

STUDIES
46

Statistics



Waterfacts

waterfacts

Statistics

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Foreword

This year 1994 has been one of significant developments in the water industry.

The Director General of Water Services (OFWAT) completed his periodic review in July, announcing new price limits (Ks) for the water companies for the next five and for the next ten years. Thus defining the financial and economic parameters of the industry in its second phase of progress since restructuring in 1989.

Part of the process of preparing for the review involved all of the key players - the Government, the National Rivers Authority, the Drinking Water Inspectorate, OFWAT and the water companies - in defining what legal obligations it would be necessary for the companies to meet during the review period, in order to satisfy quality standards and achieve greater environmental protection.

Much of this work had to do with the implementation of the new European Urban Waste Water Treatment Directive. This major piece of legislation, along with the Drinking Water and Bathing Waters Directives - both of which are presently being reviewed - is the main driver of costs and standards in the UK water industry.

All of these significant developments find expression in this year's *Waterfacts*.

Last year's change in our style of presentation appears to have been popular with *Waterfacts* readers, who are reminded that comments and suggestions are always warmly welcomed.

Indeed if anyone could produce credible figures to shed light on the relative performance of European water industries against that of the UK, the welcome for their contribution would be positively incandescent.

Donna Burnell
Editor

The editor would like to thank the following for their assistance compiling Waterfacts '94:

Jackie Conn; Valerie Homer (WCA); Derek Piggott (WSA); Jonathan West (Anglian Water); Phil Bendry (Dwr Cymru); Deborah Poore (Northumbrian Water); Sue Wright (North West Water); Brian Harris (Severn Trent Water); Chris Keane and Peter Thompson (Southern Water); Julia Bennett and Heather Gilling (South West Water); Kevin Horn (Thames Water); Sue Astley (Wessex Water); Graham Burton (Yorkshire Water); Malcolm Bailey (Mid Kent Water); Stephen Frost (DoE); Amanda Sloane (NRA); Dawn Harrison (OFWAT); Archie Minto and Harry Valentine (DoE Scottish Office); Martin Fitzpatrick (Water Executive Northern Ireland).

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Organisation of water services

On 1 September 1989, when the water industry was reorganised, the government issued licences for the provision of water and sewerage services throughout England and Wales to companies. Ten of these provide both water supply and sewerage services and are known as water service companies (WSCs), the other 21 provide only water supply services and are known as the water supply companies.

The WSCs provide all of the sewerage services and approximately three quarters of water supply in England and Wales; the water supply companies supply the remainder.

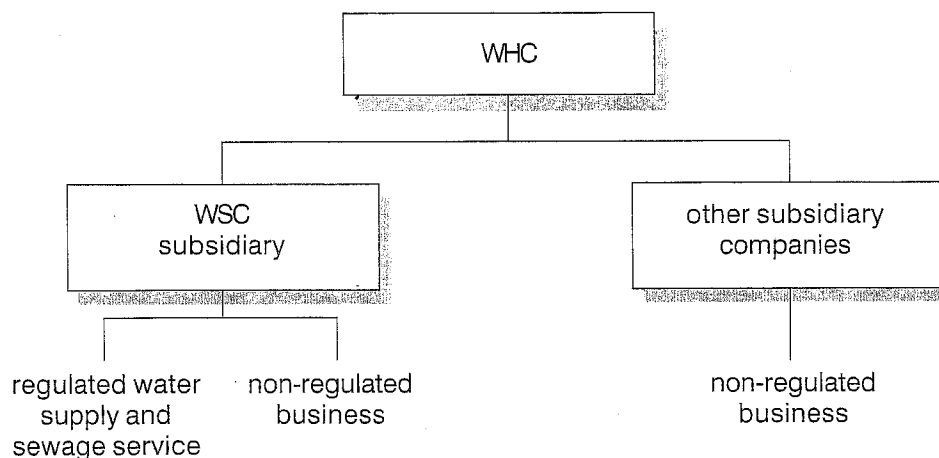
The location of each company is shown on the maps on pages 2 and 5.

Water Service Companies (WSC)

Each water service company is part of a group of companies owned by a water holding company (WHC). However, only the WSC is licensed to provide water and sewerage services,

the regulated business. The water service company can, like all the other companies in the group also operate other non-regulated business.

1.1 Example of a water holding company structure



1.2 Formal titles of the companies

Water Holding Companies

Anglian Water Plc
 Northumbrian Water Group Plc
 North West Water Group Plc
 Severn Trent Plc
 Southern Water Plc
 South West Water Plc
 Thames Water Plc
 Welsh Water Plc
 Wessex Water Plc
 Yorkshire Water Plc

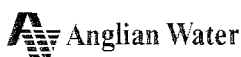
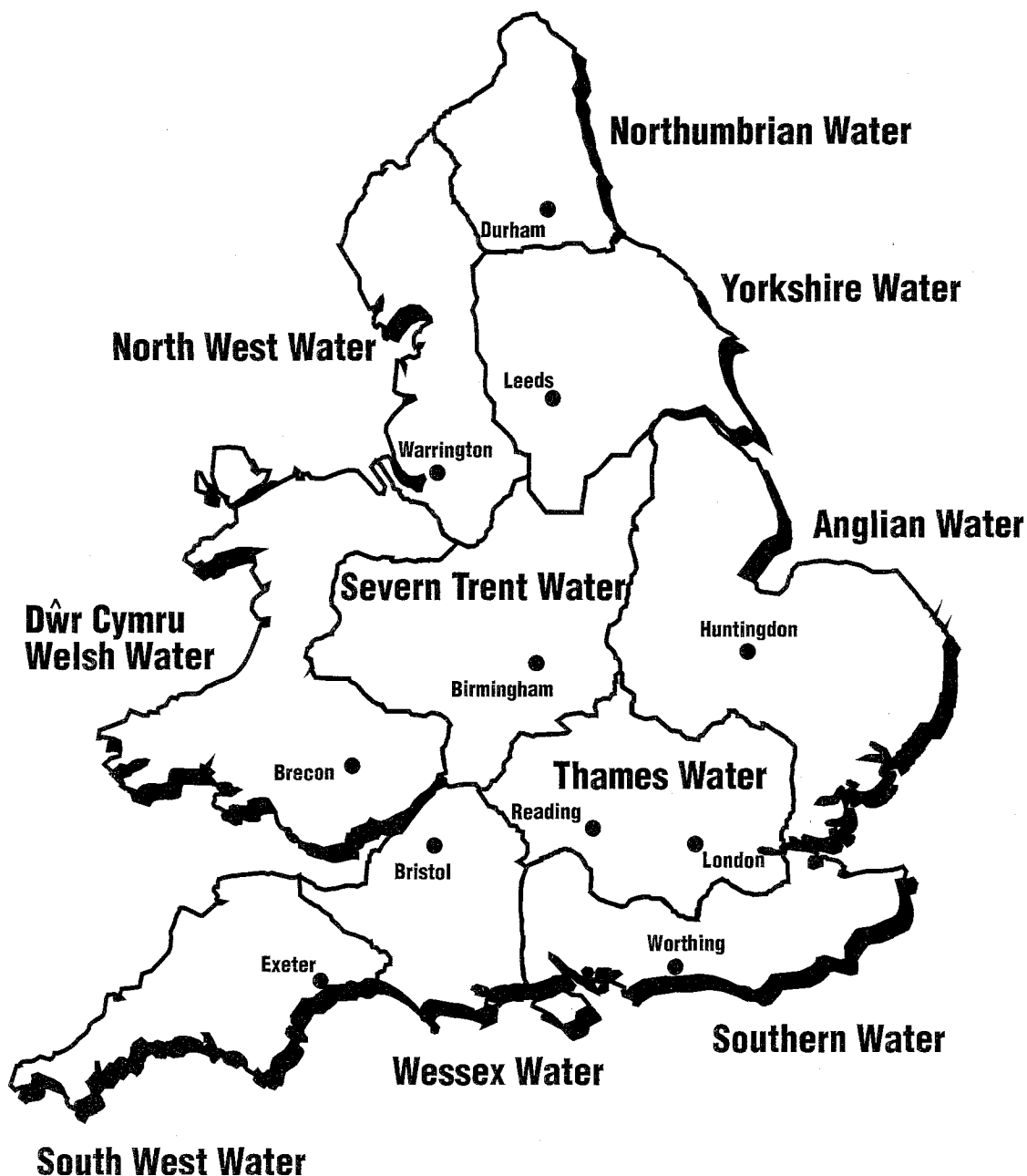
Water Service Companies

Anglian Water Services Ltd
 Northumbrian Water Ltd
 North West Water Ltd
 Severn Trent Water Ltd
 Southern Water Services Ltd
 South West Water Services Ltd
 Thames Water Utilities Ltd
 Dwr Cymru Cyfyngedig
 Wessex Water Services Ltd
 Yorkshire Water Services Ltd

Details of the board members and chief officers of each of the companies are listed in *Who's Who in the Water Industry*. This is edited by the Water Services Association and is

available from Turret Group plc: Turret House, 171 High Street, Rickmansworth, Herts WD3 1SN, Tel: 01923 777000, Fax: 01923 771 297

1.3 Water service companies



Anglian Water
Anglian House
Ambury Road
Huntingdon
Cambs PE18 6NZ
Tel: 01480 443000
Fax: 01480 443115



DŴR CYMRU
WELSH WATER

Dŵr Cymru
Plas-y-Ffynnon
Cambrian Way
Brecon
Powys LD3 7HP
Tel: 01874 623181
Fax: 01874 624167



Northumbrian Water
Abbey Road
Pity Me
Durham DH1 5FJ
Tel: 0191 383 2222
Fax: 0191 384 1920



North West Water
Dawson House
Great Sankey
Warrington WA5 3LW
Tel: 01925 234000
Fax: 01925 233360



Severn Trent Water
2297 Coventry Road
Birmingham
B26 3PU
Tel: 0121 722 4000
Fax: 0121 722 4800



Southern Water
Yeoman Road
Worthing
West Sussex BN13 3NX
Tel: 01903 264444
Fax: 01903 262100



South West Water
Peninsula House
Rydon Lane
Exeter EX2 7HR
Tel: 01392 446688
Fax: 01392 434966



Thames Water
Nugent House
Vastern Road
Reading RG1 8DB
Tel: 01734 591159
Fax: 01734 593203



Wessex Water
Wessex House
Passage Street
Bristol Avon BS2 0JQ
Tel: 0117 9290611
Fax: 0117 9293137



Yorkshire Water
West Riding House
67 Albion Street
Leeds LS1 5AA
Tel: 0113 2448201
Fax: 0113 2324322

Water supply companies

There are 21 water companies that supply water only. Several of these companies, which existed prior to privatisation, have opted for plc status. The water supply companies and the areas they supply are shown in the map 1.6. They are subject to regulation of their water supply activities in the same way as the ten WSCs. The sewerage services in their areas are the responsibility of the water service companies.

Water Services Association (WSA)

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 957 4567, Fax: 0171 957 4666

The WSA is an association of the ten English and Welsh water companies that provide both water and sewerage services.

Its principal role is:

- to promote and protect the common interests of its members in dealings with the UK Government, the EC and other regulatory authorities.
- and to try to influence policy and regulatory initiatives on water issues by governmental and other agencies, both national and international.

The WSA is governed by a Council of its members, currently one member from each of the ten water service companies.

Water Companies' Association (WCA)

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 222 0644, Fax: 0171 222 3366

All the water supply companies, except Mid-Kent belong to the Water Companies' Association which was formed in 1885 to encourage the companies to exercise their powers effectively and to discharge their responsibilities efficiently.

Water In Scotland

Scottish Office Environment Department, Engineering, Water and Waste Directorate, 27 Perth Street, Edinburgh, EH3 5RB, Tel: 0131 244 3040, Fax: 0131 244 2903

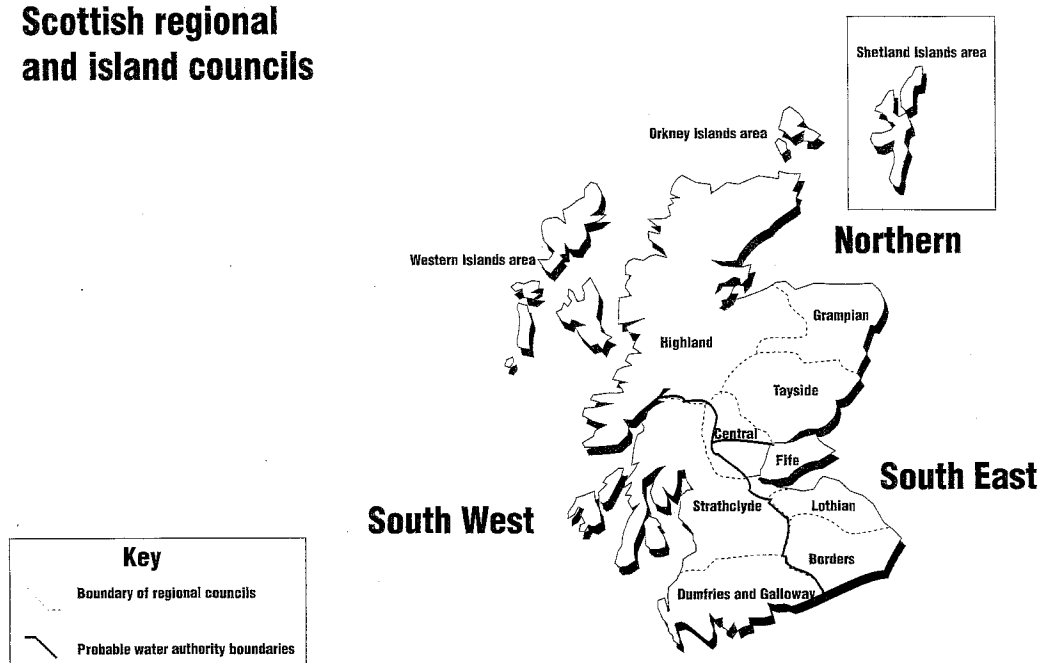
In Scotland, water and sewerage are local authority services provided by the nine regional and three islands councils established under the Local Government (Scotland) Act 1973. The Central Scotland Water Development Board, established under the Water (Scotland) Act 1967, provides bulk supplies and develops new sources of water supply for the supply areas of Central, Fife, Lothian, Tayside and Strathclyde Regional Councils.

Water pollution control is administered by the river purification authorities (RPAs). These are the seven mainland based river purification boards (RPBs), established under the Local Government (Scotland) Act 1973, and the three islands councils which act as RPAs in their areas.

Following publication of the consultation paper, 'Improving Scotland's Environment - The Way Forward' in 1992, the Government confirmed in February 1993 its plans to establish a Scottish Environment Protection Agency (SEPA). The Agency will bring together HM Industrial Pollution Inspectorate, the RPAs and the district and islands councils in respect of the responsibilities for waste regulation and Local Authority Air Pollution Control. Legislation to establish the Agency will be introduced at the earliest opportunity.

The Local Government etc (Scotland) Bill, introduced to Parliament in December 1993, includes provisions for local authorities in Scotland to be replaced with single-tier councils from 1 April 1996. As part of this reorganisation three public water authorities, for the northern, south western and south eastern regions of Scotland, will take over the provision of water and sewerage services. An independent representative body for consumers, the Scottish Water and Sewerage Customers Council, will also be established.

