

The provision of drinking water is only half of the UK water industry's work. The provision of effective and safe sewerage services is the other.

Wastewater or sewage is collected from properties and businesses, taken through the sewerage system to treatment works where it goes through a number of processes designed to separate water from solid material. Human waste products form a relatively small percentage of the total volume of sewage. The treated water – effluent – is returned to rivers and seas while the solid matter – sewage sludge – is disposed of in a number of different ways including incineration, landfill, and application to certain types of agricultural land. The dumping of sewage sludge at sea – a practice which has gone on in the industry since the last century – ceased on 31 December 1998 when new European standards came into force in the UK. Sewage treatment in the UK must comply with the provisions of the European Commission's Urban Wastewater Treatment Directive and the Bathing Water Directive. The first (see fig 4.1) specifies the

minimum standards of treatment required for wastewater from urban areas discharged into estuarial and inland waters and into coastal waters. It also deals with the disposal of sewage sludge.

As a basic rule, for all agglomerations of more than 10,000 population equivalent, (p.e.) secondary treatment has to be more stringent (secondary plus tertiary) for discharges in areas identified as sensitive.

A review was conducted in 1997 of English coastal waters identified as Areas of High Natural Dispersion (HNDAs). As a result, the government announced in 'Raising the Quality' published on 23 September 1998, that all significant coastal discharges require at least secondary level treatment. Therefore HNDA status has been withdrawn from all sites.

The Directive also lays out requirements for the protection of the environment in the disposal of sewage sludge, including its use in agriculture. These are implemented in the UK in various regulations and codes of practice.

4.1 Types of treatment required under UWWT Directive

Type of area	Size of agglomeration				
	less than 2,000 p.e.	Between 2,000 and 10,000 p.e.	Between 10,000 and 15,000 p.e.	Between 15,000 and 150,000 p.e.	More than 150,000 p.e.
Sensitive area	appropriate treatment by 2005	secondary treatment by 2005	more stringent treatment by 1998	more stringent treatment by 1998	more stringent treatment by 1998
Normal Area	appropriate treatment by 2005	secondary treatment by 2005	secondary treatment by 2005	secondary treatment by 2000	secondary treatment by 2000

p.e. = Population equivalent

Appropriate treatment: by any process and/or collecting system which allow, as regards the waters receiving the discharges, the agreed quality objectives to be met as well as the relevant provisions of Directive 91/271/EEC and other Community directives.

Appropriate treatment if discharged into coastal water:

Normal area: body of water not identified as sensitive or less sensitive.

A total prohibition on disposal of sludge at sea, also contained within the directive, came into effect at 31 December 1998. It is expected to increase the agricultural use of sludge. Sewage operators are also introducing various treatment methods to make sludge more acceptable and easily recycled.

The disposal of sewage sludge is strictly controlled. The application of sludge to agricultural land is controlled by the Sludge (Use in Agriculture) Regulations which implements EC Directive 86/278/EEC and the Department of the Environment, Transport and the Regions code of practice (CoP). The CoP and regulations are currently being revised by DETR. In 1998, an agreement called the "Safe Sludge Matrix", between the water industry, farmers and the British Retail Consortium which represents the major food retailers, means that controls are even tighter.

Treatment works in the UK which discharge effluent to surface waters must comply with three principal parameters, dealing with suspended solids, biochemical oxygen demand and ammonia.

In addition, the EC Bathing Water Directive sets standards for 19 physical, chemical and microbiological parameters for discharges that may affect bathing water. Some of the parameters are mandatory and must not be exceeded except in specified circumstance while others are guidelines.

The most widely used parameters are total and faecal coliform bacteria, which are indicators of sewage pollution. The Directive requires that at least 95 per cent of samples must have counts not exceeding the mandatory standards of 2,000/100ml for faecal coliform and 10,000/100ml for total coliform. The Commission is currently reviewing the Bathing Water Directive.

4.2 sewerage and sewage treatment by population 1997/98

	population connected to sewer		preliminary or none %	population served by STWs by level of treatment			population connected to sea outfalls	
	000s	%		primary %	secondary %	tertiary %	short%	long%
TOTAL UK	56,730	94	11	13	55	21	5	7
Anglian	5,418	93	6	4	65	25	0	6
Dwr Cymru	2,954	93	28	5	54	13	8	20
Northumbrian	2,586	98	12	52	30	4	16	8
North West	6,799	98	6	9	63	21	5	1
Severn Trent	8,225	98	0	0	60	40	0	0
Southern	3,991	95	23	16	45	16	3	21
South West	1,396	89	22	6	32	40	13	9
Thames	11,937	98	0	0	75	25	0	0
Wessex	2,420	94	5	26	49	20	1	4
Yorkshire	4,737	99	0	2	73	25	0	3
England and Wales	50,463	96	10	12	55	23	5	7
East Scotland	1,461	97	n/a	n/a	n/a	n/a	n/a	n/a
North Scotland	1,039	86	n/a	n/a	n/a	n/a	n/a	n/a
West Scotland	2,367	97	15	25	59	1	5	10
Scotland	4,867	93	-	-	-	-	-	-
Northern Ireland	1,400	83	n/a	n/a	n/a	n/a	n/a	n/a

Note: Figures may not add up due to rounding
 Source: Water companies, Scottish Office, DoE (NI) Water Service

SEWAGE TREATMENT

Sewage goes through a number of processes during treatment. These include:

Preliminary treatment

Gross solids are removed or disintegrated by passing the sewage through screens. Grit, which comes from road drainage, is also removed in specially designed tanks or channels. In some works, oil and grease are removed before primary treatment.

Primary treatment

In this first major stage of treatment, the sewage flows into settling tanks where the heavier solid material is allowed to settle to the bottom of the tank. The biochemical oxygen demand (BOD) is reduced by 20 per cent while total suspended solids are reduced to at least 50 per cent before the sewage can be discharged.

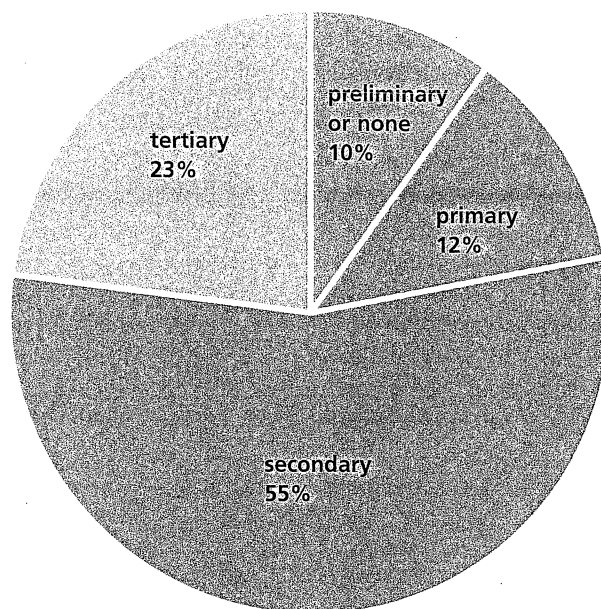
Secondary treatment

There are two main types of secondary treatment: biological filtration and activated sludge. Both use the natural action of bacteria to break down any organic matter left after primary treatment. During biological filtration, the sewage is spread over a granular filter bed. As the sewage seeps down through the filter bed, bacteria, fungi and other organisms feed on the organic matter leaving a virtually clear liquid flowing from the base of the filter bed. The activated sludge method relies on the microbiological population being mixed in suspension with the wastewater under aerobic conditions.

Tertiary treatment

In order to allow the effluent to comply with the most stringent standards before being discharged back into water, suspended matter and nutrients such as nitrogen and phosphorous are removed. Disinfection techniques, such as exposing the effluent to ultra violet rays (UV treatment), may also be applied. This is sometimes called polishing or advanced treatment.

4.3 levels of sewage treatment in England and Wales '97/98



SLUDGE (BIOSOLIDS) TREATMENT, RECYCLING AND DISPOSAL

Sewage sludge, which may be treated in a variety of ways, is the by-product of sewage treatment and is viewed as a valuable agricultural resource due to its soil conditioning properties and fertiliser value.

Thickening and Dewatering

The water content of the wet sludge is reduced by gravitational or mechanical processes. Methods used to do this include sludge consolidation centrifuges, sludge presses and vacuum filtration. Thickened or dewatered sludge contains 5-40 per cent dry solids.

Digestion

Bacteria and micro-organisms are used to break down the organic matter in the sludge. This reduces the volume of sludge solids. It also changes the form of the sludge from a dark brown, often pungent liquid to a black, tarry liquid suitable for utilisation.

Composting

This is the process of aerobic fermentation. It can take place in sewage sludge or other materials such as household waste.

Thermal drying

High temperature drying techniques reduce the sludge to a granular form which is approximately 80 per cent dry solids.

Incineration or combustion

High temperature oxidation of the sludge produces an inert ash. The heat generated in the process is usually recovered and used for other purposes.

