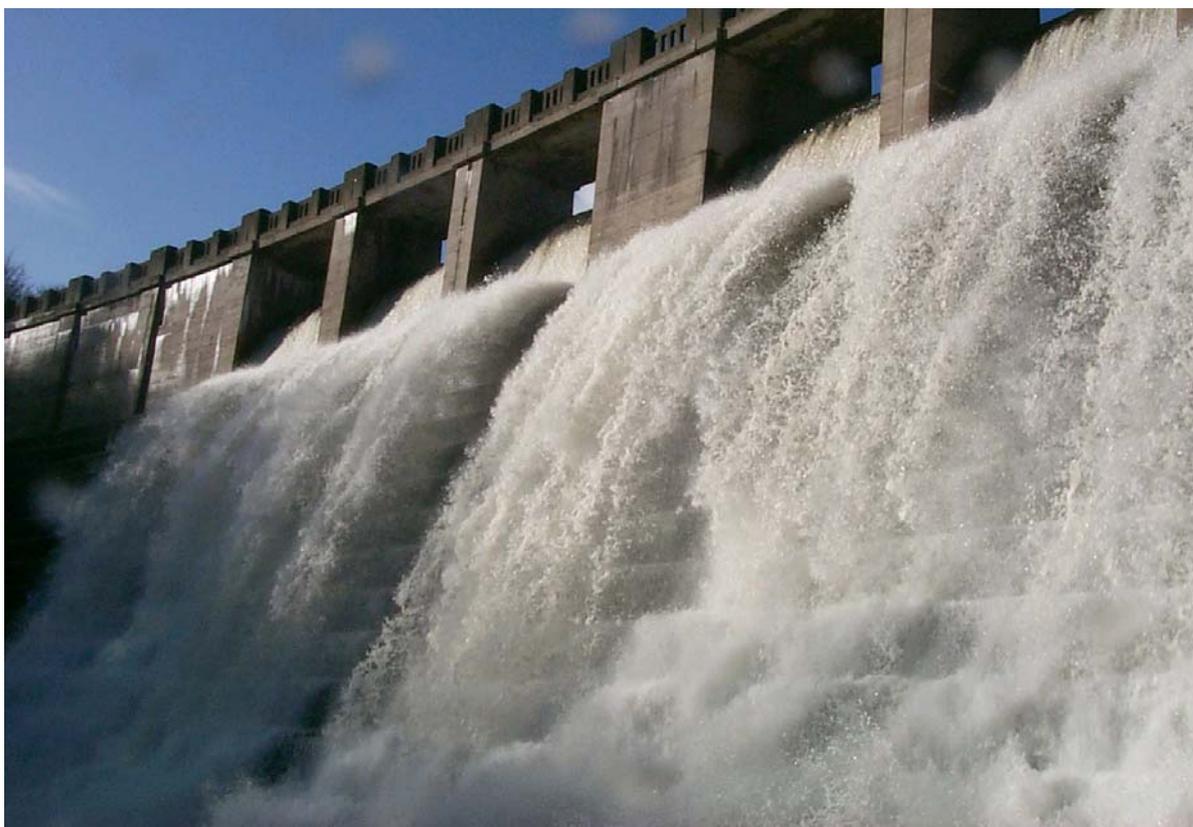


THE DEVELOPMENT OF THE WATER INDUSTRY IN ENGLAND AND WALES



Cover photograph: Ryburn Dam, Yorkshire. Courtesy of Yorkshire Water Services Limited.

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1. OVERVIEW

England and Wales benefits from an efficient and effective water and sewerage industry. Virtually every household has a continuous supply of piped water of very high quality and connection to a mains sewerage system. Environmental standards are high with river and coastal water quality showing significant improvements over recent years.

The industry's development path can be traced to the beginnings of the early nineteenth century. It has been shaped by the industrial revolution, urbanisation, increasing demand driven by economic development and ever higher environmental standards.

This paper describes the development of water and sewerage services in England and Wales¹ and attempts to avoid bias. It explains the key structural developments in England and Wales over the last sixty years and explains the roles of government, companies, regulators and other authorities. It draws on the case study of the Yorkshire Water Authority and subsequently Yorkshire Water Services where possible.

1.1 GOVERNMENT POLICY

Government policy is delivered through Acts of Parliament, associated secondary legislation and through guidance to regulators since privatisation. This is then enforced by the legal system. For this reason, the development of the water and sewerage industry through the second half of the twentieth century appears as a succession of various Acts.

This evolutionary approach, which builds on existing legislation has had a significant effect on the water and sewerage industry today and helps to explain the current structure, which is very much a product of the past.

1.2 EARLY CONSOLIDATION

The water industry was highly fragmented in the period up to and after the Second World War. Development of the industry had been largely in response to a growing population and increasing demand for water driven by the industrial revolution and accompanying economic growth.

In 1945 there were more than 1,000 bodies involved in the supply of water and around 1,400 bodies responsible for sewerage and sewage disposal. Most of these were local authorities. Planning for water resources was a highly localised activity with little co-ordination at either a regional or national level.

¹ Provision of water and sewerage services in Scotland has followed a different development path and this is outside the scope of this paper.

The focus of post-war legislation had two main aims. Firstly, to consolidate the local authority undertakings to enable each supplier to benefit from improved arrangements for the supply of water and secondly, to make provision for public investment to extend the water and sanitation services to rural communities.

The Water Resources Act 1963 led to further changes in response to a severe drought in 1959 and flooding events in 1960. It recognised the importance of a co-ordinated approach to water resource planning and introduced an administration system for abstraction permits. This was intended to ensure adequate conservation of existing and future water resources.

1.3 RESTRUCTURING

In the late 1960s and early 1970s the continued problems with planning of water resources and forecasts of future demands prompted a more far-reaching restructuring of the industry. The Water Act 1973 established 10 new regional water authorities that would manage water resources and the supply of water and sewerage services on a fully integrated basis.

The Water Act 1973 required the regional water authorities to operate on a cost recovery basis, with capital to meet investment requirements raised by borrowing from central government and revenue from services provided. Central government set financial constraints and performance aims for each authority.

In retrospect, the tight fiscal controls applied by central government in the 1970s and 1980s, due, largely, to instability in the wider economy and the high levels of debt inherited by the water authorities, led to insufficient expenditure to meet the capital maintenance and investment requirements of the industry. The resulting problems which were particularly evident in the 1980s, became progressively more unacceptable to the public given their heightened environmental awareness and increasingly stringent European legislation.

In response, the government introduced some changes through the Water Act 1983. This led to some constitutional changes, reduced the role of local government in decision making and gave the authorities scope to access the private capital markets.

In practice these changes failed to deliver the requirements for the necessary capital investment programme and a significant number of pollution incidents continued to occur. With the government unwilling to provide any additional public finance to meet the demand for capital investment, and with the privatisation of other public services underway, government concluded that privatisation of the industry was a viable outcome.

1.4 PRIVATISATION

The industry was privatised in 1989, after initial plans were put on hold in 1986. Technically, this involved the transfer of assets and personnel of the 10 water authorities into limited companies. This was accompanied by the raising of capital by floating the companies on the London Stock Exchange, a one-off injection of public capital, the write off of significant government debt and the provision of capital tax allowances.

To ensure the interests of customers and the environment were secured, privatisation led to further restructuring by separating the roles of regulation and provision of water and sewerage services. It established three separate, independent bodies to regulate the activities of the water and sewerage companies. These were; the National Rivers Authority (now succeeded by the Environment Agency), the Drinking Water Inspectorate and the Office of Water Services.

1.5 THE INDUSTRY TODAY

Today, almost everyone in England and Wales receives their water and sewerage services from the ten water and sewerage companies and 13 water only companies. The water and sewerage industry is regarded by most independent observers as efficient and well managed. In the 15 years since privatisation, water and sewerage companies in England and Wales have invested around £50 billion to catch up for past under-investment and meet new obligations. To finance this, customers' bills have increased, on average, by 35% in real terms since privatisation to 2005-06.

The independence of the regulators has allowed the water and sewerage industry to deliver their obligations free from political interference and has created a stable operating environment for investors. Incentives brought about by economic regulation have led to an industry that is very much more efficient. Significant improvements in data quality have allowed companies to target expenditure where it is most needed.

The water and sewerage companies have been effective in delivering significant improvements to customer service. Substantial improvements have been made to the quality of drinking water, rivers and bathing water. Performance indicators across a wide range of measures are now at an all-time high.

Whilst this paper explains the significant achievements of the last fifteen years, much has still to be achieved. Price limits set in 2004 include provision for a £16.8 billion capital investment programme to deliver environmental and service improvements and maintain existing systems in the five years 2005-10. Companies must deliver specified outputs whilst continuing to deliver efficiencies that benefit customers.

The Water Industry Act 2003 has now established the Consumer Council for Water. The Act has extended the potential for competition within the industry and will replace the role of the single Director General of Ofwat with a board structure under the Water Services Regulation Authority from April 2006. Future challenges which include the Water Framework Directive, climate change and long term water resources will require the industry to continue to innovate to deliver efficient services to customers.

2. INITIAL CO-ORDINATION OF WATER RESOURCES IN ENGLAND AND WALES

2.1 INTRODUCTION

The management of water resources, the control of flooding, the supply of water and the treatment of sewage was largely an uncoordinated activity in England and Wales in the early and mid-twentieth century. There were a significant number of bodies involved in the management of lakes, reservoirs and rivers, the public supply of water and the provision of sewerage and sewage disposal. In addition, there were substantial abstractions of water for electricity generation, industry and agriculture.

2.1.1 Water supply

By the mid-twentieth century, England and Wales were already notable for having piped water supplies available to a high proportion of the population for human consumption. By 1944, 70% of rural households and nearly 100% of urban households in England and Wales had piped water supplies.

In recognition of the disparity in the cost of construction of distribution mains and sewers in rural areas compared to urban areas, the Rural Water Supplies and Sewerage Act 1944 encouraged the extension of water and sewerage services to existing properties in rural communities. This put in place a mechanism for government to grant extensions of the networks and increased the number of rural households with access to piped water to 80% by 1951².

Water suppliers were split into three types, each with different characteristics:

- Local authority undertakers³ – these were divisions of local authorities, including county borough councils, borough councils, urban district councils and rural district councils⁴. Local authorities were responsible for funding requirements and were able to determine whether expenditure should be spent on water services or allocated to other expenditure requirements of the local authority budget. In 1945 there were more than 1,000 local authority undertakings⁵. There was a significant need for water transfers between local authorities. The terms of these bulk supply arrangements required approval by central government.

² Kinnersley, 1988

³ An undertaker or undertaking refers to the body with responsibility under statute to carry out the functions of water supply and in the case of a sewerage undertaking to provide a sewerage network and disposal of sewage for a specific region.

⁴ There were and remain a number of different types of local authorities or councils that serve specific regions in England and Wales. The different terminology relates to the nature of the region that the local governing authority serves.

⁵ Department of the Environment, 1971a

- Joint (water) boards – These were formed from the merger of a number of local authority undertakings as a result of implementation of the Water Act 1945. The 1945 Act encouraged local authority undertakings to merge to form joint boards to benefit from improved arrangements for the supply of water across local authority boundaries. Membership of the board was appointed by councils and usually consisted of two or three chief officers with financial or engineering expertise.
- Statutory water companies – These were private companies, usually formed by local businessmen, with share capital, incorporated under individual Acts of Parliament. Most dated from the middle of the 19th Century and included, for example, York Waterworks, which was acquired by Yorkshire Water in 2000. Statutory water companies generally included a board of up to six staff. They were restricted by central government on the rate of dividend payable to shareholders, the amount they could borrow and the amount of profit they were permitted to retain.

The 1945 Act provided all water suppliers with statutory powers to provide a water supply for domestic purposes and granted them powers to construct necessary works.

2.1.2 Sewerage and sewage disposal

Industrialisation in the 19th century was the major reason for improvements to sewerage and sewage disposal to meet the basic requirements of public health. The Public Health Act of 1875 included parts on the provision of sanitation services and water pollution and reinforced the requirement for local authorities to be responsible for the construction of sewers and drainage systems. The 1875 Act underwent a number of amendments regarding the uses that could be made of sewers before consolidation in Part IV of the Public Health Act 1936.

The Public Health Act 1936 conferred upon the owner or occupier of any premises the right to have a drain or sewer communicate with a public sewer of the local authority, but specifically excluded any liquid from a factory or manufacturing process. Industrial effluent discharges were separately provided for under the Public Health (Drainage of Trade Premises) Act 1937 which affirmed the principle that the occupier of trade premises was entitled, subject to control of the local authority, to discharge trade effluent into the public sewers. However any discharges that had commenced before the 1937 Act had come into force were exempt.

Local authority regions bore no relation to watershed areas, with many local authorities responsible for sewerage and sewage disposal and pollution control across a river basin. With no common authority operating across a river basin and each authority operating to its own standards of river pollution control, the government considered that there was no guarantee that work was carried out effectively within a river basin.

The River Boards Act 1948 established river boards with administrative responsibility for the pollution control functions previously provided by the local authorities. Their aim was to enforce pollution control across an area related to a river or group of rivers defined by watersheds or catchment areas. To give the boards powers to enforce pollution control, they were given powers to sample effluent from any land or vessel discharging into any river, stream, watercourse or inland water in their area.

Discharge permits were first provided for under the Rivers (Prevention of Pollution) Act 1951 which provided that discharges could only be made under permit of a river board. This imposed conditions on the nature, composition, temperature and volume or rate of discharge. The Clean Rivers Act 1960 and the Rivers Act 1961 extended the requirements for compliance with discharge permits.

The basis on which discharge permits were set was largely based on effluent standards derived from the eighth report of the Commission on Sewage Disposal published in 1908. This report took as its base a requirement to ensure that expenditure was not incurred on sewage treatment where circumstances did not warrant it. The report had introduced what became known as the Royal Commission Standard 20/30 for discharges⁶ which required that sewage effluents should absorb not more than 20mg/l Bio-chemical Oxygen Demand (BOD) and set a standard for suspended solids of 30mg/l BOD. A memorandum published by the Royal Commission in 1966 established the 20/30 standard as the normal minimum requirement, with the cost of treatment associated with the standard normally being regarded as reasonable.

The size of each authority varied greatly from a population served of 7.7m in London to less than 1,000 in the smallest rural districts and in the 1960's, sewerage and sewage disposal was the responsibility of around 1,400 councils.

2.1.3 Other interests in water resources

In addition to the water, sewerage and sewage authorities, several organisations were engaged in activities that affected the quantity and quality of water resources. Electricity generating plants, industry and agriculture were significant abstractors of water.

Other parties with significant interest in water resources included local and central government, drainage boards, navigation authorities, fishing bodies, agricultural bodies, river bank owners and the general public.

⁶ Johnstone and Norton, 2000

Each of these bodies worked for their own purposes but there was no single responsible body co-ordinating the use and development of water resources in a river basin as a whole⁷. In addition, no measures were in place locally to ensure planning to conserve water resources.

2.2 WATER RESOURCES ACT 1963

The growth of the economy in the 1950's led to an increased demand for water for electricity generation, irrigation, industry, and domestic consumption. A severe drought in 1959 and flooding events in 1960 emphasised the need for a responsible body to conserve water resources.

These issues, in addition to the lack of co-ordination in the use of water resources led government to develop a national policy for water under the Water Resources Act 1963.

2.2.1 Background

The Water Resources Act 1963 did not change the arrangements for the provision of water and sewerage services; local authorities, joint water boards and the statutory water companies continued to provide water services and sewerage and sewage disposal authorities continued to be responsible for sewage treatment.

The focus of the 1963 Act was to establish a structure to ensure adequate management of water resources and to ensure conservation of future water resources. To facilitate this, the 1963 Act established two additional types of authorities with power and influence over water users. These were the River Authorities and the Water Resources Board. The 1963 Act also defined the role of central government in the development of water resources. The role of these bodies is described below.

2.2.2 River Authorities

In total, 27 River Authorities were established, each with a role to conserve, redistribute and augment water resources in England and Wales on a regional basis. The River Authorities replaced the river boards established under the River Boards Act 1948. Each River Authority comprised representatives from local and national government with between 23 and 29 members, although the largest River Authority, the Yorkshire River Authority, had up to 45 members.

Each River Authority had responsibility to conserve water resources in an area related to a river basin. This was defined in the 1963 Act as a requirement to preserve, control and develop water resources.

⁷ Central Advisory Water Committee, 1962

The 1963 Act required all ground water and surface water abstractions to be licensed by the River Authorities. This was the first time that water was recognised as an economic resource in England and Wales⁸. Abstraction licences were awarded to existing abstractors and any organisation intending to abstract water would have to apply to the River Authority for a licence.

A key development of the abstraction licensing regime was that River Authorities charged abstractors for the volumes licensed rather than the quantities actually taken. Abstraction charges took account of type of use and the effect each abstraction had on resource capacity. This required abstractors to concentrate on how much water they were likely to require in the future, rather than exaggerate reservations.

Funds raised from the abstraction licensing regime were used by the River Authorities to fund development of additional resource capacity⁹.

2.2.3 Water Resources Board

The Water Resources Board was a national agency whose purpose was to advise government and River Authorities about water resources conservation on a national scale.

The Board contributed to long term planning and co-operation across large regions to meet the needs of individual authority areas, for example, by the promotion of regulating reservoirs to increase river flows in periods when river flow would otherwise be low.

However, the Board had no executive powers defined under the 1963 Act. It had no formal role in respect of water quality supplied to customers and the lack of pollution control meant that river abstractions downstream of sewage treatment works were difficult to plan because of vulnerability to pollution.

2.2.4 Central government

The 1963 Act defined the role of central government to:

- promote conservation, the proper use of water resources and provide water supplies in England and Wales and secure a national policy for water;
- augment the water resources for England and Wales; and
- ensure that the national policy for water is executed by the River Authorities and the Water Resources Board.

⁸ Kinnersley, 1988

⁹ Kinnersley, 1988

2.3 MANAGEMENT OF RESOURCES UNDER THE 1963 ACT

The Water Resources Board estimated gross abstractions under different licences issued by the river authorities in the year ending 30 September 1969¹⁰:

Table 2.3

	Quantity MI/d	Percentage (%)
Public water supply	13,638	21.7
Direct industrial abstraction	14,320	22.7
Electricity Generation	34,550 *	55.0
Agriculture	273	0.4
Miscellaneous	136	0.2
Total	62,917	100.0

*Includes 13,638 MI/d abstracted under licence from estuaries and the sea.

The Water Resources Board estimated that demand for water resources would increase significantly by the end of the twentieth century. For example, in 1970 the Board stated that public water supply undertakers had increased abstractions to an average 13,900 MI/d, with about two-thirds of this for domestic use. The Board's demand projections, based on population growth, estimated that this would increase to 28,000 MI/d by 2000¹¹ and these estimates of future demand became the most significant factor in planning for the future of the water industry in the late 1960's.

The Board was to be criticised in later years for the lack of economic appraisal in its forecasts for future demand. For example, estimates were based on simple projections of population growth and expectations that demand from industry would continue to increase at rates experienced in the previous 30 years.

Planning for future increases in demand was complicated by the significant conflicts of interest between the different requirements of water users. Rivers in England and Wales were important for both water supply and effluent disposal, yet there was no organisation in place to co-ordinate the roles of the water suppliers and sewerage and sewage disposal authorities.

The desire to dispose of sewage as cheaply as possible led to a lack of investment in sewage treatment by many councils and the number of river pollution incidents increased through the 1960's. This, in turn, increased the treatment requirement of river water abstractions. For example, by the end of the 1960's 60% of all sewage treatment works were estimated to be failing to meet the standards established at the end of the 19th century¹².

¹⁰ Department of the Environment, 1971, data is presented here in mega litres per day (MI/d).

¹¹ Department of the Environment, 1973

¹² Bakker, 2003.

2.4 SERVICE DELIVERY

Local authorities continued to consolidate their operations of water supply into joint boards during the 1960's. By contrast management of sewerage and sewage treatment continued to be a highly localised activity. At the end of 1973 there were:

- 198 statutory water undertakings in England and Wales¹³. Table 2.4 provides an indication of the reduction in the number of water undertakers between 1956 and 1970;
- 1,393 sewerage and sewage disposal authorities; and
- 29 River Authorities established under the 1963 Act.

Table 2.4

Statutory Water Undertakers	Total – 1956	Total - 1970	Volume Supplied MI/d 1969
Local authorities			
County borough councils	53	29	3,155
Borough councils	177	17	264
Urban district councils	295	9	27
rural district councils	358	9	23
	883	64	3,469
Joint boards	42	101	6,815
Statutory companies	90	33	2,891
Miscellaneous	15	-	
Total	1,030	198	13,175

2.5 THE NEED FOR CHANGE

In the late 1960's and early 1970's a number of government working parties considered the future arrangements for the water industry in England and Wales. These working parties were assembled to consider how best to achieve the management and funding requirements to meet the significant projected increases in future demand and address the problem of pollution control.

The working groups, and the water suppliers themselves, concluded there was a need for a co-ordinated approach to the supply of potable water, the treatment and disposal of sewage and the management of water resources. There was also an identified need for considerable capital investment. The government's approach to addressing these issues is described in section 3.

¹³ Department of the Environment, 1971.

3. ESTABLISHMENT OF THE WATER AUTHORITIES

3.1 INTRODUCTION

By the early 1970s the government had recognised the need for change to meet the increasing demands for water and to improve the control of pollution. The approach taken was to consider service delivery and water resource management on an integrated basis. This section describes the changes to the industry as a result of the Water Act 1973, the structure of the industry, problems encountered and the development of government policy in response to the need for further change.

3.2 WATER ACT 1973

3.2.1 Policy proposals

The government published its views on the future development of the water industry in a position paper in 1971¹⁴. The paper proposed a national framework for planning of water resources. However, to ensure effective planning of capital investment works, investment programmes should be planned every five years to cover a wide range of requirements at a local level. The investment programmes would include:

- water supply;
- sewerage and sewage disposal;
- river management; and
- planning and co-ordination.

The government proposed that planning and management could best be achieved on an integrated river basin basis under a responsive management structure with water authorities directly responsible for all functions relating to water resources. This would allow each river and its tributaries to be regulated and managed to ensure discharges did not pollute water supplies. It would also ensure that abstractions did not put at risk river life and the enjoyment of river users. For example, for the river Thames, the integrated river basin management approach led to the management of a catchment area covering¹⁵:

- 3,500 abstractions – 1,200 for agriculture, 500 for water supply and 1,800 for industrial and other users;
- 6,500 discharges from industry and 450 from sewage treatment works;
- management of fishing, with 193,000 rod licences issued annually; and
- 19,000 registered boating users, with over one million passengers through the river's 45 locks each year.

¹⁴ Department of the Environment, 1971.

¹⁵ Department of the Environment, 1986.

The government considered that integrated water resource management could be best achieved by a total of between six and fifteen vertically integrated regional monopolies, providing all the required services to their customers, from extraction of raw water, delivery of processed water, to collection, treatment and discharge of wastewater and management of the quality and quantity of water resources. The discussion document outlined the boundaries of between seven and 13 possible water authorities.

Taking a range of views into account, the government proposed a restructuring to give ten water authorities based on the ten major river basins in England and Wales. This was subsequently codified in the Water Act 1973.

The 1973 Act defined the boundaries of the ten authorities that took over the functions of the water undertakers, sewerage and sewage disposal authorities and the River Authorities (Figure 1). The Act provided the mechanism for consolidation which required that all assets of the local authorities, water undertakers (other than statutory companies) and sewerage authorities be transferred to the water authorities. In total the authorities would employ 75,000 staff, have an annual revenue of £2.6bn and an annual investment budget of £2.2bn¹⁶.

The 1973 Act did not provide any new basic legal framework for the exercise of activities; the 1945 Act continued to provide the main legal provisions relating to water supply.

¹⁶ All expenditure figures are stated in 2003-04 prices to allow for comparability. This is equivalent to revenue of £350m and investment expenditure of £300m in 1973 prices reported by the Department of the Environment, 1973.

Figure 1 The ten Water Authorities



3.2.2 Functions of the water authorities

The 1973 Act gave statutory responsibility for all aspects of water management to each water authority in its region. The functions of the water authorities defined in the 1973 Act were:

- Water conservation and development. Including operation of reservoirs, monitoring of river flows, collection of hydrological data and management of abstraction licences. It also required each authority to estimate future demands for water in its area and plan for development of future resources.
- Water supply. The 1973 Act placed a primary duty on each water authority to provide a domestic supply of wholesome water within its defined area of supply.
- Sewage collection, treatment and disposal. This included maintenance of sewerage systems, operating and developing sewage treatment works and sludge disposal. The 1973 Act imposed a duty on the water authorities to make arrangements to carry out certain sewerage functions, such as maintenance of the network, with district councils in their area. The water authorities could not make arrangements with other agencies to carry out their duties of sewage disposal or the reception and disposal of trade effluent.
- Prevention of pollution and environmental improvement. This included a requirement for a significant improvement of rivers and estuaries by the early 1980's. It also included administration of discharge permits¹⁷ and river quality monitoring.
- General provisions for recreation. This included provision of recreation facilities at reservoirs and on some rivers.
- Care of inland fisheries, funded by central government.
- Land drainage and flood protection, which included work to improve flood defences in both urban and rural areas financed by central and local government.

¹⁷ Permits which define the quality of discharge standards are usually referred to as consents in the UK.

3.2.3 Financial arrangements

Before the 1973 Act, the water authority revenue was not ring fenced from the general local authority budget. Local authorities could determine whether income should be used for operation and improvement of water services or absorbed into the general local authority budget.

A critical change brought about by the 1973 Act was to place control of investment under central government. Capital to meet investment requirements would now be raised by borrowing from central government and revenue from customers. Water authorities were obliged to operate on a cost recovery basis to ensure charges met their revenue requirements.

Authorities could receive government grants for land drainage under the Land Drainage Act 1976 and continued to receive grants for extension of water and sewerage supplies in rural areas under the Rural Water Supplies and Sewerage Act 1944. There were no other sources of government subsidy. The main sources of income for the authorities included:

- water abstraction charges;
- water supply charges;
- sewerage and treatment charges;
- trade effluent and environmental service charges;
- fishing licences and charges;
- land drainage;
- consultancy fees;
- charges for rechargeable works; and
- income from investment and land.

To ensure that the authorities would meet the self financing objective, central government set a number of financial requirements for each authority annually and required each authority to prepare audited financial statements for each financial year. The financial requirements set by the government included:

- maximum annual capital expenditure for each authority;
- annual limits on the amount each authority could borrow from central government;
- limits on the amount each company could allocate to reserves; and
- the setting of performance aims for operating expenditure.

3.2.4 Constitution of the water authorities

Administrative control of the water authorities was assigned on a regional basis under the new industry structures and the 1973 Act defined the constitution of the Water Authorities.

Each authority consisted of a chairman and up to 17 other members appointed by central government, and a number of appointments by local and district councils. Each authority was required to have at least two-thirds of its members from local authorities. For example, in 1979, the Yorkshire Water Authority comprised of a total membership of 25, including:

- Chairman appointed by central government;
- 8 members appointed by central government;
- 7 members appointed by county councils;
- 6 members appointed by district councils.

Each authority was able to discharge any of its functions through a subcommittee and a board was appointed to conduct the day-to-day functions of each authority.

3.2.5 Board structure

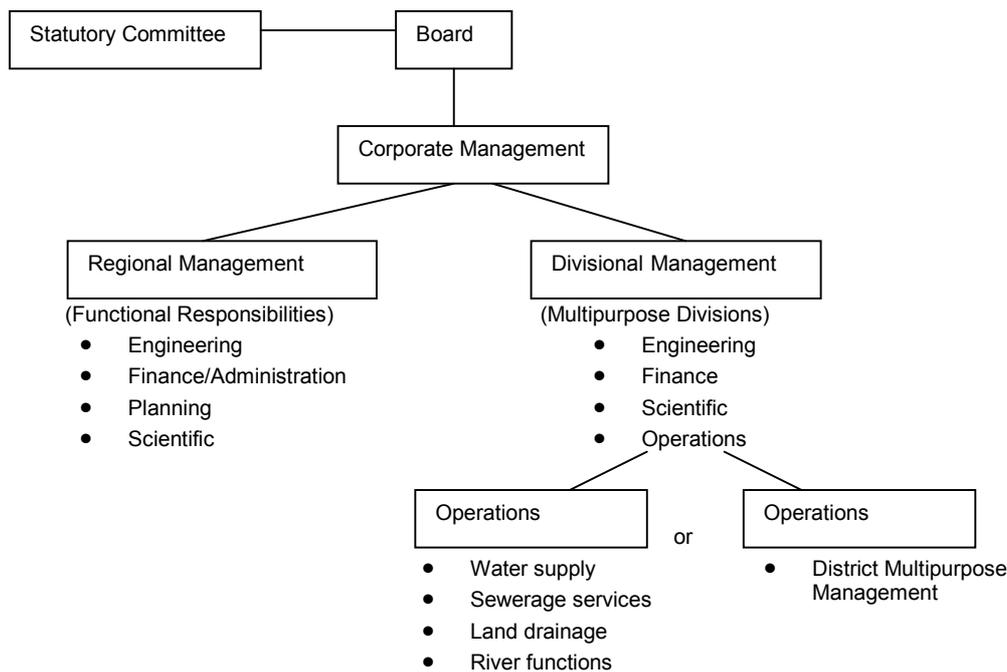
At the time that the 1973 Act became law, central government commissioned a report to consider the possible forms of management structure of the water authorities. The report recommended that the authorities should be structured on the principles of a multi-disciplinary approach to management. Each authority adopted this structure, with a management team of between four and seven staff, typically including:

- Chief Executive
- Director of Operations
- Director of Scientific Services
- Director of Resource Planning
- Director of Finance
- Director of Administration

The report addressed the complex problem of drawing together the new organisations from the variety of previous undertakings and recommended that each water authority should comprise a two-tier organisational structure. The headquarters management team comprised specialist managers, including finance, operations and planning. Outside the headquarters, activities were to be carried out by divisions under each specialist manager with each division establishing a local management team. Each water authority adopted this general framework, but each tackled its organisational problems in different ways¹⁸. A typical organisational structure is shown in Figure 3.2.5.