1.4 Scottish regional and island councils



Water In Northern Ireland

Department of the Environment for Northern Ireland (DOE NI)
Water Executive, 3 Frederick Street, Belfast, BT1 2NS, Tel:
01232 244711, Fax: 01232 330790

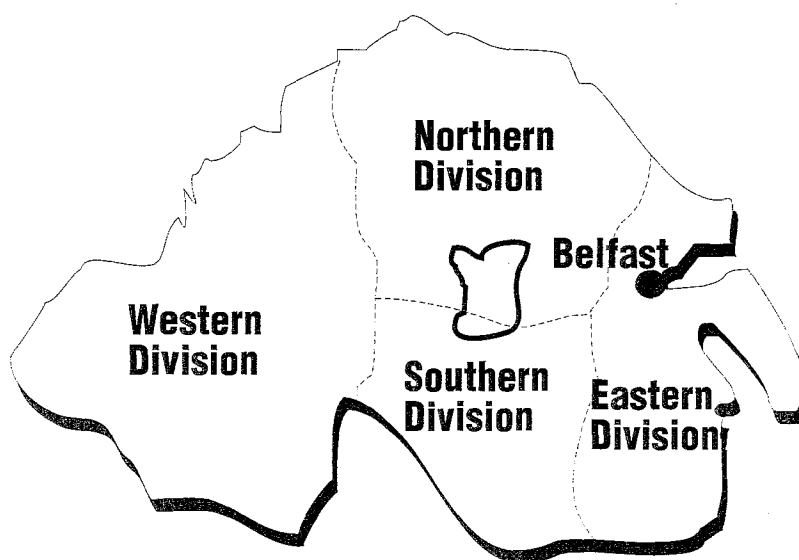
The Water Executive consists of a Headquarters Group and four territorial operating Divisions, under the control of a Directorate. The Headquarters Group, which is based in Belfast, is responsible for legislation, policy, planning, statistics, financial and manpower resources and control of the Capital Works Programme. The four territorial Divisions carry out the day to day operational functions of providing water and sewerage services to the domestic industrial, commercial and agricultural sectors.

The Government has announced plans to privatise water and sewerage in Northern Ireland as soon as practicable. However, for technical reasons, it will not be possible to do this during

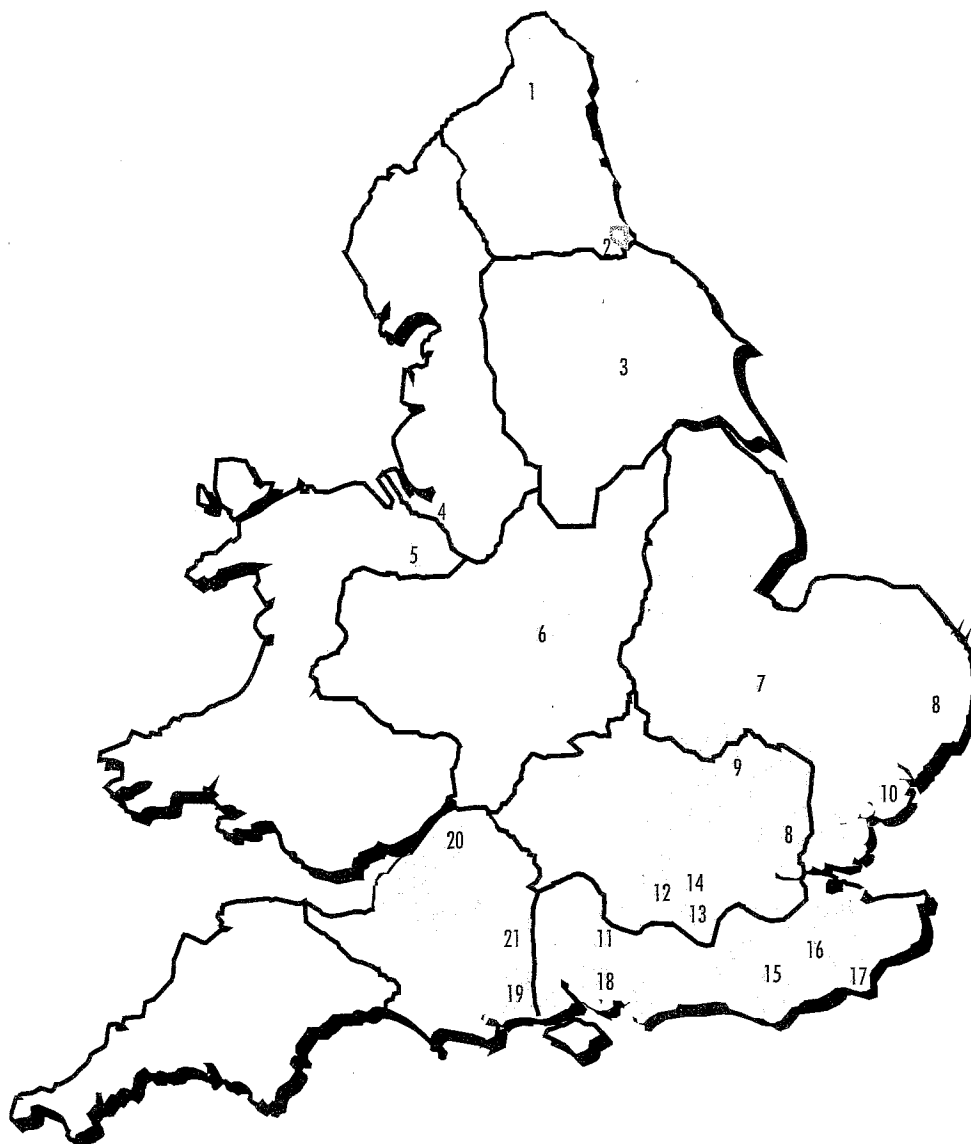
the lifetime of the present Parliament. In the interim, the Water Executive, which is responsible for delivery of these services, will be established as a Next Steps Agency not later than April 1996. This will enable it to operate as a separate unit in the Department, within a framework of appropriate efficiency targets and performance measures, and will build on work to develop the commercial orientation of the organisation.

Water pollution control is a DOE (NI) function but is administered separately by the Department's Environment Service. Statutory authority is provided by the Water Act (Northern Ireland) 1972 under which the Department's consent is required for discharges to inland and coastal waters from industry, sewage treatment works, fish farms and domestic septic tanks. Discharges are monitored regularly for compliance with consent standards. Under the Food and Environment Protection Act 1985, the Service also licenses the dumping of material at sea, for example, sewage sludge and harbour dredgings.

1.5 Northern Ireland department of the environment water services



1.6 Water supply companies



- | | | | |
|--|---|---|---|
| 1. North East Water Plc
Tel: (0191) 265 4144
Fax: (0191) 276 6612 | 6. South Staffordshire Water Plc
Tel: (01922) 38282
Fax: (01922) 21968 | 11. Mid Southern Water Plc
Tel: (01252) 835 031
Fax: (01252) 836 066 | 17. Folkestone & Dover Water Services Ltd
Tel: (01303) 276 951
Fax: (01303) 276 712 |
| 2. Hartlepoons Water Company
Tel: (01429) 274 405
Fax: (01429) 278 961 | 7. Cambridge Water Co
Tel: (01223) 247 351
Fax: (01223) 214 052 | 12. North Surrey Water Ltd
Tel: (01784) 455 464
Fax: (01784) 451 260 | 18. Portsmouth Water Plc
Tel: (01705) 499 888
Fax: (01705) 453 632 |
| 3. York Waterworks Company
Tel: (01904) 622 171
Fax: (01904) 611 667 | 8. Essex & Suffolk Water Plc
Tel: (01245) 491 234
Fax: (01245) 212 345 | 13. East Surrey Water Plc
Tel: (01737) 772 000
Fax: (01737) 766 807 | 19. Bournemouth Water Plc & West Hampshire
Tel: (01202) 591 111
Fax: (01202) 599 333 |
| 4. Chester Waterworks Company
Tel: (01244) 320 501
Fax: (01244) 316 102 | 9. Three Valleys Water Services Plc
Tel: (01707) 277 222
Fax: (01707) 277 333 | 14. Sutton District Water Plc
Tel: (0181) 643 8050
Fax: (0181) 643 4461 | 20. Bristol Water Plc
Tel: (0117) 966 5881
Fax: (0117) 963 4576 |
| 5. Wrexham & East Denbighshire Water Company
Tel: (01978) 846 946
Fax: (01978) 846 888 | 10. Tendring Hundred Water Services Ltd
Tel: (01206) 392 155
Fax: (01206) 395 541 | 15. South East Water Ltd
Tel: (01323) 411 411
Fax: (01323) 411 412 | 21. Cholderton & District Water Company Ltd
Tel: (01980) 629 203
Fax: (01980) 629 307 |
| | | 16. Mid Kent Water Plc
Tel: (01634) 240 313
Fax: (01634) 242 764 | |

1.7 Resident area and connected population 1993/94

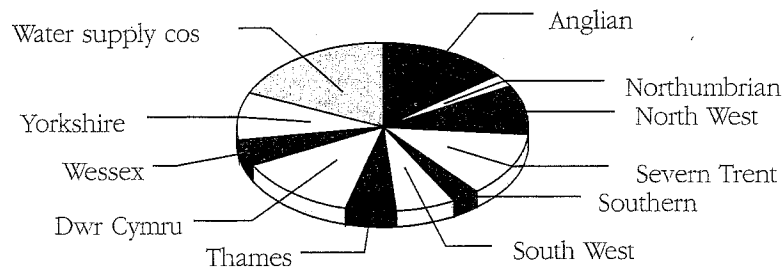
Water service companies	Water supply		Sewerage services	
	area	resident connected population	area	resident connected population
	km ²	millions	km ²	millions
Anglian	22,000	4.0	27,500	5.2
Dŵr Cymru	20,400	2.8	21,300	2.9
Northumbrian	3,850	1.2	9,400	2.5
North West	14,415	6.8	14,445	6.8
Severn Trent	19,745	7.2	21,650	8.2
Southern	4,450	2.2	10,450	4.1
South West	10,300	1.5	10,800	1.4
Thames	8,200	7.3	13,750	11.5
Wessex	7,350	1.1	10,000	2.3
Yorkshire	13,900	4.4	13,600	4.7
Total	124,610	38.5	152,895	49.6

Water supply companies	Area km ²	Population 000s
Bournemouth and West Hampshire	1,041	406
Bristol	2,391	1,019
Cambridge	1,175	279
Chester	142	117
Cholderton	25	3
East Surrey	733	326
Essex & Suffolk	2,850	1,656
Folkestone and District	420	152
Hartlepool	90	92
Mid Kent	2,050	526
Mid Southern	1,502	623
North East Water	5,143	1,318
North Surrey	500	430
Portsmouth	868	645
South East Water	2,109	593
South Staffordshire	1,507	1,216
Sutton	100	280
Tendring Hundred	352	139
Three Valleys	3,213	2,352
Wrexham and East Denbighshire	689	149
York	340	171
Total	27,240	12,492

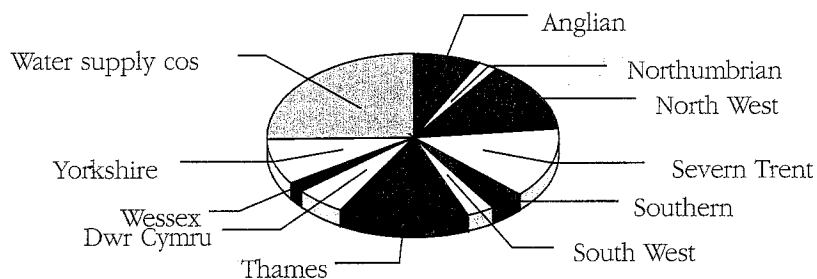
	km ²	millions	km ²	millions
England and Wales	151,850	51.0	152,895	49.6
Scotland	77,453	5.1	77,453	5.1
Northern Ireland	14,150	1.6	14,150	1.3
UK	243,453	57.7	244,498	56.0

Source: Water companies

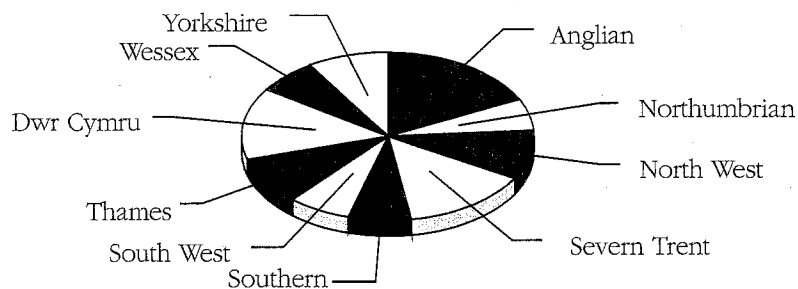
1.8 Population and area served by the water companies



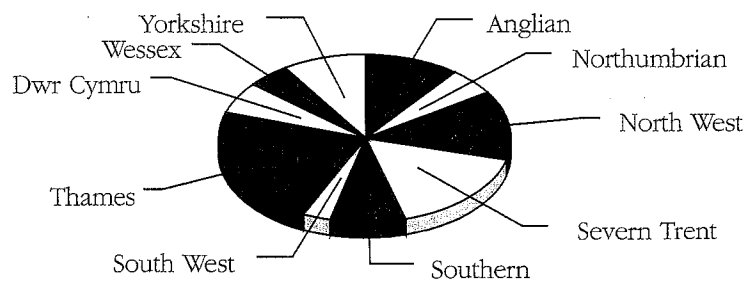
Supply of water – area served



Supply of water – population served



Sewerage services – area served

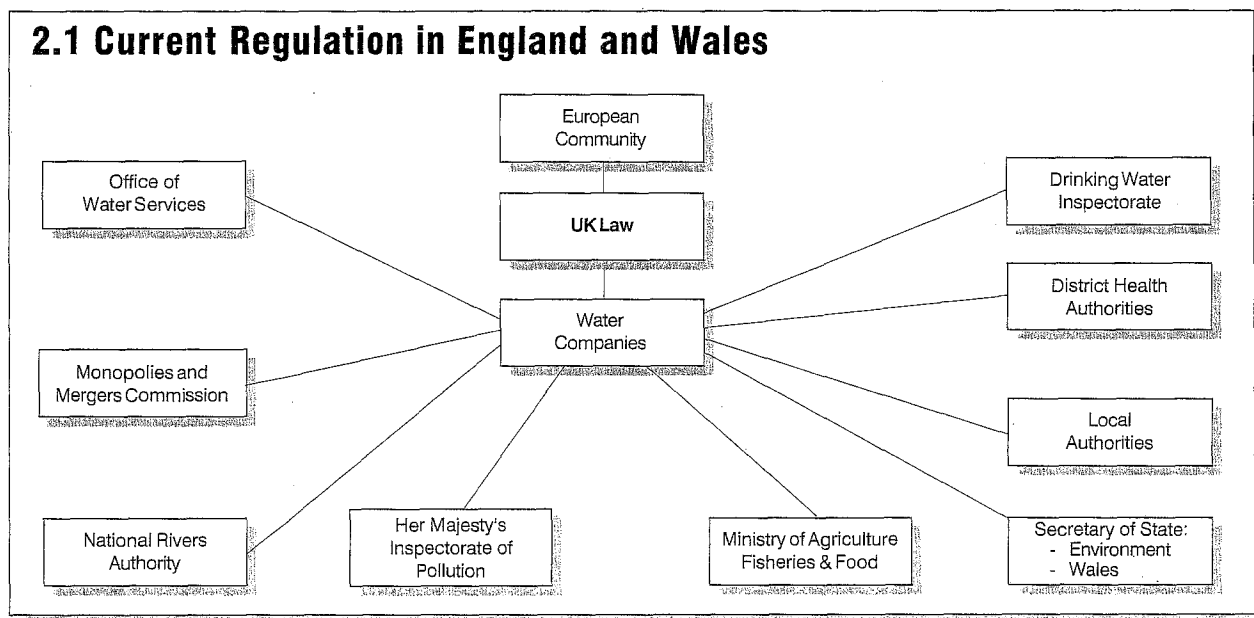


Sewerage services – population served

Regulation of water services

Public water and sewerage services in the United Kingdom are provided by undertakers from the public and private sectors. In England and Wales undertakers are appointed (licensed) water companies whereas in Scotland, the Regional and Island Councils; and in Northern Ireland, the Department of the Environment for Northern Ireland provide the services. Economic regulation, in particular, is different in England and Wales from that elsewhere.