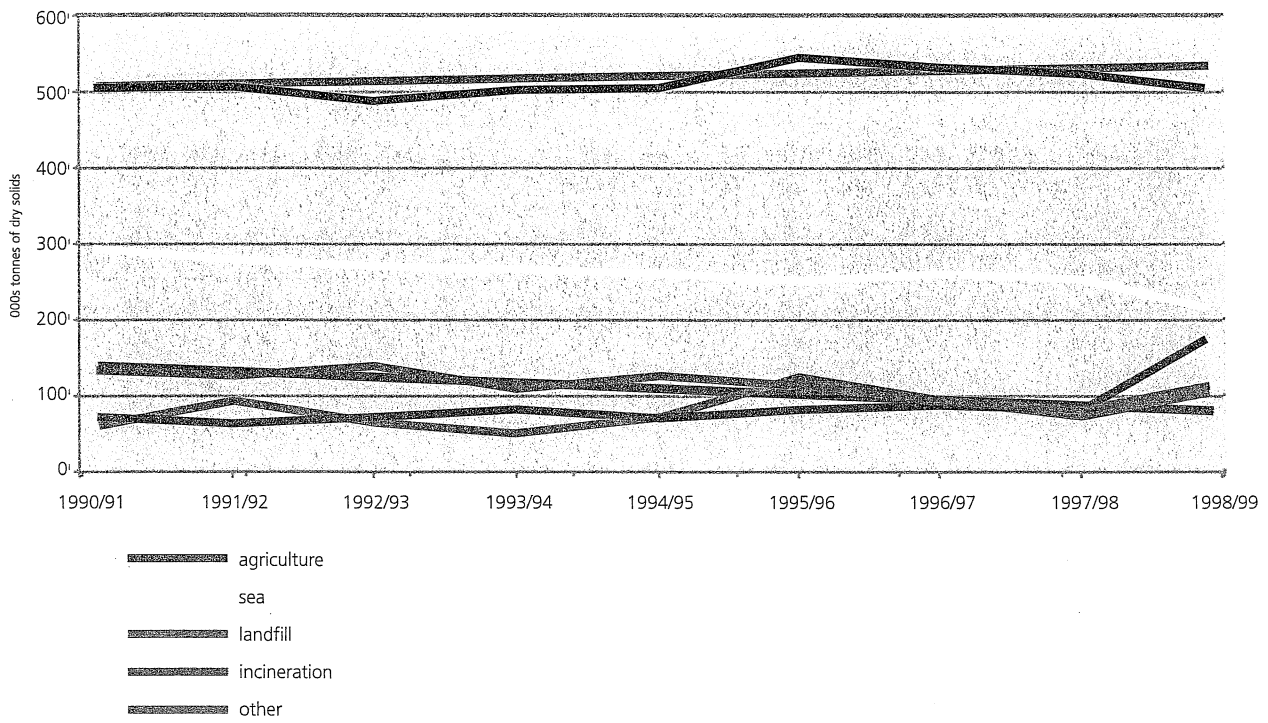
4.4 outlets for sewage sludge '98/99

	farmland	landfill	sea	incinerator	other	TOTAL
000s of tonnes of dry solids						
TOTAL UK	504	115	150	185	105	1058
%	48	11	14	17	10	100
Anglian	76	2	5	0	14	97
Dwr Cymru	30	0	0	0	1	31
Northumbrian	4	7	14	0	4	29
North West	46	36	31	14	7	134
Severn Trent	86	28	0	23	38	175
Southern	63	4	5	4	2	78
South West	18	0	2	0	5	25
Thames	110	0	36	80	16	242
Wessex	24	2	0	0	5	31
Yorkshire	17	5	0	63	9	94
England and Wales	474	84	93	184	101	936
%	51	9	10	20	11	100
East of Scotland	6	19	0	0	4	29
North of Scotland	7	1	2	0	0	10
West of Scotland	4	11	43	0	0	58
Scotland	17	31	45	0	4	97
%	18	32	46	0	4	100
Northern Ireland	13	0	12	1	0	25
%	50	0	46	4	0	100

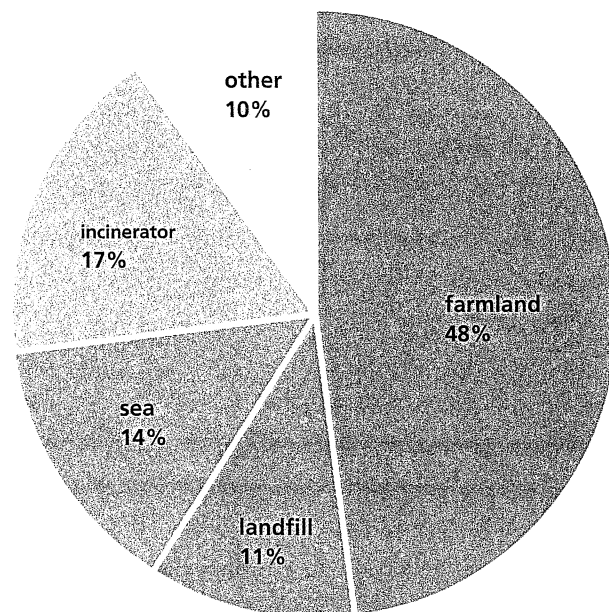
*Totals may not add due to rounding

Source: Water companies, Scottish Office, DoE (NI) Water Service

4.5 outlets for sewage in the UK '90/91 to '97/98



4.6 outlets for sewage sludge in the UK '97/98



4.7 sewage treatment works - compliance with discharge consents (numeric)

EA region/Scottish authority/NI	number of works monitored							% monitored that comply						
	1991	1992	1993	1994	1995	1996	1997	1991	1992	1993	1994	1995	1996	1997
Anglian	692	685	688	687	686	687	686	92	98	96	97	98	98	98.3
North East	506	496	448	486	463	460	455	94	94	95	96	96	94	97.6
North West	373	353	356	355	356	352	350	97	98	97	98	98	98	98.3
Severn-Trent	771	778	760	746	731	743	746	98	98	96	99	98	98	96.9
Southern	266	252	258	275	275	277	277	94	99	98	99	99	98	98.9
South Western	496	523	525	507	505	519	525	86	85	84	89	90	94	92
Thames	379	372	371	368	367	365	356	94	95	95	95	98	97	98.9
Welsh	578	577	639	630	621	613	583	95	96	93	94	97	96	96.4
England & Wales 1	4,061	4,036	4,045	4,054	4,004	4,016	3,978	94	95	94	96	97	97	96.9
East of Scotland						227	n/a						85	n/a
West of Scotland						164	n/a						78.7	n/a
North of Scotland						211	n/a						71	n/a
Scotland						602							78.2	n/a
Northern Ireland						n/a	111						n/a	80
TOTAL Great Britain						4,618	4,089						91.8	95.3

Totals may not add up due to rounding

Source: EA, Environment and Heritage Service NI

4.8 river and canal quality '90 to '98

Percentage of river and canal in each GQA chemical grade %

EA region	good quality				fair quality				poor quality		bad quality	
	Class A		Class B		Class C		Class D		Class E		Class F	
	1990	1998	1990	1998	1990	1998	1990	1998	1990	1998	1990	1998
Anglian	0.8	2.9	16.6	21.0	37.1	34.9	26.1	22.4	17.2	17.7	2.2	1.1
Midlands	7.9	10.7	26.6	32.0	28.2	30.0	17.4	14.0	17.6	11.9	2.3	1.4
North East	20.1	25.1	38.1	34.2	13.0	15.8	10.5	10.8	14.3	12.0	4.0	2.0
North West	22.5	28.1	19.4	26.1	17.4	17.6	13.9	11.8	20.3	13.4	6.5	3.0
Southern	10.9	13.4	32.7	36.4	30.6	27.0	13.4	11.3	10.9	10.8	1.5	1.2
South West	24.5	31.4	39.8	41.1	18.5	16.8	11.0	6.5	5.3	3.7	1.0	0.5
Thames	8.9	10.5	27.8	30.9	29.7	26.8	16.4	15.7	15.9	15.5	1.3	0.6
Welsh	44.3	64.7	35.1	23.3	10.6	6.8	5.7	2.9	3.3	2.0	1.0	0.3
Total	17.7	23.3	29.5	30.6	23.1	21.9	14.3	11.9	13.1	10.9	2.5	1.3
Northern Ireland*	6.1	8.1	38.1	43.0	40.5	31.4	10.3	13.4	3.8	3.6	1.1	0.5

Note: Some figures for 1990 have been revised.

*Based on three year cycles 1989-91 and 1996-98

Figures for Scotland are calculated using different criteria therefore no comparable data is available

Source: EA, Environment and Heritage Service NI

4.9 percentage estuary length by National Water Council water quality class (%)

EA region	good quality		fair quality		poor quality		bad quality	
	A		B		C		D	
	1990	1995*	1990	1995*	1990	1995*	1990	1995*
Anglian	79.1	68.8	13.5	21.9	7.1	2.5	0.3	7.0
Midlands	14.3	56.0	60.8	44.0	24.9	0.0	0.0	0.0
North East	29.2	44.4	39.3	40.6	23.8	10.1	7.7	5.0
North West	48.9	49.2	22.6	26.2	13.2	10.4	15.3	14.2
Southern	75.5	76.1	21.0	20.7	3.5	3.3	0.0	0.0
South West	80.0	77.3	18.9	21.6	1.1	1.1	0.0	0.0
Thames	45.2	24.8	54.8	75.2	0.0	0.0	0.0	0.0
Welsh	78.2	76.2	20.1	22.4	1.7	1.4	0.0	0.0
Total	66.3	59.1	24.1	34.1	6.5	3.6	3.1	3.3

Figures for Scotland & Northern Ireland are calculated using different criteria therefore no comparable data is available

*The comparison year has changed in this issue of Waterfacts

Source: Environment Agency

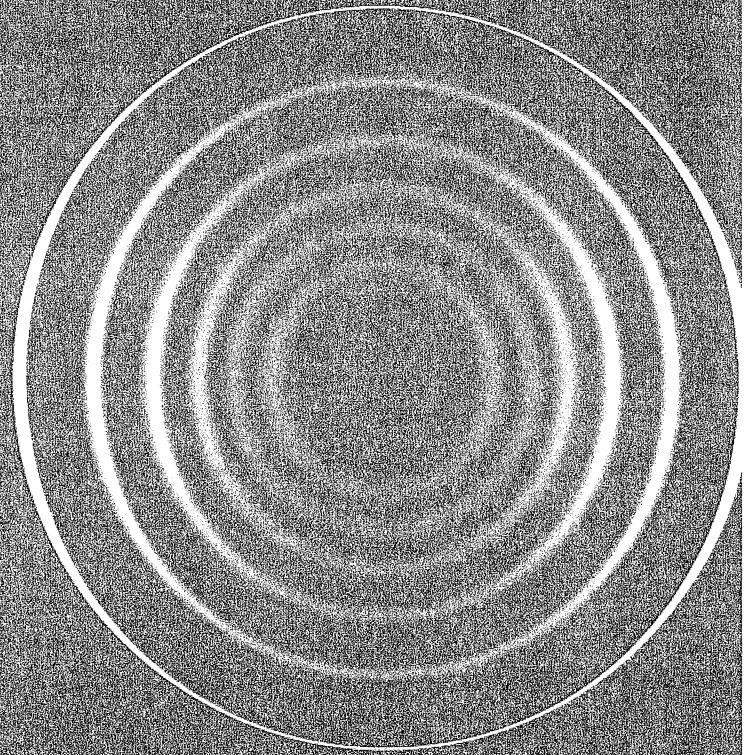
4.10 bathing water quality compliance (Directive 76/160/EEC) – coliform results