¹⁸ Institute of Water Engineers and Scientists, 1979.

Figure 3.2.5 Typical organisational structure¹⁹



3.2.6 Role of central government

Under the 1973 Act, the government retained ultimate responsibility for the full range of functions of the water industry and had a duty to collate and publish information on the demand for water and of actual and prospective water resources.

The 1973 Act also gave central government the duty to examine and approve the water authorities' plans and programmes, thereby exerting significant influence on the levels of capital investment.

The 1973 Act abolished the Water Resources Board following recognition that the board had not been given sufficient powers under the 1963 Act. This was replaced by the Central Water Policy Planning Unit which had responsibility to (i) co-ordinate the planning for water resources, water quality and the prevention of water pollution, (ii) conduct research and development and (iii) provide advice to government, the National Water Council and the Water Authorities.

¹⁹ Institute of Water Engineers and Scientists, 1979.

The United Kingdom joined the European Community²⁰ on 1 January 1973. Four Directives²¹ had immediate effect²² on water resources which prescribed standards for:

- the quality of drinking water;
- the discharges of dangerous substances to the aquatic environment;
- the quality of bathing water; and
- the quality of fresh water for fish life;

The government was ultimately responsible for ensuring that the Directives were codified into law and for ensuring that the respective standards were met. Each Directive required a significant programme of capital investment by each water authority.

3.2.7 National Water Council

The National Water Council was established by the 1973 Act. It comprised the ten chairmen of the water authorities and ten independent members appointed by government. The Council was an independent statutory body whose purpose was to draw together issues of common interest to the industry and act as a link between central government and the water authorities on general issues.

3.2.8 Household water bills

Central government encouraged the water authorities to address social welfare issues in its pricing policies. As a result bills were averaged across all customers within an authority's region of supply rather than reflect the different unit costs of supply for rural and urban areas.

A considerable proportion of revenue continued to be raised as a charge based on property values rather than applying consumption related charges. As a result, no significant promotion of water metering was introduced as a result of the 1974 restructuring²³.

²⁰ The European Community is an economic association of European countries founded to provide a common market without any economic barriers. It was known as the European Community before 1993 and the European Union subsequently.

²¹ Directives are set by the European Union and addressed to each member state. Directives are legally binding and are implemented by the member state by it changing its domestic law. Member states are in breach if a Directive is not fully and correctly implemented within the prescribed time limit.

²² Institute of Water Engineers and Scientists, 1979.

²³ Kinnersley, 1988

3.2.9 Statutory water companies

The 1973 Act did not have a significant impact on how the privately owned statutory water companies would operate. Although the statutory water companies would act as agents for the water authorities in the areas that they supplied water, the statutory water companies continued to be financed by private capital and continued to supply approximately 20% of the total drinking water supply in England and Wales. The ordinary shareholders and debenture holders continued to be subject to government controls, including dividend and interest restrictions.

However, the 1973 Act made specific provision for statutory water companies to continue to supply water in their supply region and required water authorities to take all reasonable steps to ensure statutory water companies had sufficient access to water. The objective of this was to prevent any conflict of interest between water authorities and statutory water companies.

3.2.10 Pollution control

A government committee reported²⁴ on sewage disposal in 1970 and made a number of recommendations for the management of river water²⁵. The main conclusion drawn by the committee was that while the 20/30 standard was generally regarded as a useful minimum requirement (see section 2.1.2), it was neither desirable nor practicable to adopt a uniform standard for trade effluents. The committee supported the use of permit standards for individual treatment works set by reference to local environmental quality objectives, rather than uniform emission standards which did not take the local environmental effects fully in to account.

In addition, the committee recommended:

- there should be a positive policy to improve rural sanitation;
- discharge of unscreened storm sewage should be prohibited;
- sewerage for new development should be separate to foul sewage; and
- production of shorter-life treatment plants should be investigated.

These recommendations were taken forward in the Control of Pollution Act 1974 which sought to treat pollution and waste together as a unified concept and covered waste on land, the pollution of water, noise and pollution of the atmosphere. The Act transferred the pollution control functions of the former river authorities to the water authorities. It introduced an offence for anyone to cause or knowingly permit (i) any poisonous, noxious or polluting matter to enter any stream, controlled waters or underground waters or (ii) any matter to enter a stream which would impede its natural flow.

²⁴ The Jeger report, "Taken for Granted"

²⁵ The Jeger report

The Act transferred to the water authorities the exclusive power to award permits for all discharges to inland and coastal waters and introduced the principle of “polluter pays”. However, the 1974 Act gave no criteria by which to assess discharge standards which left the water authorities with considerable discretion in setting permits standards and did not empower central government to set national standards.

The 1974 Act required publication, for the first time, of discharge permit requirements and the results of compliance monitoring. The objective of this was to ensure that the water authorities would set standards that were broadly comparable across England and Wales. However, as explained in section 3.3, central government delayed implementation of this until 1985.

3.3 THE POST-1974 OPERATING ENVIRONMENT

3.3.1 Access to finance

The heavy burden of inherited and continuing capital investment was the single most significant factor to concern the water industry²⁶ after the 1974 restructuring. Total debt inherited by the water authorities was £13.6bn (2003-04 prices) which consisted of £9.5bn from local authorities, £2.2bn from central government and £2.0bn from other sources.

However, the late 1970s and early 1980s was a period of high inflation in the UK and, in dealing with the wider problems faced in the economy, government was increasingly less willing to allow water authorities to increase borrowings and/or increase charges to customers to meet capital investment requirements²⁷. After taking account of inflation, the actual amounts borrowed by the authorities decreased significantly in the years immediately after the 1974 restructuring (figure 3.3.1a).

Charges to customers were initially kept within levels of the Retail Price Index (RPI)²⁸ (figure 3.3.1b). As a result of this, the significant requirements of the capital investment programme and the lack of access to sufficient debt financing, the cash flow of some authorities diminished severely²⁹.

This lack of investment was apparent in 1982, for example, when government permitted the water industry to spend around half of the total capital investment incurred in 1974³⁰ (figure 3.3.1c).

Areas for investment need varied considerably between the water authorities and this was highlighted, for example, by the National Economic Development Office in 1986. The report highlighted a number of problems at each Water Authority, examples of the problems faced by the Yorkshire Water Authority and North West Water Authority are highlighted below³¹:

²⁶ Institute of Water Engineers and Scientists, 1979.

²⁷ Twort et al, 2000

²⁸ The Retail Price Index (RPI) is the most frequently used measure of inflation in the UK, it is defined as an average measure of change in the prices of goods and services bought for the purpose of consumption by the majority of households in the UK.

²⁹ Bakker, 2003

³⁰ Bakker, 2003

³¹ National Economic Development Office, 1986

Yorkshire Water Authority	Water supply	Poor aesthetic quality of drinking water
	Water mains	High levels of corrosion
	Sewers	64 significant sewer collapses per annum per 100kms, (UK average 16)
	Rivers	£515m (in 2003-04 prices) estimated required to meet river quality objectives by 2000
North West Water Authority	Water supply	Poor quality of drinking water, low pressure and interruptions
	Water mains	High levels of corrosion
	Sewers	23 collapses per 100kms per annum
	Rivers, estuary and coastline	Serious pollution, estimated cost of £5.7bn (2003-04 prices)
	Sea outfalls	High level of unsatisfactory outfalls.

Figure 3.3.1a Total debt of the water authorities 1974-1988³² (2003-04 prices)

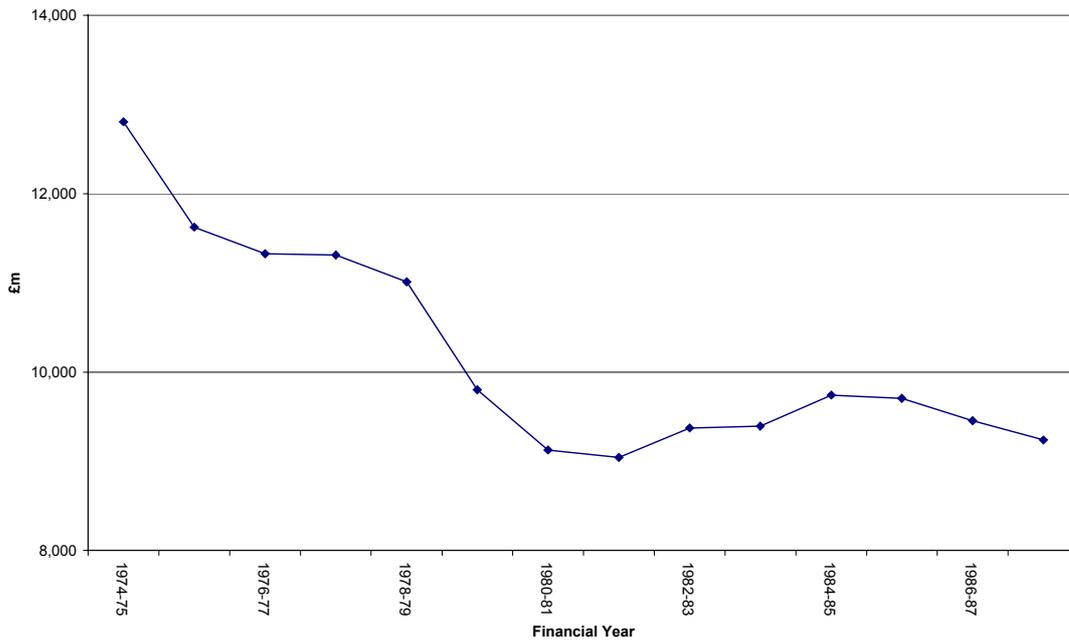
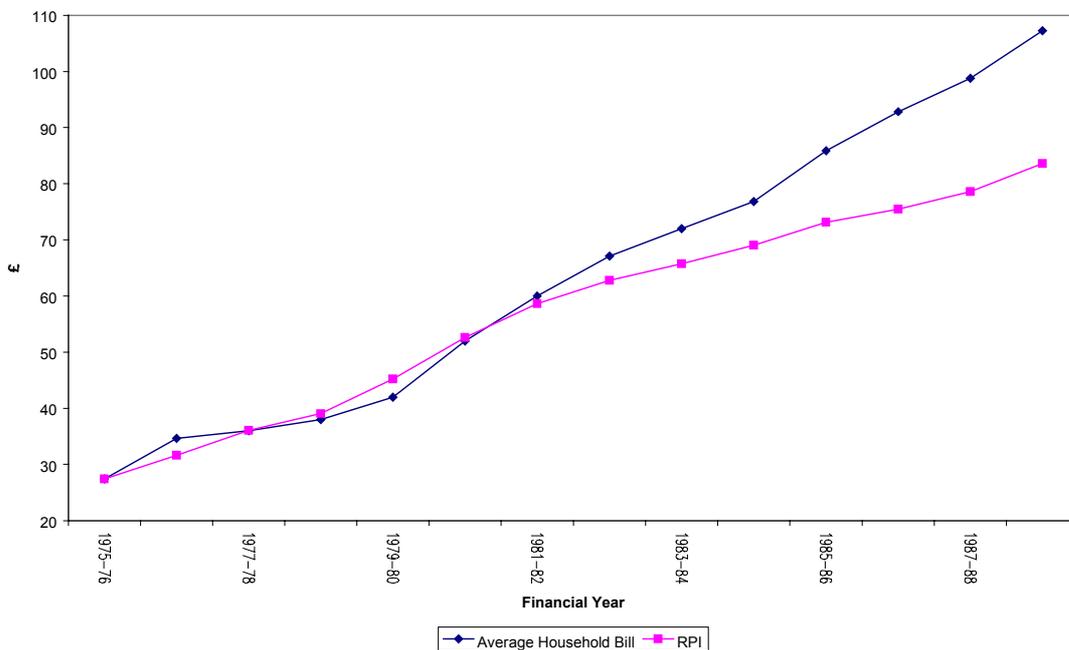


Figure 3.3.1b Average household water and sewerage bills 1975-1989³³ (outturn prices)



³² Data from Waterfacts.

³³ RPI rebased to 1974-75 prices.

Figure 3.3.1c Operating expenditure and capital investment of the water authorities 1974-1989³⁴ (2003-04 prices)

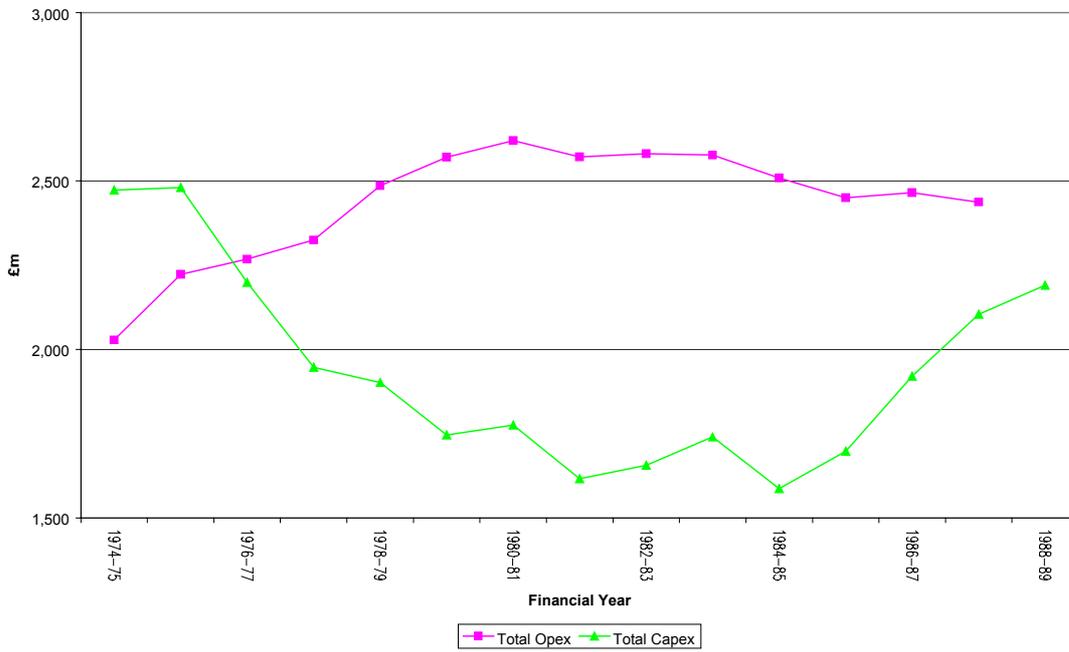
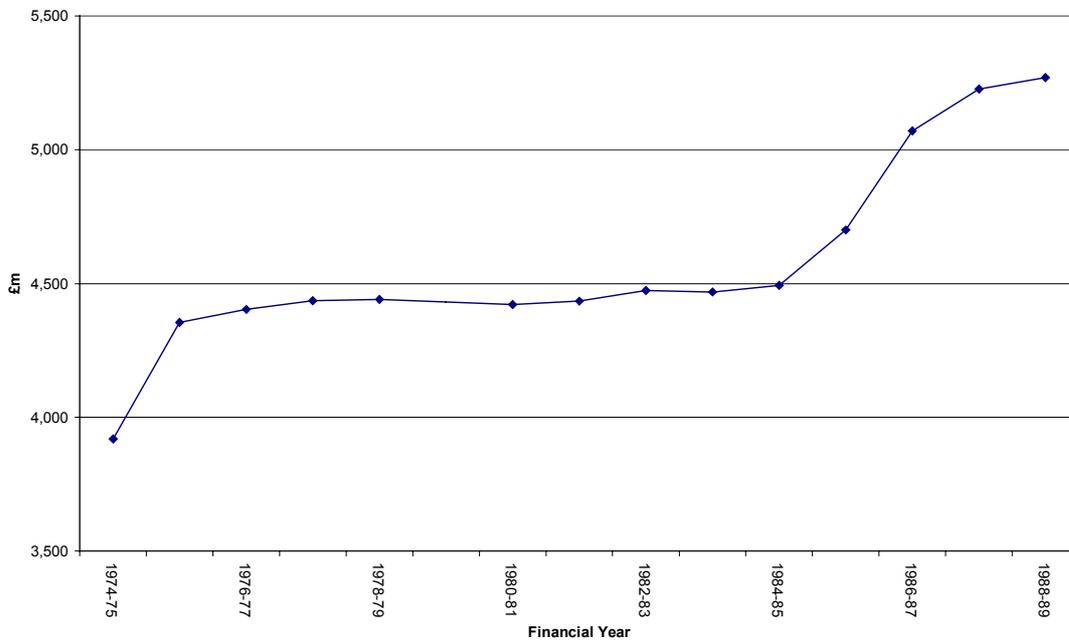


Figure 3.3.1d Turnover of the water authorities 1974-1989³⁵ (2003-04 prices)



³⁴ Data from Waterfacts

³⁵ Data from Waterfacts

3.3.2 Environmental performance

After the 1973 Act, in fulfilling the objective of controlling pollution, each Water Authority had created a water quality advisory panel to monitor its performance in meeting water quality requirements. The objective of the advisory panels was to achieve some independence between the water authority's functions of public supply, pollution control and monitoring of environmental performance.

In a move to address the problem of poor surface water quality, the National Water Council published a classification of river quality objectives in 1977. The classification system related to the purposes for which water was to be used based on five basic classes of river waters:

- 1A High quality waters suitable for all abstraction purposes with only modest treatment. Capable of supporting high class fisheries. High amenity value.
- 1B Good quality waters usable for substantially the same purposes as 1A though not as high quality.
- 2 Fair quality waters viable as coarse (freshwater) fisheries and capable of use for drinking water provided advanced treatment is given. Moderate amenity value.
- 3 Poor waters polluted to the extent that fish were absent or only sporadically present. Suitable only for low grade industrial abstractions.
- 4 Bad quality waters which were grossly polluted and likely to cause a nuisance.

This classification was adopted by each water authority in setting informal river quality objectives and to define the permits for treated sewage discharges.

The suitability of this classification system was later questioned as it introduced the concept of high river quality being a lower priority unless specific uses compel it. With significant scope for discretion in the setting of standards by the water authorities and no imposed national standards, it ultimately led to a review of the number of discharge permits, which led to a relaxation of their requirements³⁶. It further masked the problems of declining water quality and was clearly insufficient to satisfy EC law.

³⁶ Kinnersley, 1988

With little political acceptance of the dramatic increases required to customer bills to address the problems of under-investment and declining infrastructure, the government continued to delay implementation of the condition from the 1974 Act that required the water authorities to publish pollution registers against the performance of discharge permits. This was contrary to the openness required once the authorities were given the conflicting roles of sewage works operators and river quality regulators³⁷, conflicted with the water authorities' role to prevent pollution and led the water quality advisory panels to be largely ineffective. With the water authorities unwilling to self-regulate and self-prosecute there was a sharp increase in the number of incidents of river pollution³⁸. Lack of public access to information on discharge permits and pollution incidents further compounded the problem.

3.4 WATER ACT 1983

In response to the problems created by the increasing capital investment requirements of the water authorities and the requirement to address the problems of environmental pollution, the government introduced the Water Act 1983. The assumption underlying the 1983 Act was that water customers were best served by an efficiently run water utility providing prescribed service standards at least cost.

The 1983 Act changed the organisational structure of the water authorities, reduced the role of local government, and, by allowing companies to operate in a more commercial manner, paved the way for privatisation.

3.4.1 Constitutional changes

Until 1983, the water authorities were run by large boards with a majority of local authority representatives (see section 3.1.4). The 1983 Act reduced the size of the board structures with the intention of making these smaller and more business like by reducing the number of representatives from local authorities. Although all members continued to be appointed by central government, a series of chairmen vacancies were filled by people with experience in the industry rather than experience of public affairs³⁹.

The 1983 Act provided for Consumer Consultative Committees to represent the interests of customers following the abolishment of locally elected councillors as water authority members, and as a result of restrictions in public access to management meetings of the authorities.

³⁷ Kinnersley, 1988

³⁸ Kinnersley, 1988

³⁹ Kinnersley, 1988.

Local authorities were left to propose how the committees were set up, but the government published guidelines indicating how this should be done. The guidelines were criticised for a number of reasons including (i) the committees had wide terms of reference that covered national issues, but were intended to be set up on a regional basis and deal with regional issues, and (ii) they had little independence from the water authorities.

In addition, the 1983 Act abolished the National Water Council which had done little to promote the views of the water industry to central government since its implementation⁴⁰.

3.4.2 Financial changes

The 1983 Act initiated many of the financing changes that were ultimately required at privatisation and started the process of transforming the water industry from a public service to a business organisation. The 1983 Act made express provision for water authorities to borrow directly from the private capital markets rather than solely from central government. However, in practice central government continued to exercise control over the authorities' borrowing and this acted to prevent the authorities from private borrowing.

The 1983 Act introduced the principle of cost-benefit to the industry for assessing capital investment requirements and attempts were made to introduce long-run marginal cost pricing for determination of water tariffs⁴¹.

3.5 THE NEED FOR CHANGE

Section II of the Control of Pollution Act 1974 (COPA II), finally became effective from 1985 and required publication of discharge permit standards. However, in practice, the changes brought about by COPA II or the 1983 Act did little to improve the environmental performance of the water authorities, measured by improvements in river water quality.

Despite the above inflation price rises from the early 1980's onwards (Figure 3.3.1b), the 1985 River Quality Survey showed, for the first time since surveys were undertaken in 1958, that the length of river quality deterioration had overtaken that of river water quality improvement. In total, 903km out of 40,000km rivers surveyed showed a net deterioration over the period⁴². And in 1988, for example, 742 out of 6407 sewage treatment works failed their discharge permit requirements.

⁴⁰ Kinnerslet, 1988

⁴¹ Bakker, 2003

⁴² Kinnersley, 1988

The continued lack of investment meant that a significant number of incidents of pollution continued to occur and the United Kingdom continued to be in breach of a number of EC Directives. The decision by the EC to start prosecution proceedings against the government for non-compliance with two EC Directives in the mid-1980's was a major factor in the government recognising the requirement for further significant capital investment and control of pollution.

With government unwilling to fund the increased investment requirements either from increases in taxes or increasing borrowing and with its broader programme of privatisation of utilities underway, the government started to consider the privatisation of the industry. The next section describes the process of privatisation.

4. PRIVATISATION

4.1 INTRODUCTION

The proposals for privatisation of the water industry were in response to the need for more investment in the industry than the government was prepared to fund from public finance. There was also a prevailing policy which favoured privatisation as a means of securing efficiency; British Telecom and British Gas had been privatised in 1984 and 1986 respectively. The government first published its proposals in a discussion paper on water privatisation in 1986⁴³.

4.2 INITIAL PROPOSALS

The 1986 discussion paper proposed privatisation of the water authorities as they existed. This would have simply transferred the water authorities to private ownership, without changes to their powers or responsibilities. It would have required the authorities, as private companies, to have responsibility for providing water and sewerage services and to have responsibility for flood control, river water quality and control of abstraction.

The 1986 discussion paper included the concept of comparative competition, such that the privatised undertakers would be competing in the financial markets for access to finance and the performance of each company could be compared.

The government considered profit would be a more effective incentive for improved management performance than government controls. However, to protect customers' interests, a system of regulatory controls would be required to prevent privatised water authorities from overcharging customers or providing poor standards of service. The paper proposed that a Director General of Water Services would set price limits and performance standards for each licensed company.⁴⁴

4.2.1 Economic Regulation

The proposals for privatisation of the water industry differed in three fundamental respects from those of the gas and telecoms industries:

- privatisation would involve not one (as in gas and telecoms), but ten Water Authorities;
- the water and sewerage industries are distinctive in that they have duties concerning the protection of the environment; and

⁴³ Department of the Environment, 1986.

⁴⁴ The privatised companies are often referred to as licensees. However, they do not hold a licence to supply water since the supply of water through pipes is not a prohibited activity requiring a licence (unlike the supply of gas through pipes for example).

- natural monopoly conditions were more prevalent in the water and sewerage industry because it consisted of local and regional monopolies with no national distribution network.

Alongside its plans for sale and restructuring of the water and sewerage services, the government commissioned a report to discuss the proposals for economic regulation of the industry⁴⁵. The main recommendations were:

RPI – X price control regulation

- A price cap similar to the RPI–X system already in force to regulate British Telecom’s prices was favoured over rate of return regulation because of its relative simplicity and cost effectiveness, and because it would preserve efficiency incentives. (Section 4.3.3 explains the principles of RPI-X in more detail).
- The price cap would need to be periodically reviewed and adjusted to prevent prices from deviating from underlying cost levels for long periods.
- A single X factor should be set for each company, as this would be simpler than imposing a separate constraint for each service. There would be little need for X factors to differ between companies when they were first privatised.

Controls on quality

- Regulation would have to cover quality as well as price, since price controls could easily be undermined by reductions in quality levels.

Comparative competition

- The existence of ten privatised authorities (plus the statutory water companies already in private ownership) would enable the regulator to make comparisons between their costs and the quality of their performance. A system of measurement could be developed to assess the performance of each company in setting prices.

Competition in the capital market

- Although competition in product markets would remain extremely limited (unlike gas and telecoms), it would be allowed to develop in the capital market in order to discipline management and encourage innovation.
- The relatively small size of the privatised authorities would make them vulnerable to takeover. The report recommended that the government retain a ‘golden share’ in each company to prevent unwanted takeover. The Secretary of State for Trade and Industry would still have powers to block any take-over judged not to be in the public interest.

⁴⁵ Littlechild, 1986.

4.2.2 Franchising

The 1986 discussion paper set out the government position for privatisation as a preferred option to requiring water authorities to franchise out their functions. This is an important difference to the approach which has been followed by some other countries.

The position in France, for example, was that the municipality retained ownership of the assets and franchised their management and operation to private companies, usually with contracts varying between eight and twenty-five years in length. This enabled a method of competition to be introduced to a monopoly situation. However, this approach was rejected as competition would not be considered to be effective because:

- competition would occur only when new franchisee were renewed;
- the high cost of termination would require franchises to be granted for substantial periods of around 25 years; and
- there was considered to be little incentive for franchisees to invest in new equipment and infrastructure, particularly towards the end of the franchise period.

Franchises with shorter operating periods of ten years were also rejected because the division of responsibility between the owner and operator would be prejudicial to a planned programme of maintenance, renewal and expenditure.

However, central government favoured franchising by the privatised water companies themselves; this would limit government intervention and be at the discretion of the managers of each company.

4.2.3 Criticism of the initial policy proposals

The 1986 discussion paper was widely criticised as it was felt there was a fundamental flaw in the government's approach; private monopolies should not be made responsible both for making profits from essential services and discharging an environmental regulatory function. Within six months of its publication, the plans set out in the 1986 discussion paper were put on hold.

4.3 PRIVATISATION

Within months of suspending the proposals under the 1986 discussion paper, a date was set for a general election and, in its election manifesto, the then ruling Conservative party reaffirmed its intention to privatise the industry with one key amendment.

The revised approach required that all regulatory and river management functions such as pollution control, land drainage and flood protection, would be separated from the water and sewerage services carried out by the water authorities. The functions would become the responsibility of a new regulatory authority, the National Rivers Authority (NRA).

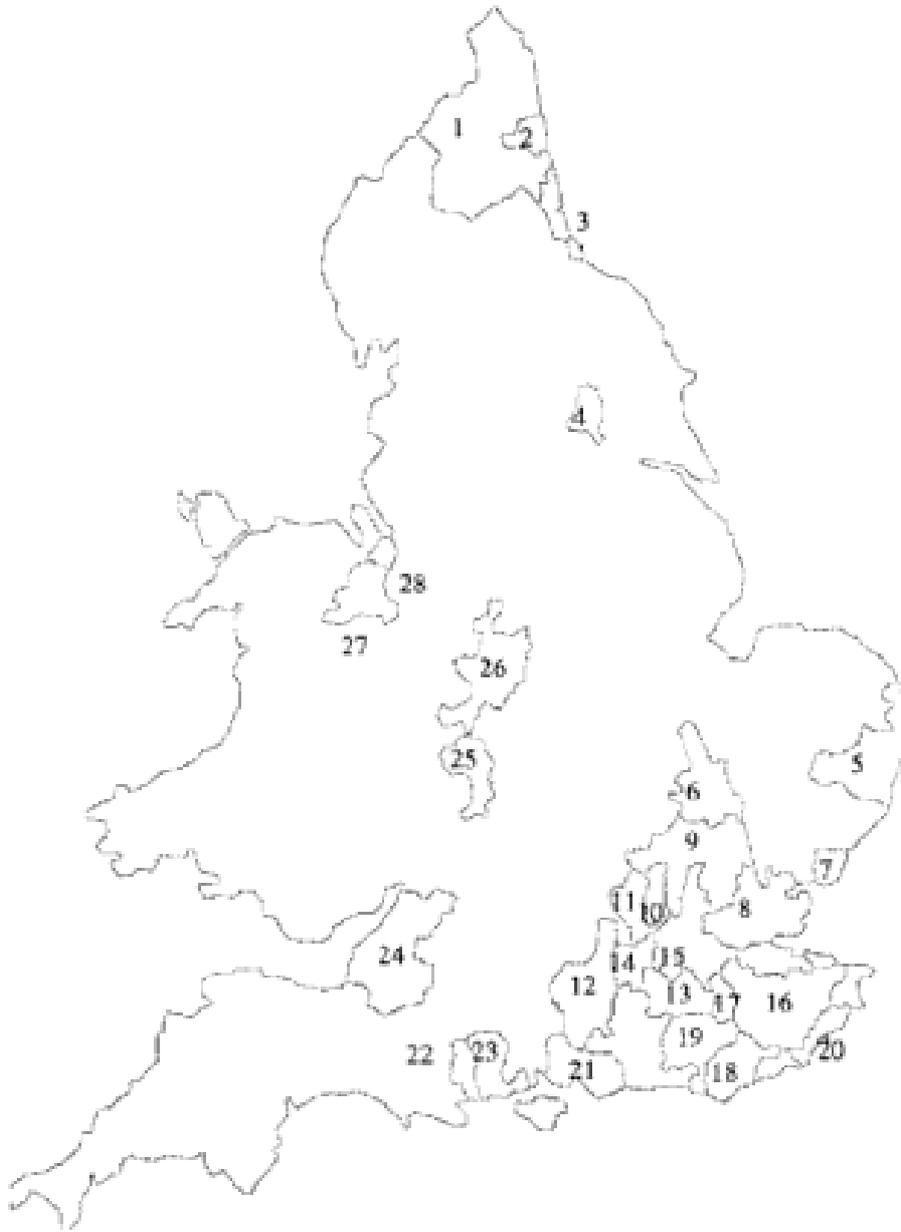
As a result the ten water and sewerage privatised undertakers would be left with the roles of water supply and distribution, sewerage and sewage disposal. These proposals formed the basis of the Water Act 1989. The remainder of this section describes the process of privatisation and the main features of the regulatory system.

