thinking about supply/demand balance solutions

	Yes	No
Does the regulatory regime provide equal incentives for CAPEX-based and OPEX-based water resource solutions?	9	13
Do you consider you are adequately incentivised through the regulatory regime to maintain your network?	10	12
Do any aspects of the methodology create weak or perverse incentives for you to maintain your network?	7	14
Would a revenue cap rather than a price cap better incentivise your management of water resources?	7	15

The incentives put in place by Ofwat may be imbalanced and opinion is split within the industry as to their effectiveness. This reduces regulatory certainty, and weakens the overall supply/demand methodology.

The companies were relatively closely split over their opinion on incentives held within the overall price review structure.

ENDNOTES

1 Consumer Council for Water, Using Water Wisely, 2006. Available at www.nao.org.uk and www.ccwater.org.uk.

2 Throughout this report, we focus on the 22 largest water companies. We have therefore not included in our detailed analysis Cholderton Water, which has less than 1,000 domestic consumers, and Albion Water, which has none.

3 The Water Industry Act specifies the following: Section 37 – Every water supplier must develop and maintain an efficient and economical system of water supply in its area; Section 52 – The water supplier must provide a supply of wholesome water sufficient for domestic purposes; Section 55 – The water supplier must provide a supply of water. The Environment Act also requires water companies to promote the efficient use of water by their customers.

4 Ofwat, 'Contributing to Sustainable Development – a Consultation on Ofwat's Approach', and – 'A Sustainable Water Industry – To PR09 and beyond', 2006.

5 HM Treasury, 'Stern Review on the Economics of Climate Change', 2006.

6 Ofwat and the Environment Agency are currently working on revised guidance for companies' water resource planning – which includes revised and updated guidance on incorporating climate change scenarios.

7 Mid Kent, Southern, and Sutton and East Surrey had been granted a drought order for non-essential use.

8 House of Lords Select Committee on Science and Technology, Eighth Report: Water Management (HL 191-I, 2005-6).

9 Institute for Public Policy Research, 'Every Drop Counts', 2006.

10 In the absence of full metering, consumption data cannot be reliable. Ofwat therefore requires companies to make assumptions and to test them including reconciling these figures where they are based on alternative assumptions.

11 The DTI are currently running a project to establish best practice in using water meters to measure water flows.

12 Committee of Public Accounts, 'Ofwat: Leakage and Water Efficiency' (HC 397, 2001-2).

13 The latest research (UKWIR, 'Best practice for unmeasured per capita consumption monitors', 1999) estimates that some 60 per cent of the difference between the unmeasured household consumption in different areas is due to socio-economic factors.

14 The 2004 Periodic Review: Research into customers views, MORI, August 2002. This research was sponsored by a cross industry stakeholder group (Defra, Welsh Assembly Government, WaterVoice, Water UK, EA, DWI, English Nature, Wildlife & Countryside Link).

15 Consumer Council for Water, Using Water Wisely, 2006. Available at www.nao.org.uk and www.ccwater.org.uk.

16 UK Water Industry Research – a body that facilitates collaborative research for UK water operators.

17 UKWIR, Critical Review of Relevant Research Concerning the Effects of Charging and Collection Methods on Water Demand, Different Customer Groups and Debt (05/CU/02/1).

18 Ofwat's good practice register of water efficiency initiatives includes cistern displacement devices; household water audits; commercial water audits; customer education/awareness; metering; water butts/composters/trigger hoses; toilet retrofitting - dual/variable/low flush; collabortive research and development; supply pipe repair/replacement and other water efficiency projects such as Cambridge Water setting up an online shop for consumers to purchase water efficient devices. (Water efficiency initiatives: good practice register 2006, www.ofwat.gov.uk).

19 Committee of Public Accounts, 'Ofwat: Leakage and Water Efficiency' (HC 397, 2001-2).

20 By low confidence we mean a reliability rating of C or D (on a scale of A to D where A is the highest) and an accuracy rating of 4 or below. June Returns, Ofwat.

21 Average household consumption in the Sydney Water area is currently double the estimated average household consumption in England and Wales.

22 Other members of the group include Defra, English Nature, and the Environment Agency, as well as many of the region's water companies.

23 Ofwat and the Environment Agency are currently procuring a contractor to examine how companies can improve the calculation of environmental and social costs and benefits for inclusion in the ELL.

24 Companies can also install compulsory meters in all new properties, on change of ownership and where water is used in significant quantities for discretionary use such as garden watering.

25 Thames Water described the response from their customers as being 'magnificent'.

26 The Water Industry Act 1991 gave Ofwat the power to revoke a water company's licence.

27 Mid Kent, Southern, and Sutton and East Surrey had been granted a drought order for non-essential use.

28 National Audit Office: Efficiency in water resource management, HC 73 2005-06, 17 June 2005.

29 A customer's bill is made up of a water element and a sewerage element, which are calculated separately. As such the table presented here focuses on the water element of the average customer bill.

30 We have excluded Cholderton and District Water Company on the basis that with a low level of domestic customers, less than 1,000, it represents an exceptional case.

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