Number of identified bathing waters																				
	1989		1990		1991		1992		1993		1994		1995		1996		1997		1998	
	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total
TOTAL UK	336	440	345	446	343	453	358	455	365	457	376	457	413	464	416	472	429	486	440	496
EA region																				
Anglian	23	28	27	29	29	33	31	33	28	33	27	33	30	34	34	35	35	35	36	36
Northumbrian	20	32	21	32	21	33	20	34	46	56	49	56	53	56	49	56	51	56	47	56
Yorkshire	18	22	17	22	19	22	20	22												
North West	11	33	10	33	10	33	11	33	13	33	24	33	15	33	13	33	17	34	21	34
Southern	45	65	48	66	45	67	51	67	58	67	53	67	62	67	62	69	67	75	75	77
South West	113	132	118	133	105	133	117	134	142	175	151	175	167	176	167	180	164	180	167	183*
Wessex	31	38	39	39	36	39	36	39												
Thames	3	3	3	3	2	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3
Welsh	40	48	35	50	45	51	39	51	42	51	39	51	49	56	52	57	60	64	64	68
England & Wales	304	401	318	407	312	414	328	416	332	418	345	418	379	425	379	433	397	447	413	457
% compliance	76		78		75		79		79		83		89		88		89		90	
Scotland:	16	23	12	23	15	23	15	23	18	23	16	23	19	23	21	23	18	23	12	23
~ North of Scotland													7	7	7	7	4	8		
~ East of Scotland													8	8	8	8	7	8		
~ West of Scotland													4	8	6	8	3	8		
Northern Ireland	16	16	15	16	16	16	15	16	15	16	15	16	15	16	16	16	14	16	15	16

Note: the Scottish water authorities were formed on 1 April 1996; therefore no data pre-1995 is available
 Severn Trent region has no identified bathing waters therefore is not included
 Yorkshire and Northumbrian have merged to form Northeast, South West and Wessex have merged to form South West
 * One bathing water, Redgate in the South West was closed during 1998 bathing season and is therefore not included in compliance assessment for 1998

Source: Environment Agency: Bathing Water Quality in England and Wales in 1998: a summary Report, Scottish Office, DoE (NI) Water Service

paying for water services



Compared to the products of other utility industries in this country – electricity, gas and telecommunication – water is relatively cheap. Most of the cost of water is associated with its storage, treatment and distribution. Rain may fall free from the skies, but it has to be collected, treated to make it safe for human consumption and pumped through over 300,000km of mains to customers' homes.

To provide national water and sewage services of the scale and quality available in the UK costs billions of pounds a year and, unavoidably, it is customers who must pay for it.

The way bills are set, and their level, varies across the UK, reflecting factors such as the organisation and history of the service, including past levels of investment, and geographic factors such as the availability of supplies.

In Scotland, the public-owned water authorities set charges reflecting their operational costs, capital requirements and the government-imposed external finance limit, with the aim of breaking even year on year.

Charges for domestic customers are based on the Council Tax band of their home, not their water consumption. They do not receive a bill from the water authority but the charge is added to the Council Tax bill they get from their local council which also collects the money.

Non-domestic customers are billed directly by the water authority. The charge may be partly based on actual water consumption, as measured by a meter, and on the rateable value of the business.

Similarly in Northern Ireland the charges imposed by the Water Service reflect operational costs and capital requirements, taking into account Government borrowing limits. For domestic customers the charges are not billed separately but are incorporated into the domestic rates bills which are based on the rateable value of their homes and do not reflect consumption.

Industrial, commercial and agricultural customers all have water meters and receive bills based on actual consumption.

In England and Wales, the situation is more complex. Charges are based on a five-yearly price assessment or periodic review undertaken by Ofwat, the economic regulator.

The review process does not directly affect very big water users - usually industrial companies - who negotiate special prices with their water company, though prices must reflect the actual cost of delivery services.

For tariff customers - by far the great majority of all customers - the review process sets a price cap, limiting the increases companies can introduce each year. The cap is normally expressed by the formula $RPI + K$ where RPI is the Retail Price Index and K reflects how much a company needs to increase charges, above inflation, to finance its services and meet its legal obligations.

K, which can be positive or negative, is determined by the Director General of Water Services by taking into account a large number of factors including an allowance for past or future efficiency improvements, operating costs, investment needs and the cost of capital.

K factors are applied to a "tariff basket" of charges for water and sewage services, including trade effluent charges, covering both business customers and householders. Some charges - for instance, infrastructure charges covering the costs of connecting property to a new mains water system or public sewer - are outside the tariff basket.

A negative K suggests that customers will see a decline in prices in real terms, a positive one suggests an increase. Since the price caps apply to the average change required in the tariff basket, price changes for different classes of customer, such as domestic or industrial, may vary, reflecting changing relative costs of supplying those classes.

All domestic customers receive a water bill and those connected to the sewerage system, the great majority, also receive a charge for sewage services.

For most domestic customers, the bill is based on the rateable value of their home. Although the domestic rating system was discontinued in 1990, water companies were allowed to continue to use rateable values for charging until 2000. After a review of water and sewerage charges in England and Wales, the Government has decided to allow companies to continue using the system after that date. At the same time it proposed changes designed to encourage the use of meters on domestic properties. These changes have been implemented by the Water Industry Act 1999.

18 per cent of customers are metered, so their water bill, and any sewage bill, is based on the amount of water used. For metered customers, the sewage charges are based on the amount of water used, less a small allowance, (typically 5 per cent) for water not discharged to the sewer.

The majority of non-domestic customers are metered and thus receive a bill based on water used.

In November 1999 the Director General published final K factors for the coming five years. The new price caps will take effect from 1 April 2000.

Prices will be reduced, on average by 12% in April 2000 (known as the P_0 cut). They remain flat for two years in real terms and then start to rise again in 2003/2004. The average K reduction over 5 years is -2.1%. There are substantial variations between companies reflecting local and regional circumstances (Table 5.1).

5.1 Price limits for '95/'96 to 04/05 (%)¹

	ANNUAL PRICE LIMITS								Average ² 2000 to 05
	1995/96	1996/97	97/98 to 99/00	2000/01	2001/02	2002/03	2003 /04	2004/05	
Water and sewerage companies									
Anglian ³	1.5	1.5	1.5	-10.0	1.0	2.2	2.5	2.5	-0.5
Dwr Cymru	0.5	0.5	0.5	-10.5	-0.5	0.0	1.2	1.0	-1.9
North West	2.5	2.5	2.5	-9.3	-1.0	0.0	4.0	4.5	-0.5
Northumbrian ⁶	1.9	1.4	0.4	-19.4	-2.0	0.0	0.0	0.0	-4.6
Severn Trent	0.5	0.5	0.5	-14.1	-1.0	-1.0	0.0	1.0	-3.2
South West ³	1.5	0.5	1.0	-12.2	0.0	2.0	2.0	2.0	-1.4
Southern	4.0	4.0	4.0	-13.0	0.0	0.0	1.6	0.8	-2.3
Thames	0.5	0.5	0.5	-11.7	0.0	0.0	-0.8	0.0	-2.6
Wessex	1.5	1.5	1.5	-12.0	0.0	0.0	3.8	4.7	-0.9
Yorkshire ^{4&7}	2.5	2.5	1.7	-14.5	0.0	0.0	0.0	1.0	-2.9
WaSC average (weighted)	1.5	1.4	1.3	-12.3	-0.4	0.2	1.3	1.7	-2.0
Water only companies									
Bournemouth & West Hampshire	-0.5	-0.5	-0.5	-3.0	-1.7	-1.7	0.0	-1.7	-1.0
Bristol	1.0	1.0	1.0	-10.0	1.0	1.0	0.0	-1.9	-2.1
Cambridge	-2.0	-2.0	-2.0	-14.3	0.0	-1.2	-0.4	-0.9	-3.5
Cholderton ⁸	-1.7	0.0	0.0	-8.0	-5.0	0.0	0.0	0.0	-2.7
Dee Valley ⁶ : Chester	-3.0	-1.0	-1.0	-10.6	-2.6	-3.0	-3.0	0.0	-3.9
Wrexham	-2.0	-2.0	-2.0						
Essex and Suffolk	2.0	2.0	2.0	-13.8	0.0	0.0	0.0	0.0	-2.9
Folkestone and Dover	-0.5	-0.5	-0.5	0.0	1.0	3.0	3.0	3.2	2.0
Hartlepool ⁵	1.5	1.5	1.5	-	-	-	-	-	-
Mid Kent	1.0	1.0	1.0	-19.7	0.0	0.0	0.0	1.6	-4.0
North Surrey	2.0	2.0	2.0	-15.0	0.0	0.0	2.0	2.2	-2.4
Portsmouth	-2.3	-1.8	-1.5	-3.0	-1.2	-1.3	-0.5	-1.0	-1.4
South East Water ⁶ : Mid Southern	-2.4	-1.0	-1.0	-16.1	-1.0	-1.5	0.0	0.0	-3.9
South East	-1.0	-1.0	-1.0						
South Staffordshire	-4.1	-0.5	-0.5	-2.7	-1.0	-1.0	-1.0	-1.0	-1.3
Sutton and East Surrey	~	-1.2	-5.9	-17.0	-5.0	-2.4	0.0	0.0	-5.1
Tending Hundred	-0.5	-0.5	-0.5	-6.9	1.0	2.0	2.0	2.0	0.0
Three Valleys	2.5	2.5	2.5	-15.2	0.0	0.0	0.0	0.0	-3.2
York ⁷	-1.1	0.0	0.0	-9.0	-1.0	0.0	0.0	0.0	-2.1
WoC average (weighted)	-0.6	0.5	0.5	-12.4	-0.6	-0.5	0.0	0.0	-2.8
Industry average (weighted)	1.3	1.3	1.2	-12.3	-0.4	0.1	1.1	1.5	-2.1

¹ Companies are permitted to increase charges each year, on average, by RPI plus (or minus) the limit shown in this table

² The average for the price limits is the geometric average of the annual price limits

³ South West Water and Portsmouth Water referred the DG's 1994 determination to the MMC and the decisions were announced in July 1995. The MMC determined South West Water's K at 1% for 1995/96 to 1999/00, but delayed implementation until 1996/97

⁴ This includes K=0 for 1997/98, as agreed between the DG and Yorkshire Water in 1996.