4.3.1 Water Act 1989

The Water Act 1989 provided the mechanism for privatisation of the industry. It transformed the existing water authorities into the new Water and Sewerage Companies and appointed them as the undertakers for their regions. It also (i) provided for the Secretary of State for the Environment to have overall responsibility for regulation of drinking water quality, (ii) provided for the National Rivers Authority to manage pollution and environmental control and (iii) defined the duties of the Director General of Water Services as the economic regulator.

The 1989 Act made provision for the existing statutory water companies to become registered under the Companies Act 1985 and to be subject to the same regulatory system. The Water Act 1989 removed previous restrictions on the amounts the statutory water companies could borrow or pay as dividends. The statutory water companies existing at privatisation are shown in figure 4.3.1 'water only companies'.

Figure 4.3.1 Water only companies at privatisation



- | | | |
|---------------------------------|-------------------|---------------------------------|
| 1. Newcastle and Gateshead | 11. Rickmansworth | 21. Portsmouth |
| 2. Sunderland and South Shields | 12. Mid Southern | 22. Bournemouth |
| 3. Hartlepool | 13. East Surrey | 23. West Hampshire |
| 4. York | 14. North Surrey | 24. Bristol |
| 5. East Anglian | 15. Sutton | 25. East Worcestershire |
| 6. Cambridge | 16. Mid Kent | 26. South Staffordshire |
| 7. Tendring Hundred | 17. West Kent | 27. Wrexham and E. Denbighshire |
| 8. Essex | 18. Folkestone | 28. Chester |
| 9. Lee Valley | 19. Eastbourne | 29. Cholderton |
| 10. Colne Valley | 20. Mid-Sussex | |

4.3.2 Environmental regulation

The Water Act 1989 introduced statutory water quality classifications and objectives for the first time. These provisions were later reproduced in the Water Resources Act 1991 and replaced the discharge permit standards set under COPA II. This is explained in more detail in section 5.4.2.

4.3.3 Economic regulation

The new industry structure required system controls to be imposed on each water and sewerage company and each water only company for charges to customers. Initial price limits were set by the Secretary of State for the Environment in England and by the Secretary of State for Wales in Wales for ten years. Future price limits would be set by the economic regulator, the Director General of Water Services.

RPI-X was the form of economic regulation used to set price limits for the gas and telecoms industries. The validity of the approach was supported in Littlechild's revised report on economic regulation of the water industry in 1988⁴⁶.

The rationale is that it offers strong incentives to the regulated companies to improve efficiency and cut costs by allowing companies to retain any profits made within the existing price cap. An assessment of the comparative performance of each company is central to the approach and requires the economic regulator to collect detailed information about the performance of each company in delivering its capital investment programme, financing its functions and its operating expenditure. Robust assessment of each company's comparative performance enables price caps to be set that are challenging to the companies to ensure that customers' bills are no higher than they need to be.

The water industry was unique among privatised industries in that there would be a significant capital investment programme to remedy past under investment and to bring the quality of water and wastewater up to standards set by EC Directives. The net effect was that water prices to customers would have to be increased. The mechanism used for the water industry is therefore commonly known as RPI+K⁴⁷.

K factors are based primarily on an undertaker's long-term revenue requirement, taking into account capital investment requirements to meet its statutory obligations, operating expenditure requirements including a judgement on potential operating and capital efficiencies, return on capital and tax requirements.

⁴⁶ Littlechild, 1988.

⁴⁷ K is commonly referred to as the 'K factor'.

The K factor sets the maximum percentage by which total income can be increased for a basket of principal charges to all customers, whether domestic, business, metered or unmeasured. Prices are set on the basis of the tariff basket calculation which were set at privatisation and later included in condition B of the companies' licences.

The tariff basket formula is a complex mechanism for weighting increases in individual tariffs. It comprises two methods of calculating the weighted increase, one for unmeasured charges and one for measured charges. Most of a company's charges are linked within the tariff basket as a whole, which means that changes to one basket of charges can be offset by changes to another. Similarly, changes to individual tariffs can be offset by changes to others. This is known as tariff rebalancing⁴⁸.

Certain charges are not included in the price limit formula. These include charges for bulk supplies and infrastructure charges, charges for non-domestic supplies of water and the reception, treatment and disposal of trade effluent.

4.3.4 Process for setting price limits at privatisation

The initial K factor for each undertaker was set by the Secretary of State for a period of ten years from April 1990 to March 2000. In setting the K factors for each company, the Secretary of State took account of the future investment proposals from each company, the comparative efficiency assessment of each company, and the minimum return investors would accept for investing in the privatised companies.

Asset management plans

In the period leading up to privatisation, each water authority and statutory water company was required to prepare an investment plan, known as an Asset Management Plan (AMP), to assess the condition of the fixed assets and expected expenditure levels over a 20-year period.

Each asset management plan distinguished between expenditure required to maintain operating capability, and expenditure required to enhance infrastructure, including that of complying with new legislation (including to meet the discharge permit requirements of COPA II by March 1992), meeting the demands of new customers and growth in demand from existing customers.

In addition, each Authority prepared detailed ten-year financial projections of revenue, costs and capital expenditure.

⁴⁸ Ofwat, 2005

Efficiency assessment

A comparative efficiency review was undertaken by advisers to the Department of Environment. This process involved teams of consultants visiting each undertaker to examine its operating costs. The undertakers were weighted to allow for factors regarded as having a significant effect on costs, namely:

- raw water quality
- economies of scale in treatment
- terrain and pumping
- regional wage rates
- system flexibility
- maintenance of distribution network
- population
- special demand factors
- economies of scale in administration

Each undertaker was placed in one of four efficiency bands to indicate the scope for improvements in its efficiency. In addition, each undertaker was required to achieve a general efficiency saving of one per cent a year to cover efficiency associated with privatisation and future technological changes.

Changes to accounting policy

A major change to the industry at privatisation was the introduction of infrastructure renewals accounting. Infrastructure renewals accounting was accepted by government and the water authorities as a more appropriate approach to the treatment of capital expenditure of underground assets than the conventional approach of capitalisation and depreciation over the life of each asset. Under this method, the infrastructure network is treated as a single asset system to be maintained in perpetuity rather than a collection of assets each with its own life and maintenance requirements.

Each year a charge is made against profits for the annualised costs of maintaining the system at its current level of operations. The level of the charge should be broadly constant, in real terms, over the medium to long term, assuming the network systems are in steady state.

Therefore, capital expenditure for above-ground assets (such as treatment works) and below-ground assets (such as sewers and pipes) contribute to the accounting charges in customers' bills in different ways:

- Capital enhancement expenditure is paid for by customers in their bills over the life of the investment through returns on the net investment and depreciation charges (for above ground assets) rather than immediately the investment is incurred.

- Above-ground capital maintenance is paid for by customers over the life of the asset through returns on the net investment and depreciation charges.
- Capital maintenance expenditure on underground assets is averaged over several years via the infrastructure renewals charge. This infrastructure renewals charge takes the place of both depreciation and expenditure on major repairs and is calculated to maintain the system in perpetuity with no loss of value. There is therefore no depreciation charge for infrastructure assets which would otherwise be the case under conventional accounting.

Financial criteria

The cost of capital on which price limits were set was a pre-tax rate of return of 7% for the water and sewerage companies and 8% for most of the water only companies. This was the assumed rate of return that was necessary to ensure that companies would have sufficient access to debt and equity funding given the strongly negative cashflows faced by each company.

To ensure the companies would be financially stable following privatisation the financial model used to set K factors took account of a number of financial criteria including: earnings per share, dividend per share, dividend cover, interest cover, operating profits, return on capital employed, net cash flow and debt/equity ratio. The K factors set at privatisation for the ten water and sewerage companies are shown in table 4.3.5.

4.3.5 Flotation

In order to make up for years of under-investment and to ensure the shares in the public limited companies would be attractive to investors, government cancelled all of the long term debt owed by the water and sewerage companies at a total cost of £7.6bn (in 2003-04 prices)⁴⁹. The government provided for a cash injection of £2.3bn⁵⁰ to the balance sheets of the water and sewerage companies, known as the 'green dowry'. In addition, provision was made for capital tax allowances of £12.0bn⁵¹ to ensure that the companies were not put at a disadvantage compared with other companies who had built up capital allowances over time.

⁴⁹ £4.9bn in 1989 prices, Ofwat 2004(b).

⁵⁰ £1.5bn in 1989 prices, Ofwat 2004(b).

⁵¹ £7.7bn in 1989 prices, National Audit Office, 1992.

Table 4.3.5 Capital expenditure and K factors set at privatisation⁵²

Water and Sewerage Company	10 year Capital Expenditure	K factors	
	£m	% p.a. yrs 1-5	% p.a. yrs 5-10
	2003-04 Prices		
Anglian	4,674	5.5	5.5
Northumbrian	1,226	7.0	3.0
North West	5,846	5.0	5.0
Severn Trent	5,651	5.5	2.0
Southern	1,830	5.5 *	0.0
South West	1,741	6.5	5.0
Thames	4,460	4.5	4.5
Wessex	1,795	4.5	4.5
Yorkshire	3,483	3.0	3.0
Total	30,707		

*Southern's K was 5.5 for 3 years; 3.5 for 2 years.

The government retained a 'golden share' in each water and sewerage company. This prevented any individual or single company from controlling more than 15% of voting shareholdings (unless 75% of shareholders voted otherwise) to prevent any unwanted take-overs. The golden share was redeemable on 31 December 1994.

At flotation, 100% of the companies was offered for sale and fully underwritten. An individual share offer was made to the general public in the UK and a special share package was made available to UK institutions and overseas investors.

The government's advisors considered that the uncertainties in relation to capital investment and the regulatory environment put the water companies at a higher risk than the previous comparator British Gas. After taking a wide range of advice, Ministers agreed that average yields (the return on the fully paid share price) for each company would range between 8.1% and 9.7% with an average of 8.55%. After allowing for a target premium of 10%, this assumed that shares would trade at an average of 7.7%, compared with 7% for British Gas⁵³. The 2,183 million water shares were priced at £2.40 and the offer was some 2.8 times subscribed.

⁵² Department of the Environment, 1989.

⁵³ National Audit Office, 1992.

In total, gross proceeds of the sale were £7.6bn⁵⁴ in 2003-04 prices, equivalent to £5.0bn net of the green dowry and privatisation costs. After taking account of the debt write off, this had the effect of eliminating any proceeds to the taxpayer from privatisation⁵⁵.

Trading in water shares began on 12 December 1989. At close of business, the average share price was £2.80, representing an average premium, after adjustments for the general movement in share prices, of 8.7%. This was within the 10% target set by government⁵⁶. In the three months following flotation, water shares continued to outperform the FTSE All Share Index, moving to a premium in excess of 20% after allowing for general movement in share prices at the end of January 1990.

⁵⁴ National Audit Office, 1992.

⁵⁵ McIntosh, 1990.

⁵⁶ National Audit Office, 1992.

5. CURRENT LEGAL FRAMEWORK AND CONDITIONS OF APPOINTMENT

5.1 LEGAL FRAMEWORK

After privatisation, four Acts of Parliament codified all past legislation still in force. The four Acts were:

- The Water Industry Act 1991 set out the powers and duties of the Water and Sewerage Companies, thus replacing those set out in the Water Act 1989, and defined the powers of the Director General of Water Services (see section 5.4.3).
- The Water Resources Act 1991 set out the functions of the National Rivers Authority and introduced water quality classifications and objectives for the first time (see section 5.4.2);
- The Statutory Water Companies Act 1991 applied specifically to the former statutory water companies;
- The Land Drainage Act 1991 transferred the functions of previous internal drainage powers of local authorities to the NRA.

In addition, subsequent Acts have modified this framework. These include:

- The Competition and Service (Utilities) Act 1992. This increased Ofwat's powers to determine disputes and increased the limited opportunities for competition in the industry.
- The Environment Act 1995. This led to restructuring of environmental regulation and placed a duty on the companies to promote the efficient use of water by customers. It consolidated the functions of the National Rivers Authority, Her Majesty's Inspectorate of Pollution, the Waste Regulation Authorities and certain elements of the Department of the Environment to a new body, the Environment Agency.
- The Competition Act 1998. This prohibits any agreements between businesses that prevent, restrict or distort competition. It also prohibits any abuse of a dominant market position. The Director General of Water Services shares investigative powers in the water industry with the Office of Fair Trading under the Act.
- The Water Industry Act 1999, made several important amendments to the Water Industry Act 1991, including removal of an undertaker's right to disconnect domestic customers for non-payment of bills, a limit on the circumstances in which companies can compulsorily meter customers, and gave the Director the task of approving companies' charging schemes. It also secured that companies could continue to charge customers on the basis of rateable value.

- The Water Act 2003, which amended the framework for abstraction licensing, revisions to the corporate structure of economic regulation and extended the scope for competition in the industry to large users.
- The Enterprise Act 2002, which has provisions relating to the merger regime.

5.2 DUTIES OF THE UNDERTAKERS

The Water Industry Act 1991 is the Act which sets out the main duties of both water undertakers and sewerage undertakers.

5.2.1 General duties of water undertakers

The general duties of the water undertakers, as defined in section 37 of the Water Industry Act 1991:

- to develop and maintain an efficient and economical system of water supply within the undertaker's area;
- to provide supplies of water to premises in the undertaker's area and make such supplies available to persons who demand them; and
- to maintain, improve and extend the water undertaker's water mains and other pipes.

These duties are enforceable by the Secretary of State or, with her consent, the Director General of Water Services.

Specific duties and powers of water undertakers

The Water Industry Act 1991 also places specific duties on and gives powers to the water undertakers, including:

- A duty to connect premises to the network where a supply for domestic purposes is requested (sections 45-49 of the Act). Undertakers may recover expenses for the connection from the person requesting it.
- Once connected there is a duty to supply water that is sufficient for domestic purposes and maintain the connection between the water main and the service pipe which supplies the customer (sections 52 to 54). Section 218(1) of the Act defines domestic purposes as "drinking, washing, cooking, central heating and sanitary purposes".
- A water undertaker is required to provide services for various other purposes, including for fire fighting and public purposes. An undertaker must also provide supplies for non-domestic services unless the provision of services would put at risk the abilities of the undertaker to meet its existing or future obligations, or unreasonable expenditure would be incurred in meeting those obligations (sections 55-59).

- Sections 60-63 gave undertakers the power to disconnect properties from supply in the event of (i) action required to carry out necessary works, (ii) non-payment of bills or (iii) where the customer no longer requires a supply. The undertaker's ability to disconnect household customers for non-payment of bills was removed by the Water Industry Act 1999.
- Section 65 requires undertakers to provide water at a sufficient pressure to supply customers' premises.
- Section 68 requires undertakers to supply water that is wholesome at the point of supply. Standards for wholesomeness and steps to preserve water quality are determined by the Secretary of State through regulations made under sections 67 and 69. The Secretary of State may appoint inspectors to act on her behalf (see section 5.4.5) in monitoring and regulating the quality of water. Local authorities also have a duty to keep themselves informed about the quality of water in their areas.
- Water undertakers enforce the regulations regarding water fittings made in section 74 of the Act.

5.2.2 General duties of sewerage undertakers

The general duties of the sewerage undertakers are defined in section 94 of the Water Industry Act 1991:

- to provide, improve and extend a system of public sewers, and to cleanse and maintain them to ensure its area is effectively drained; and
- to make provision for emptying its sewers and treatment of sewage.

This duty is again enforceable by the Secretary of State or, with her consent, the Director General of Water Services.

Specific duties and powers of the sewerage undertakers

- Sewerage undertakers have a duty to provide a public sewer for domestic drainage if requested by (i) the owner or occupier of land on which there are, or are intended to be, buildings or (ii) a Local Authority in the area that it serves.
- Section 97 provides that a Local Authority may carry out the sewerage functions on behalf of a sewerage undertaker, however, this does not remove the responsibility of the sewerage undertaker in carrying out its functions.

5.2.3 Other general duties and powers

Sections 155 to 169 of the Act provide the powers for the undertakers to carry out works. This includes powers for compulsory purchase and compulsory works orders for the purposes of carrying out the water undertaker's functions.

Water undertakers have a power to charge customers for any services they provide their customers (section 142-143). Charges can be fixed by a charges scheme or by agreement. From 2000 the charges schemes must be approved each year by the Director General of Water Services under the Water Industry Act 1999.

5.3 CONDITIONS OF APPOINTMENT

The Conditions of Appointment (often referred to as the "Licence") were originally granted by the Secretaries of State for the Environment and Wales in 1989. The Licence imposes conditions on the companies which are enforced by the Director General of Water Services.

Each licence was granted for a period of at least 25 years from privatisation. Initially a licence could be terminated if a minimum ten-year notification period was given. In 2002 the minimum notification period was extended to 25 years. This provided companies with greater certainty, enabling them and their investors to plan ahead more securely.

The Licence is mainly concerned with the setting of price limits for companies, how these are incorporated into customers' bills, ensuring that the supply and quality of service are maintained and protecting the interests of customers. There is some variance in the Licence Conditions of each undertaker, however, the main licence provisions are summarised below:

Condition A explains terms and expressions used in the Licence.

Condition B sets out the formula for calculating price limits (K factors). At privatisation, the condition required the Director to review price limits at ten-yearly intervals, but with an option to review after five years. The licence condition was amended in 1998 to require a review of all price limits at five-yearly intervals. It requires each company to produce an annual Principal Statement so that Ofwat can verify that the company's charges reflect its price limits.

Condition B also allows the Director to make, in any year, adjustments to a K factor for certain "relevant changes of circumstances" where the material impact, as measured over five years or fifteen years exceeds 10% of annual turnover. The Licence Condition allows a two-way process such that a review of price limits can be instigated by the Director or at the request of the undertaker. This provides a mechanism for an increase in K factors where costs increase due to unforeseen circumstances and clawback in the event that costs are significantly lower than anticipated.

Adjustments can also be made in relation to specific “Notified Items”. These are defined at each periodic review and currently include items such as changes in the number of meters installed to those assumed at price setting, changes in the level of bad debt due to the ban on the disconnection of domestic customers, and the cost of managing debt.

Condition C limits the amount that an undertaker can charge for the first time provision to any premises of a water supply or sewerage service for domestic purposes and the rate of increase of this charge. This charge is known as an infrastructure charge, and the maximum charge is set by Ofwat.

Condition D requires undertakers to issue a charges scheme setting out standard tariffs for supplies of water for domestic purposes and for the drainage of sewage for domestic purposes. As a result of the Water Industry Act 1999, from 1 April 2000, these charges schemes must be approved by Ofwat.

Condition E prohibits undue preference to, or undue discrimination against, any class of customer in setting charges.

Condition F details the accounts and financial information which companies are required to provide to enable the Director to assess and compare their financial position and performance. It requires that each company certifies that it has sufficient resources in place to fulfil its functions for the following 12 months.

Condition G requires each company to produce a Code of Practice for dealing with customers, including the role of WaterVoice (see section 5.4.7) in handling customer complaints.

Condition H requires that each company prepares a code of practice for dealing with customers in debt which provides to customers who have difficulty paying bills.

Condition I requires each company to publish a code of practice and procedure for dealing with metered domestic customers where there is an unidentified leak in a part of the supply pipe that is the customers responsibility.

Condition J requires the company to provide information to Ofwat on the levels of service they provide.

Condition K requires companies to ensure that they have access to sufficient assets to be able to perform their duties and operate as an independent company.

Condition L requires each company to produce long-term plans for the maintenance of, and investment in, water distribution systems so that the Director can be sure that standards will be maintained.

Condition M requires each company to provide the Director with any information he may reasonably require to carry out his functions.

Condition N gives the Director power to levy annual Licence Fees on the companies to cover the costs of running his department and of references to the Competition Commission. The fees are payable to the government, which meets Ofwat's running costs.

Condition O sets out circumstances in which a replacement appointment can be made.

Condition P does not apply to all companies and has been introduced as a result of mergers or refinancing, particularly where companies have become part of a larger group of companies. It sets out the role of the regulated businesses' owners to ensure the company is run independently of the rest of the group. All but seven companies now have this condition.

Condition Q concerns compensation payments to be made to customers in the event of interruptions to water supply because of drought.

5.4 REGULATORY FRAMEWORK

The current regulatory structure of the industry is summarised in Table 5.4.

Table 5.4

Regulator	Role	Remit
European Union Section 5.4.1	European Legislation, standard setting	Sets European water, wastewater and environmental standards
Environment Agency Section 5.4.2	Environmental regulator	Principal adviser to the government on the environment, leading public body protecting and improving the environment of England and Wales; competent authority for implementation of the Water Framework Directive. Work in partnership with a range of other organisations to reduce flood risk, promote sustainable development and secure environmental and social benefits.
Office of Water Services (Ofwat) Section 5.4.3	Economic regulator	Protect customers; sets price limits; secures that companies can finance and fulfil their functions; monitors compliance with licence conditions; standards of service.
Department for Environment, Food and Rural Affairs Section 5.4.4	Government department which sets the overall policy framework in England and Wales.	Standard setting, drafting of legislation, appoints regulator, special permits (e.g. drought orders)
Drinking Water Inspectorate Section 5.4.5	Water quality regulator	Drinking water quality monitoring and enforcement.
Competition Commission Section 5.4.6	Mergers; appeals	Company mergers; body of appeal
Consumer Council for Water Section 5.4.7	Customer representation	Handles water company customer complaints; represents consumers in policy-making process

5.4.1 European Union

The European Union (previously the European Community) plays a key role in legislation and standard setting, formally through issue-based Directives and now through the comprehensive Water Framework Directive. Directives are set by the European Union and addressed to each member state. Directives are legally binding and are implemented by the member state by transposing it into domestic law.

The United Kingdom is the member state so legislation must be introduced for Scotland and Northern Ireland in addition to England and Wales. Member states are in breach if the Directive is not fully and correctly implemented within the time limit required by the Directive. The Directives currently relevant to the water industry are:

- Nitrates Directive, which aims to reduce nitrate pollution in surface and ground water as a result of farming activities, and prevent it in future.
- Habitats Directive, which was introduced to protect and/or restore habitats for wild flora and fauna.
- Freshwater Fish Directive requires member states to protect designated surface waters from pollution that could be harmful to fish.
- Shellfish Waters Directive, which sets maximum pollution levels for certain substances that can be toxic to shellfish.
- Dangerous Substances Directive, which prohibits the release of certain dangerous substances into the environment without prior authorisation.
- Groundwater Directive, lists substances which should be prevented from entering, or prevented from polluting, groundwater. It requires a system of prior investigation, authorisation and requisite surveillance to be put in place.
- Urban Wastewater Treatment Directive sets requirements for the provision of collecting systems and the treatment of sewage according to the size of the discharge and the sensitivity of the receiving surface water.
- Drinking Water Directive sets standards for drinking water to protect public health and maintain the aesthetic quality of drinking water supplies.
- Bathing Water Directive sets standards aimed at protecting the health of bathers in surface waters and maintaining the aesthetic quality of these bathing waters.
- Surface Water Abstraction Directive sets quality objectives for the surface water sources from which drinking water is taken.

- The Water Framework Directive is the most substantial piece of EC legislation to date and requires all inland and coastal waters to reach “good status” by 2015.

5.4.2 Environmental regulation

National Rivers Authority

The main function of the water authorities that was transferred to the National Rivers Authority (NRA) in 1989 was the protection and management of water resources and management of abstraction licences. The functions of the NRA included matters relating to the quality of inland and coastal waters, control of water pollution, the control and management of water resources, navigation, salmon and freshwater fisheries, responsibility for flood defence, recreation, conservancy and harbour authority activities.

Environment Agency

The Environment Act 1995 consolidated the functions of the NRA, Her Majesty’s Inspectorate of Pollution (HMIP)⁵⁷, the Waste Regulation Authorities and certain elements of the Department of the Environment to a new body, the Environment Agency. The purpose of the new structure was to provide an integrated approach to the protection of the environment by combining the regulation of land, air and water.

The EA is a separately constituted body, but acts under direction of the government and is directly responsible to Ministers. In certain instances, decisions by the EA require the approval of the Secretary of State, and the Secretary of State has specific powers to control or influence the EA. For example, the Secretary of State may give specific directions to the EA so as to enable the UK to give effect to European legislation.

The EA has a wide range of statutory responsibilities for regulating and managing the environment which extend to pollution by industry, regulation of the disposal of radioactive waste, disposal of controlled waste, regulation of the remediation of contaminated land and to administer, monitor and enforce associated obligations.

The responsibilities relating to the water industry include (i) preservation and improvement of the quality of rivers, estuaries and coastal waters to prevent pollution, (ii) conserve, redistribute, augment and secure proper use of water resources, (iii) general supervision over flood defence, (iv) maintain and improve fisheries and (v) promote the conservation and enhancement of inland and coastal waters and their use for recreation.

In 2003-04 the EA had a budget of £805m, over half of which is spent on flood defence. The EA’s income is from three sources:

⁵⁷ HMIP was the pollution inspectorate responsible for integrated pollution control under the Environment Protection Act 1990 and the control of radioactive waste under the Radioactive Substances Act 1993.

- Income raised from charging schemes, including for example, those that deal with industrial and business matters, including water abstraction licences and waste management licences, down to recreational fishing licences. The schemes are subject to the principle of cost recovery such that charges cover costs incurred in running the scheme.
- Flood defence levies. Levies are raised on Local Authorities to fund flood defence activities. Flood Defence Committees, who decide the annual programme of improvement and maintenance work, approve expenditure and determine the amounts to be levied by the Environment Agency.
- Government grants from the Department for Environment Food & Rural Affairs (Defra) and the National Assembly of Wales (NAW). These comprised approximately 27% of the budget in 2003-04. The grants help to finance, amongst other things, flood defence capital schemes, pollution prevention and control activities, recreation, conservation and navigation.

Each water undertaker is responsible for ensuring that their water resources are adequate to meet the present and future demands of their customers, notwithstanding any constraints due to the number and extent of their abstraction licences. The EA has a duty to secure the proper and efficient use of water resources, and a separate duty to have particular regard to water undertakers' own water supply duties. In fulfilling this duty, the EA reviews the 25 year water resource plan of each water company annually.

Abstraction licences

As the licensing authority for groundwater and surface water abstraction, the EA is responsible for the granting of abstraction licences to both water-only and water and sewerage undertakers as well as to other sectors including industry and agriculture.

Current EA policy is that new abstraction licences will be granted only if the EA is satisfied of the need for new resources following a thorough analysis of demand, including the scope for demand management and environmental impact. Abstractors have a right of appeal to the Secretary of State against an EA decision with respect to the granting or refusal of a licence. The EA has the power to prosecute for breach of a licence condition.

Abstraction licences are determined after discussion with the companies and consideration of representations from relevant parties. Abstractors are charged on the basis of recovering the costs of managing water resources in the region concerned and in proportion to the environmental impact of abstraction.

The Water Act 2003 has further extended the EA's powers regarding the management of abstraction licences.

Discharge permits

The EA is responsible for controlling and monitoring the discharges of both industry and sewerage undertakers into receiving waters and for collecting charges in respect of permits to discharge. In 2002 there were about 100,000 water quality discharge permits in force in England and Wales. Of these, there were nearly 1,500 'significant' permitted discharges from sewage treatment works or industrial sites⁵⁸.

There are three different processes involved in setting discharge permits:

- The first process is the setting of classification systems for waters to comply with EC Directives. The process must comply with the requirements of the Surface Waters (River Ecosystem) (Classification) Regulations 1994, which were introduced in England and Wales.

The Regulations laid down five classifications which are defined according to conformity with seven parameters: dissolved oxygen, biochemical oxygen demand (BOD), total ammonia, un-ionised ammonia, pH, dissolved copper and total zinc. Standard sampling and analysis methods are laid down, as are methods for determining compliance with the classifications.

- The second process is that water quality objectives for individual stretches of controlled waters may be set by the Secretary of State which reflect the use to which the waters are put. These standards, known as Statutory Water Quality Objectives, act as explicit policy goals for the EA under its legal duty to grant discharge permits.
- The third process is that the EA and Secretary of State are placed under a duty to exercise their powers under the Water Resources Act 1991 so as to achieve and maintain the statutory water quality objectives at all times, so far as it is practicable to do so.

⁵⁸ "Significant" tend to be those with a flow of greater than 5 MI/d.

5.4.3 Office of Water Services

Ofwat is the economic regulator for water and sewerage services in England and Wales. It is a non-ministerial government department and is independent of government. It is currently led by a Director General of Water Services who is accountable to Parliament. His appointment is granted for a five-year term by the Secretary of State. Ofwat is funded from licence fees paid by the undertakers and the duties of the Director are defined in the Water Act 1991, as amended. Ofwat has responsibility for regulation of water companies in England and Wales.