2.1 Current Regulation in England and Wales



On 15 July 1992, the Secretary of State for the Environment announced the creation of a new environmental protection agency bringing together all the functions of the National Rivers Authority, Her Majesty's Inspectorate of Pollution and the waste regulation work of local authorities.

Draft legislation put forward in October 1994 proposed that the new structure should be in place by April 1996

- precautions against pollution
- approving various codes of practice including conservation and recreational duties, and the exercise of pipelaying powers
- enforcing certain statutory obligations imposed on water and sewerage undertakers, for example, by making enforcement orders and initiating the prosecution of any water undertaker which supplies water unfit for human consumption.

The regulators

Secretary of State for the Environment and Secretary of State for Wales

The main functions of the Secretaries of State under the Water Industry Act 1991 and the Water Resources Act 1991 (which consolidates the Water Act 1989) are:

- appointing companies to act as water and sewerage undertakers, the Director General of Water Services and individuals to serve on the National Rivers Authority.
- elaborating and supplementing the regulatory framework by means of subordinate legislation, for example, to establish standards of performance in relation to the supply of water and sewerage services, to determine standards of wholesomeness of water, to set out criteria for the classification of river quality and to impose requirements to take

In respect of the National Rivers Authority, the Secretaries of State's main functions are:

- paying grant-in-aid, setting financial controls and controlling overall staff numbers and conditions of service
- designating water protection zones and making drought orders
- approving charging schemes, charges for water abstraction licences and discharge consents
- appointing technical assessors of water quality
- applying, in exceptional circumstances, for a special administration order.

The Secretaries of State receive the reports of the Chief Inspector of the Drinking Water Inspectorate, Director General of Water Services and the National Rivers Authority and, in certain circumstances, can give directions to them and receive information from them related to their functions.

Director General of Water Services (OFWAT)

The Director General of Water Services has a primary duty under the Water Act to secure that:

- water and sewerage functions are properly carried out throughout England and Wales
- undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of these functions.

Subject to this primary duty the Director General must exercise and perform his powers and duties in the manner he considers best calculated to:

- protect the interests of customers and potential customers in respect of charges (having particular regard to the interests of customers in rural areas and to ensuring that in fixing charges there is no undue preference towards, or undue discrimination against, customers or potential customers)
- protect the interests of customers and potential customers in respect of other terms of supply, the quality of services (taking into account in particular those who are disabled or of pensionable age) and the benefits that could be secured from the proceeds of disposal of certain land
- promote economy and efficiency on the part of undertakers in the carrying out of water and sewerage functions
- facilitate effective competition between persons holding or seeking appointments under the Water Act as water or sewerage undertakers
- determine certain kinds of disputes between companies and customers.

The Director General (DG), Ian Byatt, was appointed in April 1989 for a period of five years which has been extended by a further two years. He controls a staff of around 150, the cost of which is recovered from appointees by a licence fee.

Customer Service Committees (CSC)

The prime responsibility for customers rests with the companies themselves. However, the Government established a network of regional Customer Service Committees (CSCs) reporting to the DG to represent customers' views on the operations of the companies and to investigate customers' complaints. There is one for each region covering each of the water and sewerage companies. The CSCs are independent of water companies. The Director General appoints a chairperson for each (after consulting the Secretary of State for Trade and Industry) and between ten and 20 other members. The CSCs are an important source of advice for the DG.

OFWAT Customer Service Committees' addresses are given on map 2.2.

Drinking Water Inspectorate (DWI)

The Inspectorate was formed in January 1990 and now has a complement of 31 posts of which 21 are professionally qualified staff. Its main role is to check on behalf of the Secretaries of State that the water companies of England and Wales are fulfilling their obligations with regard to the quality of drinking water supplies. The main tasks of the Inspectorate are to:

- carry out the technical audit of water companies

- initiate action as necessary to secure or facilitate compliance with legal requirements
- investigate incidents which adversely affect drinking water quality
- advise the Secretary of State on prosecution of water companies if water has been supplied which is unfit for human consumption
- provide technical and scientific advice to Ministers and officials of the Department of the Environment and Welsh Office on drinking water policy matters, including the water byelaws
- assess and respond to consumer complaints when local procedures have been exhausted
- identify and assess new issues or hazards relating to drinking water quality and initiate research as required
- assess chemicals and materials used in connection with water supplies
- provide authoritative guidance on analytical methods used in the monitoring of drinking water
- represent the Department of the Environment in standardisation work, particularly that related to the European Community.

The Inspectorate initiates enforcement action, on behalf of the relevant Secretary of State, in the following circumstances:

- when a water quality standard set under regulation 3 of the Water Supply (Water Quality) Regulations 1989 is breached and the breach is not trivial and is likely to recur
- when a breach of one of the other enforceable regulations, such as those covering sampling, analysis or water treatment requirements is identified
- when existing Section 19 undertakings, or time limited relaxations authorised under regulation 4, expire before the required improvements have been completed.

The Inspectorate will not initiate enforcement action when a company, after becoming aware of a breach of regulatory requirement, takes immediate remedial action and demonstrates that compliance has been achieved.

National Rivers Authority (NRA)

The NRA is an independent statutory body set up under the Water Act 1989. It has a board of up to 15 members, appointed by Ministers from DoE, MAFF and the Welsh Office. The NRA is financed from a variety of sources: income from land drainage precepts; charges for abstraction; it has powers to recover from dischargers the costs of enforcing water pollution control; revenue raised through rod licences, navigational licences and it receives grant-in-aid to meet its deficit. The NRA's responsibilities make it a powerful watchdog with clearly defined duties and the resources to put them into effect.

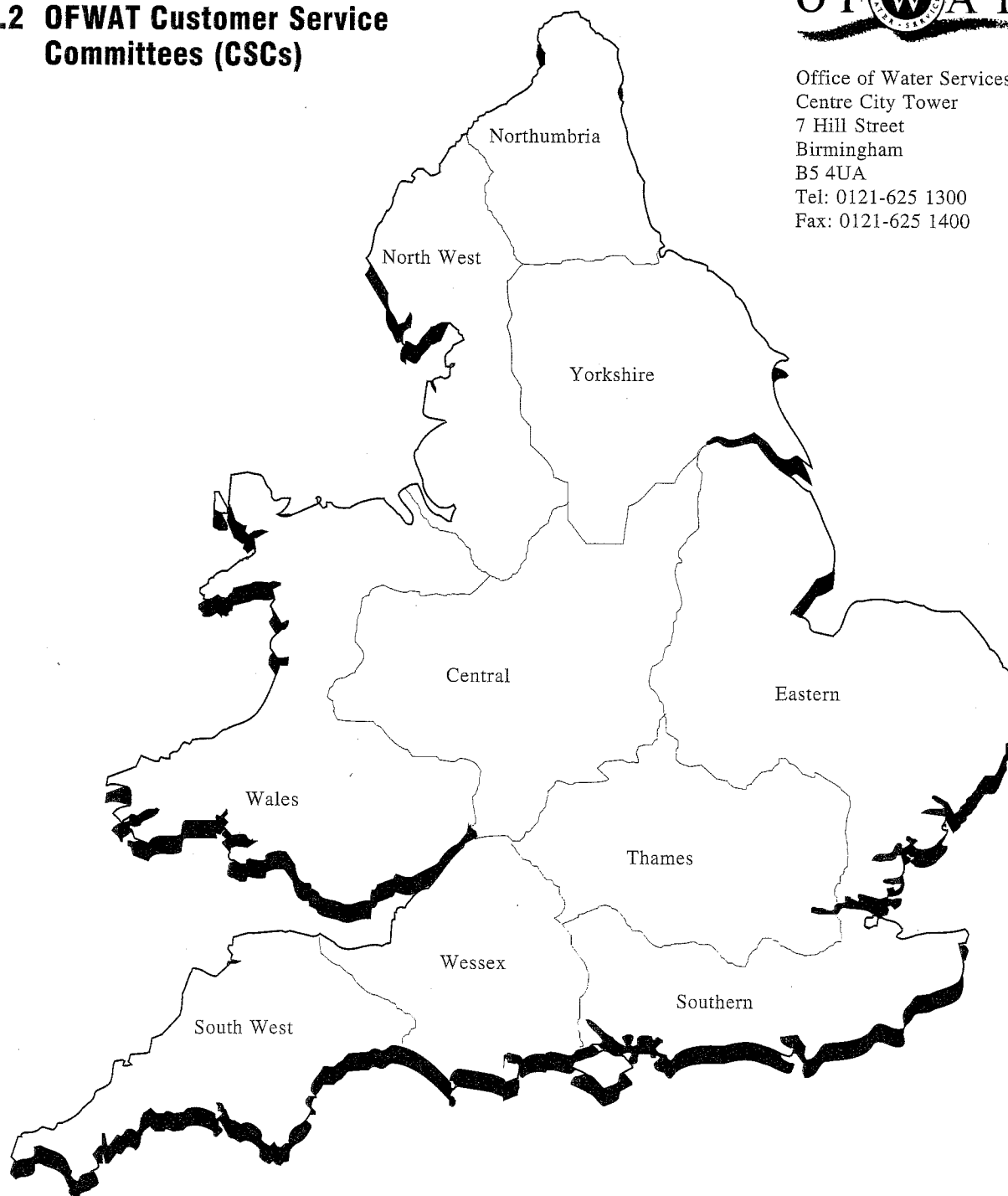
The NRA Chairman is Lord Crickhowell, former Secretary of State for Wales. The head offices are in Bristol and London and there are eight regional units as shown on the map on p.12. There is a total staff complement of approximately 7,500. The NRA is responsible for:

- the quality of inland and coastal waters
- land drainage and flood control
- management of water resources
- fisheries
- recreation and conservation
- navigation

2.2 OFWAT Customer Service Committees (CSCs)



Office of Water Services
Centre City Tower
7 Hill Street
Birmingham
B5 4UA
Tel: 0121-625 1300
Fax: 0121-625 1400



Eastern CSC
Dr Roger Corbett
Ground Floor
Carlyle House
Carlyle Road
Cambridge CB4 3DN
Tel: (01223) 323 889
Fax: (01223) 323 930

North West CSC
Mr Anthony Goldstone,
MBE, DL, FCA
1st Floor, Boulton House
17-21 Chorlton Street
Manchester M1 3HY
Tel: (0161) 236 6112
Fax: (0161) 228 6117

Southern CSC
Professor Judith Rees
2nd Floor
15-17 Ridgmount Street
London WC1E 7AH
Tel: (0171) 636 3656
Fax: (0171) 637 4813

Thames CSC
Mrs Elizabeth Monck
2nd Floor
15-17 Ridgmount Street
London WC1E 7AH
Tel: (0171) 636 3656
Fax: (0171) 636 3665

Wessex CSC
Mr Anthony Clothier
1 The Hide Market
West Street
St Philips
Bristol BS2 0BH
Tel: (0117) 955 7001
Fax: (0117) 955 7037

Northumbria CSC
Mr Jim Gardner, CBE, DL
2nd Floor
35 Nelson Street
Newcastle NE1 5AN
Tel: (0191) 221 0646
Fax: (0191) 221 0650

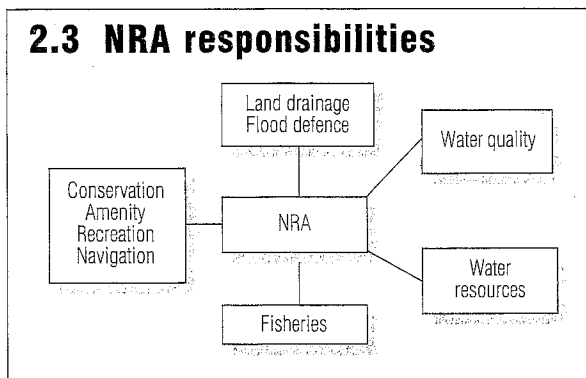
Central CSC
Mr Clive Wilkinson
1st Floor
77 Paradise Circus
Queensway
Birmingham B1 2DZ
Tel: (0121) 212 5202
Fax: (0121) 212 5204

South West CSC
Mrs Jessica Thomas
1st Floor
Broadwalk House
Southernhay West
Exeter EX1 1TS
Tel: (01392) 428 028
Fax: (01392) 428 010

CSC for Wales
The Ven Raymond Roberts, CB
1st Floor, Caradog House
1-6 St Andrews Place
Cardiff CF1 3BE
Tel: (01222) 239 852
Fax: (01222) 239 847

Yorkshire CSC
Mr Eric Wilson
10th Floor
Dudley House
Upper Albion Street
Leeds LS2 8PN
Tel: (0113) 340 874
Fax: (0113) 343 316

2.3 NRA responsibilities



The areas of responsibility include:

Water resources

The NRA is under a duty to conserve, augment and redistribute water resources (ie to safeguard the resources of the catchment). To assist in this the NRA controls abstractions by issuing the licences which are required for all large scale continuous abstractions regardless of the source of water and its intended use. In addition the NRA issues licences for impoundments (for obstructions to flow) and sets prescribed flows for stretches of river through the minimum acceptable flow regime.

Land drainage and flood protection

Since privatisation of the water industry land drainage and flood protection has been transferred to the NRA, although water and sewerage companies continue to have responsibility for protection against foul flooding.

Navigation

The water authorities acted as the navigation authority in three regions (Thames, Southern, and Anglian). In addition, the NRA has a permissive power to make byelaws to regulate the recreational use of waters where there is a public right of navigation but no active navigation authority.

Fisheries

Responsibility for most fresh water fisheries is vested in the NRA, but reservoir fisheries are the responsibility of the water companies.

Pollution control

In England and Wales the NRA is responsible for pollution control of water courses. It is a criminal offence to make a discharge into controlled waters, for example, rivers, estuaries or coastal waters, without the consent of the NRA. The NRA has a statutory duty to ensure so far as practicable by the exercising of its power (for example by reviewing the setting of appropriate discharge consents and ensuring that they are complied with), that the objectives are achieved at all times.

Her Majesty's Inspectorate of Pollution (HMIP)

HMIP's prime responsibility remains the authorisation and oversight of those industrial processes with the greatest pollution potential. In exercising its statutory duties, HMIP aims to ensure that pollution is prevented at source and the risks to human health and the environment are minimised. Under the Environmental Protection Act 1990, HMIP develops and implements an integrated approach to pollution regulation to achieve the best overall environmental outcome. Functions of importance to the water industry are:

- provision of authoritative and independent advice to

Government on pollution control practices

- approval, inspection and oversight of potentially polluting processes under the Alkali Act, Water Act and Health and Safety at Work Act
- regulatory oversight of waste disposal authorities
- research on the regulatory aspects of pollution
- preparation for the implementation and operation of new responsibilities now set out in the Environmental Protection Act 1990, including Integrated Pollution Control (IPC) and oversight of Waste Regulatory Authorities.

HMIP is committed to developing the concept of the best practicable environmental option and feasible methods of applying the cross-media approach (land, air and water) to pollution control.

The main legislation relating to pollution control under which HMIP operate is:

- The Health and Safety at Work Act 1974
- The Control of Pollution Act 1974
- The Water Act 1989
- The Trade Effluents (Prescribed Processes and Substances) Regulations 1989
- The Control of Pollution (Discharge by Water Authorities) Regulations 1989.

HMIP is organised into three regions (east, north and west) which deal with all aspects of regulation in their areas. They are supported by a central regulatory standards division, responsible for coordinating technical standards, research and guidance material and developing regulatory procedures. Administrative functions are performed by the central planning and resources division.

On 1 September 1989, the Trade Effluents (Prescribed Processes and Substances) Regulations 1989 came into force. These define certain of the most dangerous substances (known as the 'red list') together with certain categories of process. These Regulations effectively transferred responsibility for the authorisation of discharges to sewer of prescribed substances from the sewerage undertaker to HMIP acting on behalf of the Secretary of State for the Environment in England and the Secretary of State for Wales. In considering referrals, HMIP aims to ensure that the effluent is being treated by the best available technique not entailing excessive cost before being discharged to sewer. HMIP's determination of such a referral is sent as a notice to the sewerage undertaker and trader detailing the conditions relating to the prescribed substances in the discharge.