⁵ Hartlepool Water merged with Anglian Water in 1998. As such there are no price limits for Hartlepool but those for Anglian apply. As part of the merger conditions, customers of Hartlepool will benefit from an additional 5% price reduction in 2001-02. They are also protected from undue discrimination in respect of prices as a separate class of water customer under the Anglian licence.

⁶ Each of these companies are the result of mergers in recent years at which price reductions were agreed as part of the condition of the merger. Some or all of these price reductions were phased to occur after 31 March 2000. The price limits take account of these merger price reductions.

⁷ Yorkshire Water and York Waterworks announced a merger in 1999 and a combined licence was issued later in 1999. As part of the terms of the merger the price limits for York are set if they were a separate company and York's customers will benefit from a further 15% reduction in addition to the 2004-05 price limit. This is subject to the outcome of a public consultation on the proposed combined licence.

⁸ Cholderton Water is an exceptionally small company.

5.2 increase in standard charges '99/00(%)

	K	charge limit RPI+K+U' (RPI=3.7%) %	tarriff basket increase %	difference between charges limit and tariff basket increase %
Water & Sewerage Companies				
Anglian	1.5	4.5	0.0	4.5
Dŵr Cymru	0.5	3.5	3.5	0.0
North West	2.5	5.5	5.5	0.0
Northumbrian ²	0.7	3.8	3.7	0.0
Severn Trent	0.5	3.7	3.5	0.2
South West ³	1.0	4.0	4.0	0.0
Southern	4.0	10.0	7.0	3.0
Thames	0.5	3.5	3.5	0.0
Wessex	1.5	4.5	4.5	0.0
Yorkshire	2.5	5.9	5.9	0.0
WaSC average (weighted)	1.4	4.7	4.0	0.8
Water only Companies				
Bournemouth & West Hampshire	-0.5	2.5	2.5	0.0
Bristol	1.0	4.0	4.0	0.0
Cambridge	-2.0	1.2	1.0	0.2
Cholderton	0.0	3.5	3.5	0.0
Dee Valley ⁴	-1.7	1.3	1.3	0.0
Essex & Suffolk	2.0	5.5	4.6	0.9
Folkestone & Dover	-0.5	2.5	2.5	0.0
Hartlepool	1.5	6.3	0.0	6.3
Mid Kent	1.0	4.0	4.0	0.0
North Surrey	2	7.2	4.4	2.8
Portsmouth ³	-1.5	1.8	1.5	0.3
South East Water : Mid Southern	-1.0	2.0	2.0	0.0
South East	-1.0	2.0	2.0	0.0
South Staffordshire	-0.5	3.5	2.5	1.0
Sutton & East Surrey	-4.7	-1.7	-3.2	1.5
Tendring Hundred	-0.5	3.5	1.1	2.5
Three Valleys	2.5	5.5	5.5	0.0
York	0.0	3.3	3.0	0.3
WoC average (weighted)	0.4	3.7	3.2	0.5
Industry average (weighted)	1.3	4.6	3.9	0.8

Note: figures shown to one decimal place. Difference may not add due to rounding.

¹U represents underspend in the charges limit in previous years. K + U is therefore the permitted increase in charges over and above inflation. (U is zero for all other companies).

²This is the revised K factor for Northumbrian Water following the Director's interim determination, published in September 1998.

³The price limits for South West and Portsmouth Water reflect the MMC's redetermination of the K factors set by the Director in 1994.

⁴From 1 April 1998, this company was formed by the merger of the former Chester Waterworks Company and Wrexham Water plc. The average annual price limits and K factor reflect the determination of a combined K factor for Dee Valley Water.

Source: Ofwat

5.3 main price indices used in the water industry

	RPI November	RPI annual average	COPI	CCI
Annual figures				
1989-90	118.5	117.4	99.25	105.00
1990-91	130.0	128.7	99.25	111.00
1991-92	135.6	134.9	91.25	110.00
1992-93	139.7	139.1	83.75	108.00
1993-94	141.6	141.5	82.25	108.00
1994-95	145.3	145.4	87.00	116.00
1995-96	149.8	150.1	95.25	119.00
1996-97	153.9	153.7	98.30	126.00
1997-98	159.6	158.8	106.50*	137.00
1998-99	164.4	163.8	111.00*	141.00**
Percentage changes on previous year (%)				
1990-91	9.7	9.6	0.0	5.7
1991-92	4.3	4.8	-8.1	-0.9
1992-93	3.0	3.1	-8.2	-1.8
1993-94	1.4	1.7	-1.8	0.0
1994-95	2.6	2.8	5.8	7.4
1995-96	3.1	3.2	9.5	2.6
1996-97	2.7	2.4	3.1	5.9
1997-98	3.7	3.3	8.3	8.7
1998-99	3.0	3.1	4.2	2.9

Note: some figures have been revised in this edition of Waterfacts

*Based on average of quarterly indices for financial year

**At the time of going to press this figure is provisional: figures are based on September 1999 update

PRICE INDICES – ENGLAND AND WALES

This table provides information on price indices that are used widely by the water industry in England and Wales.

The November RPI is used in the RPI+K price cap formula. The Annual Average RPI on a financial year basis is used to revalue financial information to a common price basis – ie in the annual financial performance report published by Ofwat.

The DETR's Construction Price Index (COPI) is an index covering a variety of construction sectors, not just water. At privatisation it was specified in companies' licences that this was the index to be used in checking whether construction price movements should trigger an interim

determination – the process by which a company can appeal to Ofwat for a review of its K factor before the next periodic review – and in determining the size of the required adjustment. Subsequently some, but not all, companies have agreed with Ofwat to delete this part of the licence and have themselves taken on construction price risk.

The Capital Cost Index (CCI) is a water industry-specific index of capital price movements used by the companies to help manage their capital programmes. It is prepared for the companies by the Water Research Centre (WRC) and consultants, London Economics. The figures produced represent the movements in out-turn costs of a national sample of stylised projects.

5.4 average weekly cost of water and sewerage services to unmeasured domestic customers

	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
£/week ¹	1.48	1.65	1.78	1.90	2.05	2.28	2.57	2.95	3.26	3.55	3.82	4.05	4.19	4.46	4.71	4.90

¹ Prices are in nominal terms

Source: Ofwat

5.5 rebates to customers in 1995/96, 1996/97, 1997/98, 1998/99 and 1999/2000 (£)

	1995-96		1996-97		1997-98		1998-99		1999-2000	
	Water	Sewerage	Water	Sewerage	Water	Sewerage	Water	Sewerage	Water	Sewerage
Anglian	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dwr Cymru	0.00	0.00	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
North West	3.25	3.25	3.25	3.25	5.00	5.00	3.25	3.25	3.25	3.25
Severn Trent	0.00	4.00	0.00	6.50	6.50	0.00	6.50	0.00	6.50	-
South West ¹	5.00	5.00	10.00		15.00		15.00		-	
Yorkshire	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

¹ South West's rebate is on a per customer basis and not a per service basis.

Source: Ofwat

5.6 average unmeasured charges 1998/99 and 1999/2000 (weighted) £

	water supply		sewerage		TOTAL ¹	
	1998/99	1999/00	1998/99	1999/00	1998/99	1999/00
Water service companies						
Anglian ²	142	142	183	188	325	335
Dŵr Cymru ²	133	133	154	167	287	300
Northumbrian	103	101	126	142	229	243
North West ²	102	105	133	144	235	249
Severn Trent ²	104	114	118	117	222	231
Southern	107	114	153	165	260	279
South West	130	128	238	263	368	390
Thames	99	104	102	104	201	208
Wessex	127	133	144	151	271	284
Yorkshire ²	113	119	122	132	236	251
Water supply companies						
Bournemouth & West Hampshire	100	105	-	-	-	-
Bristol	112	122	-	-	-	-
Cambridge	110	109	-	-	-	-
Cholderton	n/a	n/a	-	-	-	-
Dee Valley	123	121	-	-	-	-
Essex & Suffolk	125	133	-	-	-	-
Folkestone & Dover	121	127	-	-	-	-
Hartlepool	96	96	-	-	-	-
Mid Kent	144	149	-	-	-	-
North Surrey	121	128	-	-	-	-
Portsmouth	74	74	-	-	-	-
South East: Mid Southern	119	120	-	-	-	-
South East	169	171	-	-	-	-
South Staffordshire	82	86	-	-	-	-
Sutton & East Surrey	139	135	-	-	-	-
Tendring Hundred	166	166	-	-	-	-
Three Valleys	119	127	-	-	-	-
York	93	96	-	-	-	-
Weighted industry average	117	121	147	157	263	277
Northern Ireland ³	-	-	-	-	-	-
Scotland:						
~East Scotland	76	84	63	69	139	153
~North Scotland	85	94	63	70	148	165
~West Scotland	76	79	51	61	127	140

n/a = not available

²Totals may not add up due to rounding

³Figures include rebates ie, figures represent the actual charges to customers

⁴Northern Ireland unmeasured charges are not levied but are deemed to be recovered as an element of the regional rate
Mid Southern Water plc and South East Water Ltd have merged to form South East Water Ltd