The primary duties of the Director (as amended by the Water Act 2003) are to act in a way that he considers is best calculated to:

- Protect the interests of customers (wherever appropriate by promoting effective competition);
- secure that the functions of each water and sewerage company, as specified in the 1991 Act, are properly carried out; and,
- to secure that companies are able to finance their functions, in particular by securing a reasonable rate of return on their capital.

In carrying out these functions, the Director has a number of secondary duties to:

- promote economy and efficiency;
- secure that no undue preference is shown, and that there is no undue discrimination to customers, in the way that companies fix and recover charges. This means that a customer's bill, in general terms, should reflect the costs which that customer imposes on the system for a supply of clean water, disposal of dirty water and draining of surface water;
- to secure that customers are protected as respects benefits that could be secured for them from the proceeds of any disposal of a company's protected land;
- protect customers' interests, including the quality of the service that they receive;
- to ensure that transactions with associate companies are carried out at arm's length;
- to ensure that each company maintains its accounts in a suitable form and manner;

- enforce the companies' duty (under the Environment Act 1995) to promote the efficient use of water by their customers; and
- to contribute to the achievement of sustainable development.

The Director is supported in performing his duties by his office (Ofwat) which compares the performance of the companies to encourage greater efficiency and secure value for money for customers. Ofwat monitors company performance to ensure that companies deliver the required services and improvements and services.

Ofwat has responsibility for setting price limits (K factors) every five years which determine the increases that companies can make to their charges. Ofwat set price limits for the undertakers in 1994, 1999 and 2004.

The Director also has powers under the Competition Act 1998, which came into force on 1 March 2000. The Competition Act prohibits companies from entering into agreements that are anti-competitive and prohibits abuse of a dominant market position. It strengthens the Director's powers to investigate complaints and to take action, including imposing financial penalties, where behaviour is anti-competitive.

The Water Industry Act 2003 has provided the Director with additional powers to fine companies for contravention of a licence condition.

As a result of implementation of the Water Industry Act 2003, the role of the Director will be replaced by the Water Services Regulation Authority, from April 2006.

5.4.4 Secretary of State and the Department for Environment, Food and Rural Affairs

The Secretary of State for Environment, Food and Rural Affairs (Defra) has overall responsibility for all aspects of water law and policy in England, including water supply, water resources management and the regulatory systems for the water environment, drinking water and water industry.

The Secretary of State and Ministers are supported and advised by the Water Directorate within Defra.

Defra prepared the water legislation which established the main water companies and their regulatory bodies; setting out the duties and powers of each. Defra also sets the legal framework for drinking water quality, environmental, and customer service standards which the undertakers must deliver and the regulators must enforce.

Many of the UK's water quality and environmental standards derive from EU Directives. The Department negotiates with the EU on behalf of the UK and advises in relation to the implementation of Directives in UK law as necessary. Defra also leads on the development of national water policies, which is the

core of the Department's remit. Defra has three main policy objectives which it delivers within the framework of sustainable development:

- a secure supply of water of a quality safe for drinking
- the use of water resources and sewerage services in a way that respects the environment
- furtherance of social and economic policies

The Water Directorate also co-ordinates policy for the coastal and marine environment, including international agreements on the North East Atlantic and the North Sea, and policy on flood management and inland waterways.

The Welsh Assembly Government has a similar role in Wales.

5.4.5 Drinking Water Inspectorate

Water companies have a duty under the 1991 Act to supply water that is wholesome at the point of supply; it is a criminal offence to supply water unfit for human consumption. 'Wholesomeness' is defined by reference to standards and other requirements set out in the Water Supply (Water Quality) Regulations 2000 (England) and 2001 (Wales). These regulations transpose the requirements of the 1998 EC Directive on the quality of water intended for human consumption.

The Secretary of State for the Environment, Food and Rural Affairs and the National Assembly for Wales are the respective Authorities responsible under the Act for regulating the quality of public drinking water supplies in England and Wales. These authorities have appointed persons in the form of the Drinking Water Inspectorate (DWI) to act on their behalf in relation to sections 67 and 70 of the Act. They have also delegated specific powers to the Chief Inspector of Drinking Water to enforce water quality standards and initiate prosecutions.

The main tasks of the DWI are to:

- carry out a technical audit of water undertakers;
- initiate enforcement action as necessary for contraventions of the wholesomeness standards or other enforceable environmental duties;
- investigate incidents which affect drinking water quality adversely;
- prepare cases for prosecution if there is sufficient evidence that water unfit for human consumption has been supplied;
- provide technical and scientific advice to Ministers and officials of Defra and the office for the Welsh Assembly Government on drinking water policy issues, identify and assess new issues or hazards relating to drinking water quality and initiate research as required;

- assess and respond to consumer complaints on drinking water quality when local procedures have been exhausted;
- assist in the Authorities' approval process for substances, products and processes used in the provision of public water supplies; and
- provide authoritative guidance on matters such as the analytical methods used in the monitoring of drinking water.

The DWI has no role in enforcing the Private Water Supplies Regulations, which relate to supplies other than those provided by the water undertakers. This is the responsibility of Local Authorities under section 77 of the Act. Local Authorities are required to keep a register of private supplies in its region. However DWI provides technical advice to local authorities on private water supplies.

5.4.6 Competition Commission

The Competition Commission (previously the Monopolies and Mergers Commission) has the role of 'court of appeal' for both the water companies and the Director. A company may appeal against the decision of the Director in respect disagreement of the following issues:

- the five-yearly review of K factors and infrastructure charge;
- interim adjustments of K; and
- any amendment to the companies licences.

In considering these matters, the Commission must take into account the same issues as those taken into account by the Director under the Water Industry Act 1991. Decisions by the Competition Commission are binding but apply only to those companies that seek a redetermination. Redeterminations of price limits were sought by South West Water and Portsmouth Water following the 1994 periodic review and by Sutton and East Surrey Water and Mid Kent Water following the 1999 periodic review (see section 6.4).

The Competition Commission also plays a role in the event of a merger or acquisition within the industry. Under section 32 of the Water Industry Act 1991 (as amended by the Enterprise Act 2002 and the Water Act 2003) a merger involving any two undertakers in England and Wales must be referred to the Competition Commission where the turnover of each of the water enterprises to be merged exceeds £10m. In practice, this would mean that any merger within the water industry would be referred to the Competition Commission for investigation.

5.4.7 Customer protection and representation

As noted in section 5.4.3, the Director General of Water Services has a duty to carry out his functions in the manner which he considers best calculated to protect the interests of customers. The Water Industry Act 2003 also requires the Director to have particular regard to the interests of customers that are disabled or chronically sick, of pensionable age, have low income, reside in rural areas or whose premises are not eligible to be supplied by a licensed supplier.

To aid the customer objective the Director appointed ten regional committees, called Customer Service Committees (CSCs), each corresponding to the areas served by the ten water and sewerage companies. The Director was given certain powers to establish and maintain the CSCs and the duties of the CSCs included keeping under review all matters likely to affect the interests of customers of the water and sewerage undertakers, and the investigation of complaints by customers.

The Director appointed a Chairman to each CSC and the Director and chairmen of the CSCs met as the Ofwat National Customer Council. This was a non-statutory body, intended to complement the work of the CSCs, to assist the Director in complying with his duties in relation to the protection of customers' interests and to strengthen the representation of water customers nationally.

Under the Water Act 2003, a new independent Consumer Council for Water (CCWater) was set up on 1 October 2005 to replace the existing customer representation structure. CCWater is independent of both the water industry and the regulator. It replaced the existing statutory consumer representative WaterVoice.

6 POST PRIVATISATION – PRICE SETTING

6.1 INTRODUCTION

As discussed in section 4.3, price limits⁵⁹ were set at privatisation for each company for a ten-year period. Within the first two years of privatisation, companies' profits were exceeding forecasts due to delays in the capital investment programmes and, added to the rate of return assumed in the privatisation settlement, the profits generated by the privatised companies were increasingly unacceptable to the public.

In July 1991 Ofwat announced that it would review price limits for all companies in 1994. The reasons stated were:

- It would allow for a re-examination of the reasonable rate of return on capital. The settlement at privatisation was necessary to create a market for the privatised companies shares, but evidence suggested that the financial profiles were more generous than those needed to finance an efficient company;
- Price limits would be set that took account of the new environmental obligations arising since privatisation, examples included the ban on the dumping of sewage sludge at sea, adoption of the Urban Waste Water Treatment Directive and the acceleration of the completion of dates for compliance with the Bathing Waters Treatment Directive;
- No efficiency targets had been built into price limits after 1994 at privatisation.

The circumstances that necessitated a full review of price limits were clearly evident from discussions between the economic regulator and the companies in the years immediately after privatisation. Ofwat had warned companies to consider not putting up their charges by the maximum allowed under the K formula and voluntary abatements⁶⁰ of K were agreed with most companies in each of the three charging years 1991-92, 1992-93 and 1993-94.

With seven companies refusing to agree to abate K for the 1993-94 charging year, Ofwat sought formal redeterminations of price limits for the seven companies. The result of this and the voluntary abatements was that customer bills across England and Wales were, on average, 2% lower than they would otherwise have been by the 1994-95 charging year.

⁵⁹ A price limit is the average increase in charges that a company can increase (or decrease) its overall average charge above (or below) inflation each year to finance its services and meet its legal obligations. It applies to the average charge of the previous year.

⁶⁰ An abatement of K occurs where a company does not apply its full K to its regulated charges in any one year. If the abatement is voluntary it can carry forward any unused K to future years.

The major new environmental obligations imposed on the sewerage companies were a particular issue for South West Water, the company with the longest coastline. New environmental obligations significantly increased its expected capital investment programme. Its formal application in 1991 to increase its price limits led to an increase in K from 6.5 to 11.5 in 1992-93, 1993-94 and 1994-95. After further clarity of outputs, Ofwat's second formal determination of South West Water's price limits in 1992 decreased its price limits to 11.0 in 1993-94 and 1994-95.

The 1994 price review set price limits which took effect for ten years from April 1995. By 1998 it was clear that the frequency and extent of changes affecting water companies were such that 10-year price limits were not appropriate, consequently and the licence conditions of all companies were amended to require price reviews to be undertaken at five-yearly intervals. Price limits were subsequently set for all companies in 1999 and 2004 for the five-year periods 2000-05 and 2005-10 respectively.

The period between reviews will be subject to further consideration in the future to ensure price setting continues to match the needs of the planning requirements of what is a long-term industry. Some companies and other bodies have suggested, for example, that a five-year time horizon does not provide sufficient stability for an industry that must plan to provide water and sewerage services much further into the future.

6.2 APPROACH

There are a number of areas where the approach to issues at each price review have been refined or developed. These developments have been made in response to new issues, as a result of better access to information on company performance and in response to criticisms of previous reviews. However, the principles underlying each price review have been broadly similar.

In setting price limits, the first stage is to establish the outputs that need to be delivered within the price setting period. These are dependent on the individual needs, obligations and requirements of each company. Price limits need to be sufficient to allow each company to:

- run their businesses day-to-day to meet all service, and environmental compliance obligations;
- maintain asset systems for current and future customers;
- ensure a sufficient balance between supply and demand for water and sewerage services;
- meet drinking water quality standards;
- meet obligations on environmental improvements; and
- make other drinking water quality, service and environmental improvements, for example reducing the number of homes at risk of sewer flooding.

In setting price limits, Ofwat consults with the companies, Ministers, the EA, English Nature and customer representation groups, including WaterVoice. This ensures that price limits are set at the level required to address the needs of customers, the companies and the environment.

At each price review, companies have produced business plans which set out the price limits they propose and their justification. These have been subject to careful scrutiny by Ofwat in deriving its conclusions on price limits. Table 6.2 demonstrates the outcome of Ofwat's scrutiny in determining price limits at the 2004 price review for Yorkshire Water and the industry.

The average price limits for the water and sewerage companies and the industry averages set at each review are shown in Annex B. The negative price limits set for the 2000-01 financial year at the 1999 price review are of particular note. These reduced price limits, on average, by 12.3% for the industry.

The bill drivers table in Annex B for the 1999 review demonstrates it was past performance of companies, particularly on efficiency savings and return on capital, together with the assumptions about future efficiency that were the primary factors in reducing bills at the 1999 review.

Table 6.2 Price limits set at the 2004 review and price limits included in the business plan of Yorkshire Water and the industry average

	Annual price limits					Average
	2005-06	2006-07	2007-08	2008-09	2009-10	
Price limits set in 2004						
Yorkshire	5.5	4.9	3.6	3.6	2.1	3.9
Industry average (weighted)	9.6	3.9	3.2	2.5	2.0	4.2
Business plans						
Yorkshire	6.9	3.7	3.7	3.7	3.7	4.3
Industry average (weighted)	13.4	7.1	4.6	3.4	2.9	6.2

1. The average for the price limits is the geometric average of the annual price limits.

Source: Ofwat

6.3 SETTING PRICE LIMITS

Figure 6.3 represents, in broad terms, the approach to setting price limits.

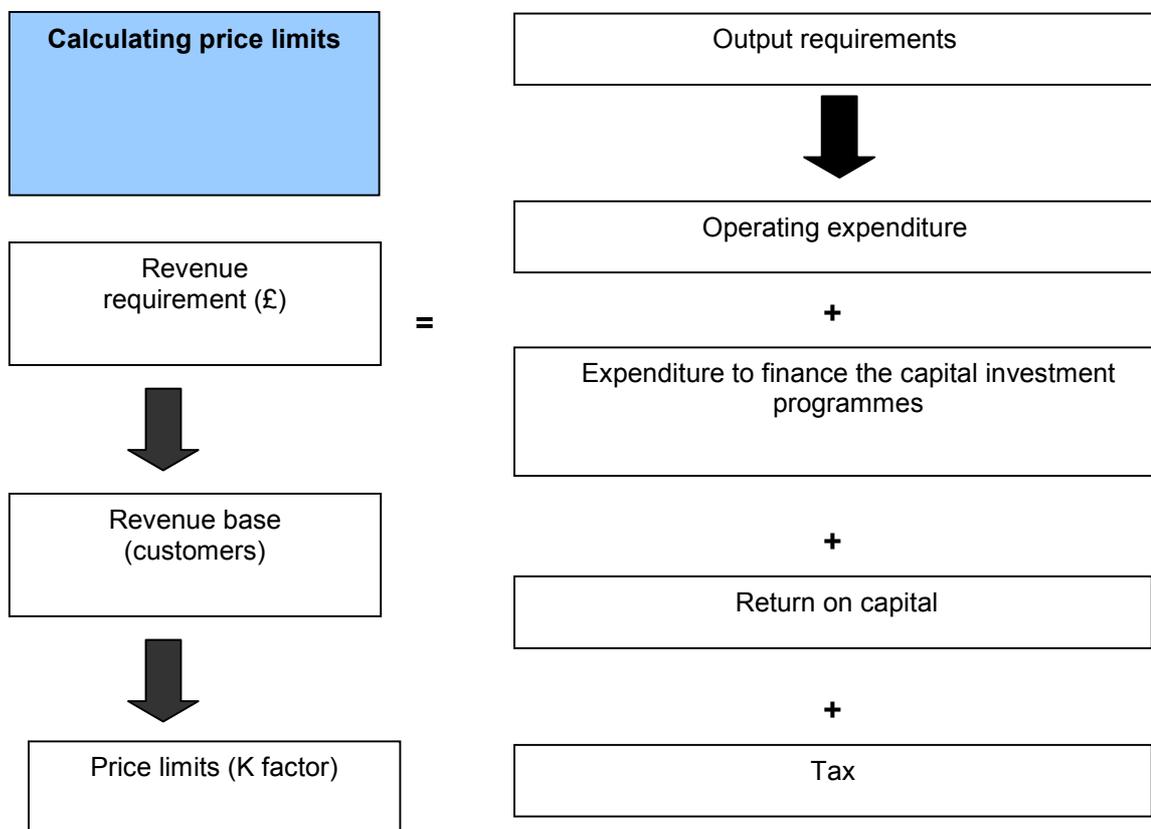
Each company needs to collect sufficient revenue to finance its operating expenditure and the capital investment programme. It also needs to be able to finance previous capital investment through the return the company earns on its regulatory capital value. In addition, an allowance is made for tax and any incentive allowance for outperformance in the previous five-year period. The sum of these costs is called the revenue requirement.

Changes to the number and mix of measured/unmeasured customers affect the revenue received. Rising bills may prompt more customers to seek a meter to save money; unmeasured bills may rise as a result to ensure that the company has sufficient revenue to meet its obligations.

The percentage change between the revenue requirement and the revenue expected from customers is the price limit. Finally, the outcome of this calculation is checked to ensure price limits will enable the company to be financeable.

The approach is explained in more detail in the following sections.

Figure 6.3 Calculating K factors



6.3.1 Incentives and efficiency

At each price review, Ofwat has examined the scope for efficiency and the relative efficiency of each company. Separate efficiency targets have been set for each company for operating and capital expenditure. Tougher efficiency challenges are set on those companies which are least efficient.

In determining the scope for efficiency, Ofwat undertakes research to understand the likely scope for further efficiency improvements in the future and detailed econometric analysis to assess the relative efficiency of each company.

Using these two elements price limits should include challenging, but achievable, assumptions on both continuing efficiency for the industry, and company specific catch-up efficiencies to encourage all companies to move towards the levels of efficiency achieved by the most efficient companies.

Although the efficiency assumptions of each price review have been additional to those of the economy as a whole (measured by the retail price index), the industry has continued to achieve and better those assumptions. As a result, customers have benefited from real improvements in efficiency, through bills being lower at subsequent price reviews than otherwise would have been the case.

To provide companies with an incentive to continue to outperform the efficiency assessment, Ofwat introduced formal incentive mechanisms at the 1999 review. These allowed each company to keep, for a minimum of five years, the benefits of outperforming expectations on costs, before sharing the benefits of outperformance with customers. The incentive mechanisms were further refined at the 2004 review to enhance the rewards for future outperformance for those companies assessed as leading, but also set an upper limit on the risks of underperformance that companies carry.

6.3.2 Maintaining services and serviceability to customers

Price limits assume no deterioration in service to customers or in the level of companies' compliance with their drinking water quality regulations or environmental discharge permits. At each price review, Ofwat considers the operating costs and capital costs (capital maintenance) necessary for companies to maintain their assets.

Operating expenditure currently accounts for around 40% of customers' bills. In considering the future operating expenditure of each company, the starting point is the company's total operating expenditure in the year prior to the price review. For example, at the 2004 review, operating costs for the 2003-04 financial year were considered. Assumptions on new and future costs, such as pensions, customer debt and energy costs allow the operating costs for each company to be determined for the five year period.

Capital maintenance expenditure currently accounts for around 30% of customers' bills. Ofwat considers the capital maintenance expenditure necessary for companies to maintain their assets. This involves an assessment of the condition of the infrastructure and non-infrastructure assets and use of econometric models to determine future capital investment requirements to maintain the condition of the assets.

A new approach to assessing future requirements for capital maintenance was developed for the 2004 periodic review, building on work to address criticisms made by the Competition Commission, the Environmental Audit Committee and other stakeholders following the 1999 review.

Ofwat, Defra, the DWI, the EA and the industry developed the 'common framework' for capital maintenance planning. The long term objective of this was to encourage each company to understand its assets and the associated capital maintenance investment based on a condition assessment.

The evidence produced by the new approach led to a significant increase in the total value of capital maintenance expenditure over the five years from 2005. The assumption that companies will invest £8.4 billion to maintain their pipes, sewers and treatment works over the period 2005-2010 represents a 22% increase to assumptions of the 1999 review.

6.3.3 Maintaining the balance between supply and demand

Maintaining a balance between supply and demand for water and sewerage services is implicit in companies' statutory duties. Ofwat reviews companies' business plans to ensure that work proposed is part of a long-term strategy to maintain the balance between supply and demand.

Water companies prepare integrated long-term water resource plans to take account of future customer demands and likely changes to the availability of water resources for the following 25 years. Ofwat and the EA work to ensure that plans are developed according to best practice and to ensure the plans and investment included in price limits represent an optimal strategy.

Sewerage companies are encouraged to plan for a similar horizon when developing sewerage assets and to adopt a long-term approach to investment planning.

6.3.4 Drinking water and environmental quality improvements

Price setting involves a detailed assessment of the outputs and associated expenditure required of each company to meet (i) new environmental and drinking water standards set by the EU and (ii) domestic statutory obligations set by the government. In total, nearly £25 billion was invested between 1990 and 2005 on improving drinking water quality and the environment.

At each review, Ofwat, Ministers, the EA and the DWI have worked closely to clarify the nature and timing of current and future environmental obligations in determining which capital schemes should be included in the price review period. The roles of each of these bodies in determining the nature of improvements for each company was discussed in section 5.4.

Once a list of outputs has been developed to be included in price limits, Ofwat considers the capital investment proposals put forward by the companies. Ofwat looks for evidence that companies have explored different ways of achieving the required outputs, taking account of innovations in technology. By comparing the approaches put forward by the companies in delivering schemes, Ofwat is able to scrutinise and challenge each company's approach and costs.

Adoption of the Urban Wastewater Treatment Directive (UWWTD) and its translation in 1990 led to a significant investment requirement by the sewerage companies following the 1994 and the 1999 reviews, particularly for those with long coastlines. The Directive laid down minimum standards for treatment of wastewater and disposal of sewage sludge. It requires secondary treatment of all wastewater as a minimum, for settlements of more than 2,000, except for coastal discharges where 10,000 is the population limit. The Directive specifically required elimination of sewage sludge dumping at sea, which the government announced would be phased out by 1998.

Whilst the UWWTD continued to require significant investment at the 1999 and 2004 price reviews, other drivers, including, the Habitats Directive, Bathing Water Directive and progress in meeting River Quality Objectives have required significant investment by the companies.

For the water service, companies have been required to meet the standards set out, first of all by the Drinking Water Directive at privatisation and in 1994, and with higher standards in the new Drinking Water Directive in the 1999, and a lesser extent the 2004 reviews.

The 2004 review drinking water and environment improvements for 2005-10 costed at £5.5 billion. The improvements to drinking water quality and the environment achieved since privatisation are discussed in section 7.

6.3.5 Enhanced service levels

Where companies put forward schemes to improve service, these are considered for inclusion in price limits. When reviewing these schemes, Ofwat looks for clearly defined outputs and considers the cost effectiveness of schemes when considering their inclusion in price limits. Examples of service enhancement schemes included in price limits are: dealing with low flow and water pressure, improving taste and odour of drinking water, reducing hardness of drinking water and reducing the incidence of sewer flooding.

6.3.6 Forecasting revenues

At each price review companies are required to provide assessments of their forecast revenue. Ofwat has assessed the assumptions underlying the forecasts and assesses how much revenues need to change to provide sufficient funds to run each company, taking account of expected changes in demand and each company's customer base.

6.3.7 Financial issues

Cost of capital

Ofwat has a duty to secure that an efficiently run company is able to finance its functions. This includes securing that each company is able to earn a post-tax return at least equal to the cost of capital and a requirement to secure that the revenues, profits and cash flows allow each company to raise finance on reasonable terms in the capital markets. At each review, Ofwat has consulted widely with the financial markets and taken advice from financial advisors in determining the cost of capital for an efficiently financed company.

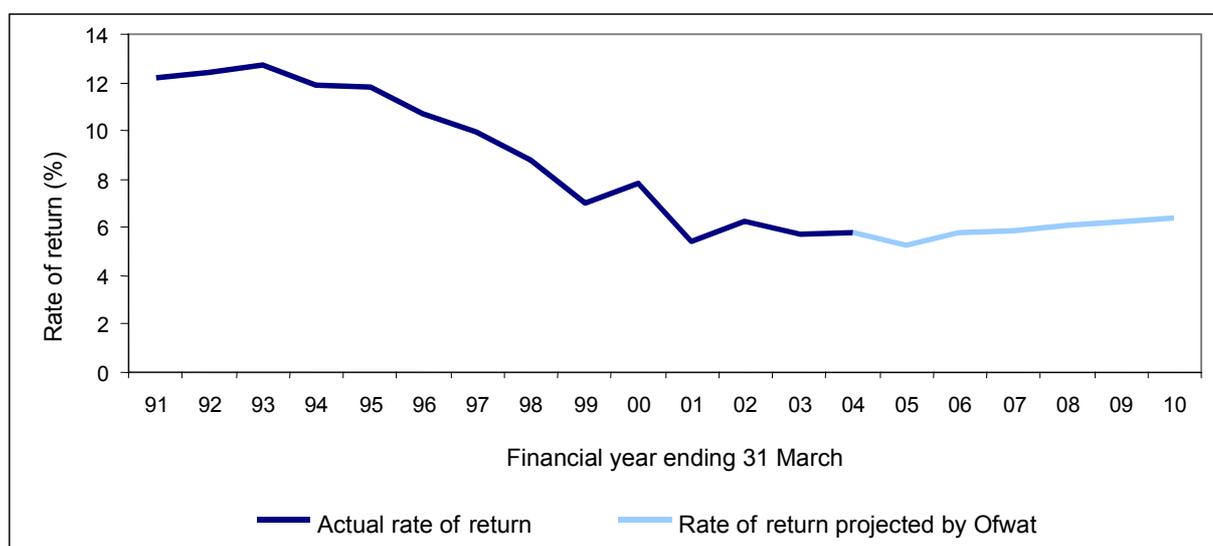
At the 1994 review, Ofwat determined that new investment would have a lower cost of capital and set a range of 5%-6% in real terms post tax. This represented a reduction from the returns of around 12-13% that the companies earned in 1992-93⁶¹ (see figure 6.3.7). In 1994, it was assumed that overall returns on capital would converge from the levels being earned at that time towards the return on new capital of 5%-6% over a 10 year period. The effect of this reduction is seen in the period 1995 to 1999 in figure 6.3.7.

At the 1999 price review, Ofwat took account of the fall in the cost of capital based on market evidence and applied a stepped reduction to the cost of capital. Ofwat considered that a cost of capital in the range 4.25%-5.25% (on a real, post-tax basis) was sufficient for an efficiently financed company, with adjustments for higher costs faced by small companies and companies with fixed rate debt. The effect of the resulting stepped reduction to the cost of capital for the industry is evidenced for the year ending March 2001 in figure 6.3.7. It contributed to the average reduction in K factors in 2000-01.

The continuing large capital investment programmes and the associated financing strain on the companies made the approach to the cost of capital and financeability a critical issue at the 2004 review. Ofwat determined that a weighted average cost of capital of 5.1% in real terms on a post tax basis was appropriate for companies to finance their functions. This represented an increase to the cost of capital set at the 1999 review to enable the water industry to remain attractive to a diverse range of investors.

⁶¹ Ofwat, 1994.

Figure 6.3.7 Industry post-tax rates of return from 1991 to 2004 and Ofwat's projection to 2010



Source: Ofwat

Capital base

The regulation of the water industry is based on price limits rather than controls on profits or rates of return. Ofwat needs to be satisfied, however, that companies are able to finance their functions and hence needs to be aware of the implications of different price limits for levels of profit and rates of return.

For the purposes of assessing rates of return, there has to be a measure for capital base.

At privatisation, the water and sewerage companies were valued at 15% of their current cost book value⁶². Applying the cost of capital to the full current cost of the assets would have resulted in a significant redistribution of income from consumers to shareholders.

For the 1994 review, Ofwat consulted on the most appropriate method of valuing each company and determined that market capitalisation would provide a more direct measure of capital value. To avoid the problem of short and medium-term fluctuation in share prices generally, the first 200-day average of the share price for each company was taken, adjusted for the addition of debt and the green dowry (section 4.3.5). For the water only companies the capital value was determined on the basis of a ratio of initial value to indicative value based on the average of the water and sewerage companies.

⁶² Monopolies and Mergers Commission, 1995.

The values derived for each company are referred to as the regulatory capital value and have been used in setting price limits at subsequent price reviews after adjustment for appropriate capital investment.

6.3.8 Uncertainty

Like all businesses, the water industry is subject to external influences and change. Changes carry a risk to companies and investors. Some are reflected in the cost of capital, others are specific to the industry. In setting price limits, Ofwat aims to minimise uncertainty. However there are two major methods of dealing with uncertainty between reviews: interim determinations and the logging up and down mechanism.

Interim determinations

As explained in section 5.3, condition B of the companies' licences allow a company to ask Ofwat to re-determine its price limits between price reviews if it faces higher costs or lower income in respect of certain specified circumstances than assumed at the last price review. Ofwat can also initiate a redetermination to reduce a company's price limit if the company has benefited from lower costs or higher revenue than assumed in certain specified circumstances. Such a redetermination is known as an interim determination (IDoK). In the period 2000 to 2004 there were ten IDoK's, including one for Yorkshire Water. The effect on the price limits for customers of Yorkshire Water and York Waterworks can be seen in table 6.3.8.

Table 6.3.8 Price limits set at the 1999 review and actual price limits following the interim determinations

	Annual price limits					Average ¹
	2000-01	2001-02	2002-03	2003-04	2004-05	
Price limits set in 1999						
Yorkshire						
Yorkshire	-14.5	0.0	0.0	0.0	1.0	-2.9
York	-9.0	-1.0	0.0	0.0	0.0	-2.1
Industry average (weighted)	-12.3	-0.4	0.1	1.1	1.5	-2.1
Price limits post IDoK						
Yorkshire						
Yorkshire	-14.5	0.0	0.0	3.5	3.5	-1.7
York	-9.0	-1.0	0.0	2.5	2.6	-1.1
Industry average (weighted)	-12.3	-0.3	0.3	1.9	3.4	-1.6

Source: Ofwat.