Ministry of Agriculture, Fisheries and Food (MAFF)

The Minister of Agriculture, Fisheries and Food appoints two members of the NRA. This reflects MAFF's responsibilities for flood defence and fisheries matters in England. Together with the Secretary of State for Wales, the Minister has a general oversight of flood defence and fisheries and may give directions as to how they are carried out. Day to day responsibility for these functions rest with the NRA but byelaws, orders, schemes, etc. will continue to be confirmed by the appropriate Minister. The Minister appoints the chairman and a number of members of the regional flood defence committees. The Minister also licenses, monitors and controls the deposit of any substances, including sewage sludge, in the sea as set out in the Food and Environment Protection Act 1985 Part II.

2.4 National Rivers Authority

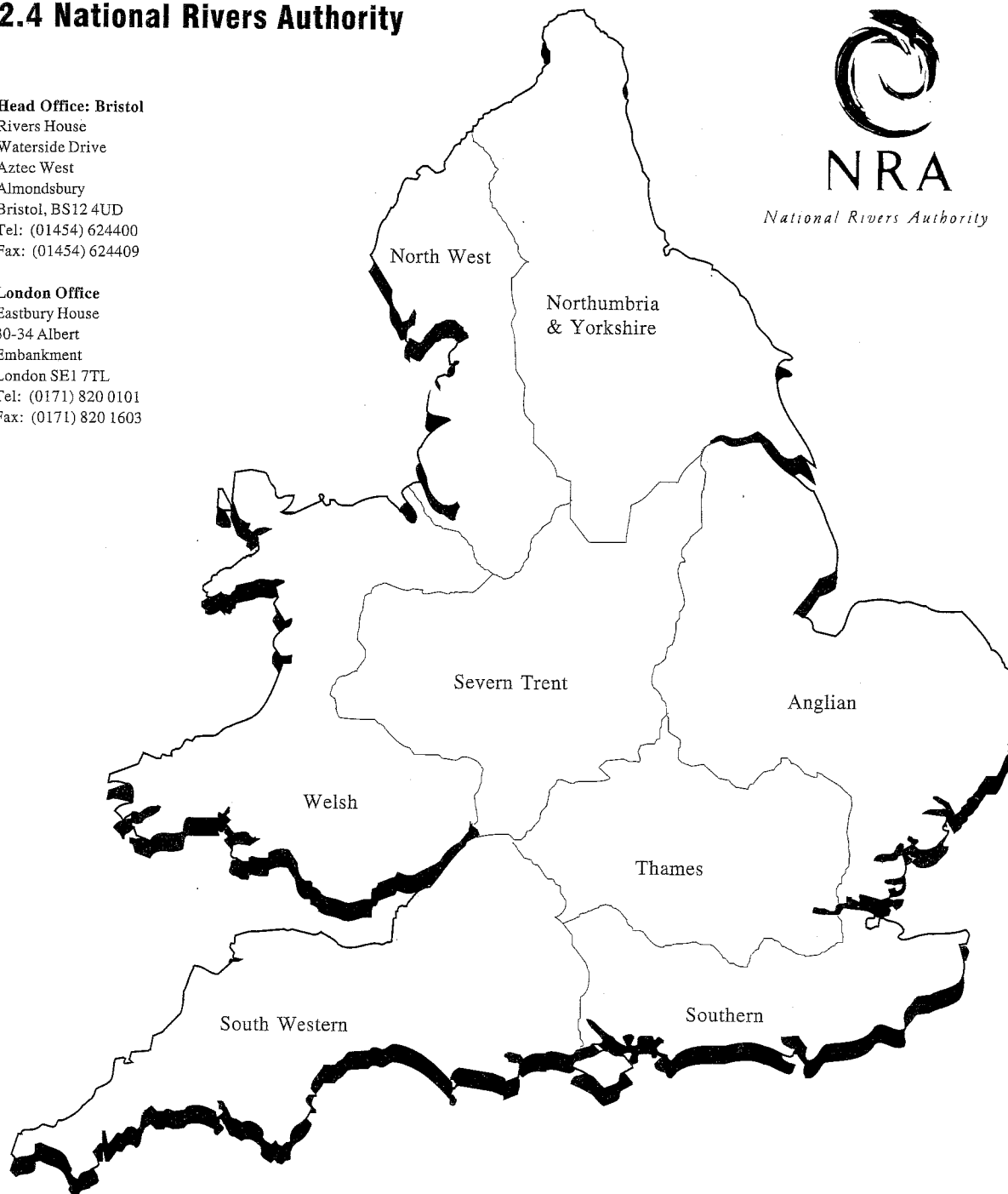
Head Office: Bristol
 Rivers House
 Waterside Drive
 Aztec West
 Almondsbury
 Bristol, BS12 4UD
 Tel: (01454) 624400
 Fax: (01454) 624409

London Office
 Eastbury House
 30-34 Albert
 Embankment
 London SE1 7TL
 Tel: (0171) 820 0101
 Fax: (0171) 820 1603



NRA

National Rivers Authority



Anglian
 Kingfisher House
 Goldhay Way
 Orton Goldhay
 Peterborough, PE2 0ZR
 Tel: (01733) 371811
 Fax: (01733) 231840

Northumbria & Yorkshire
 Rivers House
 21 Park Square South
 Leeds
 LS1 2QG
 Tel: (0113) 440191
 Fax: (0113) 461889

Severn Trent
 Sapphire East
 550 Streetsbrook Road
 Solihull
 West Midlands B91 7LQ
 Tel: (0121) 711 2324
 Fax: (0121) 711 5824

South Western
 Manley House
 Kestrel Way
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 Tel: (01392) 444000
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Thames
 Kings Meadow House
 Kings Meadow Road
 Reading
 RG1 8DQ
 Tel: (01734) 535000
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 Richard Fairclough House
 Knutsford Road
 Warrington
 WA4 1HG
 Tel: (01925) 53999
 Fax: (01925) 415961

Gosforth Office
 Eldon House
 Regent Centre
 Gosforth, Newcastle upon Tyne
 NE3 3UD
 Tel: (0191) 2130266
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 Guildbourne House
 Chatsworth Road
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Bridgwater office
 Rivers House
 East Quay
 Bridgwater
 Somerset TA6 4YS
 Tel: (01278) 457333
 Fax: (01278) 452985

Welsh
 Rivers House
 Plas-yr-Afon
 St Mellons Business Park
 Cardiff CF3 0LT
 Tel: (01222) 770088
 Fax: (01222) 798555

Monopolies and Mergers Commission (MMC)

The principal role of the MMC is very much that of a 'court of appeal' both for the Director General and for the WSCs and the water companies. A company may appeal to the MMC against the Director General's decision in the event that a company is dissatisfied with:

- the Director General's determination in a Periodic Review of 'K'
- the Director General's interim adjustments to 'K' between Periodic Reviews
- any proposed amendment by the Director General to the Instrument of Appointment

This appeal procedure acts as a counter-balance to the considerable power of the Director General. In the event of any merger or acquisition activity within the industry, and where both companies hold assets valued in excess of £30 million, there will be an automatic referral to the MMC.

The Office of Fair Trading (OFT)

The Office of Fair Trading is the senior governmental regulatory agency. The Director General of Fair Trading (DGFT) exercises powers under the Fair Trading Act 1973, Competition Act 1980 and the Competition and Service (Utilities) Act 1992. The Water Act 1991 contains provision for the DGFT to request the DG to exercise certain of the DGFT's functions under the Fair Trading Act relating to courses of conduct which are or maybe detrimental to customers of the water and sewerage undertakers. Certain of the DGFT functions under the Fair Trading Act and the Competition Act may be exercised by both the DGFT and the DG in so far as they relate to water and sewerage services. The DG also has a duty to give information, advice, and assistance to the DGFT in relation to the functions of the water and sewerage undertakers.

Legislation

The Water Act 1989 was almost entirely replaced by the following Consolidation Acts which came into force on 1 December 1991:

- the Water Industry Act 1991
- the Water Resources Act 1991
- the Statutory Water Companies Act 1991
- the Land Drainage Act 1991
- the Water Consolidation (Consequential Provisions) Act 1991.

Codes of Practice

There are three statutory codes of practice as follows:

- code of practice with respect to environmental and recreational duties
- code of good agricultural practice
- code of practice with respect to the exercise by water companies of their works powers on private land.

The Licence of Appointment requires each company to produce codes of practice on the following under conditions G, H, and I respectively:

- customer relations with the CSCs
- disconnections
- leakage

There is also for each company a guaranteed standards scheme laid down in statutory instruments 1159 and 1383 of 1989. Under the scheme customers are entitled to a payment or credit when a company fails to maintain certain minimum standards of service to domestic premises. Details are available from each company.

2.5 Regulators' costs 1993/94

	expenditure £M	investment £M	manpower March 1994
OFWAT	8.1	0.6	150
NRA			
<i>Flood protection</i>	215.9	30.5	3,094
<i>Water resources</i>	70.1	8.4	784
<i>Pollution control</i>	83.0	7.3	1,557
<i>Other</i>	35.5	6.5	2,274
Total NRA	404.5	52.7	7,709

Source: regulators

Water supply

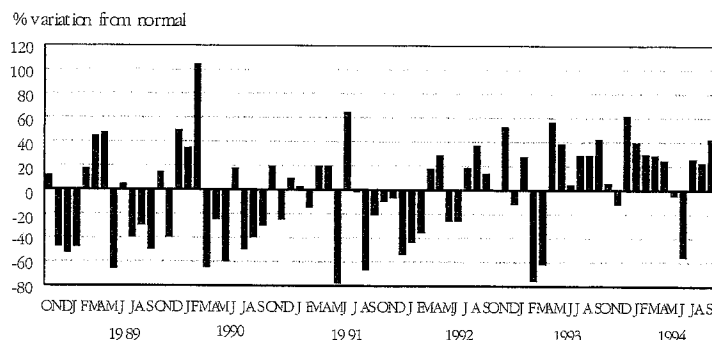
The period April 1993 to April 1994 was unusually wet. Over England and Wales as a whole, rainfall was a quarter above average and in the areas affected by the 1988-92 drought, rainfall was a third above the long term average. Following the relatively cooler and wetter summers of 1992 and 1993, hot and dry weather established itself in June and July 1994. The earlier rainfall ensured that water resources were adequate.

3.1 Total annual rainfall (mm)

NRA region	1941-70 average	1989	1990	1991	1992	1993
Anglian	611	547	477	472	709	728
Northumbria	879	604	849	788	863	961
North West	1,217	1,025	1,184	1,082	1,209	1,159
Severn Trent	773	707	696	628	842	833
Southern	787	662	665	682	806	909
South West	1,194	1,093	1,121	1,046	1,129	1,390
Thames	704	640	540	591	789	771
Welsh	1,334	1,185	1,209	1,136	1,366	1,348
Wessex	864	833	758	777	859	971
Yorkshire	818	667	779	674	833	897
England/Wales	912	801	807	771	965	972
Scotland	1,431	-	1,844	1,473	1,761	1,482
Northern Ireland	1,095	934	-	879	1,029	1,004

Source: Meteorological Office MORECS system

3.2 Rainfall for England and Wales - October 1988 to July 1993



Source: Meteorological Office MORECS system

3.3 Drought orders

NRA Region	1976	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	total
Anglian	15	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	19
Northumbria	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
North West	0	0	2	0	2	0	6	0	31	0	0	0	0	21	0	1	0	0	63
Severn Trent	13	0	0	0	0	0	0	0	6	0	0	0	0	5	0	0	0	0	24
Southern	4	0	0	0	0	0	0	0	0	0	0	0	0	19	25	18	11	0	77
South West	39	0	12	0	0	0	7	5	45	0	0	0	0	21	10	0	1	0	140
Thames	8	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	13
Welsh	20	0	2	0	2	0	2	1	22	0	0	0	0	13	1	0	0	0	63
Wessex	19	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	25
Yorkshire	16	0	0	0	0	0	0	0	0	0	0	0	0	9	17	9	1	0	52
Total	136	0	19	0	4	0	15	6	104	0	0	0	0	89	61	28	16	0	478

Source: DoE.

3.4 Estimated water abstractions (million litres/day)

NRA Region	for public water supply		for industry*		for spray irrigation		for agriculture**	
	surface	ground	surface	ground	surface	ground	surface	ground
Anglian	1,165	711	49	149	91	70	3	17
Northumbria	997	89	19	15	0	0	0	3
North West	1,708	272	563	189	3	1	0	5
Severn Trent	1,570	986	283	104	24	13	2	14
Southern	298	986	7	118	7	6	0	3
South West	551	53	85	21	1	3	1	30
Thames	2,581	1,285	18	113	4	6	1	7
Welsh	2,375	162	480	45	13	16	1	16
Wessex	355	367	248	17	6	2	0	19
Yorkshire	1,241	206	319	91	7	12	3	4
England/Wales	12,841	5,117	2,071	862	156	129	11	118

Data is mainly for 1992

* excluding water power (hydro electric), saline and tidal abstractions but including mineral washing

** other than spray irrigation

NRA Region	for fish farming		for electricity supply		other		total	
	surface	ground	surface	ground	surface	ground	surface	ground
Anglian	24	3	59	5	0	1	1,391	956
Northumbria	54	0	0	0	0	0	1,070	107
North West	112	1	441	0	0	0	2,827	468
Severn Trent	26	6	2,010	11	3	5	3,918	1,139
Southern	148	113	0	2	1	2	461	1,230
South West	948	10	192	0	1,687	6	3,465	123
Thames	371	60	107	0	1	22	3,083	1,493
Welsh	497	2	14,090	2	91	2	17,547	245
Wessex	1,597	140	0	0	12	10	2,218	555
Yorkshire	347	5	632	14	0	0	2,549	332
England/Wales	4,124	340	17,531	34	1,795	48	38,529	6,648

Data is mainly for 1992

Source: Digest of Environmental Protection and Water Statistics, DoE 1994; NRA

The National Rivers Authority licenses abstractions by water service companies, water supply companies, industry, agriculture and also private supplies. There are about 30,000 private supplies, of which only about 200 supply more than 500 people. The WSCs and water supply companies abstract from rivers, lakes and groundwater to provide the resources for supplying the

public with potable water. A few large industries which require water that is clean, but not treated to drinking water standards, receive non-potable supplies. The vast majority of domestic supplies are not metered whereas industrial supplies (and some commercial) are metered. About 99 per cent of the population has the benefit of public water supply.