5.7 average household bill measured charges 1998/99 and 1999/2000 (weighted) £

	water supply		sewerage		TOTAL ¹	
	1998/99	1999/00	1998/99	1999/00	1998/99	1999/00
Water service companies						
Anglian ²	90	87	121	112	211	199
Dŵr Cymru ²	150	150	163	180	313	330
Northumbrian	87	90	118	134	205	224
North West ²	86	85	128	129	214	214
Severn Trent ²	114	108	110	101	224	209
Southern	93	97	138	147	231	244
South West ²	93	92	153	162	246	253
Thames	95	95	102	101	197	196
Wessex	108	96	124	113	232	209
Yorkshire	78	82	84	85	162	167
Water supply companies						
Bournemouth & West Hampshire	87	90	-	-	-	-
Bristol	79	90	-	-	-	-
Cambridge	99	86	-	-	-	-
Cholderton	n/a	n/a	-	-	-	-
Dee Valley Water	81	79	-	-	-	-
Essex & Suffolk	108	105	-	-	-	-
Folkestone & Dover	90	92	-	-	-	-
Hartlepool	92	96	-	-	-	-
Mid Kent	119	124	-	-	-	-
North Surrey	110	112	-	-	-	-
Portsmouth	80	83	-	-	-	-
South East : Mid Southern	102	119	-	-	-	-
South East	119	126	-	-	-	-
South Staffordshire	73	78	-	-	-	-
Sutton & East Surrey	150	126	-	-	-	-
Tendring Hundred	101	107	-	-	-	-
Three Valleys	98	106	-	-	-	-
York	82	118	-	-	-	-
Weighted industry average	99	101	124	126	224	225
Northern Ireland	n/a	n/a	n/a	n/a	n/a	n/a
Scotland: West of Scotland	n/a	n/a	n/a	n/a	n/a	n/a
North of Scotland	n/a	n/a	n/a	n/a	n/a	n/a
East of Scotland	n/a	n/a	n/a	n/a	n/a	n/a

n/a = not available

¹Totals may not add up due to rounding

²Figures include rebates ie. figures represent the actual charges to the customer

Mid Southern Water plc and South East Water Ltd have merged to form South East Water Plc

Source: Water Companies, Ofwat, Scottish Office, DoE (NI) Water Service

5.8 measured charges for household customers 1999/2000 - water service companies

	WATER SUPPLY			SEWERAGE			
	volumetric charge p/m ³	standing charge £/yr	average bill 99/00 £	volumetric charge p/m ³	standing charge £/yr	rateable value charge p/£rv	average bill 99/00 £
Anglian - Standard ¹	75.95	24.00	87	110.62	12.00	-	112
Anglian - SoLow	107.95	0.00	-	126.62	0.00	-	-
Anglian - Plus ¹	35.95	64.00	-	56.62	66.00	-	-
Dŵr Cymru ²	83.95	24.00	83	116.67	11.00	-	93
Northumbrian	-	-	-	50.44	76.00	-	134
~ Northumbrian	53.64	24.00	90	-	-	-	-
~ North East	-	-	-	-	-	-	-
North West ²	67.00	25.00	85	57.40	11.00 + 67.00 ³	-	129
Severn Trent ²	77.67	29.52	108	59.30	⁴	-	101
~ Zone 1	-	-	-	-	-	21.42	-
~ Zone 2	-	-	-	-	-	18.03	-
~ Zone 3	-	-	-	-	-	19.13	-
~ Zone 4	-	-	-	-	-	20.67	-
~ Zone 5	-	-	-	-	-	24.16	-
~ Zone 6	-	-	-	-	-	23.38	-
~ Zone 7	-	-	-	-	-	22.76	-
~ Zone 8	-	-	-	-	-	19.13	-
Southern	65.00	25.00	97	90.56	36.00	-	147
South West	78.80	19.80	92	175.45	9.72	-	162
Thames	61.59	19.00	95	48.74	41.00	-	101
Wessex	85.65	20.00	96	87.31	36.00	-	113
Yorkshire	80.90	24.00	82	93.01	20.00	-	85

Notes: The volumetric tariffs have been standardised to take account of different non-return to sewer assumptions for each company.

¹Anglian has three tariff options available to measured household customers.

²Average bills given for these companies exclude customer rebates paid in 1999-2000.

³North West has a standing charge of £11 to recover customer-related costs and a fixed charge of £67 to recover surface water and highway drainage costs.

⁴Severn Trent does not have a meter standing charge for households. Property surface water costs are recovered through the rateable value charge.

Properties without a rateable value pay a charge related to property type: Flat/terrace – £18.60, Semi-detached – £37.32, Detached – £55.92

Source: Ofwat: Report on tariff structures and charges 1999-2000

5.9 measured charges for household customers 1999/2000- water supply companies

	volumetric charge p/m ³	standing charge £/yr	average bill* 99/00 £
Bournemouth & West Hampshire	61.20	17.00	90
Bristol	67.60	22.00	74
Cambridge	60.60	23.90	84
Cholderton	82.60	20.60	126
Dee Valley:			81
~Chester	57.09	24.00	-
~Wrexham	69.38	24.00	-
Essex & Suffolk:		24.00	105
~Essex	69.20	-	-
~Suffolk	95.08	-	-
Folkestone & Dover	70.00	18.60	92
Hartlepool ² - Standard	46.16	24.00	73
- SoLow	78.16	0.00	-
- Plus 4	21.16	47.00	-
Mid Kent ² - Standard	74.75	19.40	129
- Low User	100.63	0.00	-
- Economy	44.16	50.00	-
North Surrey	70.80	21.00	112
Portsmouth ¹	43.80	24.00	83
South East: Mid Southern	65.25	15.00	119
South East:		15.00	126
~ Eastbourne	113.72	-	-
~ Mid Sussex	118.93	-	-
~ West Kent	95.06	-	-
South Staffordshire	56.69	15.56	78
Sutton & East Surrey:	-	-	126
~ East Surrey	64.00	24.00	-
~ Sutton	83.00	24.00	-
Tendring Hundred	106.00	25.00	115
Three Valleys ² - Standard	62.78	20.00	106
- Social	40.00	43.00	-
York	52.10	24.00	118

* Forecasts

¹These charges apply from 1 July 1999.

²Hartlepool and Mid Kent Water have three tariff options and Three Valleys Water has two options available to measure household customers.

Source: Ofwat and water companies

5.10 trade effluent charges 1999/2000

	Average regional strength		Apportionment of charge						Minimum charge £
	Os mg/l	Ss mg/l	R p/m ³	V p/m ³	Bv p/m ³	M p/m ³	B' p/kg	S' p/kg	
Anglian - Green	460	424	13.58	21.26	4.11	11.39	44.35	31.20	160.00
Anglian - Orange	460	424	13.21	20.68	4.00	11.08	43.15	30.38	160.00
Anglian - Blue	460	424	12.70	19.88	3.85	10.65	41.50	29.17	160.00
Anglian - Industrial	460	424	9.56	14.97	2.90	8.03	31.24	21.98	160.00
Dŵr Cymru	500	350	17.00	8.75	3.51	12.97	40.38	40.71	124.00
Northumbrian ¹	386	187	24.46	12.00	-	-	43.51	49.43	302.00
North West	360	235	12.60	10.20	1.40	9.70	28.70	33.00	132.00
Severn Trent ²	351	343	15.57	14.68	-	-	25.00	19.08	107.61
Southern	452	512	24.26	17.70	2.87	3.11	51.70	31.25	180.00
South West	744	489	39.45	36.35	-	-	86.05	78.17	147.00
Thames	445	336	7.06	8.68	-	-	29.35	44.84	75.00
Wessex	802	313	21.38	13.83	-	-	28.11	35.21	190.00
Yorkshire ³	905	314	23.60	23.27	-	-	25.25	41.43	233.00

Note:

¹Northumbrian Water has a large user R charge of 16.39, where the volume of discharge exceeds 100,000m³.

²Severn Trent Water has a banded R charge, the first 49,999m³ is charged at the standard rate of 15.57/m³, then >=50,000m³ to <250,000m³ is charged at 11.33/m³ and from 250,000m³ and above is charged at 9.10p/m³. It also has a banded V charge, the first 349,999m³ charged at the standard rate of 14.68p/m³ and from 350,000m³ and above is charged at 12.36/m³.

A lower rate for B of 20.81p/kg and a higher charge for S of 22.97p/kg also applies where the average COD load exceeds 7,499kgs per day.

³Yorkshire has a banded R charge, the first 50,000m³ is charged at the standard rate of 23.60p per m³, then > 50,000m³ to < 250,000m³ is charged at 13.05p per m³ and more than 250,000m³ at 8.9p per m³.

R = reception and conveyance

V = primary treatment (V for volumetric)

Bv = additional volume charge if there is biological treatment

M = treatment and disposal where effluent goes to a sea outfall (M for marine)

Ot = chemical oxygen demand (COD) of effluent after one hour quiescent settlement at pH 7

Os = COD of crude sewage after one hour quiescent settlement

St = total suspended solids (mg/litre) of trade effluent at pH 7

Ss = total suspended solids (mg/litre) of crude sewage

B' = B/Os, ie B corrected for average regional strength

S' = S/Ss, ie S corrected for average regional strength

B = biological oxidation of settled sewage

S = treatment and disposal of primary sludge

Charges for B and S are usually expressed in p/m³ relative to standard strength (concentration: usually expressed in mg/litre).

Standard strengths vary from company to company. To maintain comparability, the charges shown here (B' and S') are corrected for standard strength and shown as p/kg.

Charges are calculated according to the Mogden formula: Charge = R + [(V + Bv) or M] + B(Ot/Os) + S(St/Ss)

Source: Ofwat: Report on tariff, structure and charges 1999-2000

TRADE EFFLUENT CHARGES

Businesses in England and Wales which discharge a trade effluent in a public sewerage system are charged for the reception and treatment of the effluent.

Charges are calculated using the Mogden formula (see 5.11) which takes into account the way that a particular company's effluent differs from the normal, average effluent composition in the region.