At the 2004 price review Ofwat determined that material changes in costs associated with the following items were those that could be considered at future interim determinations:

- number of meter optants;
- bad debt and debt management;
- charges for abstractions and discharges to controlled waters;
- charges for lane rental/traffic management; and
- changes in taxation of infrastructure expenditure arising from the introduction of International Financial Reporting Standards.

‘Logging up and down’

The logging up mechanism allows non-trivial changes in capital costs to be taken into account at the next price review for certain specified changes experienced by a company. The mechanism is not codified in companies’ licences but ensures that the periodic review reflects the actual circumstances faced by the companies. It encourages companies to work to define all possible obligations as part of the periodic review process.

6.3.9 Customer consultation

In order to protect and represent customer needs and to encourage customer participation, Ofwat, the companies and other interested parties carry out customer surveys in order to gain a detailed understanding of customers’ priorities for the following regulatory period. This includes their willingness to pay for company specific improvements and can lead to increased funding at a price review where a company demonstrates that particular priorities are of concern.

6.3.10 Infrastructure charges

In addition to setting price limits, at each review, Ofwat has set limits to the amounts that companies can charge for infrastructure charges. These are reflective of the costs imposed on the infrastructure as a whole by new connections and are charged in addition to the direct costs of making those connections.

6.4 APPEALS

Ofwat's decisions in setting price limits are subject to appeal should a company disagree with the K factors set at a price review or at an interim determination. Each company has two months from receiving its determination to decide whether to request a referral to the Competition Commission (see, role of the Competition Commission, section 5.4.6).

South West Water and Portsmouth Water appealed their price limits following the 1994 price review.

South West Water appealed because it considered operating expenditure and capital expenditure reductions and levels of depreciation assumed in the final determination would leave the company financially unviable. Following its review, the Commission concluded that the company could feasibly increase its expenditure within the prices limits set and reduced the K factor allowed by Ofwat in the first year. It also concluded that the company's return on capital should reduce to the cost of capital by the end of 1999-2000; rather than 2004-05 as assumed by Ofwat.

Portsmouth Water appealed because it considered the efficiency savings and the assessment of capital employed would pose a serious threat to its financial viability. After review, the Commission concluded the amount of revenue obtainable from commercial customers was not as high as that predicted in the final determination and disagreed with Portsmouth Water that there was a need for a real terms increase in operating costs. The resultant K factors set by the Commission were below those set by Ofwat.

After the 1999 price review, Sutton and East Surrey Water and Mid Kent Water appealed their price limits. The Commission took a different view to Ofwat on: the treatment of depreciation, the scope for efficiencies in capital programmes and the number of customers opting for a meter. However, the Commission did endorse the approach and conclusions on the cost of capital and the scope for efficiency savings. The Commission revised both companies' price limits, resulting in slightly higher K factors than those proposed by Ofwat, but still much lower than those proposed by the companies in their business plans.

There were no appeals to the 2004 final determinations.

6.5 JUNE RETURNS AND REPORTERS

Since privatisation, all companies have been required by their licence to submit an annual return to Ofwat covering their activities in the previous financial year. This is currently submitted in June and is the primary source of regulatory information which enables the performance of each company to be compared. Information collected in the June returns can lead to further investigation by Ofwat. An example was Ofwat's report on the performance of Yorkshire Water following the drought in 1995⁶³ (see section 7). The data collected in the June return is described in Annex C.

Companies' licences require reporters, auditors and valuers to provide independent scrutiny of all information provided to Ofwat. All financial information in the June return is audited by the companies' auditors and valuers provide independent market verification of the sale of land by any company. The auditors also examine the water companies' statutory and regulatory accounts (the financial statements prepared in accordance with guidelines set by Ofwat in their Regulatory Accounting Guidelines). The reporters have an important role in examining the non-financial information provided to Ofwat. Their role is discussed in more detail in section 6.5.1.

Ofwat reports on the information provided in its four annual reports:

- "Financial performance and expenditure of the water companies in England and Wales";
- "Levels of service for the water industry in England and Wales",
- "Security of supply, leakage and the efficient use of water"; and
- "Water and sewerage service unit costs and relative efficiency".

The information collected from the June returns and reported in these reports is the source of much of the information in section 7 of this report.

Ofwat publishes a fifth report, "Tariff structure and charges", which summarises companies' regulated charges and sets out policy on tariff issues.

In addition, the DWI and the EA monitor the performance of the companies in achieving the outputs allowed for in price limits. They provide annual assessments of the companies' compliance⁶⁴ with current drinking water and environmental standards and progress with programmes to meet new statutory obligations. This information is available in the public domain and enables Ofwat to ensure that customers do not pay for services that the companies do not deliver.

⁶³ Ofwat, 1996

⁶⁴ For example, 'Drinking Water 2003; A Report by the Chief Drinking Water Inspector', DWI, 2004 and the Environment Agency Regions' reports to Ofwat.

6.5.1 Reporters

Reporters are usually consulting engineers. They examine the non-financial elements of the information that companies provide to Ofwat. As well as scrutinising individual company data, reporters help Ofwat to ensure that information provided by different companies is accurate and suitable for comparison. This applies to both historic data presented in the June returns, in forecast data presented in company submissions for price reviews and in specific investigations.

For the June returns, the reporters check and report on whether the companies have:

- systems to accurately collect and record the information Ofwat requires;
- allocated expenditure correctly; and
- demonstrated progress and performance, particularly in respect of capital investment programmes and standards of service to customers.

The primary duty of each reporter is to Ofwat, but they also have a duty of care to the relevant company. Each company is responsible for appointing and paying reporters, following Ofwat's approval. Guidance is given to the reporters regarding the areas they should scrutinise at an industry and company specific level.

7. POST-PRIVATISATION - PERFORMANCE AND TRENDS

The water and sewerage companies, and the system of regulation in which they operate, have achieved a great deal since privatisation. By the end of 2003-04, companies had invested around £50 billion since privatisation in new assets and in the maintenance of existing assets⁶⁵. This has funded significant drinking water quality, environmental improvements and other service enhancement improvements. It has also funded schemes to improve supply/demand balance and capital maintenance. This funding has been vital to ensure compliance with environmental and other standards required by the government. Many of these are derived from EU regulations which, in turn, are negotiated by member states.

As a result, the quality of services delivered to customers is at an all time high, the pollution impact of the industry on the water environment has reduced significantly and the quality of drinking water has improved. Performance of water and sewerage infrastructure assets and water non-infrastructure assets is stable and the industry is very much more efficient. Much improved data quality has allowed companies to target expenditure where it is most needed.

Whilst this section provides an explanation of the development of the water industry since privatisation, this is not to say that the changes occurred because of privatisation. The improved incentives on managers and access to capital created by privatisation are part of a more complex set of factors including, for example, government policy, the effectiveness of the regulators and improved standards. All of these influences have acted together to bring about the huge improvements described in the following sections.

7.1 EXPENDITURE

In its annual report, 'Financial performance and expenditure of the water companies in England and Wales'⁶⁶, Ofwat reports on the financial performance of the water companies. All information provided in this section is attributed to that report and Ofwat's report 'Future water and sewerage charges, Final Determinations', 2004

7.1.1 Operating expenditure

Total water and sewerage operating expenditure, excluding exceptional items was £2.869 billion in 2003-04 (Yorkshire Water £219.7m). Overall, this is broadly the same as expenditure in 1998-99 which was £2.865 billion in 2003-04 prices (Yorkshire Water £250.4m). However, these figures require careful analysis. Water and sewerage companies now provide much improved services in terms of drinking water quality, environmental performance and services to customers.

⁶⁵ Ofwat, 2004.

⁶⁶ Figures referred taken from the 2004 report.

When comparing 1998-99 with 2003-04, the largest savings have been made in general and support expenditure. These are mainly comprised of administrative staff costs, the operating costs of vehicles, and the maintenance of buildings, land and equipment.

Companies have also made savings in labour costs with a reduction of £15 million in real terms (4%) since 1998-99. However, this saving has more than been offset by the £25 million (7%) increase in hired and contracted services as companies have contracted out functions that were previously carried out by their own employees.

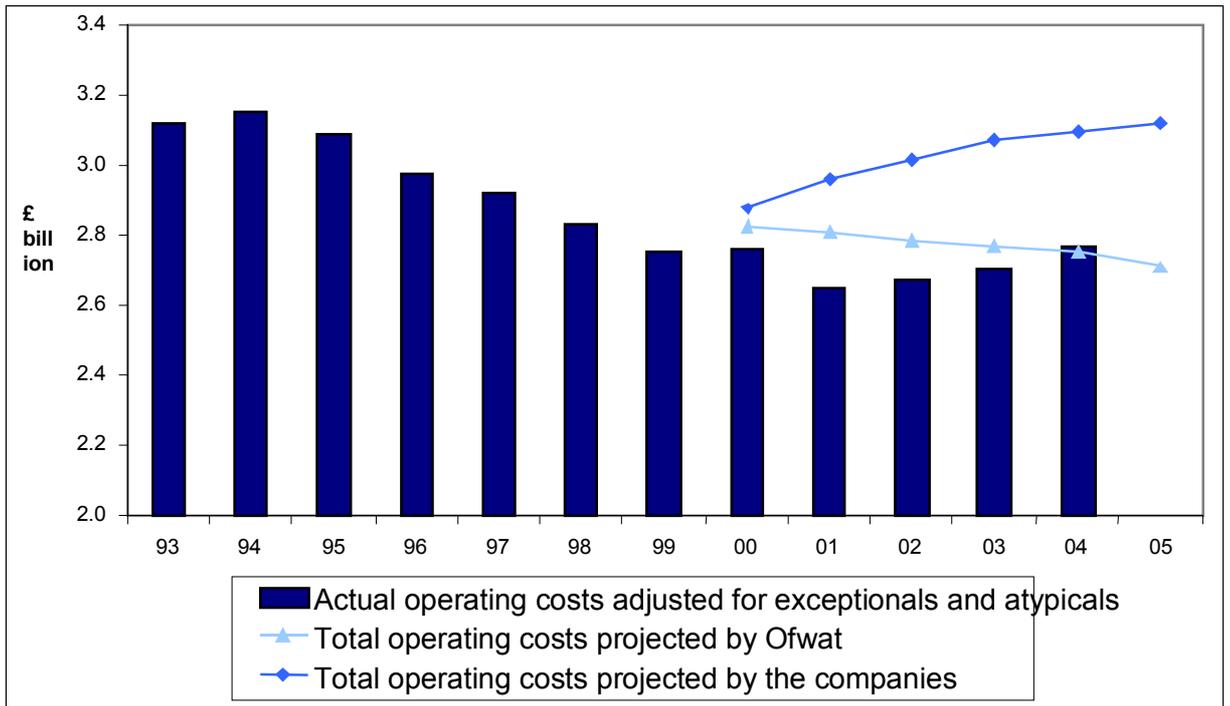
The cost of materials and consumables have reduced by £8 million in real terms, (approximately 6%). The cost of power is broadly the same as it was in 1998-99 as rising power costs have been offset by greater energy efficiency.

Companies have not achieved savings equally across the various direct activities. The greatest savings, of 12% and 9%, are for water distribution and water resources and treatment respectively. Sludge treatment and disposal costs have increased by more than 30% since 1998-99 due to changes in legislation. This is because the higher levels of treatment required by changes in legislation have led to greater volumes of sludge, and, in addition, companies are no longer allowed to dispose of sludge at sea.

Figure 7.1.1a shows the trend in operating costs from 1993-2005 and the difference between the companies' projections of operating costs at the 1999 review and those allowed at the 1999 price review. This demonstrates that after the 1999 price review, the companies outperformed Ofwat's assumptions, but that by 2003-04, actual operating costs were similar to those assumed.

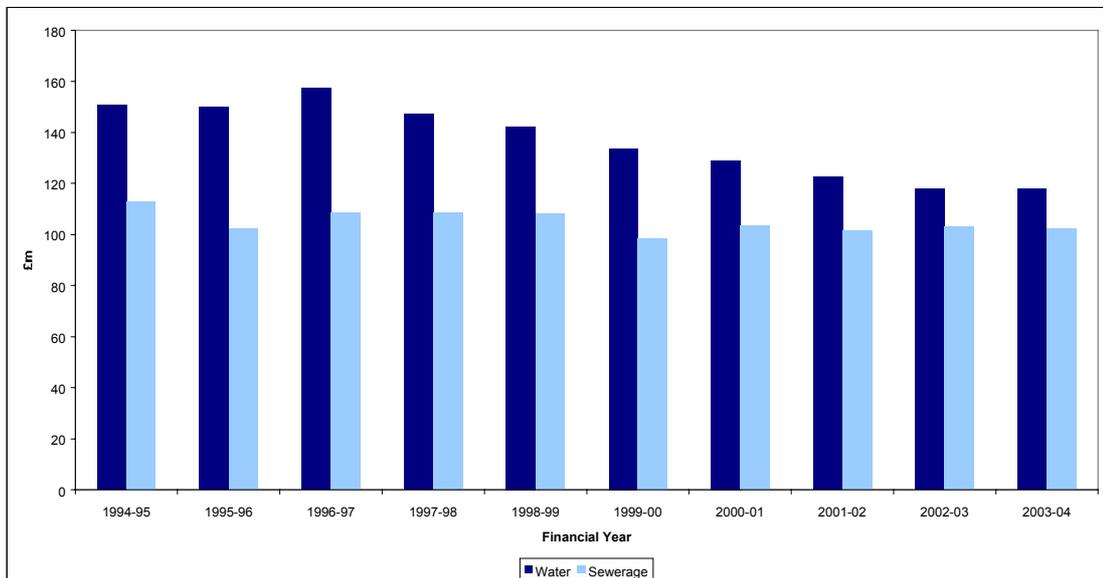
Figure 7.1.1b shows the trend in the operating costs incurred by Yorkshire Water excluding exceptional costs. The operating costs for the water service show a reducing trend since 1996-97 as a result of improvements in efficiency, despite increased requirements to meet improvements in drinking water quality. Sewerage operating costs appear to have stayed broadly level over the period. However, this masks increased costs for sludge treatment and disposal to meet changes in legislation.

Figure 7.1.1a Industry operating costs 1993-2005 (2003-04 prices)



Source: Ofwat

Figure 7.1.1b Yorkshire Water operating costs excluding exceptional 1995-2004 (2003-04 prices)



Source: Ofwat.
Pre 2000-01 data includes York Waterworks

7.1.2 Capital expenditure

The industry has incurred significant capital investment since privatisation. In total this amounted to around £50 billion by the end of 2003-04, equating to an average annual capital investment in the water industry in excess of £3.7 billion a year. In 1999, Ofwat noted that water industry capital investment had accounted for 2%-3% of total capital expenditure in England and Wales every year since privatisation⁶⁷.

Figure 7.1.2a shows the capital investment undertaken by the companies since 1981; it breaks investment down between investment to maintain existing assets, and enhancements to improve drinking water quality, the environment and customer service. For the period 2005-10 a comparison is made between the assumptions included in price limits set at the 2004 price review and the companies' business plan projections.

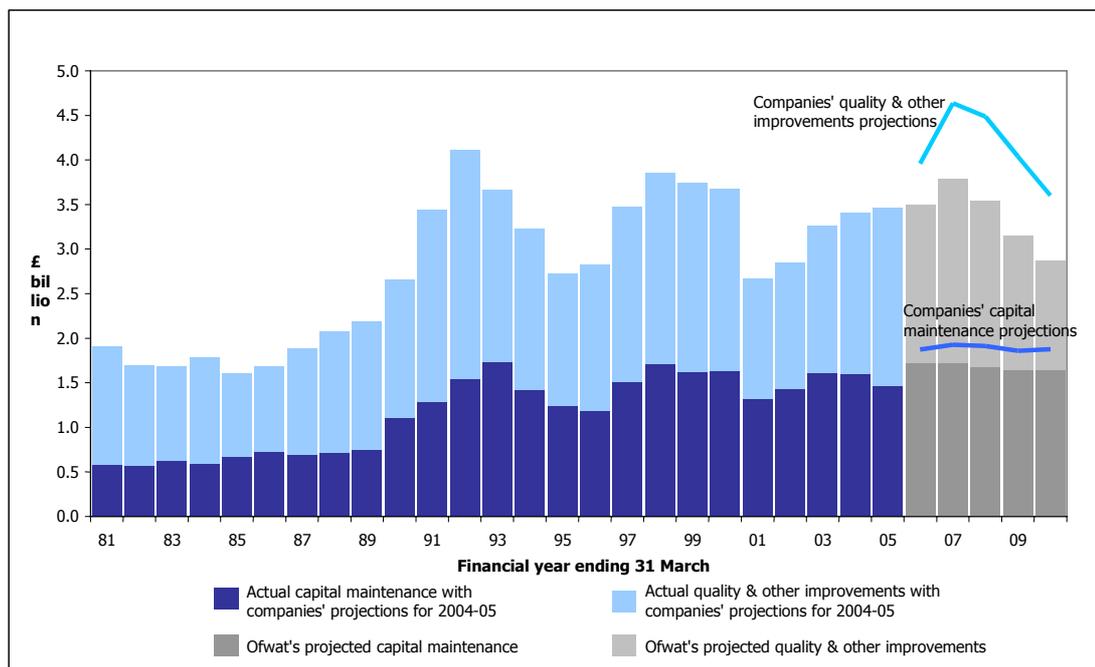
The significant increase in capital expenditure in response to the environmental problems faced by the industry in the late 1980s is clearly evident. The relatively low levels of capital expenditure in 1995 and 1996 and 2001 and 2002 are in the years immediately after price reviews. Companies have attributed this dip to the need to review and plan their capital investment programmes after price limits have been set and this results in a peak later in the five-year period. Suppliers and contractors consider this creates higher cost capital solutions.

To dampen this roller coaster effect, Ofwat and the industry identified a number of capital schemes to deliver benefits to customers and the environment in the first two years after the 2004 review. These were agreed with the companies one year ahead of the final decisions on price limits to allow companies sufficient time to plan this capital investment programme.

Companies will continue to incur significant capital investment in the 2005-10 period, with £17 billion included in price limits. Table 7.1.2 sets out the capital investment allowed in price limits for the water industry for the period 2005-10.

⁶⁷ Ofwat, final determinations, 1999.

Figure 7.1.2a Actual and projected capital investment 1981-2010 (2003-04 prices)



Source: Ofwat

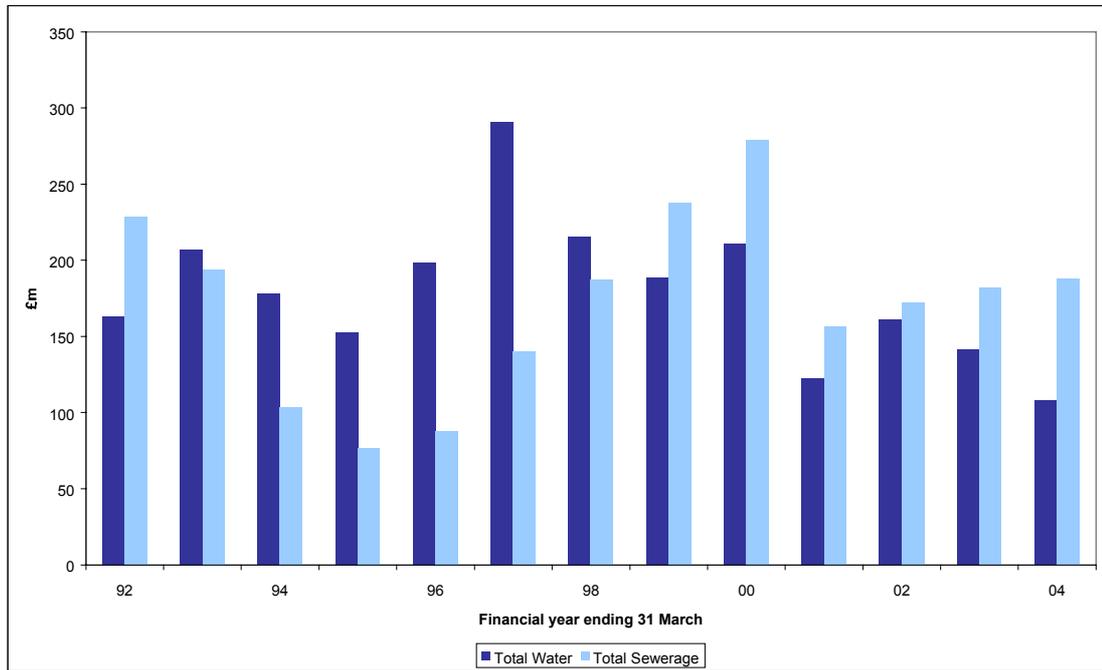
Table 7.1.2 Capital investment for England and Wales for 2005-10 (2003-04 prices)

	Water £ billions	Sewerage £ billions	Total £ billions
Capital expenditure¹ (five-year total)			
Capital maintenance	4.2	4.2	8.4
Supply/demand balance	1.7	0.6	2.3
Drinking water and environmental quality improvements	2.1	3.4	5.5
Enhanced service levels	—	0.6	0.6
Total	8.0	8.8	16.8

Source: Ofwat

Figure 7.1.2b shows the capital expenditure of Yorkshire Water for the period 1992-2004. For capital investment in the sewerage service, the 'roller coaster' effect is clearly seen in the years immediately after the 1994 and 1999 price review. The peak in capital expenditure in 1996-97 for the water service is attributed to the increased investment following the supply problems experienced in 1995 (see section 7.4.2).

**Figure 7.1.2b Yorkshire Water – total capital expenditure 1992-2004
(2003-04 prices)**



Source: Ofwat
Pre 2000-01 data includes York Waterworks

7.2 DRINKING WATER AND ENVIRONMENTAL IMPROVEMENTS

The investment made by the water and sewerage companies since privatisation has achieved significant environmental and customer service benefits. Substantial improvements have been made in the quality of drinking water, rivers, bathing water and in the development of strategic approaches to flood management. These improvements have been made as a result of rising public expectations and EU Directives. All of these improvements have been paid for by water customers, offset to some degree through the water companies' efficiency savings.

7.2.1 Drinking Water Quality

In 1989, for the first time in England and Wales, regulations were introduced which set numerical standards for drinking water quality. These regulations were updated in 2000 and new standards came into force on 1 January 2004⁶⁸.

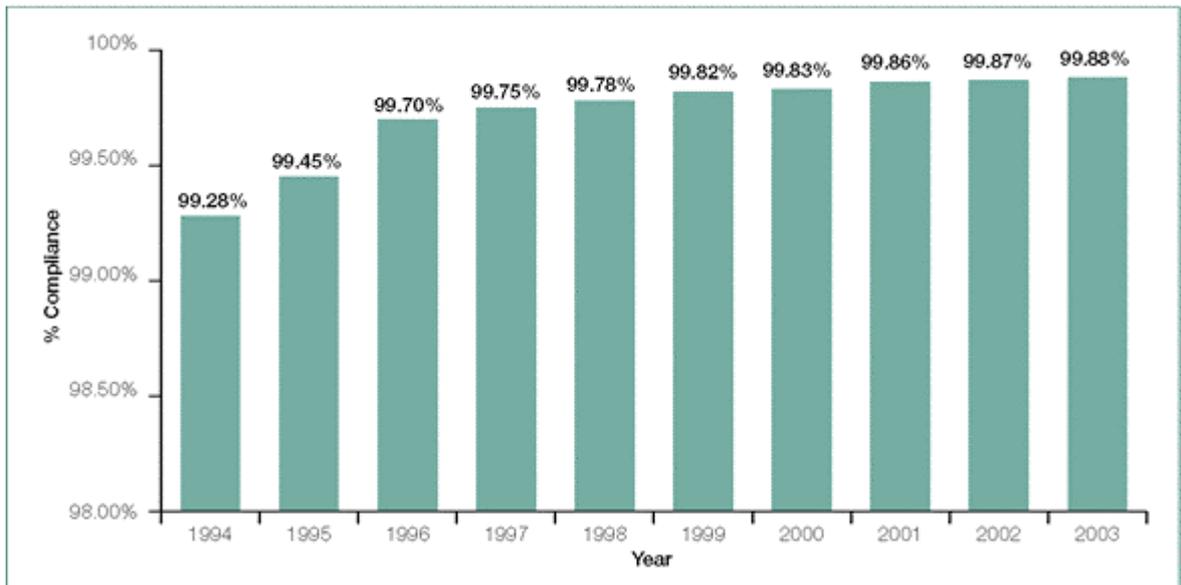
The Drinking Water Inspectorate report annually on the quality of drinking water in England and Wales in the Chief Inspectors' report. The 2004 report recorded that overall, compliance with the standards by the water companies in 2003 was 99.88% with 3,418 breaches of standards out of a total of 2,896,252 tests⁶⁹. This was the highest quality ever reported. This high level of compliance has been attained as a result of improvement programmes at water treatment works and service reservoirs which have led to significant reductions in the number of breaches of microbiological standards, and a significant programme of investment to renovate the distribution systems.

Figure 7.2.1a shows the overall compliance with the standards, specified in the Water Quality (Water Supply) Regulations 1989, since 1994. The improvement is best seen in Figure 7.2.1b which shows the decreasing number of breaches of the standards.

⁶⁸ For further details see DWI, 2004.

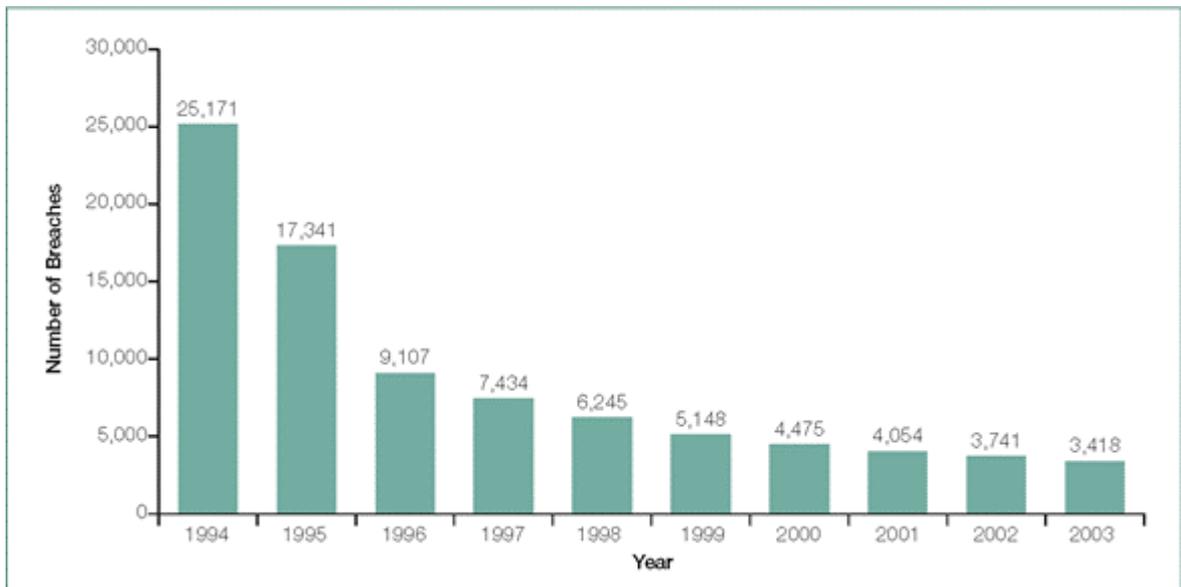
⁶⁹ DWI, 2004.

Figure 7.2.1a Overall compliance with water quality regulatory standards in England and Wales, 1994-2003



Source: DWI

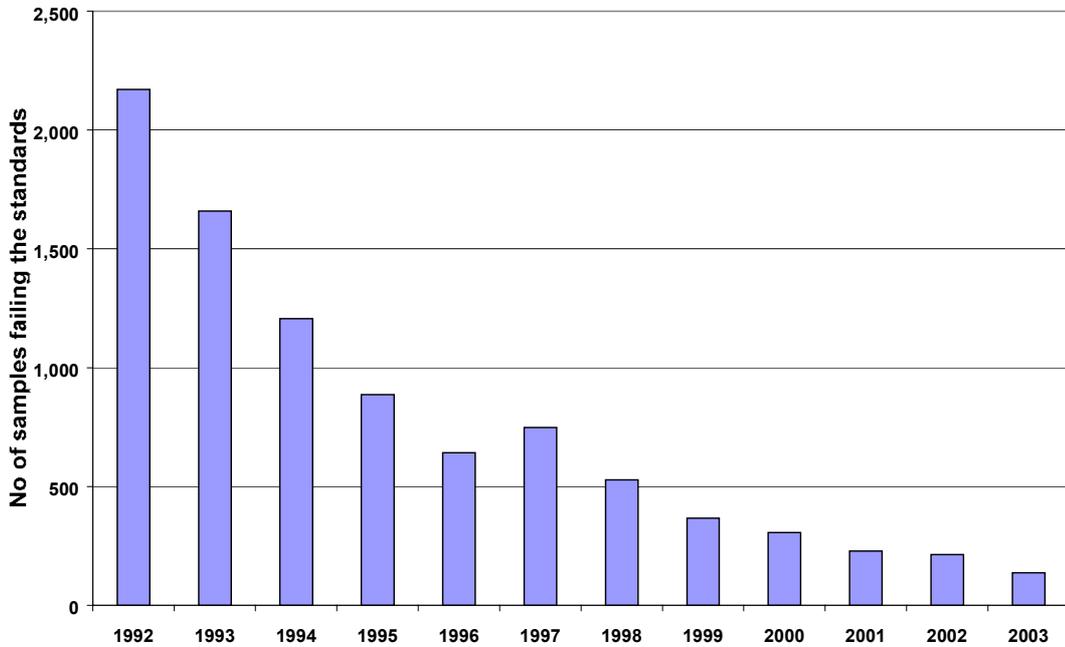
Figure 7.2.1b Total number of breaches of water quality numerical standards in England and Wales, 1994-2003



Source: DWI

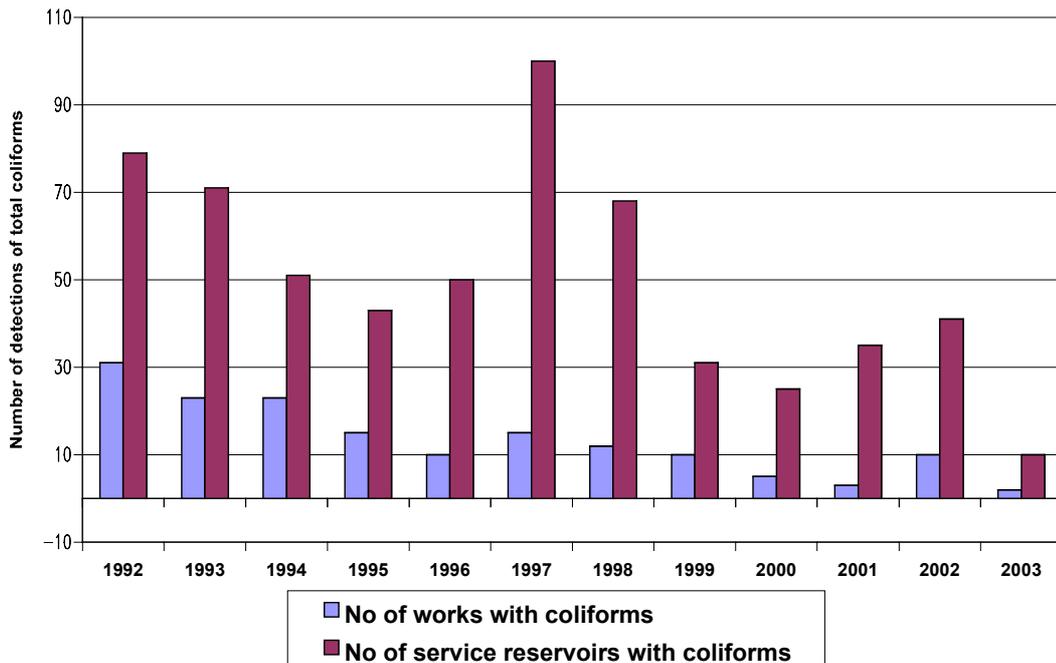
Figures 7.2.1c to 7.2.1f show the downward trend in the numbers of samples failing the standard within Yorkshire Water as reported by the DWI. The trends are a result of significant capital investment to improve both the infrastructure and the non-infrastructure assets since privatisation.