3.5 Public water supplied 1983/84 to 1993/94 (million litres/day)

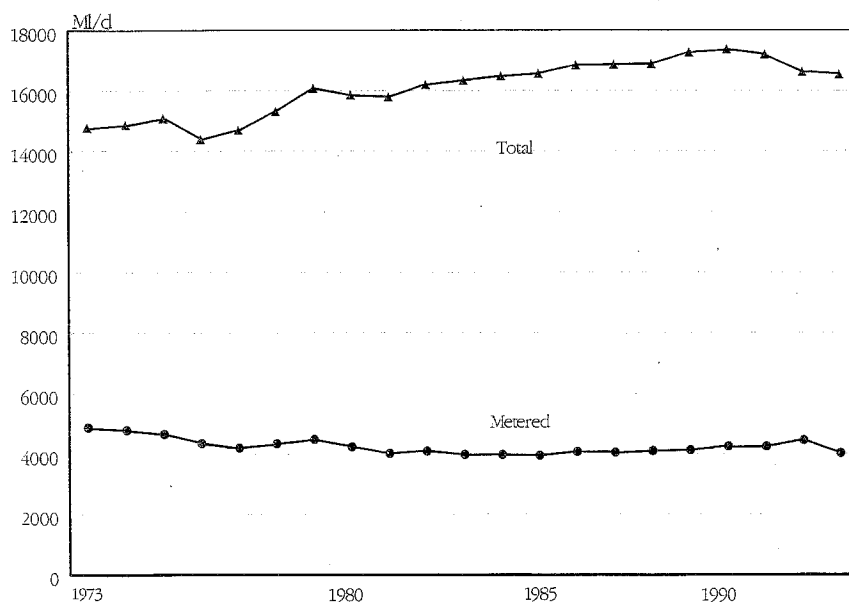
	England & Wales*				Scotland	Northern Ireland	UK
	unmetered	metered	non-potable	total			
1973/74	9,343	4,884	579	14,806			
1974/75	9,555	4,801	548	14,904			
1975/76	9,907	4,668	534	15,109			
1976/77	9,519	4,359	539	14,417			
1977/78	9,961	4,211	552	14,724		N/A	
1978/79	10,407	4,352	584	15,343			
1979/80	10,961	4,490	643	16,094			
1980/81	11,083	4,247	546	15,876			
1981/82	11,224	4,029	561	15,814			
1982/83	11,548	4,106	561	16,215			
1983/84	11,842	3,996	516	16,354	2,236	691	19,278
1984/85	11,956	3,990	558	16,504	2,199	682	19,385
1985/86	12,036	3,965	575	16,576	2,198	678	19,452
1986/87	12,195	4,088	571	16,854	2,243	679	19,776
1987/88	12,216	4,059	604	16,879	2,194	680	19,753
1988/89	12,177	4,114	605	16,896	2,205	679	19,780
1989/90	12,424	4,135	714	17,273	2,248	674	20,195
1990/91	12,549	4,256	576	17,381	2,300	680	20,361
1991/92	12,399	4,258	552	17,209	2,239	684	20,151
1992/93	11,669	4,457	503	16,629	2,206	680	19,515
1993/94	11,999	4,034	521	16,554	2,251	670	19,475

* includes water supply companies

Data for public water supply for 1961 to 1985/86 was given in Waterfacts '86.

Source: Water companies; Scottish Office; Water Executive Northern Ireland

3.6 Public water supplied 1973 to 1993/94 in England and Wales



3.7 Public water supplied in 1993/94

	+unmeasured potable	measured potable	non-potable	total
Water service companies	Ml/d	Ml/d	Ml/d	Ml/d
Anglian	746	342	33	1,121
Dŵr Cymru	800	226	141	1,167
Northumbrian	278	149	242	669
North West	1,817	580	90	2,487
Severn Trent	1,533	550	0	2,083
Southern	448	171	1	620
South West	359	118	0	477
Thames	2,063	495	0	2,558
Wessex	281	121	0	402
Yorkshire	1,063	367	0	1,430
Total	9,388	3,119	507	13,014
Water supply companies				
Bournemouth and West Hampshire	85	67	0	152
Bristol	233	82	10	325
Cambridge	51	21	0	72
Chester	21	7	0	28
Cholderton	1	0	0	1
East Surrey	77	19	0	96
Essex & Suffolk	345	137	0	482
Folkestone and District	36	15	0	51
Hartlepool	19	18	3	40
Mid Kent	118	40	0	158
Mid Southern	49	48	0	97
North East Water	273	92	0	365
North Surrey	97	33	0	130
Portsmouth	134	48	0	182
South East Water	126	39	0	165
South Staffordshire	273	77	0	350
Sutton	54	8	0	62
Tendring Hundred	21	7	0	28
Three Valleys	545	130	0	675
Wrexham and East Denbighshire	27	15	1	43
York	26	12	0	38
Total water supply companies	2,611	915	14	3,540
Total England and Wales	11,999	4,034	521	16,554
Scotland*	1,603	585	18	2,206
Northern Ireland	484	186	0	670
UK	14,086	4,805	539	19,430

+ Unmeasured water includes water delivered to unmeasured properties (including supply pipe losses) as well as distribution losses, operational uses (eg mains flushing) and the miscellaneous water taken (including fire fighting).

Scotland: * latest available breakdown figures for 1992/93

Source: Water companies; Scottish Office; Water Executive Northern Ireland

3.8 Projected increase in total water demand on public water supply companies to 2021

NRA region	Medium Increase Scenario	
	1991	2021+
Anglian	1,764	2,245
Northumbria	1,106	1,219
North West	2,579	2,577
Severn Trent	2,411	2,702
Southern	1,220	1,406
South West	499	632
Thames	3,975	4,238
Welsh	1,299	1,357
Wessex	901	1,033
Yorkshire	1,506	1,621
England & Wales	17,260	19,030

Source: NRA Head Office March 1994

Average household water use

Some examples of the amount of water used in everyday activities in the household are:

● Taking a bath	80 litres
● Taking a shower	5 litres/min
● Flushing the toilet	9.5 litres
● Watering the garden (sprinkler 17l/m)	540 litres/hour
● Using a washing machine	80 litres
● Using a dishwasher	35 litres
● Drinking use (approx 3% of total consumption)	10 litres/day

Source: OFWAT

3.9 Leakage Trials

A major research and development effort over two years by the WSA/WCA National Leakage Control Initiative led to the publication in October 1994 of 'Managing Leakage' - available from WRc publications, Henley Road, Medmenham, Marlow, Bucks SL7 2HD, Tel: 01491 571 531

This substantial piece of work replaces Report 26 which dates back to 1980 and will provide guidance to the water industry on leakage management strategies.

The reports include guidance on:

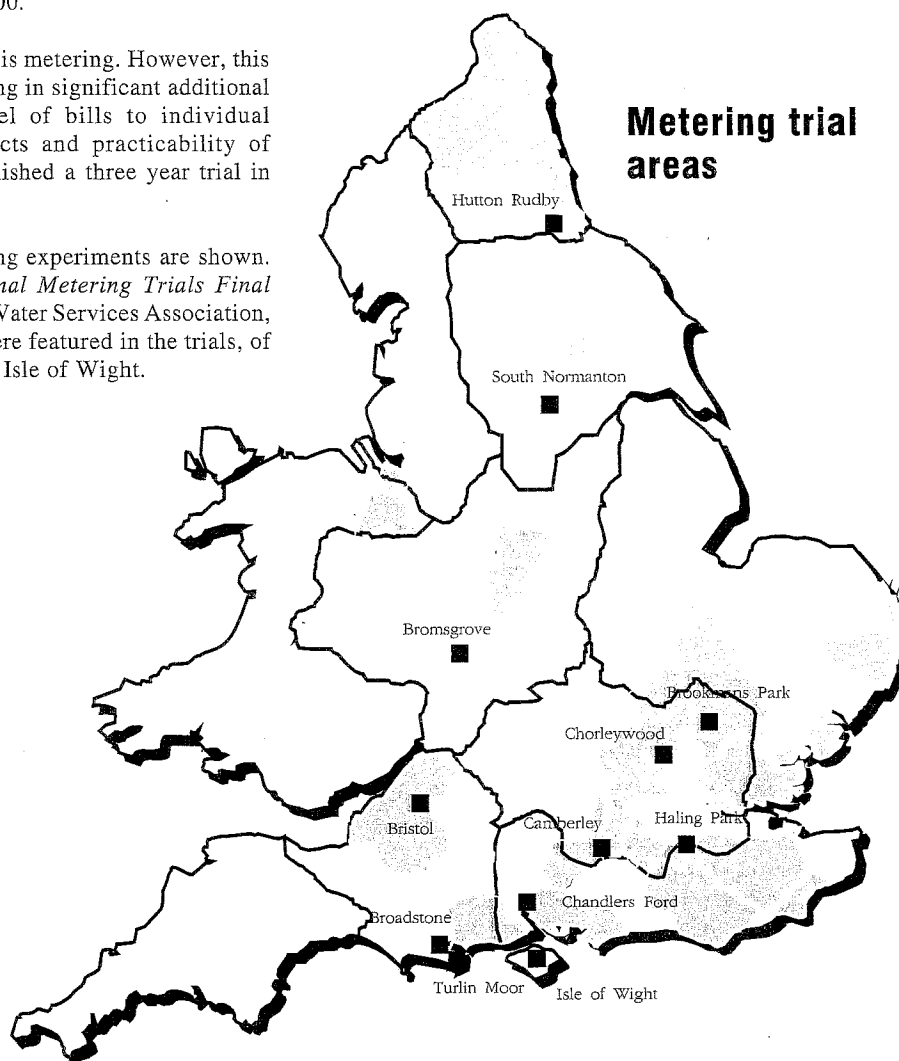
- Reporting comparative leakage performance to assist in prioritising leakage control
- Setting economic leakage targets
- Estimating unmeasured water delivered - a vital component in the estimation of leakage.
- Interpreting and using right flow data
- Managing water pressure
- Dealing with customers' leakage

3.10 Metering trials

Under present legislation the water companies have to replace rateable values as the main method of charging for domestic customers by April 2000.

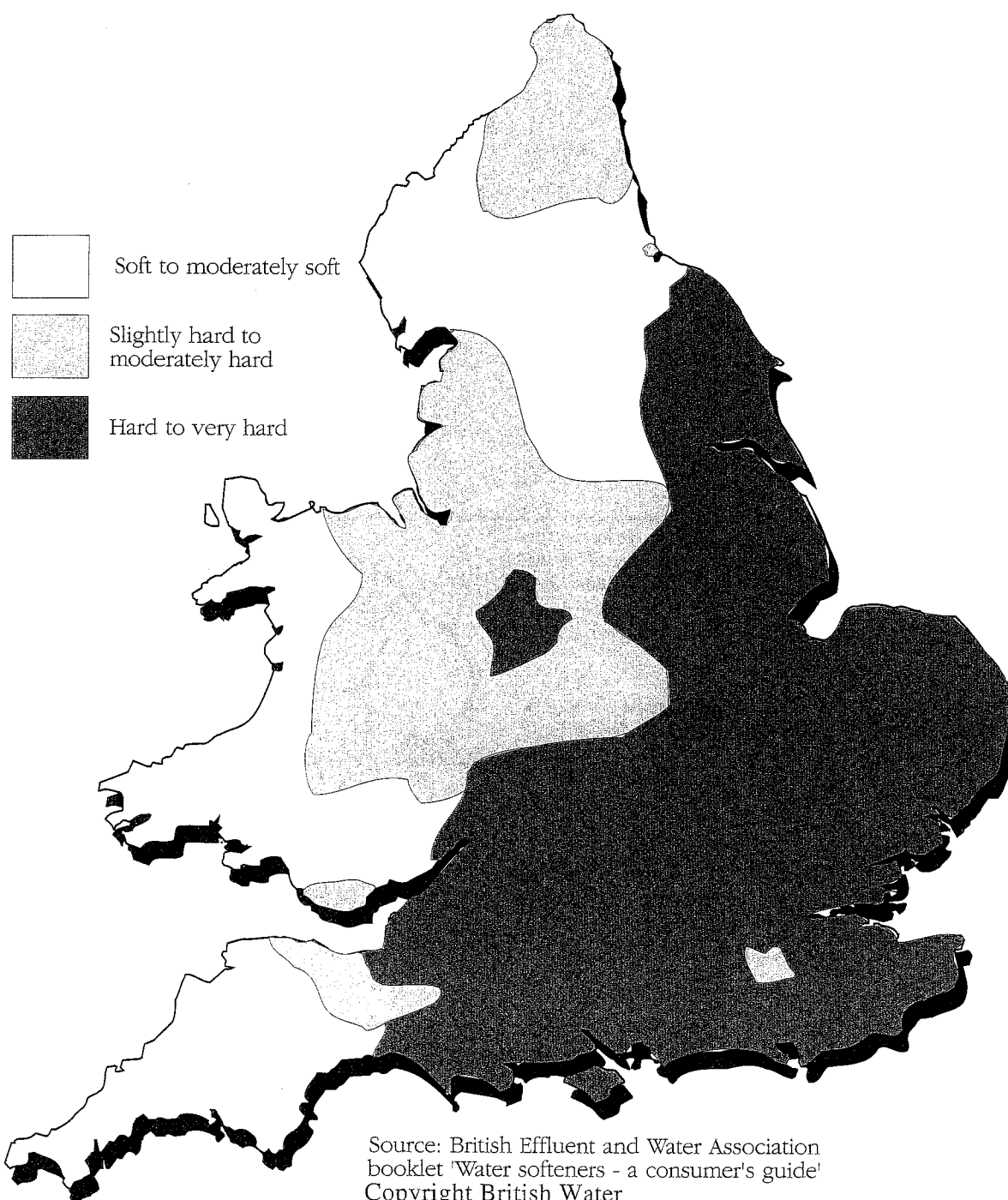
One of the alternatives available is metering. However, this would be a major change resulting in significant additional costs and changes to the level of bills to individual customers. To assess the effects and practicability of metering the Government established a three year trial in twelve areas.

The areas designated for metering experiments are shown. Full details are given in *National Metering Trials Final Report 1993*, available from the Water Services Association, £20. About 57,000 properties were featured in the trials, of which about 48,000 were on the Isle of Wight.



3.11 Water hardness

Rainwater is naturally 'soft'. As it percolates through the ground it can become 'hard' if it dissolves chalk and limestone. Water hardness can vary locally due to the source of the water and the type of catchment. The map gives a general indication of the types of water you would expect to find.



3.12 Drinking water quality compliance 1990-1992

Summary of water quality in England and Wales

Percentage of zones not complying at all times with prescribed concentrations or values

parameter	Percentage of zones not complying in:			
	1990	1991	1992	1993
Coliforms	9.1	5.2	3.3	1.1
Faecal Coliforms	12.4	10.7	10.0	6.4
Colour	1.6	1.4	0.9	0.7
Turbidity	5.4	5.7	4.8	3.9
Odour	3.2	2.0	1.0	0.7
Taste	3.2	2.2	1.5	1.1
Hydrogen ion	8.2	7.6	6.7	5.7
Nitrate	3.1	3.6	3.6	2.0
Nitrite	12.0	12.3	10.3	9.5
Aluminium	10.2	8.7	6.3	5.4
Iron	29.6	31.0	30.9	26.0
Manganese	9.7	10.4	8.4	6.9
Lead	23.4	25.6	21.1	20.9
PAH	4.0	6.8	8.6	10.1
Trihalomethanes	3.3	4.9	5.2	1.4
Total pesticides	-	14.6	13.3	11.9
Individual pesticides	29.8	30.6	29.8	27.9
Other parameters	-	6.1	5.1	2.8

Source: *Drinking Water 1993, A report by the Chief Drinking Water Inspector*

The Drinking Water Inspectorate produced its fourth annual report in 1994. The report included tables for each individual company and the most significant parameters were summarised above for the whole country. Last year over three and three quarter million drinking water samples were tested and almost 99 per cent met all the British and EC standards all the time.

The table shows that the number of determinations contravening some PCVs has increased over the four years. However, the increases are not considered to be indicative of a worsening in water quality, but rather the product of a more focused monitoring strategy.

The duty placed on water companies to supply wholesome water is extremely demanding. To fulfil their duty, water companies must meet quality standards at all times and in all zones which they supply. A water supply zone is the basic unit of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available.