5.11 water company trade effluent charging formula 1999/2000

Current charging formula

Water service company

Anglian	$C = R + (V \text{ or } Vb \text{ or } Vm \text{ or } M) + (Ot/Os) B + (St/Ss) S$
Dŵr Cymru	$C = R + V + Vb + (Ot/Os) B + (St/Ss) S$
Northumbrian	$C = R + V + (Ot/Os) B + (St/Ss) S$
North West	$C = R + M + V + B1 + (Ot/Os) B2 + (St/Ss) S$
Severn Trent	$C = R + V + (Ot/Os) B + (St/Ss) S$
Southern	$C = R + (V \text{ or } Vb \text{ or } Vm) + (Ot/Os) B + (St/Ss) S + M$
South West	$C = R + V \text{ (or } Vm) + (Ot/Os) B + (St/Ss) S$
Thames	$C = R + V + (Ot/Os) B + (St/Ss) S$
Wessex	$C = R + V + (Ot/Os) B + (St/Ss) S$
Yorkshire	$C = R + P + (Ot/Os) B + (St/Ss) S$
Scotland: North of Scotland	$C = R + V + (Ot/Os) B + (St/Ss) S$
East of Scotland	$C = R + V + (Ot/Os) B + (St/Ss) S + Mo$
West of Scotland	$C = R + V + (Ot/Os) B + (St/Ss) S$
Northern Ireland	$C = R + V + (Ot/Os) B + (St/Ss) S$

Ot = chemical oxygen demand (COD) of effluent after one hour quiescent settlement at pH7
 St = total suspended solids (mg/litre) of trade effluent at pH7
 B = biological oxidation of settled sewage
 S = treatment and disposal of primary sludge
 see table 5.10 for other abbreviations

Modifications to codes include:

Vb = V + Bv

Vm = M

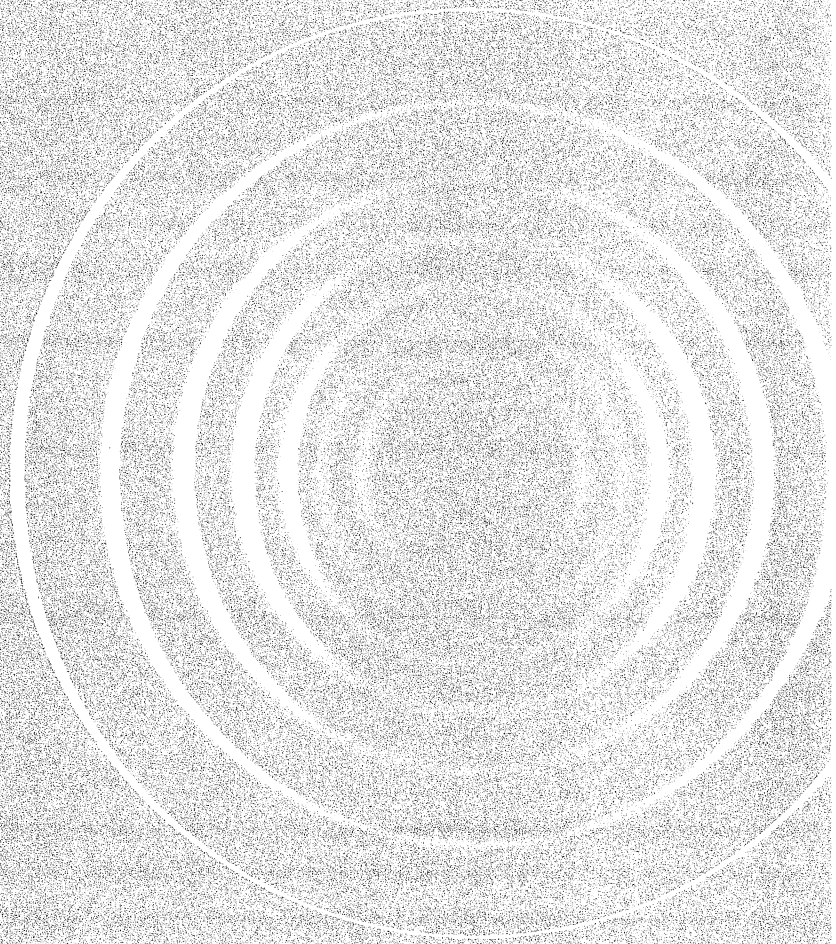
M = Md + M

Mo = Monitoring Costs

P = the cost per cubic metre of the preliminary treatment of foul sewage
 (including such preliminary treatment as is appropriate to the circumstances of the receiving waste water treatment works in question).

Source: Water Companies

finance and investment



6.1 profit and loss accounts 1998/99 (£m) (CCA)

	Turnover of appointed business	Operating Costs	Operating income	Working capital adjustment	Operating Profit	Other income	Net interest	Financing Adjustment	Profit before tax	Tax	Profits after tax
Water Service Company											
Anglian	731.8	-472.0	3.6	0.2	263.1	0.6	-91.6	23.3	195.4	-42.3	152.6
Dwr Cymru	456.0	-343.2	0.4	1.3	114.5	2.0	-54.2	21.3	83.6	-8.9	74.7
Northumbria	343.6	-185.9	-2.9	1.9	156.4	0.0	-33.6	11.8	134.6	-25.4	109.2
North West	941.8	-628.5	-3.5	2.9	312.7	2.2	-118.3	32.4	228.9	-89.6	139.3
Severn Trent	952.7	-597.5	2.4	2.9	360.6	1.0	-72.9	30.6	319.3	-111.0	208.3
Southern	433.8	-282.9	3.5	4.3	158.7	0.6	-51.4	12.5	120.4	-32.0	88.4
South West	265.8	-143.5	0.1	0.5	122.9	0.3	-32.6	9.7	100.4	-40.5	59.9
Thames	1,071.1	-689.2	11.5	7.6	401.0	0.0	-77.6	18.4	341.8	-75.1	266.7
Wessex	265.0	-134.8	-2.1	1.4	129.5	0.5	-28.8	7.3	108.5	-22.2	86.3
Yorkshire	580.9	-378.5	1.8	-1.5	202.7	1.4	-35.6	17.4	185.9	-18.0	167.9
Total water service cos	6,042.5	-3,856.0	14.8	21.5	2,222.1	8.6	-596.6	184.7	1,818.8	-465.0	1,353.3
Water supply companies											
Bournemouth and West Hants	25.80	-18.60	-7.20	0.00	7.20	0.00	-0.90	0.30	6.60	-2.20	4.40
Bristol	64.80	-49.90	-0.80	0.30	14.60	0.10	-4.50	1.00	11.20	-1.20	10.00
Cambridge	15.26	-10.66	0.76	0.00	5.38	0.00	-0.99	0.32	4.71	-1.35	3.54
Cholderton	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dee Valley Water	17.79	-10.91	0.03	0.09	6.99	0.04	-0.23	0.01	7.27	-2.38	4.89
Essex & Suffolk	115.14	-80.40	2.16	-0.13	36.77	0.35	-9.51	2.95	30.57	-7.07	23.49
Folkestone & Dover	11.21	-8.39	0.12	0.04	2.99	0.00	-0.90	0.21	2.30	-0.41	1.89
Hartlepool	6.41	-4.52	0.07	-0.01	1.95	0.02	-0.18	-0.03	1.76	-0.74	1.02
Mid Kent	38.87	-23.44	-0.16	0.53	15.80	0.53	-3.22	0.62	13.73	-1.64	12.09
North Surrey	31.78	-21.34	0.02	0.16	10.62	0.57	-1.97	0.59	9.80	-1.89	7.91
Portsmouth	28.05	-19.38	0.16	0.14	8.98	0.13	-1.44	-0.34	8.01	-2.08	5.93
South East	98.74	65.61	0.61	0.11	33.85	1.11	-10.65	1.81	26.12	-3.54	22.58
South Staffordshire	58.10	-47.10	-0.26	0.15	10.89	0.00	-1.19	0.48	10.18	-3.13	7.05
Sutton & East Surrey	42.2	-28.5	-0.4	-0.1	13.4	0.0	0.8	0.3	14.5	-4.8	9.7
Tending Hundred	11.72	-7.14	0.04	0.05	4.66	0.28	-0.56	0.17	4.54	-1.20	3.34
Three Valleys	139.88	-99.48	-0.09	-0.41	40.72	1.36	-9.62	2.95	35.41	-11.23	24.18
York	9.28	-6.44	0.00	0.01	2.85	0.07	-0.42	0.15	2.65	-0.63	2.02
Total water supply cos	715.0	-370.6	9.5	0.9	217.7	4.6	-45.5	12.2	189.4	-45.5	144.0
TOTAL England and Wales	6,757.5	-4,226.6	24.3	22.4	2,439.8	13.2	-642.1	196.9	2,008.2	-510.5	1,497.4
n/a = not available											
Note: totals may not add due to rounding											

Source: Water companies

The UK water industry is investing heavily in new assets to ensure it complies with EC environmental and quality directives, and to replace ageing infrastructure and improve services to customers.

During the past five years the industry in England and Wales has invested around £16.55 billion, equivalent to about £318 for each of its 52 million customer households.

In 1998/99 investment in England and Wales reached a new record high of £3.7 billion, more than 54 % of turnover.

More than half was spent on wastewater, including £1.2 billion on new treatment plants alone, reflecting

particularly the impact of the EC Urban Waste Water Treatment Directive. Water distribution was also a major target area with a total spend of £1.1 billion.

Given the great differences in the structure of the industry across the country, it is to be expected that the level of financial detail available will vary.

Information is most readily available on the water companies in England and Wales, reflecting the requirement of the Stock Exchange, the Companies Act and the regulatory process.

Further information about the companies in Table 6.1, 6.3 and 6.7 is provided on a current cost accounting basis.