Figure 7.2.1c Yorkshire Water – number of samples failing to meet the water quality standards 1992-2003



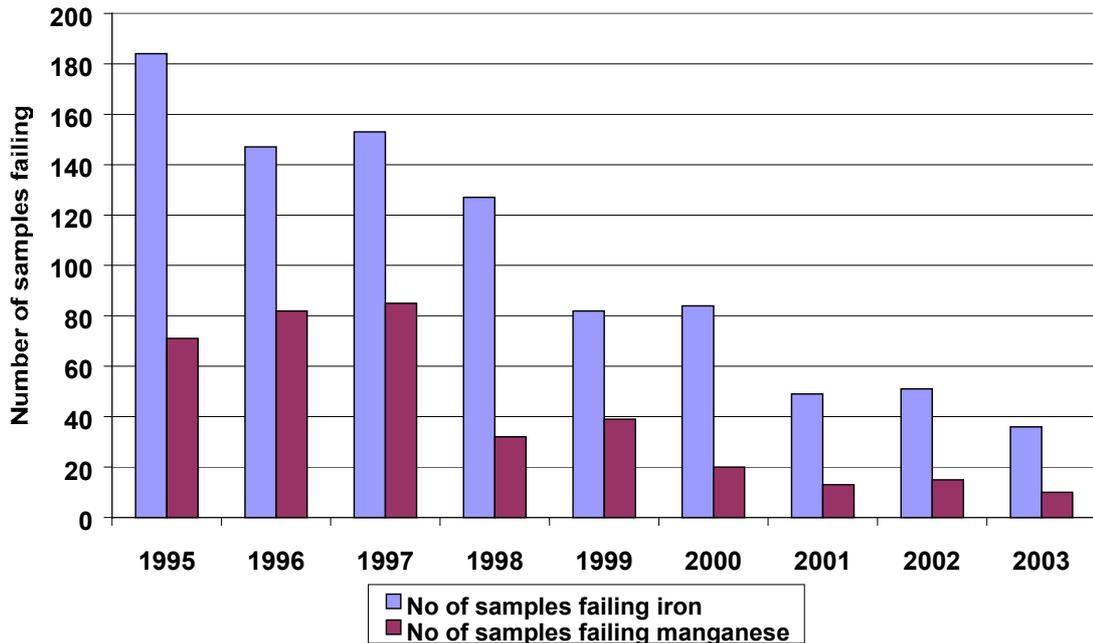
Source: DWI

Figure 7.2.1d Yorkshire Water – total number of samples failing the coliforms standard 1992-2003



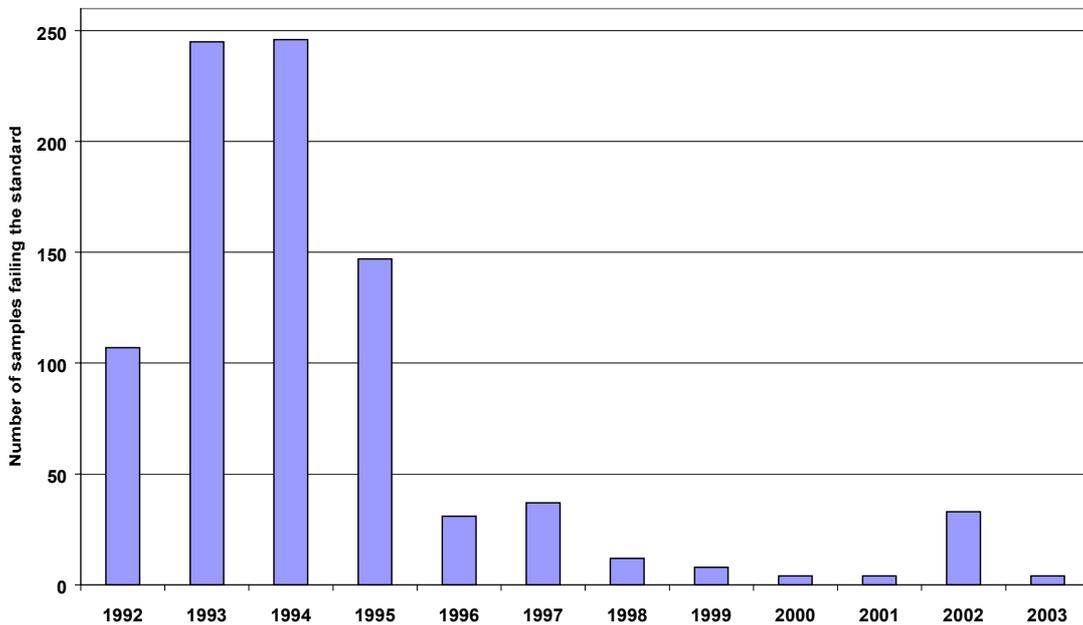
Source: DWI

Figure 7.2.1e Yorkshire Water –total number of samples failing the iron and manganese standards 1995-2003



Source: DWI

Figure 7.2.1f Yorkshire Water – Total number of samples failing the pesticides standard 1992-2003



Source: DWI. All of the following applies for figures 7.2.1c to 7.2.1f: 1990-1999 is combined data covering both York Waterworks and Yorkshire Water. Subsequent data covers the whole region of Yorkshire Water following the merger of the two companies. In 1990 and 1991 Yorkshire Water had major problems with its sampling programme and did not take the required number of samples. Until 1994 Yorkshire Water had authorised relaxations for parameters including iron, manganese, colour, turbidity and aluminium. The number of failures relate to the failure of the relaxed standard and not the prescribed standard. The true failure rate would therefore be higher.

7.2.2 Environmental performance

Capital investment by the sewerage companies has led to significant improvements in the discharges from sewage treatment works since privatisation. This has contributed to significant improvements to the chemical and biological quality of water in rivers and estuaries, and the microbiological quality of bathing waters. This has taken place against a background of increasing pressures from diffuse pollution and abstraction for human consumption, irrigation and industrial processes⁷⁰.

Environmental impact

Compliance with the sanitary standards at sewage treatment works has improved from 97% in 1995-96 to 99.8% in 2003-04, as measured by population served.

Compliance of designated coastal bathing waters with the imperative (mandatory) standards of the Bathing Water Directive has improved since privatisation. The highest ever level of bathing water compliance was achieved in England was achieved in the 2005 bathing season at 98.79%.

For 2003, the Environment Agency (EA) reported to Ofwat that, of the 6 out of 489 bathing waters that failed the imperative standards, only 2 could be attributable partly, or wholly, to water company discharges. Much of this improvement is a consequence of investment by the water industry in removing or improving many point sources of pollution such as storm overflows or sewage treatment works.

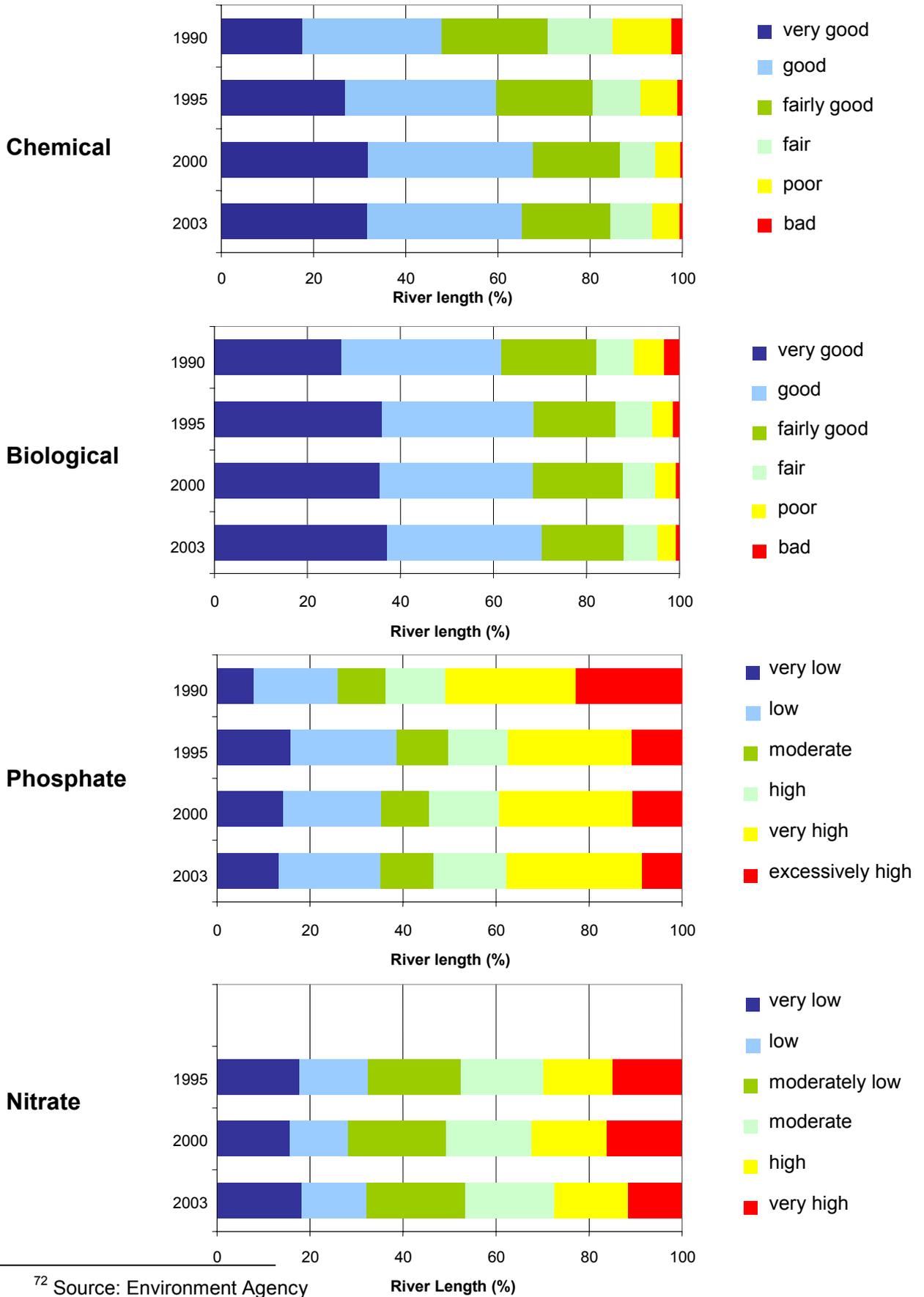
The EA's analysis of the factors affecting water quality shows that intermittent and diffuse sources are increasingly becoming the cause of microbial non-compliance of bathing waters.

Figure 7.2.2a demonstrates the improvements to the water quality of rivers in England and Wales since 1990⁷¹.

⁷⁰ Defra, 2002.

⁷¹ Further information available at the EA website www.environment-agency.gov.uk

Figure 7.2.2a Assessment of river quality - England & Wales 1990-2003⁷²

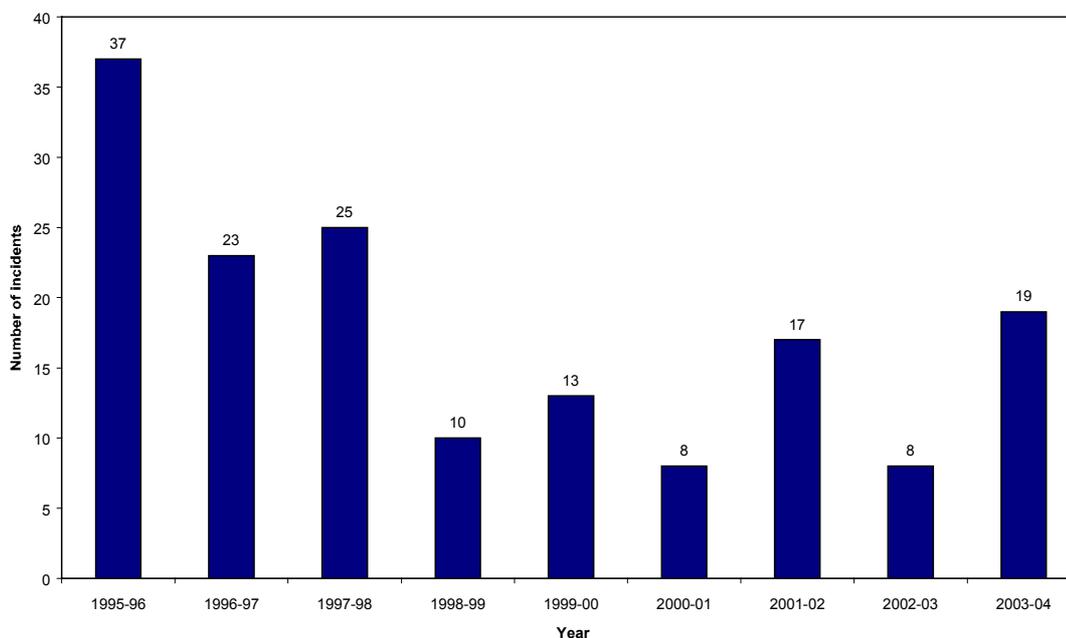


Pollution incidents

The numbers of category 1 (major), category 2 (significant) and category 3 (minor) sewage related pollution incidents have all decreased since 1995-96. In 2003, approximately 78% of sewage related incidents occurred at combined sewer overflows, foul sewers or pumping stations⁷³.

Figures 7.2.2b, 7.2.2c and 7.2.2d show the reductions in the number of sewage related pollution incidents for the industry since 1995-96. These demonstrate that whilst the industry is still responsible for one in six pollution incidents affecting controlled waters, the incidence of pollution has reduced as a result of capital investment and the focus of management attention and operational activity to improve performance.

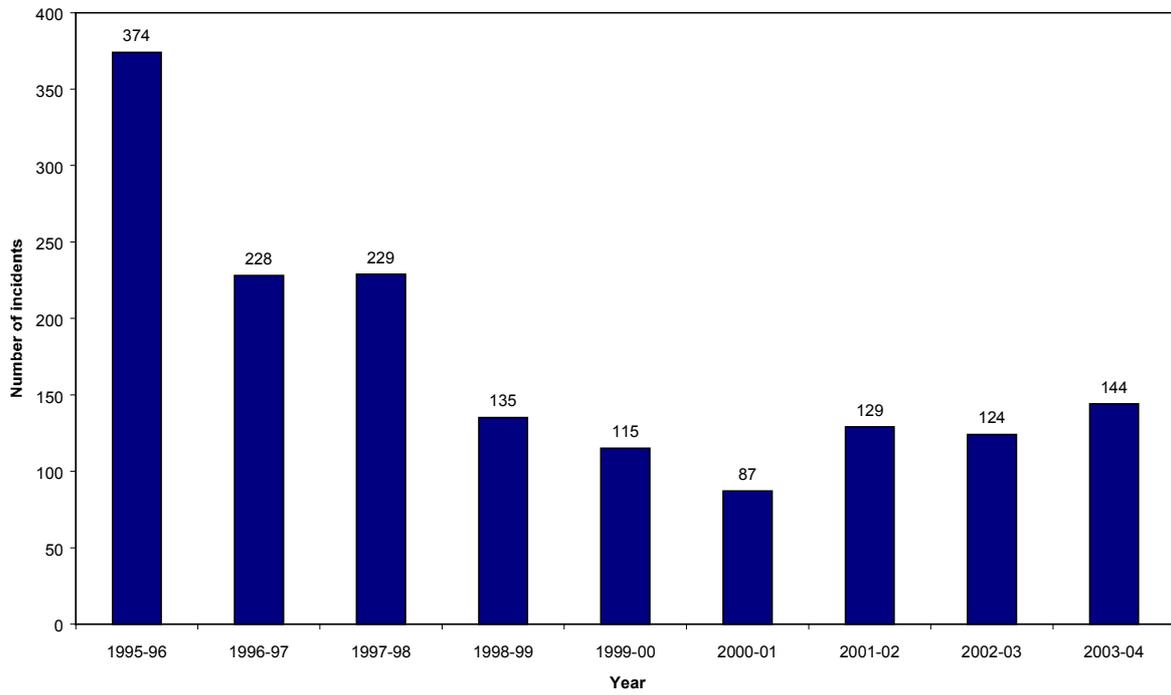
Figure 7.2.2b Category 1 (major) pollution incidents in England and Wales 1995-2004



Source: Ofwat.

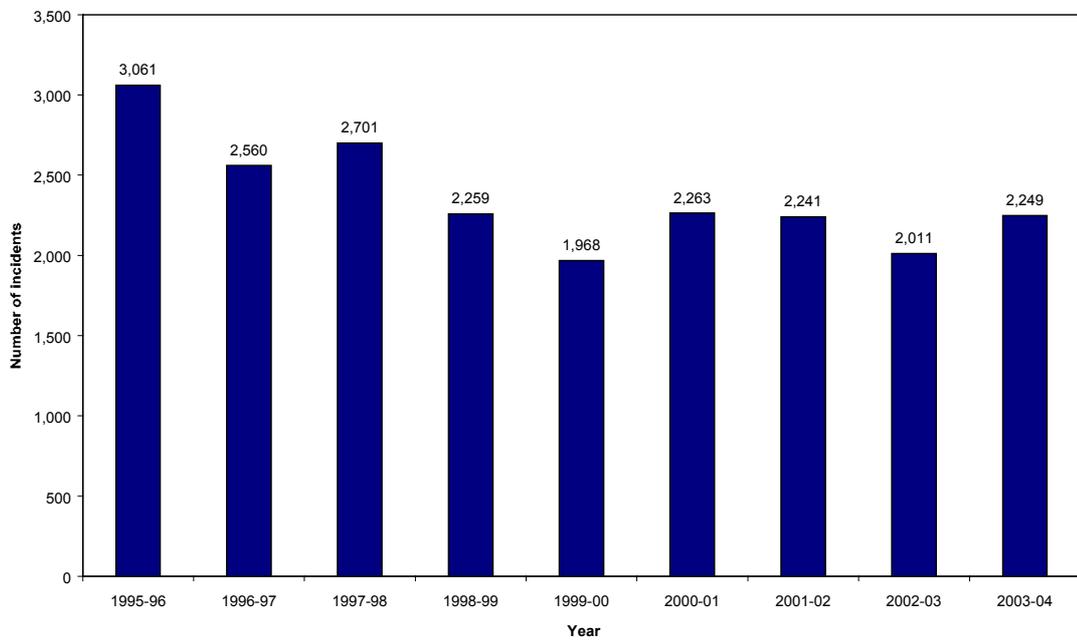
⁷³ Ofwat, 2004d.

Figure 7.2.2c Category 2 (significant) pollution incidents in England and Wales 1995-2004



Source: Ofwat

Figure 7.2.2d Category 3 (minor) pollution incidents in England and Wales 1995-2004



Source: Ofwat

7.3 CUSTOMER SERVICE

Each year Ofwat assesses companies' overall delivery of service to customers in the Overall Performance Assessment (OPA). The assessment serves two purposes.

- First, it enables Ofwat to make comparisons of the quality of the overall service companies provide to customers, and to take this into account at each price review. The OPA for 2002-03 and 2003-04 was reflected in the price limits set for 2005-10. Companies are incentivised to provide high levels of service to customers by receiving a small positive adjustment to price limits. Companies are penalised for providing a poor level of service to customers by having a negative adjustment to price limits.
- Second, the OPA informs customers (and other interested parties) about the overall performance of their local water company.

The assessment reflects the broad range of services provided to customers. The key areas and contributing measures included are:

- water supply (water pressure, interruptions to supply, hosepipe bans, and drinking water quality);
- sewerage service (sewer flooding incidents and risk of flooding);
- customer service (written complaints, billing contacts, meter reading, telephone answering, telephone access, services to customers with special needs, supply pipe repair policies, debt and revenue policies, complaint handling policies, compensation policies, and provision of information to customers); and
- environmental impact (leakage, sewage treatment works, pollution incidents from water and sewerage activities, and sludge disposal).

The industry performance against some of these measures (known as DG indicators) is shown in table 7.3. Performance is reported in Ofwat's annual analysis as published in the 'Levels of service for the water industry in England and Wales'.

Table 7.3 demonstrates that industry performance over the last 14 years has improved steadily and is now stabilising at a high industry performance. Most companies' OPA scores are now clustered around the top end of the scale. These improvements reflect the continuing efforts of companies to improve service to customers, particularly to reduce problems of low water pressure and the risk of sewer flooding.

Performance is now stabilising at levels that broadly meet customers' expectations. Customer research carried out for the 2004 price review by Ofwat and other stakeholders, including WaterVoice and the companies, indicates that customers in general believe the companies have achieved broadly satisfactory levels of service in relation to costs.

Table 7.3 Industry customer service performance 1990-91 to 2003-04

Description	1990-91	1992-93	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
	%	%	%	%	%	%	%	%	%	%	%
Properties at risk of low pressure	1.85	1.26	0.78	0.43	0.25	0.16	0.13	0.11	0.10	0.06	0.04
Properties subject to unplanned supply interruptions of 12 hours or more.	0.42	0.38	0.58	0.21	0.15	0.05	0.06	0.11	0.12	0.05	0.14
Population subject to hosepipe bans	41	12	39	30	3	3	0	0	0	0	0
Properties subject to sewer flooding incidents (overloaded sewers and other causes)		0.05	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.01
Properties at risk of sewer flooding incidents (once in ten years)			0.07	0.07	0.07	0.07	0.08	0.08	0.05	0.04	0.03
Properties at risk of sewer flooding incidents (twice in ten years)		0.09	0.07	0.06	0.05	0.05	0.04	0.04	0.02	0.01	0.01
Billing contacts not responded to (within five working days)	31.18	20.15	10.00	8.16	4.74	2.53	1.52	0.86	1.23	0.53	0.47
Written complaints not responded to (within ten working days)	31.09	18.14	5.79	5.07	1.99	1.28	0.64	0.44	0.66	0.15	0.14
Bills not based on Meter readings			3.67	2.32	0.87	0.34	0.33	0.70	0.45	0.16	0.15
Telephone calls not answered within 30 seconds				26.97	18.76	9.70	9.21	7.64	6.37	5.89	5.85

Note:

It is not appropriate simply to add up the totals for each indicator to determine the overall total of customers receiving poor service. Some customers may be included in more than one row. For example, a customer at risk of low pressure may also have written to the company to complain. Where information was not collected, it is shown as a blank space.

7.4 SUPPLY

7.4.1 Total water supplied

Total distribution input in 2003-04 was 15,658 MI/d compared with 14,356 MI/d in 1974. This is in contrast to predictions made in the late 1960s and early 1970s that suggested that future demand would continue to increase significantly (see section 2.3).

The principal driver behind this reduction in demand is the lower level of leakage from the supply system. This trend is less clear at a regional level where changes in local industry are important. For example, in the South East of England use by business has declined. However, domestic use has increased as a result of the increase in the number of households and a rise in per capita consumption.

Tables 7.4.1a and 7.4.1b provide a more detail of the trends in water supplied at a national level and for Yorkshire Water. Figure 7.4.1 provides a snapshot of the relative size of each element of water supply.

Table 7.4.1a Water supplied and distribution input 1974-2004

Industry	1974	1979	1983-84	1988-89	1993-94	1998-99	2003-04
MI/d							
Measured households					276	860	1,608
Measured non-households					3,776	3,718	3,677
Measured total	4,801	4,490	3,996	4,114	4,052	4,578	5,284
Water taken unbilled					119	156	233
Unmeasured households					7,844	7,421	7,264
Unmeasured non-households					485	208	155
Distribution operational use					47	73	96
Distribution losses					3,690	2,618	2,625
Unmeasured total	9,555	10,961	11,842	12,177	12,185	10,476	10,373
Distribution Input	14,356	15,451	15,838	16,291	16,236	15,056	15,658

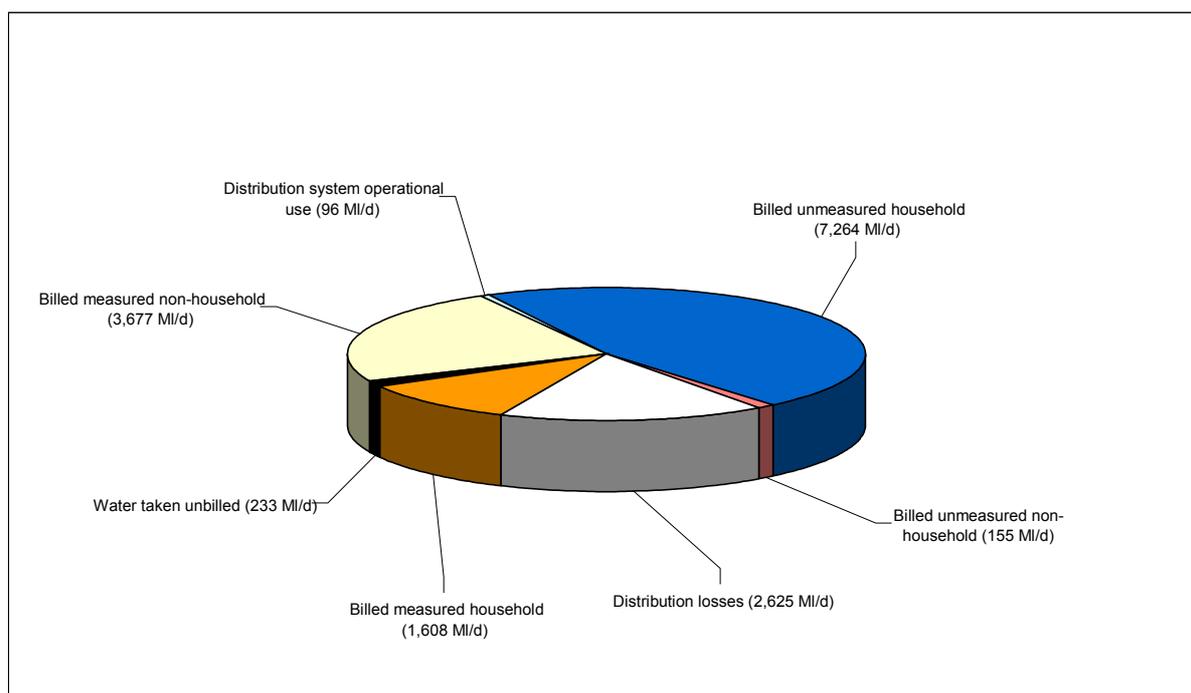
Source: Ofwat and Waterfacts

Table 7.4.1b Yorkshire Water - Water supplied and distribution input 1988-2004

MI/d	1988-89	1993-94	1998-99	2003-04
Measured households			72	133
Measured non-households			326	320
Measured total	390	379	399	453
Water taken unbilled			31	39
Unmeasured households			581	567
Unmeasured non-households			3	2
Distribution operational use			8	7
Distribution losses			264	229
Unmeasured total	1,036	1,089	886	844
Distribution Input	1,425	1,468	1,285	1,297

Source: Ofwat and Waterfacts

Figure 7.4.1 Components of the water supply in England and Wales in 2003-04



Source: Ofwat

7.4.2 Leakage

After privatisation, better data from the companies revealed a rising trend in leakage that reached a peak in the drought year of 1995. In 1997, following a water summit arranged by the government, the industry was set with a medium-term goal of achieving an economic level of leakage by 2002-03⁷⁴. The consequences, both operational and in presentation, of high leakage combined with high demand caused by the dry summers of the mid-1990s led to measures that resulted in immediate reductions in reported levels and in improved economic analysis.