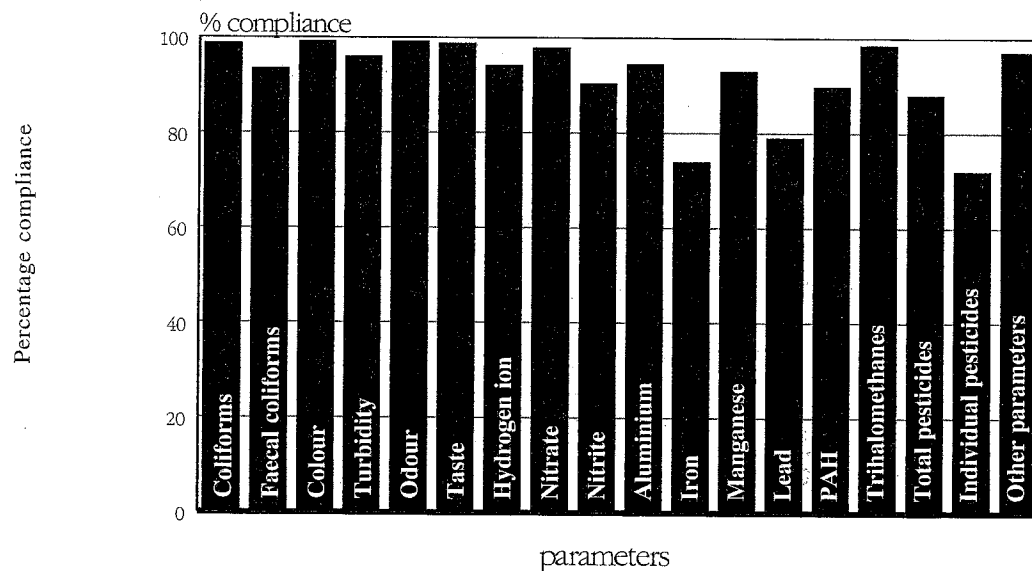
If monitoring reveals a concentration or value of a param-

eter in a sample to be exceeding one of the standards, even by a small margin, the water supplied must be regarded as unwholesome at the time the sample was taken and the record will show that the sample did not comply with the regulations. Similarly, the record will show that the zone from which the sample was taken has not complied fully throughout the year with that standard.

Many of the standards have been set to secure aesthetic quality which means that the water will not have an unpleasant taste, odour or appearance. Other standards, set specifically for health reasons, usually incorporate wide margins of safety. Hence, an occasional excursion above a standard is not indicative, necessarily, that health has been endangered or that water is unfit to drink. However trivial a breach of the regulations may be, it will appear on the record, indicating that the water supplied was unwholesome. Forty two standards allow no latitude.

Each water company shows a similar high level of general compliance, although the distribution of the parameters will differ. Full details for all companies are shown in the Chief Inspector's report.

3.13 Drinking water compliance for water service companies, 1993



Source: DWI

Fluoridation

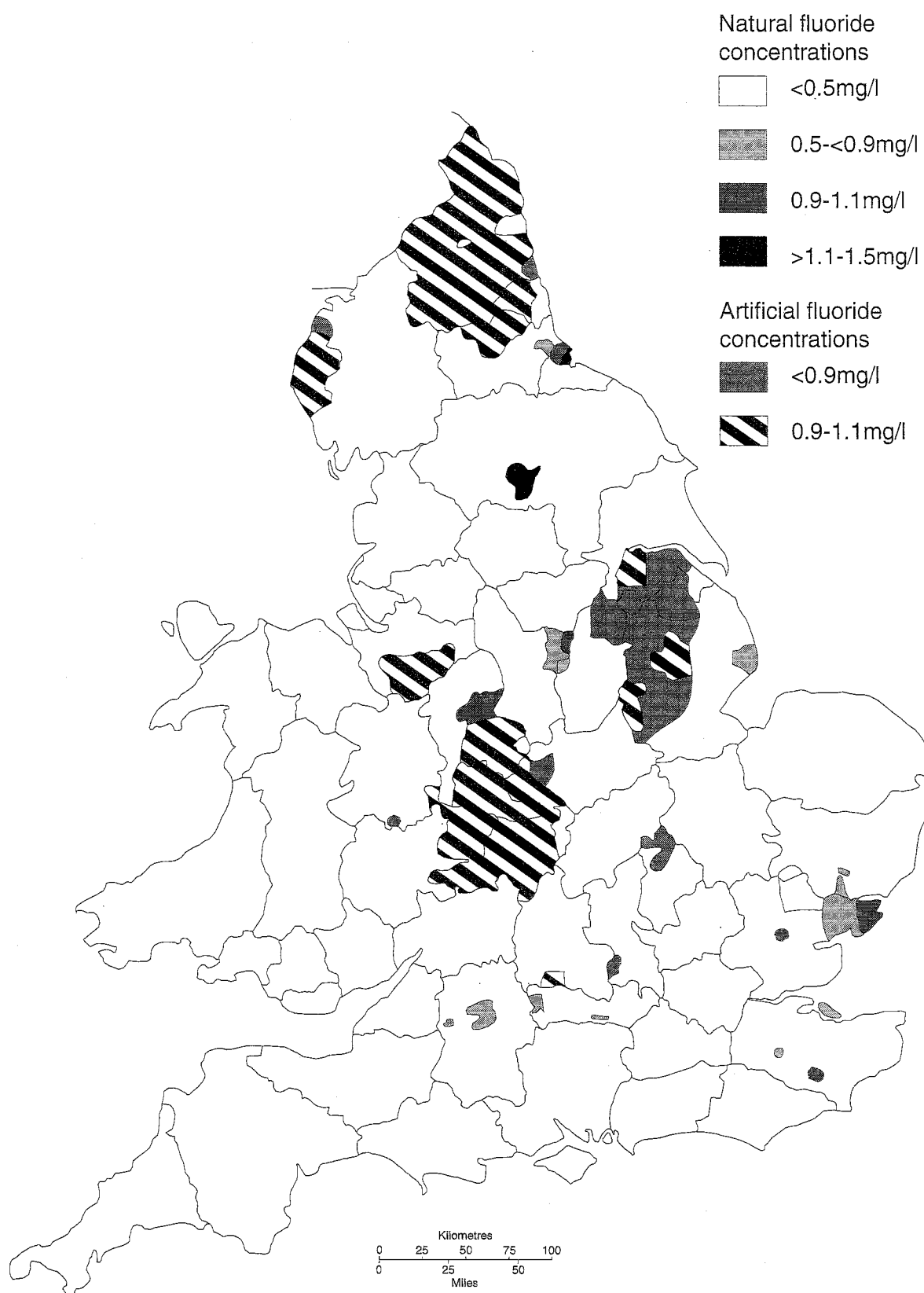
Section 87 of the Water Industry Act 1991 permits the fluoridation of waters supplies, if following consultation, a district health authority so requests. The health authority must apply in writing to the water undertakers, who may then decide to increase the fluoride content of the water supplied within the area specified in the health authority's application. The following water undertakers are currently increasing the concentration of fluoride in some water supplies in their areas in response to such requests:

Anglian Water Services Ltd
 Northumbrian Water Ltd
 North West Water Ltd
 Severn Trent Water Ltd
 Thames Water Utilities Ltd
 East Worcestershire Water Ltd*
 North East Water plc
 South Staffordshire Water plc

* East Worcestershire now part of Severn Trent Water Ltd.

Source: Hansard 22.03.93

3.14 Fluoride concentrations in water supplies



Source: DoE information as at 31.12.92

3.15 Drinking water quality standards

Substances tested for Under British Law	What it means	amount allowed
Temperature	The standards require water to be supplied below a certain temperature.	25°C
pH	This is the measure of the acidity or alkalinity of water.	5.5 - 9.5
Colour	This is an aesthetic requirement - water should be clear and bright, but may occasionally show a slight reddish or yellowish tint caused by iron from old iron mains. This is not harmful to health but can be a nuisance when spin-drying washing. There are major programmes under way to replace or reline old mains.	20 Hazen units on colour scale
Turbidity	Sometimes water appears milky because of air bubbles. This is not harmful and if the water is left to stand for a few minutes it will clear from the bottom upwards.	4 Formazin turbidity units
Total dried solids	Water samples are dried, so that water companies can weigh any residual substances such as minerals.	1500 mg/l
Qualitative odour	This test is to check if any odour is present. Water may smell of chlorine as a small amount of chlorine is added to water before it leaves the treatment works to ensure that the water remains safe on its journey to taps. It is not harmful.	Samples are frequently checked and any significant odour is investigated
Qualitative taste	This test to check if the water has any unpleasant taste. If water has been standing in pipework for some hours it may have a flat, stale or metallic taste. It may help to flush the tap before taking water for drinking.	Samples are frequently checked and any significant taste is investigated
Dilution odour Dilution taste	These are quality control tests to measure the level of odour and taste and are carried out by specialist tasting panels.	Dilution number 3 at 25°C
Conductivity	By passing an electric current through water, water companies can measure levels of mineral salts it contains.	1500 µS/cm at 20°C
Total hardness	Hardness is normally caused by the rocks through which the water passed, e.g. chalk. Hardness means you may use more soap when washing and water lathers less than soft water. It has no adverse effects on health - indeed, research has shown that in hard water areas there is less incidence of heart disease	Standards only apply if water is softened when the minimum standard is 60 µg/l as calcium
Alkalinity	Alkalinity, like hardness, comes from the rocks through which the water has passed. Alkalinity is naturally present in water but can be altered by softening.	Standards only apply if water is softened when it is 30 µg/l as bicarbonate.
Free chlorine Total chlorine	When chlorine is added to water to kill bacteria, some of it is used in the process. Some remains as 'free chlorine' to ensure that the water remains safe as it passes through the system. The total amount is the 'total chlorine'.	Results are compared against a long term average. Any significant difference is investigated.
Total coliforms Faecal coliforms Clostridia Faecal streptococci	These are bacteria which can be found sometimes in untreated water. Disinfection during treatment removes them. However, they may sometimes appear in tests in small numbers, although follow up tests usually show that the mains water is satisfactory. They can flourish in contaminated taps in homes.	0/100 ml 0/100 ml Not more than 1/20 ml 0/100 ml
Colony count 1 Day Colony count 3 Day	Small amounts of harmless bacteria can be present in treated water - as they are in foods like yoghurt. Water companies check the numbers of groupings of these bacteria. The information obtained helps maintain the efficiency of the water treatment process and the cleanliness of the water mains.	Results are compared against a long term average. any significant difference is investigated.
Oxidisability	This test indicates the overall quality of the water.	5 mg/l
Ammonia	Ammonia occurs naturally in water from some sources. It does not cause health problems and where it does occur, it can be controlled or removed by treatment.	0.5 mg/l
Nitrite Nitrate	Both these substances are found in water running over and through agricultural land.	0.1 mg/l 50 mg/l
Chloride	Chloride comes from the rocks through which water has passed. It is not harmful to health.	400 mg/l
Fluoride	Fluoride occurs naturally at varying levels. Some companies add fluoride at the request of local health authorities.	1500 µg/l
Phosphorus	Phosphate occurs naturally in water and comes from mineral deposits.	2200 µg/l
Sulphate	This substance occurs naturally in water and comes from mineral deposits.	250 mg/l
Magnesium	Magnesium occurs naturally in water and comes from mineral deposits.	50 mg/l
Manganese	Manganese occurs naturally in water and can cause it to stain some surfaces. Manganese is not harmful to health, but can be a nuisance.	50 µg/l

Source: Wessex Water

Drinking water quality standards

Substances tested for under British Law	What it means	amount allowed
Aluminium	Aluminium occurs naturally and is also used to remove impurities from water in some water treatment works. Its use in water treatment is very closely controlled and continually monitored.	200 mg/l
Calcium	Calcium is a naturally occurring substance, for example, in chalk, and is responsible for the degree of hardness of the water.	250 mg/l
Potassium	Potassium occurs naturally in water.	12 mg/l
Sodium	Sodium is a naturally occurring substance and a by-product of softening.	150 mg/l
Copper	Traces of these metals are occasionally found in water. They usually come from old, corroding plumbing and can cause a metallic taste.	3000 µg/l
Zinc		5000 µg/l
Iron	Iron is found naturally in some underground water. At sources where natural iron levels are high, treatment plants are provided to remove it. Iron is also used in water treatment and it does not cause health problems. Its use is closely controlled.	200 µg/l
Lead	Lead was formerly used as a plumbing pipe material. Lead in amounts well above the standard can be a health risk if consistently consumed over many years. Soft water in particular can dissolve lead from lead pipes in these areas. 'Dosing' reduces plumbosolvency.	50 µg/l
Silver	Silver occurs naturally in water.	10 µg/l
Antimony	These substances are rarely found in water.	10 µg/l
Arsenic		50 µg/l
Barium		1000 µg/l
Boron		2000 µg/l
Cadmium		5 µg/l
Chromium		50 µg/l
Cyanide		50 µg/l
Mercury		1 µg/l
Nickel		50 µg/l
Selenium		10 µg/l
Total organic carbon	By monitoring the level of naturally occurring carbon, water companies can ensure that treatment processes are working properly and no problems are developing.	Results are compared against long term average. Any significant difference is investigated.
Trihalomethanes	THMs derive from the combination of chlorine with organic matter.	100 µg/l
Carbon tetrachloride	These substances arise from industrial processes but can be easily removed. Water companies work with the industries themselves to ensure they do not reach the water supply in the first place.	3 µg/l
Trichloroethene		30 µg/l
Tetrachloroethane		10 µg/l
Benzo 3, 4 pyrene	PAHs are organic chemicals formed during heating or partially burning chemicals such as coal, wood or garden refuse. PAHs are wide spread in the environment and have been detected in food, air and water.	10 ng/l
Fluoranthene		The amounts of the individual substances are added together and compared with the standard for total PAHs.
Benzo (B) fluoranthene		
Benzo (K) fluoranthene		
Benzo (GHI) perylene		
Indeno (123CD) pyrene		
Total PAHs		200 ng/l
Anionic detergent	These substances come from washing powders.	0.2 mg/l
Pesticides and related products individual substances	Water companies test for the various herbicide and pesticide substances which may be used in their areas and present in water.	0.1 µg/l
	These come from their use by people such as farmers, local authorities and gardeners. The traces found are no threat to health, being far smaller than the maximum limits which the Government's medical advisers say would be necessary to protect health, but water companies are nevertheless taking steps to remove even these minute traces.	
	The permanent solution to this problem is greater restriction on the use of these substances.	
Total substances	This is the sum of the amounts of individual herbicide and pesticide substances.	0.5 µg/l