6.2 income by turnover category 1998/1999 (£m)

	WATER SERVICES		SEWERAGE SERVICES		trade effluent	other	TOTAL
	metered	unmetered	metered	unmetered			
Water service companies							
Anglian	127.90	142.50	141.30	262.90	22.96	34.20	731.77
Dwr Cymru	64.10	142.80	34.20	173.50	8.70	32.70	456.00
Northumbrian	46.70	103.20	41.40	135.80	7.60	8.90	343.60
North West	136.80	246.60	177.30	317.30	43.30	20.40	941.80
Severn Trent	161.00	239.70	166.70	326.90	40.10	17.40	952.70
Southern	43.60	81.90	73.00	216.90	7.00	11.40	433.80
South West	40.60	65.20	42.10	109.60	4.60	3.70	265.80
Thames	153.60	273.60	159.20	434.80	23.80	26.10	1071.10
Wessex	35.70	48.60	43.20	123.20	6.70	7.60	265.00
Yorkshire	108.20	166.50	740.50	193.60	27.40	10.70	580.90
Total water service cos.	918.20	1510.60	952.90	2294.50	192.16	173.10	6042.47
Water supply companies							
Bournemouth & Hampshire	7.90	14.20	-	-	-	3.70	25.80
Bristol	17.40	42.50	-	-	-	2.10	62.00
Cambridge	6.78	8.38	-	-	-	0.10	15.26
Cholderton	n/a	n/a	-	-	-	n/a	n/a
Dee Valley	6.96	10.83	-	-	-	0.00	17.79
Essex & Suffolk	37.77	73.19	-	-	-	4.18	115.14
Folkestone & Dover	5.05	5.93	-	-	-	0.23	11.21
Hartlepool	n/a	n/a	-	-	-	n/a	n/a
Mid Kent	12.22	26.41	-	-	-	0.23	38.87
North Surrey	10.36	19.68	-	-	-	1.74	31.78
Portsmouth	7.49	19.69	-	-	-	0.87	28.05
South East	33.18	62.26	-	-	-	3.30	98.74
South Staffordshire	16.83	38.81	-	-	-	2.46	58.10
Sutton & East Surrey	10.09	30.98	-	-	-	1.11	42.17
Tendring Hundred	4.00	7.42	-	-	-	0.29	11.72
Three Valleys	35.96	101.75	-	-	-	2.17	139.88
York	2.16	6.70	-	-	-	0.42	9.28
Total water supply cos.	214.15	468.73	-	-	-	22.90	705.79
Total England and Wales	1132.35	1979.33	952.90	2294.50	192.16	196.00	6748.26

n/a = not available

Note: totals may not add up due to rounding

Source: Water companies

6.3 operating costs by category 1998/99 (£m) (CCA)

	Manpower costs	Other costs employment	Power	Rates	Severage agencies	Materials and consumables	Hired and contracted services	Infrastructure renewals	Depreciation (CC)	Other	TOTAL
Water service companies											
Anglian	69.2	2.4	25.9	27.4	0.0	19.2	79.5	17.3	157.2	73.8	471.9
Dwr Cymru	42.8	2.0	16.9	17.5	9.1	19.9	29.2	33.1	96.8	76.0	343.3
Northumbria	35.9	3.1	11.7	12.6	0.0	8.7	21.0	20.1	51.8	21.0	185.9
North West	43.6	0.0	19.7	43.6	11.7	12.6	21.0	82.9	202.1	191.3	628.5
Severn Trent	132.9	n/a	31.5	36.6	17.5	29.7	53.2	65.3	181.2	49.5	597.4
Southern	41.3	0.0	13.6	13.6	0.0	6.5	27.0	19.7	122.9	38.3	282.9
South West	25.8	0.7	8.1	9.2	1.4	7.8	18.5	9.5	49.4	15.8	146.2
Thames	101.3	0.0	39.3	47.7	0.0	21.3	190.2	40.7	182.1	66.6	689.2
Wessex	18.9	1.7	8.1	8.0	0.0	9.0	15.0	10.7	49.7	13.7	134.8
Yorkshire	63.1	10.0	20.5	28.4	0.0	15.3	48.1	35.1	123.0	35.0	378.5
Total water services cos	574.8	19.9	195.3	244.6	39.7	150.0	502.7	334.4	1,216.2	581.0	3,858.6
Water supply companies											
Bournemouth & West Hampshire	5.5	0.0	1.1	1.6	0.0	1.2	2.6	1.1	4.0	1.5	18.6
Bristol	7.4	1.5	2.9	3.6	0.0	5.9	11.6	6.4	9.7	0.9	49.9
Cambridge	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0
Cholderton	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0
Dee Valley	2.0	0.2	0.8	0.7	0.1	0.6	1.2	1.6	2.7	0.9	10.8
Essex & Suffolk	17.6	1.0	4.7	5.2	0.0	5.2	11.5	6.2	15.6	13.4	80.4
Folkestone & Dover	2.0	-	0.5	0.6	-	0.3	1.3	0.5	1.8	1.4	8.4
Hartlepool	n/a	n/a	0.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-
Mid Kent	4.6	0.4	1.6	1.9	0.0	0.8	4.0	2.2	5.0	3.0	23.5
North Surrey	3.9	0.2	1.1	1.4	-	1.2	2.8	1.2	6.0	3.4	21.2
Portsmouth	5.7	0.1	0.8	1.9	1.3	1.4	2.0	3.3	1.8	1.1	19.4
South East	10.2	1.6	4.5	4.6	n/a	7.0	10.7	6.1	12.5	8.5	65.7
South Staffs	4.7	0.0	3.9	3.8	0.0	2.2	1.0	4.2	7.6	19.7	47.1
Sutton & East Surrey	6.1	0.4	1.8	2.0	-	2.6	5.3	3.1	6.1	1.1	28.5
Tending Hundred	1.8	0.2	0.2	0.4	-	0.4	1.0	0.7	1.6	1.0	7.2
Three Valleys	20.9	-	6.1	7.5	-	3.4	16.7	11.2	19.2	14.5	99.5
York	2.0	0.0	0.3	0.5	-	0.6	0.2	0.3	1.2	1.4	6.4
Total water supply cos	94.4	5.6	30.6	35.7	1.4	32.8	71.9	48.1	94.8	71.8	487.0
Total England and Wales	669.2	25.5	225.9	280.3	41.1	182.8	574.6	382.5	1,311.0	652.8	4,345.6
n/a = not available											
Note: totals may not add up due to rounding											

Source: Water companies

6.4 capital expenditure by service 1998/99 (£m)

	Water resources	Water treatment	Water distribution	Water management	Sewerage	Sewerage treatment	Sewerage management	TOTAL
TOTAL UK								
Water service companies								
Anglian	5.2	12.6	111.1	23.7	53.6	116.9	23.7	346.8
Dŵr Cymru	1.1	10.9	52.4	11.1	97.3	101.6	5.2	279.6
Northumbrian	1.5	4.8	37.1	3.5	43.6	88.0	7.4	185.9
North West	7.0	31.3	138.3	22.1	139.6	155.9	24.0	518.2
Severn Trent	16.9	39.9	156.7	55.0	143.1	162.5	40.4	614.5
Southern	5.4	5.8	39.0	4.6	112.0	154.2	18.5	339.5
South West	1.3	4.7	29.7	7.4	11.9	46.1	4.1	105.2
Thames	11.6	19.7	224.2	27.2	53.5	141.9	29.5	507.6
Wessex	1.9	4.7	32.1	6.9	19.4	67.0	11.3	143.3
Yorkshire	28.2	42.6	77.1	18.1	29.8	163.4	18.1	377.3
Total water services cos	80.1	177.0	897.7	179.6	703.8	1,197.5	182.2	3,417.9
Water supply companies								
Bournemouth & West Hampshire	0.2	1.9	5.7	1.9	-	-	-	9.7
Bristol	0.4	0.6	17.1	2.6	-	-	-	20.7
Cambridge	0.1	0.3	5.3	0.5	-	-	-	6.2
Cholderton	n/a	n/a	n/a	n/a	-	-	-	n/a
Dee Valley	0.1	1.4	3.5	0.6	-	-	-	5.6
Essex & Suffolk	3.1	5.4	24.9	4.4	-	-	-	37.8
Folkestone & Dover	0.1	0.1	2.1	0.5	-	-	-	2.8
Hartlepool	0.2	0.0	0.2	0.0	-	-	-	0.4
Mid Kent	2.0	2.6	14.9	3.0	-	-	-	22.5
North Surrey	0.1	1.7	6.8	0.6	-	-	-	9.2
Portsmouth	0.7	2.1	5.0	0.7	-	-	-	8.5
South East	1.2	1.5	26.2	3.7	-	-	-	32.6
South Staffordshire	1.0	0.5	13.4	2.9	-	-	-	17.8
Sutton & East Surrey	0.3	4.2	7.7	1.3	-	-	-	13.5
Tendring Hundred	0.1	0.2	2.1	0.3	-	-	-	2.7
Three Valleys	0.1	5.2	37.4	4.9	-	-	-	47.6
York	0.0	0.7	1.2	0.1	-	-	-	2.0
Total water supply cos	9.6	28.4	173.6	28.1	-	-	-	239.6
Total England and Wales	89.7	205.4	1,071.3	207.7	703.8	1,197.5	182.2	3657.5

Data for Scotland and Northern Ireland is not available

n/a = not available

Note: Totals may not add up due to rounding.

Source: Water companies

6.5 total capital expenditure 1992/3 to 1998/99 (£m)

	92/93	93/94	94/95	95/96	96/97	97/98	98/99	TOTAL
UK	3384	3206.6	2886.8	2914.9	3522.3	3945.79	*	19860.39
Water service companies								
Anglian	326.7	371.5	300.6	283.7	350.1	372.17	346.8	2351.57
Dŵr Cymru	201	180.5	197.3	219.3	253	277.3	279.6	1608
Northumbrian ¹	129.3	104.2	88.6	103	166.4	249.17	185.9	1026.57
North West	489.5	423.6	373.7	436.5	499.9	498.62	518.2	3240.02
Severn Trent ²	569.1	460.1	426.5	365.4	466.2	558.4	614.5	3460.2
Southern	114.7	152.2	157.1	139.8	188.7	284.9	339.5	1376.9
South West	205	204.9	159	108.5	161.7	166.82	105.2	1111.12
Thames	400.4	390.8	326.7	375.2	443.8	507.91	507.6	2952.41
Wessex	130.2	115.1	91	87.8	98.3	128.1	143.3	793.8
Yorkshire	303.1	220.8	188.6	230.4	355.7	343.9	377.3	2019.8
Total water service cos	2869	2623.7	2309.1	2349.6	2983.8	3387.29	3417.9	19940.39
Water supply companies								
Bournemouth & West Hampshire					8.7	11.9	9.7	30.3
Bristol					18.2	28.4	20.7	67.3
Cambridge					3.8	5.0	6.2	15
Dee Valley					5.4	5.7	5.6	16.7
Cholderton					n/a	n/a	n/a	0
Essex & Suffolk					41.2	49.2	37.8	128.2
Folkestone & Dover					6	4.1	2.8	12.9
Hartlepool					1.5	1.0	0.4	2.9
Mid Kent					13.3	11.4	22.5	47.2
North Surrey					13.1	17.5	9.2	39.8
Portsmouth					9	9.2	8.5	26.7
South East					34.5	36.9	32.6	104
South Staffordshire					20.1	25.4	17.8	63.3
Sutton & East Surrey					8.2	8.5	13.5	30.2
Tendring Hundred					3.5	4.3	2.7	10.5
Three Valleys					46.5	54.4	47.6	148.5
York					3.5	3.3	2.0	8.8
Total water supply cos	220	238.9	220.7	224.2	236.5	276.2	239.6	1656.1
Total England and Wales	3089	2862.6	2529.8	2573.8	3220.3	3663.49	3657.5	21596.49
Scotland	230.4	262	259.9	238.2	225.7	282.3	n/a	1498.5
Northern Ireland	64.6	82	97.1	102.9	76.3	n/a	n/a	422.9

n/a = not available
 data for Northumbrian: 1992-95 has been revised to take into account the merger with North East Water
 data for Severn Trent 1992-95 has been revised to take account of adopted assets and assets acquired at nil cost
 Note: totals may not add up due to rounding
 * As no data for Scotland and Northern Ireland total UK is not applicable.