Between 1994-95 and 2002-03 leakage was reduced by around 1,500 MI/d, with most companies reporting leakage against and in line with their own targets based on their own economic analyses. This reduction is equal to the daily needs of almost ten million domestic customers, equivalent to nearly one fifth of the population of England and Wales.

Figures 7.4.2a and 7.4.2b show the total level of leakage for the water industry and Yorkshire Water. Yorkshire Water reduced its level of leakage to its economic level of 300 MI/d in 2001-02⁷⁵. The increases in industry total leakage in 2001-02 and 2002-03 were largely driven by increases at Thames Water⁷⁶.

In 1995 Yorkshire Water experienced severe shortages in water resources. Between April 1995 and January 1996 the level of low rainfall in the region was estimated to have occurred less often than once in 200 years by the meteorological office.

Possible rota cuts and/or other emergency measures were only avoided by an intensive road tankering operation in November and December 1995.

An independent inquiry⁷⁷ into the management of the immediate supply problems and steps taken to avoid emergency restrictions was undertaken. Ofwat also investigated the decisions the company made in the period leading up to the summer of 1995 and whether the situation that developed should have been anticipated and avoided.

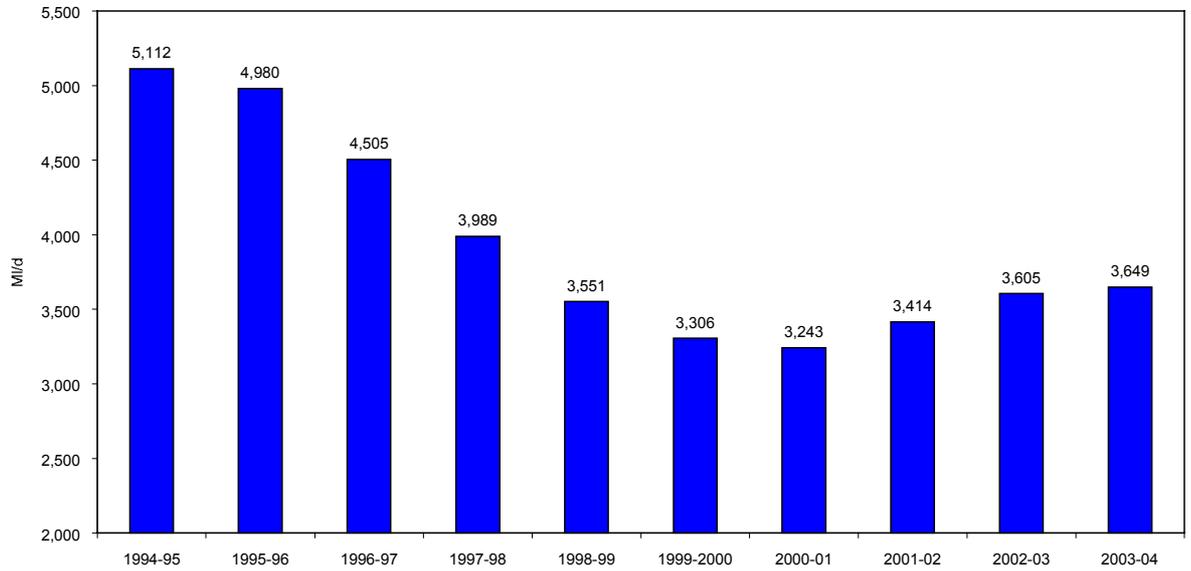
⁷⁴ An economic level of leakage is the level at which it would cost more to make further reductions than to produce water from another source.

⁷⁵ From 2005-06, Yorkshire Water's Economic Level of Leakage is 295 MI/d.

⁷⁶ See Ofwat's Security of supply, leakage and the efficient use of water report for further details.

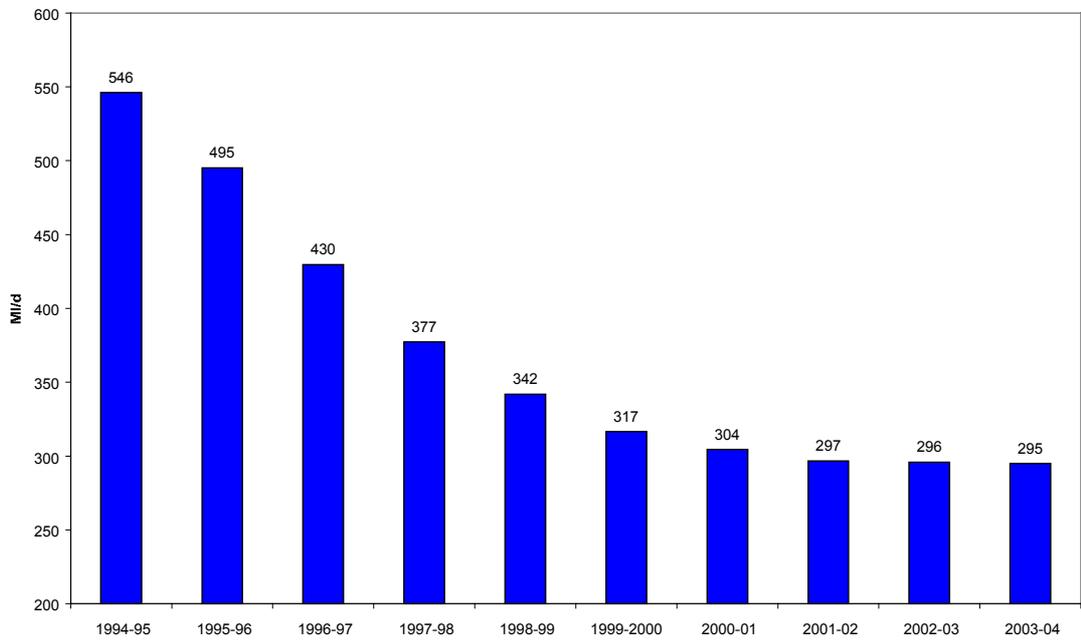
⁷⁷ Uff, 1996.

Figure 7.4.2a Industry total leakage 1994-2004



Source: Ofwat

Figure 7.4.2b Yorkshire Water leakage 1994-2004



Source: Ofwat.

Ofwat concluded there were serious failings by the company in respect of its arrangements for maintaining adequate supplies of water, in particular controlling distribution losses, and minimising supply interruptions..

The company recognised its failings in these areas and agreed not to increase prices above the rate of inflation in 1997-98. The company also agreed to formally take action to:

- significantly reduce supply interruptions; and
- reduce its leakage to levels below those previously forecast. This was to be based on a quantified assessment of the economic level of leakage.

In 1997 Yorkshire Water submitted its report, called 'Establishing the economic level of leakage', to Ofwat. It was the first company to provide an assessment of its economic level of leakage.

Since then companies' understanding of the economic level of leakage principle has developed significantly and all companies have submitted economic level of leakage appraisals as part of the review process.

A joint initiative between Ofwat, the EA and Defra led to the publication of the consultants' report 'Future approaches to leakage target setting for water companies in England and Wales' in March 2002. This set out principles of best practice and considers how companies should undertake a fully integrated appraisal of the financial, social and environmental aspects of leakage reduction and other operations to ensure the efficient use of water now and in the future by all abstractors.

7.4.3 Metering

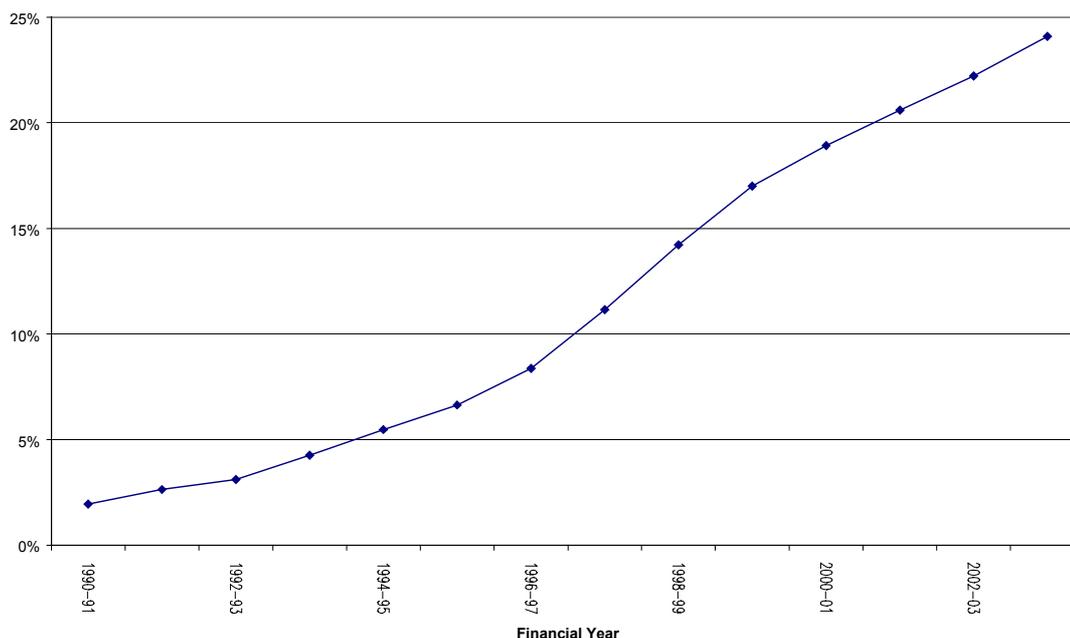
The majority (around 76% in 2003-04) of household customers in England and Wales pay for water and sewerage bills based on the rateable value⁷⁸ of their property. At present around 24% of households are charged for their water and sewerage services on a measured basis, based on the volume of water consumed, plus a standing charge.

The number of household customers that are charged on a measured basis has risen steadily since privatisation (Figure 7.4.3) and is expected to continue to rise in the future (to 36% by 2009-10⁷⁹).

⁷⁸ This is the official value given to premises (household or commercial) as shown in the official valuation list (published under part V of the General Rate Act 1967) on 31 March 1990. Hence, any premises built before 1990 should have a rateable value. Water companies use this as a tool for determining how much unmeasured customers should pay.

⁷⁹ Ofwat, 2004(b)

Figure 7.4.3 Proportion of metered household customers 1990-2004



Source: Ofwat.

The increase in customers receiving metered supplies reflects:

- Customers choosing to pay on a measured basis rather than an unmeasured basis. The Water Industry Act 1999 gave customers a right to switch to being charged on a measured basis, without having to pay for the installation of the meter. Previously, metering was at the sole discretion of the company and customers who asked for a meter could be charged to cover the cost of installing a meter. Most customers who opt for a meter do so because they use less than the unmeasured average amount of water and therefore expect to save money.
- Companies metering selected customers. Companies have a duty to promote the efficient use of water by their customers and can compulsory meter certain customers to help manage demand. A company may, for example, install a meter if a customer has a swimming pool.
- A high proportion of non-domestic customers (88%) receiving a measured supply.
- A requirement for all new domestic properties constructed after 1990 to be fitted with a meter.

Table 7.4.3 shows the number of meters installed since 1996.

Table 7.4.3 Number of meters installed in England and Wales

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	Annual average 2005-10
Customers choosing a meter	224,452	392,506	333,642	271,602	232,522	225,633	226,579	280,914	239,200
Compulsory installed meters	53,641	166,650	152,401	81,395	11,674	10,424	13,043	18,741	70,800

Source: Ofwat.

In the longer term as the number of customers paying on a measured basis increases the companies will be in a better position to modify customer demand. However, in the short term there are cost and revenue implications that must be overcome as customers switch from an unmeasured to a measured charging basis. In the short term, companies are entitled to increase charges to unmeasured customers to recover any reduction in revenue from customers who switch to a metered supply to ensure it is revenue neutral. This is subject to control by Ofwat through the approval of charges within the tariff basket.

7.4.4 Household consumption

Because only 24% of households in England and Wales have meters, the demand for the remaining households must be estimated. This is done mainly through consumption surveys, which monitor use in individual households and distinct areas within a company's region to gain an estimate of average unmeasured consumption. As the number of measured customers increases customers will be better able to calculate household consumption and this should help improve demand management.

Table 7.4.4 Trends in household consumption (litres/person/day) 1993-2004

	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Unmeasured household consumption estimates	142	145	154	149	150	148	151	152	153	153	158
Measured household consumption	-	129	134	134	137	136	137	134	136	137	141
Estimates of average household consumption (weighted average)	-	-	152	148	149	146	149	149	150	150	154

Source: Ofwat.

7.5 SOURCES OF FUNDS AND INVESTMENT

The significant capital investment requirement of the companies since privatisation has led to a persistent negative cash flow and the level of debt financing has increased significantly. Customers are the source of revenue for the companies, and, as a consequence, their bills have increased to cover the cost of financing the capital investment programme. Only one company has obtained additional funds by means of a rights issue since privatisation.

7.5.1 Water and sewerage bills

Customers' bills rose sharply in the first half of the 1990s but then rose more gradually following the price review in 1994. The price reduction following the 1999 review has been followed by further gradual rises, but overall the price limits for 2005-10 mean that the average household bill in 2009-10 will be 42% higher than at privatisation in 1989 before taking account of inflation. The average household bills for the industry and Yorkshire Water are shown in table 7.5.1.

Table 7.5.1 Average household bills 2005-06 (November 2004 prices)

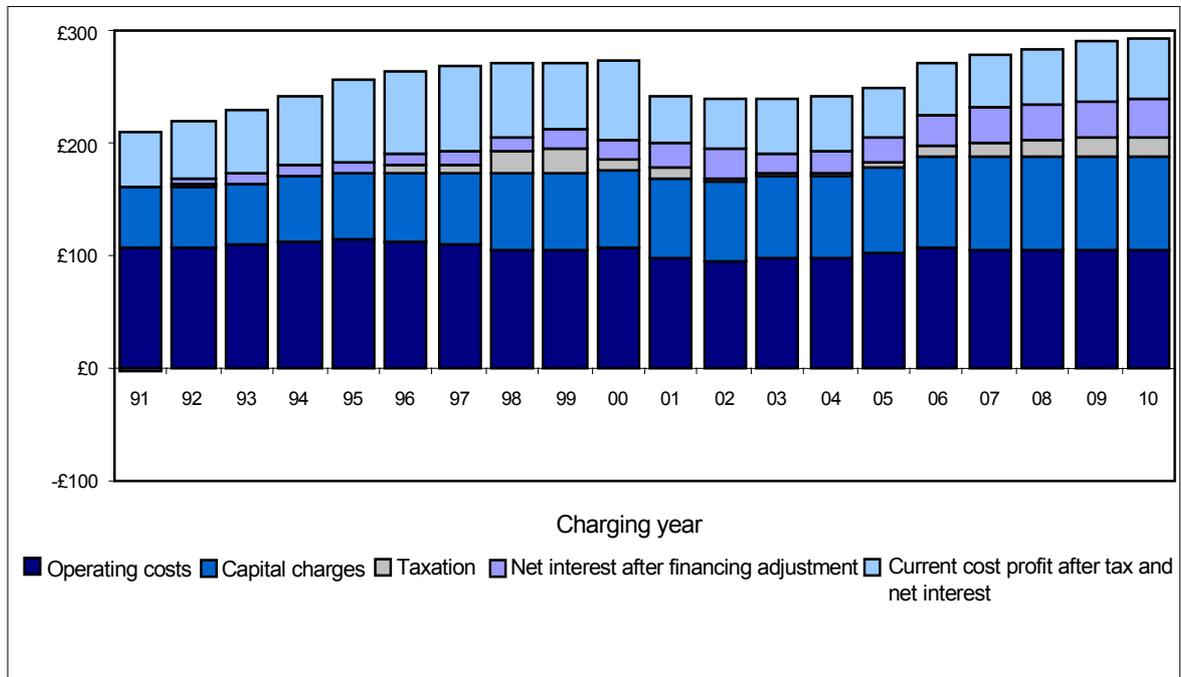
	Yorkshire Water	Industry
Water	126	134
Sewerage	138	144
Total	264	278

Customer bills vary considerably between companies. Customers of South West Water currently have the highest bills and by the end of 2005-10, customers of South West Water and United Utilities Water will have seen the largest bill increases of 74% and 81% in real terms since privatisation.

Figure 7.5.1 sets out how the main components of the household bill for England and Wales have changed since privatisation. This shows that operating costs as a proportion of household bills are declining slowly. It shows that capital charges (current cost depreciation and the infrastructure renewals charge) have risen since privatisation because of the significant capital programmes completed by the companies. Business taxes were negligible until the mid-1990's but have since risen.

The return on capital is split into two components; interest payments and profit attributable to shareholders. Interest payments have risen sharply as debt has become a major element of company finances.

Figure 7.5.1 Components of the average household bill for the industry 1991-2010 (2003-04 prices)



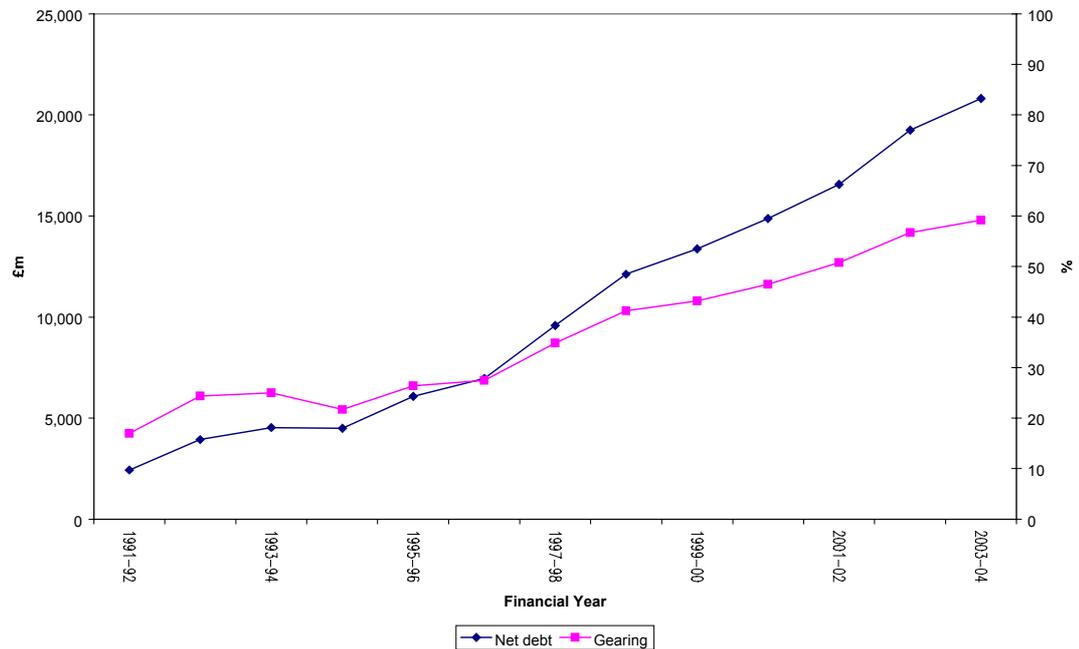
7.5.2 Debt

In the years immediately after privatisation, industry levels of gearing were very low. By 31 March 2004, the total net debt position of the industry was £20.8 billion, equivalent to a gearing level of 60% (measured on the basis of net debt to regulatory capital value), reflecting significant capital investment and changes to the capital structure of the companies since privatisation. This also reflects a one-off tax on the privatised utilities in 1997. Figure 7.5.2a shows the increase in industry net debt since privatisation.

Figure 7.5.2b shows the increase in the net debt and gearing of Yorkshire Water since privatisation. 1995-96 saw a large increase in the net debt position of Yorkshire Water as a result of payment of a special dividend specifically to increase its gearing.

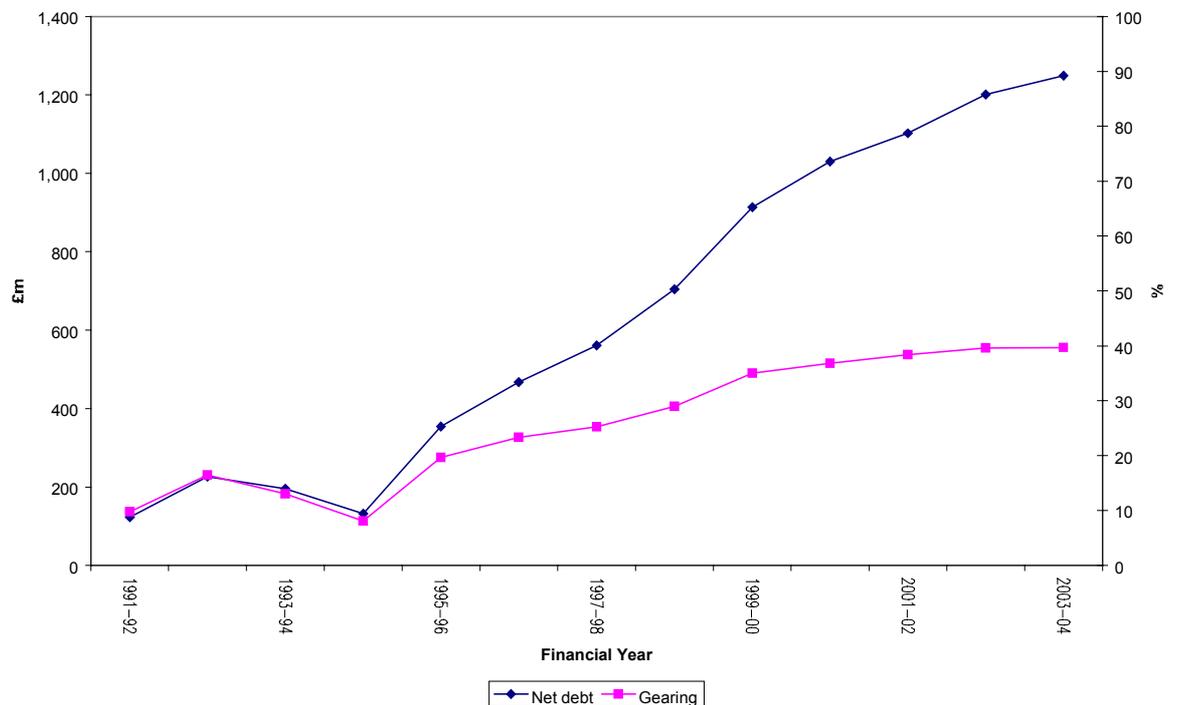
The sources of debt financing available to water and sewerage companies are wide ranging and include both the international and the UK bond markets. Developments in the water sector have enabled even the smaller companies to gain greater access to a variety of debt sources including the European Investment Bank.

Figure 7.5.2a Industry net debt and gearing since privatisation (2003-04 prices)



Source: Ofwat

Figure 7.5.2b Yorkshire Water net debt and gearing since privatisation



Notes to Figures 7.5.2a and 7.5.2b: gearing is the measure of net debt to regulatory capital value.

Source: Ofwat

7.5.3 Equity

Although debt financing has, other things being equal, been a significantly cheaper source of finance than equity since privatisation, Ofwat considers that to rely solely on debt would force the whole industry into an unsustainably brittle structure to the ultimate detriment of customers⁸⁰. In particular, companies may not be sufficiently resilient to cope with unforeseen operating conditions, economic downturn etc. Therefore, Ofwat's aim at each price review has been to ensure that returns assumed should provide shareholders with sufficient incentives to provide additional funds, either in the form of retained earnings or new equity, to enable companies to make new investment where this is appropriate.

United Utilities plc, the parent of United Utilities Water plc, is the only company to date to have increased finance via new equity. In July 2003, United Utilities plc announced a £1 billion rights issue to fund its water quality and environmental improvement programme. The issue was fully subscribed.

⁸⁰ Ofwat, 2004

7.6 COMPETITION

The Water Act 2003 amended the duties of the Director General of Water Services to provide a primary duty to further the consumer objective, which is to protect the interests of consumer, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the provision of water and sewerage services.

There are five ways in which competition can be achieved: water supply licences; inset appointments; cross-border supplies; private supplies; and competition in providing new mains and service pipes. This section also discusses briefly the competitive opportunities in the provision of services.

7.6.1 Water Supply Licences

From 1 December 2005, new water supply licensees will be able to access a water undertaker's supply system for the purpose of supplying non-household customers whose annual average consumption is greater than 50 Ml a year. Ofwat estimates that there are approximately 2,200 customers at eligible premises spending in total about £210 million on water each year (2003-04 figures).

Prospective suppliers will need to obtain a Water Supply Licence from Ofwat. Companies will be able to apply either for a 'retail' licence, which enables the holder to buy water wholesale from a water undertaker and to sell to eligible customers; or a 'combined' licence, which authorises the holder to introduce water into an existing water undertakers supply system and sell it on to eligible customers.

The new arrangements require all the current water undertakers to develop access codes setting out the terms on which licensees can access the supply system. The access codes will comprise the standard policies common to all water undertakers and should reflect any specific local issues. The 'access terms' are defined as the terms (including price) under which a water undertaker and licensee agree access to a water undertaker's supply system.

7.6.2 Inset appointments

Inset appointments allow the existing regulated water or sewerage supplier to be replaced by another, at a specific site. Only a limited company or a statutory water company can become a water and/or sewerage undertaker. An inset application must meet one of three criteria:

- the customer uses (or is likely to use) at least 50 megalitres in England, 250 megalitres in Wales, of water per year.
- the site is not currently served by a water and/or sewerage undertaker.
- the existing water and/or sewerage undertaker agrees to the inset.

An inset appointment can be granted by Ofwat following a period of consultation and subject to the applicant satisfying certain criteria to ensure that the interests of customers are protected. A successful inset appointee can serve its new customer(s) either using its own resources or by requesting the use of the existing undertaker's assets. A total of eleven inset appointments have been granted since privatisation.

7.6.3 Cross-border supplies

Water undertakers have a duty to supply water for domestic customers outside their area provided that the customer is willing to pay the cost of making the connection to the undertaker's distribution network. From 1 December 2005, this duty will not apply to customers who are eligible under the water supply licences regime. Owners of private sewers and drains have a similar entitlement to connect to the public sewer.

7.6.4 Private supplies

Any person who owns a self-contained supply of water is entitled to supply water to others by agreement (subject to rules concerning water quality). However, nearly all customers in England and Wales receive their water and sewerage services from a water and/or sewerage undertaker.

7.6.5 Competition in providing new water mains and service pipes

Water and sewerage undertakers retain responsibility for the integrity and quality of their network, however, developers are able to lay new water and sewerage mains and service pipes either directly or using their own contractors. If these assets are laid to water and sewerage undertakers' standards then the undertakers must take over responsibility for them.

7.6.6 Competitive opportunities for the provision of services

Water and sewerage companies offer opportunities for competition in the market for the supply of services to companies in the form of contracting out of some or all of its capital investment and operational activities.

Since privatisation, the value of services outsourced by the industry has increased significantly. Outsourcing of activities is now commonplace within the water industry and includes the full range of functions required by companies including: consultancy services, engineering design, construction, civil engineering, mechanical and process engineering, asset refurbishment, network maintenance, customer services, vehicle leasing, IT, laboratory services, debt recovery, research and development and facilities management.

Outsourcing allows companies to take advantage of the best combination of quality and price which the market has to offer. As the market for most of the services outsourced is national, there are a wide range of capable suppliers competing for business with the water industry. The continuing high level of capital investment required makes water companies particularly attractive clients for service providers. The market enables companies to engage the best mix of specialist external and in-house capabilities.

By undertaking competitive bidding exercises which deliver real competition between the service providers, water companies can achieve efficient procurement of goods, works and services. This is a key method of delivering capital and operating efficiency savings so that water companies can outperform the regulator's efficiency targets and deliver higher returns to shareholders.

Since privatisation, water companies have adopted different strategies in relation to outsourcing. Companies have tended to be selective in the areas that they outsource, although most make significant use of external contractors to deliver their capital investment programmes.

Most companies use external suppliers to some extent in the provision of day to day functions. However, only Welsh Water outsources all of its operating functions to external contractors. The company retains only a small number of staff directly to co-ordinate the work of the contractors and ensure that it meets its statutory duties.

Yorkshire Water has outsourced most of its capital investment delivery work to external contractors. It presently outsources its customer service functions to an associate company, Loop. Since privatisation, Yorkshire Water had also created a separate analytical services (laboratory) company, Alcontrol and a civil engineering contractor, BWEL Ltd. Both companies have now been sold by the group.

Since privatisation, some companies have sought to develop spin-off commercial enterprises with a view to developing international business by selling their expertise overseas. Anglian Water, Welsh Water, United Utilities Water, Thames Water, Severn Trent Water, Northumbrian Water and Yorkshire Water have all participated in international trade to some extent. This has been a mixture of selling water industry commercial services to foreign water suppliers and buying overseas companies. For example, Yorkshire Water acquired Aquarion, based in Connecticut, USA in January 2000.

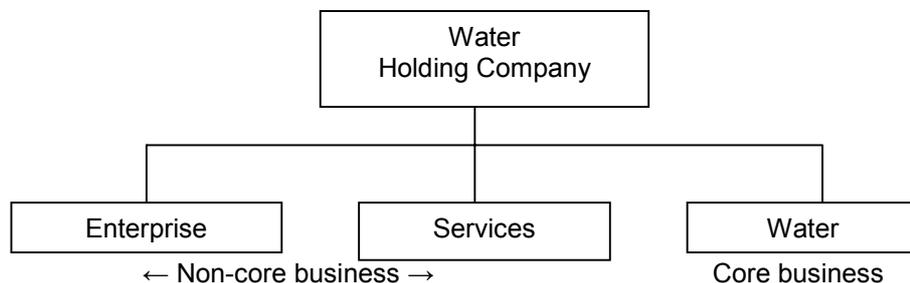
7.7 MANAGEMENT AND RESTRUCTURING

7.7.1 Diversification

The 1973 Act constrained the water authorities from undertaking trading activities other than those which would facilitate its functions as an undertaker. The 1983 Act subsequently permitted overseas activities in the form of advice, assistance and training, but only with the consent of central government. Partly as a consequence, the other trading activities of the water authorities had generally been immaterial to their turnover and profitability before privatisation. The 1989 Act allowed companies to extend this activity and the group of each company was allowed to extend its operations into other services via separate ventures.