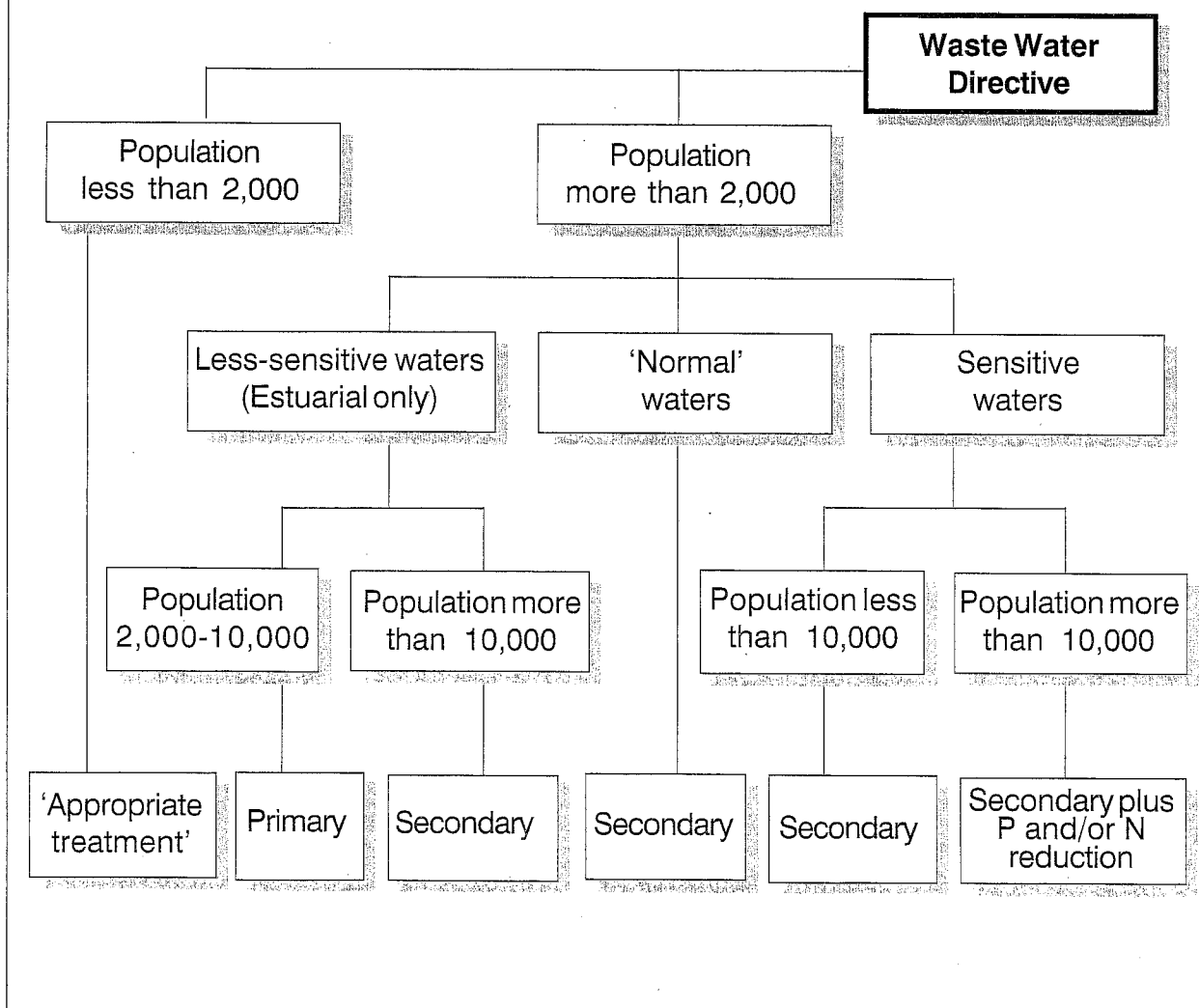
Source: Wessex Water

Sewerage, sewage and sludge disposal

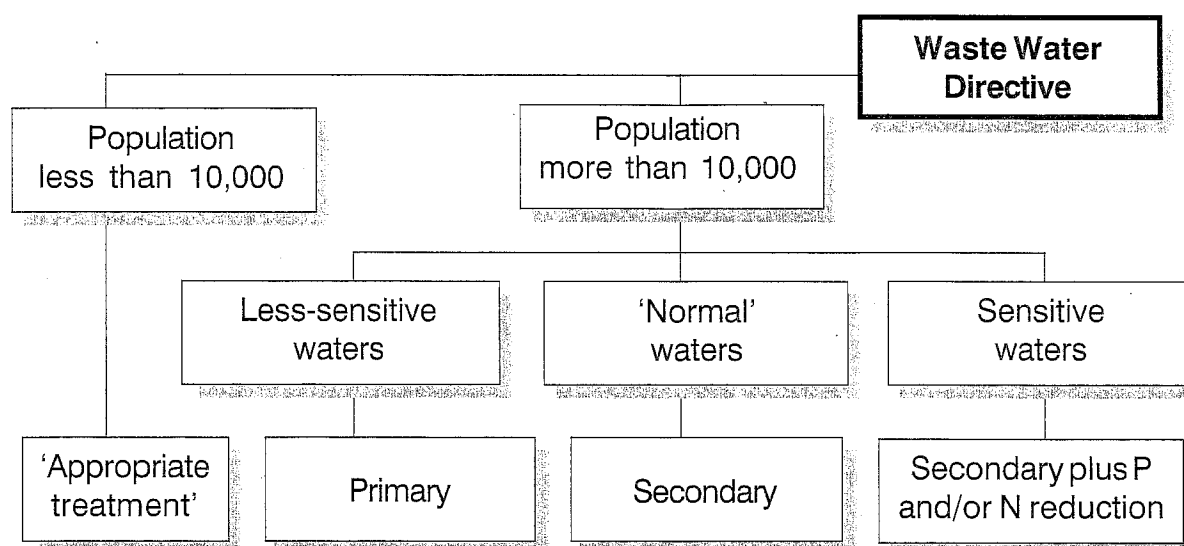
The EC Urban Waste Water Treatment Directive (UWWTD) sets timetables for implementation between 1998 and 2005 and lays down minimum standards of treatment for municipal wastewater and the disposal of sewage sludge. It requires secondary treatment of municipal wastewater as a minimum, except in areas designated as less sensitive when primary treatment alone may be permitted. However, if an area is designated as sensitive, nutrient removal may be required. The implications of the directive are shown in 4.1 and 4.2. The directive specifically requires the elimination of sewage sludge disposal at sea. The Government announced on 5 March 1990 that sea disposal of sludge would be phased out by 1998 subject to the resolution of planning procedures and replacement scheme designs.

The EC Bathing Water Directive (76/160/EEC) aims to improve the quality of bathing water and to protect public health. It sets standards for 19 physical, chemical and microbiological parameters. Some are mandatory and must not be exceeded except in specified circumstances; others are voluntary 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 percent of samples must have counts not exceeding the mandatory standards of 10,000/100ml for total coliforms and 2000/100ml for faecal coliforms.

4.1 Levels of treatment required under UWWTD - estuarial and inland water



4.2 Levels of treatment required under UWWTD - coastal waters



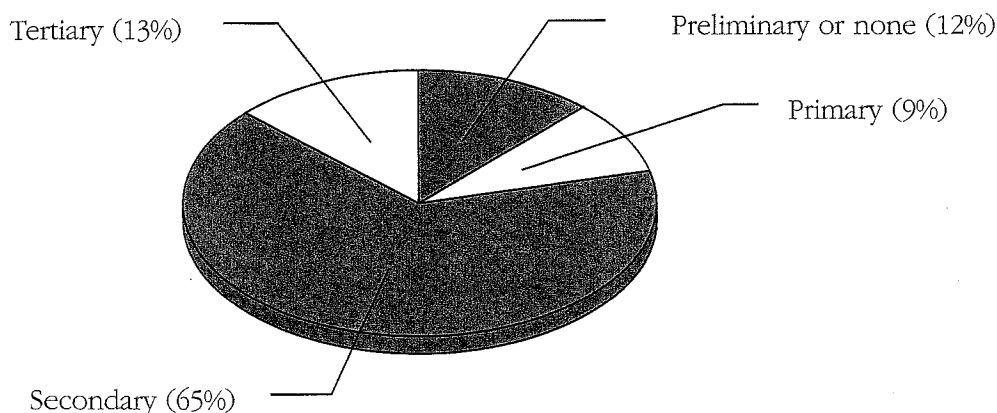
4.3 Sewerage and sewage treatment by population 1993/94

	population connected to sewer		level of treatment				connected to sea outfalls	
	000s	% of residents connected	preliminary or none %	primary %	secondary %	tertiary %	short %	long %
Anglian	5,184	91	15	8	52	25	-	15
Dŵr Cymru	2,922	93	45	5	48	2	12	33
Northumbrian	2,554	98	33	38	27	2	15	8
North West	6,753	98	8	22	67	3	2	4
Severn Trent	8,226	98	0	0	68	32	0	0
Southern	4,118	95	33	12	50	5	32	22
South West	1,358	89	35	14	33	18	33	3
Thames	11,529	98	2	0	85	13	0	0
Wessex	2,342	93	10	26	51	13	5	5
Yorkshire	4,684	99	9	0	87	4	0	3
England and Wales	49,670	94	12	9	65	13	-	-
*Scotland	4,844	94	28	26	45	1	-	-
Northern Ireland	1,285	81	N/A	N/A	N/A	N/A	-	-
UK	55,799	94						

* Scotland latest available figure from 1988 survey

Source: water companies; Scottish Office; Water Executive Northern Ireland.

4.4 Levels of sewage treatment in England and Wales 1993/94



Disposal of sewage sludge

The disposal of sludge from sewage works is strictly controlled :

- disposal to landfill is becoming restricted due to the lack of available local sites
- disposal of sewage sludge at sea is controlled by licences issued by MAFF who monitor the effect on dumping grounds and set the licence conditions accordingly
- disposal of sewage sludge to agricultural land is undertaken in accordance with guidelines issued by the former National Water Council/DoE Standing Committee on the Disposal of Sewage Sludge. These have been superseded by the implementation of the Directive 86/278/EEC 'Use of sewage sludge in agriculture' which was notified on 12 June 1986 and member states implemented the Directive by June 1989.

Local authority sewerage arrangements in England and Wales

Section 15 of the Water Act 1973 imposed a duty on water authorities to endeavour to make arrangements, subject to rights of termination, to discharge certain of their sewerage functions (excluding sewage treatment and disposal and trade effluent) through district councils in their area. Under the provisions of the 1989 Water Act, sewerage arrangements existing at vesting continue to have effect. The arrangements may be varied only by agreement and may be brought to an end by either party giving reasonable notice. Sewerage undertakers were able to give notice before 1 April 1992. *Waterfacts 88* listed the sewerage agencies that transferred during the lifetime of the water authorities.

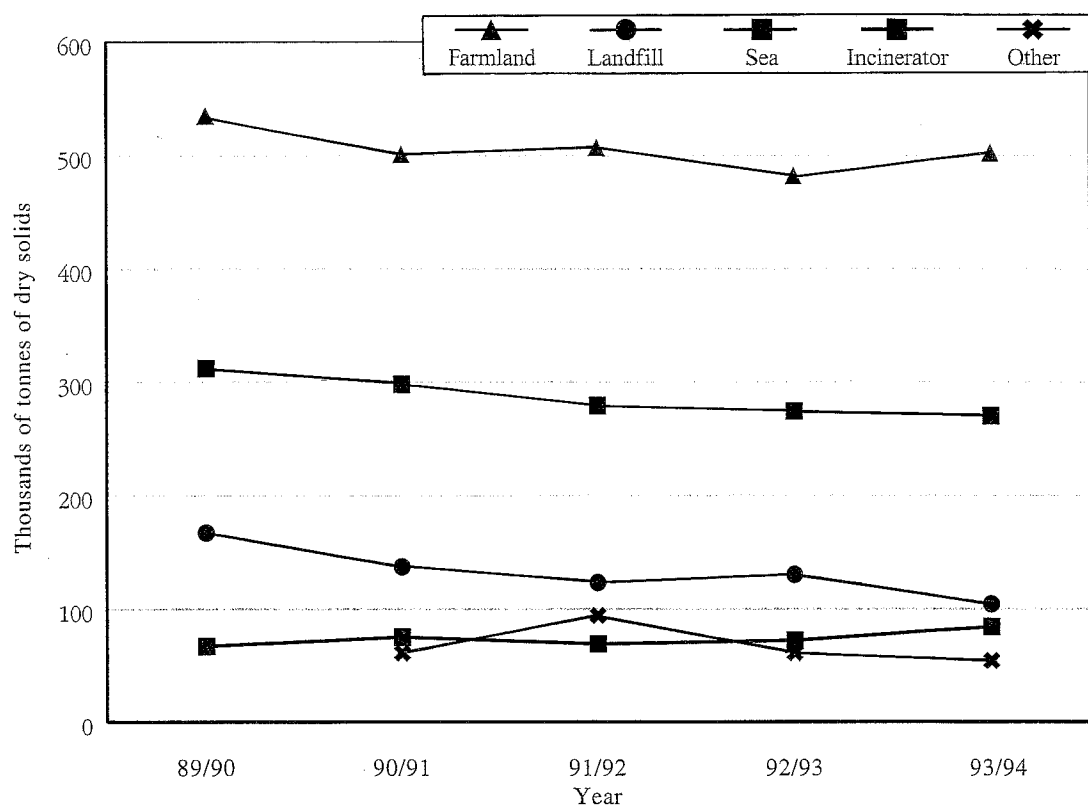
4.5 Disposal of sewage sludge 1993/94

	farmland	landfill	sea 000s of tonnes	incinerator dry solids	other	total
Anglian	108	4	12	0	15	139
Dŵr Cymru	23	0	5	0	1	29
Northumbrian	3	12	20	0	2	37
North West	31	18	66	9	2	126
Severn Trent	85	43	0	28	9	165
Southern	33	2	8	5	9	57
South West	12	0	3	0	0	15
Thames	104	0	74	0	11	189
Wessex	27	0	0	0	4	31
Yorkshire	47	18	8	41	0	114
England & Wales	473	97	196	83	53	902
%	52	11	22	9	6	100
Scotland*	13	5	60	1	1	80
Northern Ireland	16	2	14	0	0	32
UK	502	104	270	84	54	1014
%	50	10	27	8	5	100

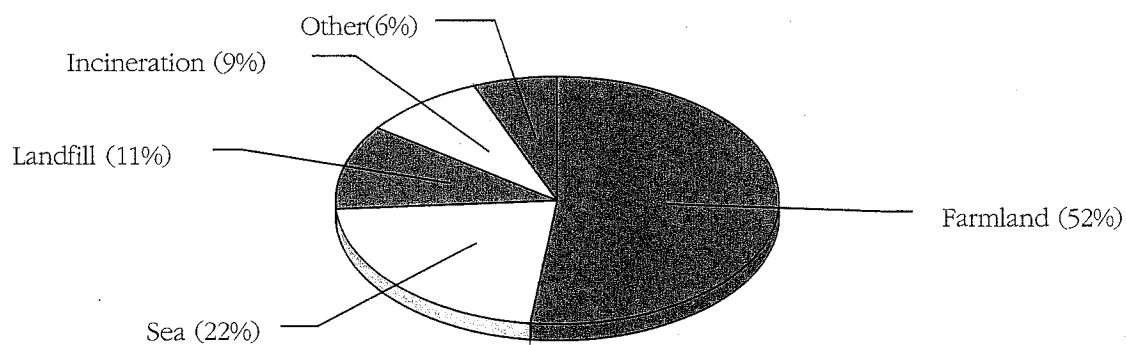
* Scottish: latest available figures from a 1990 survey

Source: Water companies; MAFF; Scottish Office; Water Executive Northern Ireland

4.6 Disposal of sewerage sludge in the UK 1989/90 - 1993/94



4.7 Sludge disposal in the UK 1993/94



4.8 Sewage treatment works – compliance with discharge consents

NRA region	number of works tested						% tested in breach of consent					
	1987	1988	1989	1990	1991	1992	1987	1988	1989	1990	1991	1992
Anglian	754	748	702	704	692	685	34	28	17	12	8	2
Northumbria	182	178	181	179	171	166	15	15	8	2	1	2
North West	448	441	439	378	373	353	12	10	10	4	3	2
Severn Trent	742	751	847	781	771	778	22	15	8	9	2	2
Southern	274	271	273	271	266	252	14	15	12	12	6	1
South West	219	228	231	231	238	250	30	29	27	27	27	31
Thames	379	378	379	379	379	372	18	16	13	8	6	5
Welsh	611	650	650	629	578	577	18	17	14	13	5	4
Wessex	270	272	266	247	258	273	11	6	5	2	2	1
Yorkshire	351	354	347	346	335	330	21	17	16	8	9	8
England & Wales	4,230	4,271	4,315	4,145	4,061	4,036	21	17	13	10	6	5

Source: Water companies; NRA

As a result of Part II of the Control of Pollution Act of 1974, ('COPA II'), brought into force in 1984, sewage treatment works were granted consents by the Department of the Environment to discharge effluent (treated water) to a watercourse. For each consent, limits may be set for three principal parameters:

- for 'suspended solids' - that is to say turbidity caused, for example, by silt
- for bio-chemical oxygen demand ('BOD') - the extent to which organic matter in the water draws out oxygen
- for ammonia - which is toxic to fish.