Source: Water companies, EA, Scottish Office, DoE (NI) Water Service

6.6 ten year investment included in price limits (£m)

	average annual ¹ 1995/96 to 1999/00	capital expenditure ² 2000/01 to 2004/05
Water service companies		
Anglian	280	280
Dwr Cymru	190	222
Nórthumbrian*	154	146
North West	460	603
Severn Trent	380	391
Southern	240	217
South West	100	145
Thames	440	435
Wessex	100	153
Yorkshire	300	291
Total water service cos	2,644	2,883
Water supply companies		
Bournemouth & West Hampshire	7	10
Bristol	14	25
Cambridge	2	4
Cholderton	n/a	n/a
Dee Valley	3	5
Essex & Suffolk	37	34
Folkestone & Dover	3	6
Hartlepool	1	n/a
Mid Kent	11	17
North Surrey	10	8
Portsmouth	7	10
South East	36	36
South Staffordshire	13	22
Sutton & East Surrey	9	13
Tendring Hundred	3	3
Three Valleys	34	44
York	2	3
Total water supply cos	192	240
Total England and Wales		
~ annual average	2,836	3,123
~ five year total	14,180	15,615

Notes:

n/a = not available

Totals may not add due to rounding.

¹ Figures are at 1993/94 prices and do not include any allowance for possible movements in capital expenditure prices relative to RPI.

² Figures show expenditure allowed for by the Director General in making his determinations. It is for companies to determine how objectives are achieved, and the actual level and balance of expenditure required. In the case of South West Water and Portsmouth Water, the MMC allowed some extra investment in its determination but no adjustment has been made to the

³ Capital Expenditure is gross of grants and contributions for new development. Figures are at May 1999 price level.

* Figures include North East Water.

6.7 total fixed assets at 31 March 1999 - net book values (£m) (CCA)

	Water Service			Sewerage service			TOTAL
	Infrastructure assets	Operational assets	Other tangible assets	Infrastructure assets	Operational assets	Other tangible assets	
Water service companies							
Anglian	3,916.0	890.3	143.4	9,120.1	1,515.6	79.1	15,664.5
Dwr Cymru	5,524.1	747.7	42.0	6,232.6	1,155.8	34.8	13,737.0
Northumbrian	2,997.7	340.9	9.9	4,663.3	661.7	13.6	8,687.1
North West	11,067.5	1,173.8	125.9	19,962.3	2,266.7	266.0	34,862.2
Severn Trent	5,568.2	1,240.0	132.5	17,808.1	2,125.6	107.1	26,981.5
Southern	2,184.0	418.2	37.7	9,229.8	1,180.3	89.3	13,139.3
South West	2,247.0	424.0	32.0	2,546.5	705.7	30.2	5,985.4
Thames	5,590.0	1,855.5	23.0	28,358.5	2,374.5	31.5	38,233.0
Wessex	2,095.8	268.8	14.3	5,888.7	737.9	24.6	9,030.1
Yorkshire	5,582.5	959.5	191.9	8,134.7	1,214.4	275.2	16,358.2
Total water service companies	46,772.8	8,318.7	752.6	111,944.6	13,938.2	951.4	182,678.3
Water supply companies							
Bournemouth & West Hampshire	331.5	66.2	8.8	-	-	-	406.5
Bristol	1,219.0	183.1	2.1	-	-	-	1,404.2
Cambridge	243.2	28.5	6.7	-	-	-	278.4
Cholderton	n/a	n/a	n/a	-	-	-	n/a
Dee Valley	246.2	35.3	1.5	-	-	-	283.0
Essex & Suffolk	1,053.5	392.3	23.2	-	-	-	1,469.0
Folkestone & Dover	158.4	22.3	0.5	-	-	-	181.2
Hartlepool	103.0	12.7	1.4	-	-	-	117.1
Mid Kent	501.2	102.8	2.7	-	-	-	606.7
North Surrey	401.0	84.1	1.9	-	-	-	487.0
Portsmouth	379.2	68.8	1.8	-	-	-	449.8
South East	1,515.4	327.5	4.1	-	-	-	1,847.0
South Staffordshire	966.0	99.4	9.8	-	-	-	1,075.2
Sutton & East Surrey	494.6	89.3	4.2	-	-	-	588.1
Tending Hundred	163.0	32.0	0.6	-	-	-	195.6
Three Valleys	1,839.9	386.1	0.2	-	-	-	2,226.2
York	132.4	41.0	0.9	-	-	-	174.3
Total water supply companies	9,747.5	1,971.4	70.4	-	-	-	11,789.3
Total England and Wales	56,520.3	10,290.1	822.9	111,944.6	13,938.2	951.4	194,467.5
Data for Northern Ireland and Scotland is not available							
n/a = not available							
Note: totals may not add due to rounding							

Source: Water companies

6.8 infrastructure improvements for the industry in England and Wales

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
Total length of water main new, renewed or relined (km)	6,761	6,028	6,153	5,723	6,897	7,419	7,059
Total length of sewers - new or renewed (km)	1,778	1,501	1,362	1,369	1,741	n/a	1,871
Number of communication pipes replaced	253,245	215,582	193,879	208,657	233,936	249,404	261,191
Number of lead communication pipes replaced	-	-	-	-	-	1,393	132,247
Sea outfalls abandoned	21	41	20	n/a	42	57	54
New sea outfalls commissioned	8	8	6	n/a	3	3	2
Note: These totals exclude figures for Cholderton							
n/a = not available							

Source: Water companies

6.9 infrastructure improvements for the industry in England and Wales

	Details						Sewer Condition					
	Water Mains New renewed or retired (km)	Number of communication pipes replaced	Number of lead communication pipes replaced	Sewers new or renewed (km)	Sea outfalls abandoned	New sea outfalls commissioned	Critical New	Replaced	Renovated	Non-Critical new	Replaced	Renovated
TOTAL UK	7,707	263,291	135,572	2,057	65	2	355	88	224	1,248	n/a	63
Water service companies												
Anglian	555	18,395	8,784	162	1	0	8	5	12	142	7	4
Dwr Cymru	516	19,486	13,800	71	9	0	31	13	5	10	8	4
Northumbrian	344	19,968	-	64	26	2	28	1	35	60	2	24
North West	948	48,549	46,607	222	0	0	23	25	54	98	10	13
Severn Trent	858	54,118	22,200	790	0	0	148	23	1	576	40	2
Southern	195	8,209	1,330	103	-	-	18	1	2	85	9	11
South West	172	6,850	4,179	45	16	0	19	0	0	25	0	0
Thames	1,398	13,142	1,600	151	n/a	n/a	19	13	70	63	n/a	n/a
Wessex	196	4,570	1,188	109	2	0	15	3	8	83	4	1
Yorkshire	698	14,232	7,553	154	0	0	38	4	0	106	3	4
Total water service co's	5,880	207,519	107,241	1,871	54	2	347	88	188	1,248	83	63
Water supply companies												
Bournemouth & Hants	33	4,237	-	-	-	-	-	-	-	-	-	-
Bristol	157	6,652	5,940	-	-	-	-	-	-	-	-	-
Cambridge	22	305	194	-	-	-	-	-	-	-	-	-
Cholderton	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dee Valley	22	2,150	214	-	-	-	-	-	-	-	-	-
Essex & Suffolk	113	8,599	7,320	-	-	-	-	-	-	-	-	-
Folkestone & Dover	24	894	6	-	-	-	-	-	-	-	-	-
Hartlepool	6	16	16	-	-	-	-	-	-	-	-	-
Mid Kent	142	2,274	154	-	-	-	-	-	-	-	-	-
North Surrey	41	1,700	42	-	-	-	-	-	-	-	-	-
Portsmouth	40	4,735	2,449	-	-	-	-	-	-	-	-	-
South East	255	4,372	556	-	-	-	-	-	-	-	-	-
South Staffordshire	60	2,597	1,484	-	-	-	-	-	-	-	-	-
Sutton and East Surrey	55	1,066	640	-	-	-	-	-	-	-	-	-
Tendring Hundred	20	839	309	-	-	-	-	-	-	-	-	-
Three Valleys	178	13,001	5,447	-	-	-	-	-	-	-	-	-
York	11	235	235	-	-	-	-	-	-	-	-	-
Total water supply cos	1,179	53,672	25,006	0	0	0	0	0	0	0	0	0
Total England & Wales	7,059	261,191	132,247	1,871	54	2	347	88	188	1,248	83	63
East Scotland	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
North Scotland	n/a	n/a	3,065	-	-	-	-	-	-	-	-	-
West Scotland	648	2,100	260	186	11	0	8	-	36	-	142*	-
Total Scotland	648	2,100	3,325	186	11	0	8	0	36	0	n/a	0
Northern Ireland	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

n/a = not available

Note: totals may not add up due to rounding

* includes new and replaced

Source: Water companies