With the exception of one very small water company, each licensed company is owned by a parent company, often as one of several group subsidiaries and sometimes within a larger, international, group structure. Only the licensed business is able to provide water or water and sewerage services. Like other companies in the group, however, licensed companies may also conduct other, non-regulated businesses.

Typical structure:



Diversification of the activities within corporate structures has tended to happen in one of the following ways:

- by transferring some areas of the regulated business (such as transport, IT, scientific or customer services) into separate companies which continue to trade largely with the regulated business;
- by placing the non-regulated activities into group subsidiaries and providing these services to third parties as well as to the regulated business;
- by developing service or enterprise companies which may or may not have previously supplied goods or services to the regulated business – such companies usually become a subsidiary of the group; and
- by entering into joint ventures with other companies.

To ensure that customers are protected from any potential losses or higher charges that may result from diversification, Directors of the regulated business must:

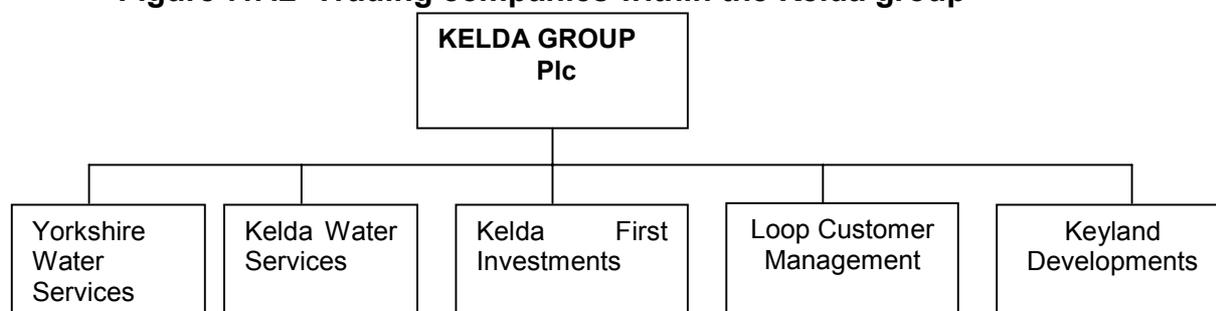
- ensure at all times that they have adequate financial and managerial resources to run the business;
- certify annually that they have adequate financial and managerial resources to run the business for the coming year;
- after any material diversification state they have the necessary financial and management resources;
- ensure that any transactions with group companies are carried out at arm's length, so that neither gives to or receives from the other any cross-subsidy (and water and sewerage customers do not pay inflated prices); and
- ensure that, in carrying out its functions, the regulated business behaves as if it is substantially a sole business.

The ring fencing provisions were tested in 2001 with the collapse of Enron, the ultimate parent company of Wessex Water. The water and sewerage company continued to carry out its functions without any detrimental effect to its customers and was then sold intact to a new customer.

7.7.2 The current trading companies within Kelda Group

Kelda is the parent company of Yorkshire Water. The current trading companies of the Kelda Group are shown in figure 7.7.2. A detailed explanation of the trading companies within Yorkshire Water and the development of the management structure since privatisation is provided in the paper by Yorkshire Water, "Water and Wastewater Services, Historical Case Study", presented to the China-UK working group in July 2005.

Figure 7.7.2 Trading companies within the Kelda group



- Yorkshire Water Services is the business that provides regulated water and sewerage services to its customers.

- Kelda Water Services – is an outsourcing operations business. It provides services to third parties outside the group.
- Kelda First Investments – Includes Aquarion, a water company based in Connecticut, USA.
- Loop Facilities Management – created from the former Yorkshire Water Customer Services business in 2000. Loop performs the customer service function for Yorkshire Water and for some external clients, including local county councils.
- Keyland Developments – property management company

7.7.3 Changes of ownership

At privatisation, the government retained a single ‘golden share’ in each of the privatised companies, which effectively meant that no individual or single company could control more than 15% of voting shareholdings (unless 75% of shareholders voted otherwise). This was intended to maintain stability in the industry. On January 1 1995, the government redeemed its shares, opening up the WaSCs in England to the full force of the market.

The lapsing of the golden shares opened up the potential for (i) holding companies to sell their regulated businesses, (ii) takeovers within the industry, and (iii) mergers between companies⁸¹. Since then there have been a number of changes of ownership of the Water and Sewerage Companies and only a limited number of companies now retain a listing on the London Stock Exchange.

Each change of ownership is subject to review by Ofwat to ensure that the interests of customers will continue to be served under the new ownership structure. Kelda, the ultimate parent of Yorkshire Water, is one of the water and sewerage companies that continues to be listed on the London Stock Exchange. The more significant changes of ownership since privatisation are summarised in figure 7.7.3.

⁸¹ The government did not hold any golden shares in the Water only Companies. Water only Companies have been subject to potential change of ownership since before privatisation.

Figure 7.7.3 Significant changes of ownership since privatisation

1996	<p>Lyonnaise, a French water and construction company, took over Northumbrian Water.</p> <p>North West Water Group plc, owner of North West Water Ltd, took over NORWEB plc (an electricity distribution company) and became United Utilities plc (the water and sewerage company was subsequently rebranded United Utilities Water plc).</p> <p>Welsh Water plc, owner of Welsh Water took over South Wales Electricity plc and became Hyder plc.</p> <p>Scottish Power, an electricity production and distribution company took over Southern Water.</p>
1999	<p>Enron Water Europe plc took over Wessex Water.</p>
2000	<p>Western Power Distribution took over Hyder.</p> <p>RWE AG, a German utility company, took over Thames Water plc.</p>
2001	<p>Glas Cymru acquired Welsh Water from Western Power Distribution Ltd. Welsh Water subsequently contracted out management of its water and sewerage operations to United Utilities and management of its customer service operations to Thames Water, raising the proportion of its operating costs subject to contracting out from around 60 to 80%</p>
2002	<p>First Aqua acquired Southern Water.</p> <p>YTL Power International Berhad acquired Wessex Water from Enron.</p>
2003	<p>Aquavit plc purchased Northumbrian Water Ltd and re-listed the company on the London Stock Exchange.</p>

7.7.4 Industry consolidation

There has been some consolidation of the water industry since privatisation. This has occurred as a result of two circumstances:

- merger of company licences where those companies were already under the same ownership; and
- acquisition of one water company by another and subsequent merger of the company licences.

Consolidation of the industry has reduced the number of water only companies from a total of 29 at privatisation to 13 today; the 10 water and sewerage companies existing at privatisation are in existence today. Consolidation within the industry is summarised in annex D. This includes the acquisition by Yorkshire Water of York Waterworks and the subsequent merger of the two companies' licences.

7.7.5 Industry structure

Following the 1999 periodic review and the stock market's reaction to 'old economy' stocks in the early part of 2000, a number of water companies, including Yorkshire Water in 2000, considered restructuring proposals. These proposals contained some or all of the following elements:

- reducing equity investment through a significant increase in debt finance;
- splitting asset management from operations; or
- new ownership structures such as companies limited by guarantee or mutuals⁸²

Ofwat considers any restructuring of this type, and may introduce additional licence requirements to ensure the arrangements are in the best interests of customers. In 2000, for example, it rejected Yorkshire Water's proposal for mutualisation and separation of the operation and ownership of the assets on these grounds.

Only one company, Welsh Water, actually restructured wholly along these lines and outsourced all of its activities under contract to third party service providers. It also changed its ownership structure. The owner of Welsh Water is a single purpose company, formed to own, finance and manage Welsh Water. As it is a company limited by guarantee, it has no shareholders and is run solely for the benefit of customers.

Some other companies, including Anglian Water, Southern Water, South Staffordshire Water, Sutton & East Surrey Water, Portsmouth Water, Mid Kent Water have adopted some of the techniques employed by Welsh Water in order to increase levels of gearing to up to 90%. Others remain committed to the traditional equity model.

⁸² A mutual company is an organisation owned by its members as opposed to shareholders.

Adopting higher levels of gearing can act to reduce the cost of finance, at least in the short term. However, this has the risk of reducing the future financial flexibility of the companies as interest must continue to be paid on borrowings, unlike dividends to shareholders which could be reduced. Ofwat has drawn attention to these risks of highly geared companies but considers that these issues are the responsibility of the investors, lenders and the management of companies and should not be borne by customers. Any financial structure must be consistent with the long-term nature of the industry and companies must ensure they remain able to access the capital markets at reasonable rates to finance present and prospective capital programmes.

8. FUTURE ISSUES

8.1 WATER INDUSTRY ACT 2003

The Water Industry Act 2003 amended Ofwat's powers and duties. The Act will also replace the role of the Director with a Water Services Regulation Authority from April 2006. It extends the potential for competition within the water industry (see section 7.6) and obliges the Authority to carry out its duties in a manner best calculated to contribute to the achievement of sustainable development. The Authority will consist of a Chairman, appointed by the Secretary of State for the Environment in consultation with the Welsh Assembly, and at least two other members appointed by the Secretary of State in consultation with the Assembly and the Chairman⁸³.

Another important change brought about by the Water Industry Act 2003 was the establishment of a new independent Consumer Council for Water (CCWater) on 1 October 2005. CCWater replaced the previous statutory consumer representative WaterVoice. CCWater is an independent body, funded by the Department for Environment, Food and Rural Affairs.

8.2 WATER FRAMEWORK DIRECTIVE

The Water Framework Directive came into force in December 2000. It is the most substantial piece of EC water legislation to date and requires all inland and coastal waters to reach "good status" by 2015, unless there are well justified reasons for delays or lower environmental objectives. The Water Framework Directive will establish a river basin district structure within which environmental objectives will be set, including ecological targets for each water body. It will have the following major consequences⁸⁴:

- further integration of the management of water quality and quantity and management of groundwater and surface water;
- further integration of plans affecting rivers and river catchments;
- a broader approach to environmental water quality, in particular by focussing on ecological status;
- action to address pollution from all sources including point and diffuse sources and seeks to incorporate the polluter pays principle; and
- reviewing the costs of providing water and sewerage services, particularly any cross-subsidies.

⁸³ Further information available at www.ofwat.gov.uk.

⁸⁴ Defra, 2002. Further information available at www.defra.gov.uk.

8.3 UNCERTAINTIES

When Ofwat set price limits for 2005-2010 in 2004 it recognised there were some uncertainties that could not be taken into account in price limits. Section 6.3.8 covers how Ofwat deals with interim determinations of K between price reviews. At the price review in 2004 Ofwat identified a number of items could lead to interim determinations:

- Meter optants – changes up or down in the number of customers choosing to be supplied by a meter. The rate at which customers change can have a significant impact on a company's revenue.
- Bad debt and debt management – As domestic customers can no longer be disconnected for non-payment of their bills companies can face increases to their levels of bad debt and the costs of managing debt.
- Abstraction charges and discharges to controlled waters – These costs traditionally increased by no more than inflation, but are uncertain going forward and may increase by more than inflation.
- Lane rental/traffic management – Companies may face new charges as a result of provisions in the Traffic Management Act 2004.
- Tax – Companies may face increases in the taxation of infrastructure expenditure arising from the introduction of the International Financial Reporting Standards (IFRS) and FRED 29.

8.4 CLIMATE CHANGE IMPACTS AND LONG TERM WATER RESOURCE ISSUES

Climate change is likely to result in milder, wetter winters and hotter drier summers in the UK. The incidence of drought in the UK is likely to increase under climate change, but so is the incidence of flooding. The challenge for the industry is how it plans to make the best of these changed circumstances, with more rainfall in winter and less in summer. Ensuring that companies continue to provide adequate supplies of water for the drier parts of the country is one priority area.

The Environment Agency and individual water companies produce 25 year water resource plans which now factor in climate change and these were an input to Ofwat's 2004 price review.

Companies may need to put in new capacity where this is necessary, though land use pressures are always going to make this difficult and time consuming. Companies will also need to address the demand for water through such measures as leakage reduction, more efficient appliances, better building design and more appropriate use of water by agricultural and other users. A bigger challenge will be to change public attitudes and behaviour, to assist water conservation.

As well as work to mitigate climate change by cutting emissions, steps to address resource issues are already in progress. This includes direct government help to encourage water efficiency through the enhanced capital allowance scheme which provides tax relief for businesses investing in technologies improving water efficiency and protecting water quality.

As well as problems for water supply, increased frequency of drought may lead to more incidence of low river flows, leading in turn to worsening water quality and adverse impacts on ecosystems and biodiversity. However, in setting consents to discharge and abstraction licences, the Environment Agency will mitigate these effects by taking into account lower flows in summer months and higher flows in winter months.

9. GLOSSARY

Bulk supply -	A wholesale transfer of water from one supplier to a neighbouring supplier to boost the neighbour's supply capability.
Central government -	The government responsible for exercising political authority over the affairs and actions of the country as a whole.
Conservancy -	A body with jurisdiction over a river, port, area of countryside etc.
Diffuse Pollution -	Diffuse Pollution comprises true non point source contamination and pollution arising from a large number of dispersed, often individually minor, point sources. Examples of true non point sources are sheet run off from fields or seepage of nutrients from soil into ground water. Examples of minor point sources are field drains or surface water drains in urban areas. Diffuse sources are often individually minor, but collectively significant.
EC Law -	Directives issued by the European Community (now called European Union) which requires member states to incorporate this into community law within their country. The government of the member state could be held in breach for failing to implement correctly and in some instances would be liable to pay compensation to individuals who suffer damage as a result.
Gearing -	A company's net debt expressed as a percentage of its total capital. Ofwat uses net debt as a percentage of the regulatory capital value. Other common measures include the ratio of net debt to net debt plus equity, expressed as a percentage. $\text{Expressed as a percentage: } \frac{\text{debt}}{\text{Regulatory capital value}} \times 100$
Hydrology -	The study of the distribution, conservation, use etc. of the earth's water and its atmosphere.
Local government -	Government of the affairs of counties or towns etc. by locally elected political bodies. It is subordinate to central government.
Lock -	A section of canal or river that may be closed off by gates to control the water level and the raising and lowering of vessels that pass through it.

Municipality -	A city, town or district enjoying some degree of local self-government.
Price limit -	The average increase in charges that a company can increase (or decrease) its overall average charge above (or below) inflation each year to finance its services and meet its legal obligations.
Rechargeable works -	Work carried out by the companies to meet statutory obligations and for which they are entitled to recover expenses reasonably incurred on each job. Examples include mains diversion work or the cost of installing a commercial water meter.

10. FURTHER READING AND BIBLIOGRAPHY

10.1 FURTHER READING

Further information is available from the following websites:

Department for the Environment, Food and Rural Affairs	www.defra.gov.uk
Drinking Water Inspectorate	www.dwi.gov.uk
Environment Agency	www.environment-agency.gov.uk
Office of Water Services	www.ofwat.gov.uk
Water Industry Commissioner for Scotland	www.watercommissioner.co.uk
WaterUK	www.water.org.uk
Consumer Council for Water	www.watervoice.org.uk
Yorkshire Water	www.yorkshirewater.com

Industry data presented is available from Ofwat publications, the public version of the June Returns and Waterfacts.

10.2 BIBLIOGRAPHY

Bakker, K. (2003) 'An uncooperative commodity, Privatising Water in England and Wales' Oxford University Press, Oxford.

Ball, S & Bell S. (1991), Environmental Law, Third Edition, Blackstone Press Limited, London.

Central Advisory Water Committee, (1962) Sub-Committee of the Growing Demand for Water – Final Report, HMSO, London.

Competition Commission, (2002). Vivendi Water UK PLC and First Aqua (JVCo) Limited. A report on the proposed merger. HMSO, London.

Department for Environment, Food & Rural Affairs, (2002). Directing the Flow. Priorities for future water policy. Defra publication, London.

Department of the Environment, (1971), The Future Management of Water in England and Wales. A Report by the Central Advisory Water Committee, HMSO, London.

Department of the Environment and the Welsh office, (1973). A Background to Water Reorganisation in England and Wales, HMSO, London.

Department of the Environment, (1986), Privatisation of the Water Authorities in England and Wales, HMSO, London.

Department of the Environment, (1989), Water Privatisation: Consumers to benefit through higher water quality and lower price rises. Department of the Environment, London.

Department for Environment, Food and Rural Affairs, (2002), Directing the flow, priorities for future water policy, Department for Environment, Food and Rural Affairs, London.

Drinking Water Inspectorate, (2004), Drinking Water (2003), A report by the Chief Inspector, Drinking Water Inspectorate, London.

Environment Agency, (2005), A better place? State of the environment (2005). Environment Agency, Bristol.

Institute of Water Engineers and Scientists, (1979), The Structure and Management of the British Water Industries, London.

Johnstone, DWM and Norton, MR, (2000) Development of Standards and their Economic Achievement and Regulation in the 21st Century. Presented at the Ciwem Millennium Conference, April 2000, Leeds.

Kinnersley, D. (1988) Troubled Water, Rivers, Politics and Regulation, Hilary Shipman Limited, London.

Littlechild, S. (1986) Economic Regulation of Privatised Water Authorities, A report submitted to the Department of the Environment, HMSO, London.

Littlechild, S. (1988) Economic Regulation of Privatised Water Authorities and some further Reflections. Oxford Review of Economic Policy Vol. 4 No.2, Oxford University Press, Oxford.

McIntosh, A. (1990) 'What to do about water', Industrial Policy Paper No.4, Institute for Public Policy Research, London.

Monopolies and Mergers Commission, (1995). Portsmouth Water plc. A report on the determination of adjustment factors and infrastructure charges for Portsmouth Water plc. HMSO, London.

National Audit Office, (1992), Department of the Environment: Sale of the Water Authorities in England and Wales, HMSO, London.

National Economic Development Office, (1986). The Nation's Infrastructure, Water, London.

Ofwat, (1996), Report on conclusions from Ofwat's enquiry into the performance of Yorkshire Water Services Ltd, Ofwat, Birmingham

Ofwat, (1999), Future water and sewerage charges 2000-05. Final Determinations. Ofwat, Birmingham.

Ofwat, (2002), Setting price limits for 2005-10: Framework and approach, a consultation paper. Ofwat, Birmingham.

Ofwat, (2004), Future water and sewerage charges, Final Determinations, Ofwat, Birmingham.

Ofwat, (2004(a)), Water and sewerage service unit costs and relative efficiency 2003-04 report, Ofwat, Birmingham.

Ofwat, (2004(b)), Financial performance and expenditure of the water companies in England and Wales, 2003-04 report, Ofwat, Birmingham.

Ofwat, (2004(c)), Security of Supply, leakage and the efficient use of water, 2003-04 report. Ofwat, Birmingham.

Ofwat, (2004(d)), Levels of service for the water industry in England and Wales, 2003-04 report. Ofwat, Birmingham.

Ofwat, (2005), Tariff structure and charges 2005-06 Report, Ofwat, Birmingham.

OXERA, (1996), Guide to the Economic Regulation of the Water Industry. The OXERA press, Oxford.

Schrodgers, Secretary of State for the Environment and the Secretary of State for Wales, (1989), Prospectus. The Water Share Offers.

Twort, A, Ratnayaha, D & Brandt, M. Water supply 5th Edition 2001, Butterworth - Heinemann, Oxford.

Uff, J (1996) Water supply in Yorkshire: Report of the Independent Commission Inquiry.

Waterfacts, various years, Water Services Association, London.

Yorkshire Water, Water and Wastewater Services in Yorkshire, Historical Case Study, Yorkshire Water, Bradford

ANNEX A THE WATER AND SEWERAGE COMPANIES AND WATER ONLY COMPANIES AS AT JUNE 2005

Water and sewerage companies

Anglian Water Services Limited,
Dŵr Cymru Cyfyngedig (Welsh Water),
Northumbrian Water Limited,
United Utilities Water plc,
Severn Trent Water Limited,
Southern Water Services Limited,
South West Water Limited,
Thames Water Utilities Limited,
Wessex Water Services Limited
Yorkshire Water Services Ltd.

Water only companies

Bournemouth and West Hampshire Water plc,
Bristol Water plc,
Cambridge Water Company,
Cholderton and District Water Company Limited,
Dee Valley Water plc,
Folkestone and Dover Water Services Ltd,
Mid Kent Water plc,
Portsmouth Water plc,
South East Water plc,
South Staffordshire Water Plc,
Sutton and East Surrey Water plc,
Tendring Hundred Water Services Ltd
Three Valleys Water plc.

ANNEX B – PRICE LIMITS SET AT THE 1994, 1999 AND 2004 PERIODIC REVIEWS

1994 review

Company	1995-96	1996-97 to 1999-00	2000-01 to 2004-05	Average over 10 years
	%	%	%	%
Water and sewerage companies (WaSC)				
Anglian	1.5	1.5	1.5	1.5
Welsh Water	0.5	0.5	0.5	0.5
North West	2.5	2.5	0.0	1.2
Northumbrian	2.5	2.5	2.0	2.2
Severn Trent	0.5	0.5	0.0	0.2
South West	1.5	1.0	0.0	0.5
Southern	4.0	4.0	3.0	3.5
Thames	0.5	0.5	0.5	0.5
Wessex	1.5	1.5	0.5	1.0
Yorkshire	2.5	2.5	0.0	1.2
WaSC average (weighted)	1.5	1.5	0.6	1.0
WoC average (weighted)	0.6	0.6	-1.3	-0.4
Industry average (weighted)	1.4	1.4	0.4	0.9

Source: Ofwat

Price limits in 1994 were set for ten years. These figures exclude the outcome of the South West Water referral to the Monopolies and Mergers Commission. Price limits for the water only companies are a weighted average for presentational purposes.

1999 review

Company	2000-01	2001-02	2002-03	2003-04	2004-05	Average
	%	%	%	%	%	%
Water and sewerage companies (WaSC)						
Anglian	-10.0	1.0	2.2	2.5	2.5	-0.5
Welsh Water	-10.5	-0.5	0.0	1.2	1.0	-1.9
North West	-9.3	-1.0	0.0	4.0	4.5	-0.5
Northumbrian	-19.4	-2.0	0.0	0.0	0.0	-4.6
Severn Trent	-14.1	-1.0	-1.0	0.0	1.0	-3.2
South West	-12.2	0.0	2.0	2.0	2.0	-1.4
Southern	-13.0	0.0	0.0	1.6	0.8	-2.3
Thames	-11.7	0.0	0.0	-0.8	0.0	-2.6
Wessex	-12.0	0.0	0.0	3.8	4.7	-0.9
Yorkshire	-14.5	0.0	0.0	0.0	1.0	-2.9
WaSC average (weighted)	-12.3	-0.4	0.2	1.3	1.7	-2.0
WoC average (weighted)	-12.4	-0.6	-0.5	0.0	0.0	-2.8
Industry average (weighted)	-12.3	-0.4	0.1	1.1	1.5	-2.1

Source: Ofwat

2004 review

COMPANY	2005-06	2006-07	2007-08	2008-09	2009-10	Average
	%	%	%	%	%	%
Water and sewerage companies (WaSC)						
Anglian	3.8	0.0	2.8	2.7	2.7	2.4
Welsh Water	14.2	3.6	4.1	3.3	2.2	5.4
Northumbrian	6.5	3.7	3.2	1.0	0.6	3.0
Severn Trent	11.8	4.8	2.0	1.7	2.3	4.5
South West	12.5	9.8	9.8	1.7	1.4	6.9
Southern	12.6	3.9	3.5	5.8	2.6	5.6
Thames	14.9	2.1	1.2	1.3	1.5	4.1
United Utilities	5.0	6.4	4.4	3.5	3.0	4.5
Wessex	8.9	4.9	5.6	4.0	2.9	5.2
Yorkshire	5.5	4.9	3.6	3.6	2.1	3.9
WaSC average (weighted)	9.4	4.0	3.4	2.7	2.2	4.3
WoC average (weighted)	12.4	1.9	1.5	0.4	-0.3	3.1
Industry average (weighted)	9.6	3.9	3.2	2.5	2.0	4.2

Source: Ofwat

FACTORS AFFECTING HOUSEHOLD BILLS AT THE 1994, 1999 AND 2004 REVIEW

1994 review (1992-93 prices)

	Change in average household bill 1994-95 to 2004-05		
	Water £	Sewerage £	Total £
Drinking water and environmental quality improvements	13	31 *	44
Reduction in base operating costs	-7	-5	-12
Reduction in return on existing assets	-6	-6	-12
Growth, levels of service and capital maintenance	1	2	3
Net effect on bills	1	22	23

*of which improvements to meet the Urban Waste Water Treatment Directive £22
In 1994-95, the average household bill was £95 water and £106 sewerage.

1999 review (May 1999 prices)

	Water £	Sewerage £	Total £
Average household bill 1999-2000	113	135	248
Less Passing on past efficiency savings and outperformance	-8	-27	-35
Assumptions on future efficiency improvements	-13	-12	-25
Plus Drinking water and environmental quality improvements	9	20	20
Improvements in service performance	<1	<1	29
Maintaining the balance between supply & demand	1	0	<1
Average household bill 2004-05	102	116	218
Change from 1999-2000 to 2004-05	-£11	-£19	-£30
	-10%	-14%	-12%

2004 review (November 2003 prices)

	£
Average household bill in 2004-05	249
Less Past efficiency savings and outperformance	-3
Scope for reduction through future efficiency improvements	-13
Plus Maintaining base services	18
Of which changes in revenue	-6
changes in operating costs	10
changes in capital maintenance	7
changes in impact of taxation	5
Financing	2
Maintaining security of supplies to all customers	11
Drinking water, environmental quality and customer service improvements	33
of which drinking water quality	9
environmental improvements	21
service performance	3
Average household bill in 2009-10	295
Change from 2004-05 to 2009-10	46

ANNEX C - JUNE RETURN INFORMATION SUBMISSION

Each year, each water and sewerage company submits an annual return (the June return) to Ofwat which provides the following information.

Key outputs (levels of service indicators)

Including performance achieved on:

- restrictions on water use;
- low pressure;
- interruptions;
- flooding from sewers;
- responses to billing queries and written complaints;
- performance in answering of telephone calls; and
- frequency of meter reading.

Company performance under the Guaranteed Standards Scheme (GSS)

Customers are entitled to certain guaranteed standards laid down by the government. Where these are not met, compensation is payable. The GSS covers:

- interruptions to the water supply;
- flooding from sewers;
- written account queries;
- making and keeping appointments; and
- responding to account queries and complaints.

Non-financial measures

- population supplied;
- number of households and non-households receiving measured and unmeasured supplies of water and sewerage services;
- new connections;
- meter installations;
- supplies to non-households;
- volumes of water affected by various undertakings and relaxations;
- the volume of water delivered, including leakage;
- volumes of sewage and effluent collected, treated and disposed;
- lengths of water mains and sewers inspected, repaired and renewed;
- water sources;
- treatment needs; and
- types of water and sewage treatment works.

Regulatory accounts

- profit and loss accounts and balance sheets (on both an historic cost and a current cost basis);
- cash flow statement for the regulated business;
- operating costs analysed by types of direct cost;
- maintenance and other expenditure for water and sewerage services;
- revenue from measured and unmeasured supplies of water and sewerage services and other sources;
- values and types of assets;
- movements in working capital; and
- transactions with associated companies.

Financial measures

- additions to the company's asset base;
- maintenance and depreciation by type and asset life;
- expenditure by purpose for water and sewerage services (base service, quality enhancements, enhanced service levels and improvements to the supply/demand balance); and
- proceeds from land disposals.

ANNEX D – CONSOLIDATION OF THE WATER INDUSTRY BETWEEN 1989 AND 2005

Current companies	Intermediate mergers	Companies at 1989	
Anglian Water Services Limited		Anglian Water Services Limited Hartlepool Water Company	
Northumbrian Water Limited	North East Water plc	Northumbrian Water Limited	
		Newcastle & Gateshead Water Co Sunderland & South Shields Water Company	
	Essex & Suffolk Water plc	East Anglian Water Company (Suffolk Water plc) Essex Water plc	
United Utilities Water plc		North West Water Limited	
Severn Trent Water Limited		Severn Trent Water Limited East Worcestershire Waterworks Company	
Southern Water Services Limited		Southern Water Services Limited	
South West Water Services Ltd		South West Water Services Ltd	
Thames Water Services Limited		Thames Water Services Limited	
Dŵr Cymru Cyfyngedig (Welsh Water)		Dŵr Cymru Cyfyngedig (Welsh Water)	
Wessex Water Services Limited		Wessex Water Services Limited	
Yorkshire Water Services Limited		Yorkshire Water Services Limited York Waterworks plc	
Bournemouth & West Hampshire Water plc		Bournemouth & District Water Company West Hampshire Water Company	
Bristol Waterworks Company		Bristol Waterworks Company	
Cambridge Water Company		Cambridge Water Company	
Dee Valley Water plc		Chester Waterworks Company Wrexham & East Denbighshire Water	
Cholderton & District Water Company		Cholderton & District Water Company	
Three Valleys Water plc	Three Valleys Water plc	Colne Valley Water Company Lee Valley Water Company Rickmansworth Water Company	
		North Surrey Water	North Surrey Water Company
South East Water plc	South East Water plc	Eastbourne Water Company West Kent Water Company Mid Sussex Water Company	
		Mid Southern Water Company	Mid Southern Water Company
Sutton & East Surrey Water plc		East Surrey Water plc Sutton & District Water plc	
Folkestone & Dover Water Services Limited		Folkestone & Dover Water Services Limited	
Mid Kent Water Company		Mid Kent Water Company	
Portsmouth Water plc		Portsmouth Water plc	
South Staffordshire Water plc		South Staffordshire Waterworks Company	
Tendring Hundred Water Services Ltd		Tendring Hundred Water Services Ltd	