4.9 River and canal quality 1988 - 1992

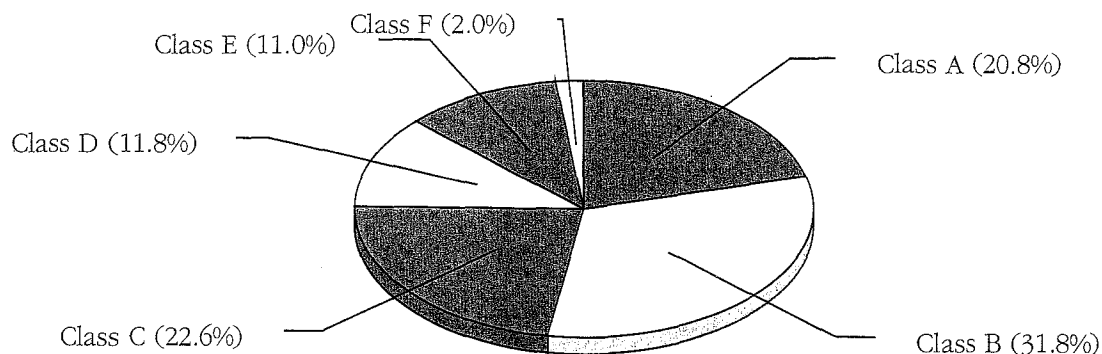
Percentage of river and canal by chemical water quality class

NRA region	good quality %				fair quality %				poor quality %		bad quality %	
	Class A		Class B		Class C		Class D		Class E		Class F	
	1988 -1990	1991 -1992	1988 -1990	1991 -1992	1988 -1990	1991 -1992	1988 -1990	1991 -1992	1988 -1990	1991 -1992	1988 -1990	1991 -1992
Northumbria & Yorkshire	19.9	13.2	37.8	40.5	13.4	19.3	10.3	8.4	14.4	15.8	4.2	2.9
North West	22.5	27.2	19.4	25.8	17.0	15.8	13.9	12.0	20.7	15.4	6.5	3.8
Welsh	44.4	56.2	34.7	29.6	10.8	7.7	5.6	3.2	3.4	2.8	1.1	0.6
Severn-Trent	9.3	6.7	23.5	31.7	32.4	28.0	14.9	16.9	17.9	13.5	2.0	3.2
Anglian	0.7	2.9	15.8	18.9	35.3	32.1	26.5	24.2	18.2	19.4	3.5	2.5
Thames	9.0	6.7	27.7	32.3	29.8	34.3	16.3	16.8	15.9	9.1	1.3	0.7
Southern	10.8	8.3	32.8	43.0	30.8	30.2	13.0	9.8	10.9	7.6	1.7	1.1
South Western*	24.3	31.8	39.6	37.6	19.3	21.3	10.3	4.8	5.4	3.8	1.1	0.7
Total	17.7	20.8	29.3	31.8	23.6	22.6	13.9	11.8	13.0	11.0	2.5	2.0

* incorporates Wessex

Source: NRA Annual Report 1993/94

4.10 Total river and canal quality 1992



4.11 Bathing water quality compliance (directive 76/160/EEC)

Number of designated bathing waters

NRA Region	1987		1988		1989		1990		1991		1992		1993	
	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total	pass	total
Anglian	18	28	19	28	23	28	27	29	29	33	31	33	28	33
Northumbria	9	19	9	19	20	32	21	32	21	33	20	34	46	56
Yorkshire	20	22	21	22	18	22	17	22	19	22	20	22		
North West	10	30	6	33	11	33	10	33	10	33	11	33	13	33
Severn Trent	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southern	38	65	27	65	45	65	48	66	45	67	51	67	58	67
South West	96	109	92	109	113	132	118	133	105	133	117	134	142	175
Wessex	32	38	30	38	31	38	39	39	36	39	36	39		
Thames	0	2	0	2	3	3	3	3	2	3	3	3	3	3
Welsh	28	47	37	48	40	48	35	50	45	51	39	51	42	51
England and Wales	251	360	241	364	304	401	318	407	312	414	328	416	332	418
% compliance	70 (56)*		66		76		78		75		79		79	
Scotland	19	23	12	23	16	23	12	23	15	23	15	23	18	23
Northern Ireland														
Ireland			14	16	16	16	15	16	15	16	15	16	15	16
UK			267	403	336	440	345	446	342	453	358	455	365	457

* there were changes in definitions in 1987 - 56% represents the equivalent figure in 1988 terms

Note: The following NRA regions have combined: Northumbria and Yorkshire; South West and Wessex to form South Western

Source: DoE; NRA; Scottish Office; Water Executive Northern Ireland

There are 418 bathing waters designated in England and Wales, prior to 1987 there were only 27. Under the bathing

water quality directive samples of bathing water must be taken at regular intervals during the bathing season.

Charges and customers

Water charges are regulated by means of a limit on the increase in charges which a company can impose in any year. Compliance with this limit is monitored by the independent regulator OFWAT which also periodically reviews the limits. The price limits cover both measured and unmeasured water and sewerage services as well as trade effluent charges. They allow charges to be increased each year by the movement in the RPI index in the twelve months to November prior to the charging year plus or minus K where K reflects how much a company needs to increase charges, above inflation, to finance its services and meet its legal obligations.

Price limits are set for 10 years but may be reviewed after 5 years if either the Regulator or the company wish. They can also be changed between these Periodic Reviews, by means of an Interim Determination, if there are major changes to certain specific circumstances which are set out in each company's Licence. During 1993/94 all companies have agreed to reduce the number of these "relevant changes of circumstances" and this should limit the occasions on which they or the Director General will seek an Interim Determination.

During 1994, the Director General completed the first Periodic Review of the price limits since the Government set the initial K's in 1989 when the companies were privatised. This process involved on unprecedented level of public consultation by both

5.1 Numbers of connections 1993/94

Water service companies	Unmeasured supply				Measured Supply			
	households		non-households		households		non-households	
	water 000s	sewerage 000s	water 000s	sewerage 000s	water 000s	sewerage 000s	water 000s	sewerage 000s
Anglian	1,380	1,874	28	36	101	117	70	67
Dŵr Cymru	1,034	1,092	30	29	27	28	74	48
Northumbrian	457	1,018	13	79	2	11	23	29
North West	2,529	2,505	69	69	78	78	158	128
Severn Trent	2,592	2,982	59	63	170	180	177	158
Southern	767	1,423	15	33	89	106	49	62
South West	541	498	10	11	31	26	70	34
Thames	2,834	4,412	130	166	120	164	126	167
Wessex	396	848	10	28	28	45	41	38
Yorkshire	1,642	1,728	24	37	70	72	102	84
Total	14,172	18,380	388	551	716	827	890	815
Water supply companies								
Bournemouth and West Hampshire	151		4		7		11	
Bristol	381		20		17		37	
Cambridge	92		2		7		7	
Chester	40		1		2		3	
Cholderton	1		0		0		0	
East Surrey	119		3		5		11	
Essex and Suffolk	624		11		21		43	
Folkestone and District	59		2		2		5	
Hartlepool	35		1		0		2	
Mid Kent	185		2		9		18	
Mid Southern	239		4		14		17	
North East Water	520		12		10		20	
North Surrey	169		3		8		16	
Portsmouth	258		4		0		15	
South East Water	223		5		14		20	
South Staffordshire	452		13		19		32	
Sutton	112		2		1		4	
Tendring Hundred	55		2		4		3	
Three Valleys	863		16		31		41	
Wrexham and East Denbighshire	53		1		3		5	
York	68		2		0		5	
Total	4,699		110		174		315	
England / Wales	18,871	18,380	498	551	890	827	1,205	815
Scotland	2,094	2,055	156	188	2	na	54	na
Northern Ireland	570	490	38	na	na	na	40	0
UK	21,535	20,925	692	739	892	827	1,299	815

Source: Water companies; Scottish Office; Water Executive Northern Ireland

OFWAT and the Companies over the last 2/3 years. This covered not only the approach which OFWAT intended to use for the review, but also sought customers' views on their future requirements and willingness to pay for water services. Companies were required to submit their Strategic Business

Plans to OFWAT by 31 March 1994, after scrutiny by independent reporters, and on 28 July 1994 the Director General announced his determination of the Price Limits for each Company until 2005. Each company will now produce a brochure outlining its plans for the next 10 years.

5.2 Price limits for 1995-96 to 2004-05 (%)

Water service companies	1995/96	Annual price limits		average over 10 years
		1996/97 to 1999/00	2000/01 to 2004/05	
Anglian	1.5	1.5	1.5	1.5
Dŵr Cymru	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 ³	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
average (weighted)	1.5	1.5	0.6	1.0
Water supply companies				
Bournemouth and West Hampshire	-0.5	-0.5	-0.5	-0.5
Bristol	1.0	1.0	-3.0	-1.0
Cambridge	-2.0	-2.0	-2.0	-2.0
Chester	-1.0	-1.0	-1.5	-1.3
Cholderton	0.0	0.0	0.0	0.0
East Surrey	-1.0	-1.0	-1.5	-1.3
Essex and Suffolk	2.0	2.0	-1.5	0.2
Folkestone	-0.5	-0.5	-1.0	-0.8
Hartlepool	1.5	1.5	0.5	1.0
Mid Kent	1.0	1.0	-1.0	0.0
Mid Southern	-1.0	-1.0	-1.0	-1.0
North East	0.0	0.0	-0.5	-0.3
North Surrey	2.0	2.0	-1.5	0.2
Portsmouth ³	-1.5	-1.5	-1.5	-1.5
South East	-1.0	-1.0	-1.0	-1.0
South Staffordshire	-0.5	-0.5	-1.0	-0.8
Sutton	-1.5	-1.5	-1.5	-1.5
Tendring Hundred	-0.5	-0.5	-0.5	-0.5
Three Valleys	2.5	2.5	-1.0	0.7
Wrexham	-2.0	-2.0	-2.0	-2.0
York	0.0	0.0	0.0	0.0
average (weighted)	0.6	0.6	-1.3	-0.4
Industry average (weighted)	1.4	1.4	0.4	0.9

Notes:

- 1 Companies are permitted to increase charges each year, on average, by RPI plus (or minus) the limit shown in this table
- 2 The price limits for 1995/96 take account of any unused K carried over from previous years. For companies with carry-over, the formal Adjustment Factor (K) set for that year will be lower than the effective price limit shown here.
- 3 South West water and Portsmouth Water have referred the DG's determination to MMC. Decisions are expected in early 1995.

Source: OFWAT

5.3 Increase in standard charges 1994/95 – water service companies (%)

Company	K	charges limit RPI+K+U (RPI=1.4%)	tariff basket increase	difference between charges limit and tariff basket increase
Anglian	4.0	6.4	6.4	0.0
Dŵr Cymru	5.0	6.4	6.4	0.0
North West	4.0	6.1	6.1	0.0
Northumbrian	7.0	8.4	8.4	0.0
Severn Trent	5.4	6.7	6.7	0.0
South West	11.0	12.4	12.4	0.0
Southern	3.5	5.8	5.8	0.0
Thames	4.1	5.5	5.5	0.0
Wessex	4.5	5.9	5.9	0.0
Yorkshire	1.9	3.3	3.3	0.0
Unweighted average	5.0	6.7	6.7	0.0

Company

Bournemouth & West Hampshire	1.0	4.4	4.4	0.0
Bristol	2.0	4.0	4.0	0.0
Cambridge	0.0	1.4	1.4	0.0
Chester	1.0	4.4	2.4	2.0
Cholderton & District ¹	6.0	9.1	7.4	1.7
East Surrey Water Plc	2.0	5.4	3.4	2.0
Essex & Suffolk	4.6	6.0	6.0	0.0
Folkestone & Dover	8.0	9.4	9.4	0.0
Hartlepoons	3.5	4.9	4.9	0.0
Mid Kent	2.5	3.9	3.9	0.0
Mid Southern	4.0	7.3	5.9	1.4
North East	3.0	7.9	4.4	3.5
North Surrey	8.5	9.9	9.9	0.0
Portsmouth ²	2.0	5.4	3.4	2.0
South East	0.0	1.4	1.4	0.0
South Staffordshire	3.0	7.7	4.1	3.6
Sutton District	3.5	5.9	4.9	1.0
Tendring Hundred	2.5	3.9	3.9	0.0
Three Valleys	2.8	4.2	4.2	0.0
Wrexham & East Denbighshire	2.7	4.1	4.1	0.0
York	3.0	5.5	4.4	1.1
Unweighted average	3.1	5.5	4.6	0.7

U is amount of K not taken up in previous years

1. Cholderton information is the latest available.

2. Portsmouth information is the latest available.

Source: OFWAT

5.4 RPI

November	RPI
1988	110.0
1989	118.5
1990	130.0
1991	135.6
1992	139.7
1993	141.6

Source: Central Statistical Office

5.5 RPI repricing

Year	Nov - Nov % increase
1988/89	6.4
1989/90	7.7
1990/91	9.7
1991/92	4.3
1992/93	3.0
1993/94	1.4

Source: Central Statistical Office

5.6 Construction output prices index

Financial Year	quarter 2	quarter 3	quarter 4	quarter 1	average
1989/90	97	99	100	101	99.3
1990/91	101	100	99	97	99.3
1991/92	95	92	90	88	91.3
1992/93	86	84	83	82	83.8
1993/94	82	82	82	82	82.0

(1990=100)

Source: Department of the Environment

5.7 Average weekly cost of water and sewerage services to domestic customers

	1981/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95
£/week	1.15	1.29	1.38	1.48	1.65	1.78	1.90	2.05	2.28	2.57	2.95	3.26	3.55	3.82

Source: Water companies

5.8 Average charges 1994/95

Average household bill unmeasured services

	water supply		sewerage		total	
	1993/94 £	1994/95 £	1993/94 £	1994/95 £	1993/94 £	1994/95 £
Anglian	115.58	123.88	131.80	139.60	247.38	263.48
Dŵr Cymru	125.51	128.73	111.71	127.26	237.22	255.99
Northumbrian	80.20	88.02	90.73	99.07	170.93	187.09
North West	78.84	85.35	90.30	96.60	169.14	181.95
Severn Trent	73.26	79.92	91.01	99.27	164.27	179.19
Southern	78.35	84.07	109.19	116.84	187.54	200.91
South West	105.70	118.76	160.25	185.10	265.95	303.86
Thames	74.57	78.76	76.75	82.52	151.32	161.28
Wessex	95.37	101.90	113.89	120.34	209.26	222.24
Yorkshire	93.66	97.06	84.10	96.17	177.76	193.23
Weighted average	87.43	93.07	97.32	105.02	184.75	198.09
Notern Ireland ⁽¹⁾	-	-	-	-	-	-
Scotland ⁽²⁾	55.15	59.10	41.26	41.74	96.41	100.84

Notes:

1 In Northern Ireland unmeasured charges are not levied but are deemed to be recovered as an element of the regional rate.

2 In Scotland sewerage services are funded from within the council tax.

Average charges for household measured services 1994/95

	water supply		sewerage		rate
	volume	standing charge 1/2" diameter ¹	volume	standing charge 1/2" diameter ¹	
	p/m ³	£/yr	p/m ³	£/yr	p/£rv
Anglian	63.48	30.00	84.78	29.00	0.00
Dŵr Cymru	73.30	35.00	91.36	5.00	0.00
Northumbria	50.53	36.00	35.26	51.00 ²	23.11
North West	59.20	33.00	44.10	45.00	0.00
Severn Trent ³	61.00	27.50	45.63	0.00	0.00
Southern ⁴	48.90	34.00	71.40	36.00	0.00
South West	70.27	35.40	147.20	24.80	0.00
Thames	46.74	22.00	42.09	34.00	0.00
Wessex	63.11	29.70	71.43	37.20	0.00
Yorkshire	58.10	28.00	78.40	25.00	0.00

Average water supply cos

1 There are scales of standing charges for different size diameter connections. Domestic households are usually served by 1/2" or equivalent connection

2 Customers without RV or with RV less than £501

3 Severn Trent: other drainage charged at full rate. New properties charged in 3 bands

4 Southern Water: other charges apply for the Isle of Wight

Source: Water companies; Scottish Office; Water Executive Northern Ireland

Trade effluent charges

In addition to domestic charges, all occupiers of trade premises in England and Wales who discharge a trade effluent into a public sewerage system will be charged by their water company for the treatment given, in accordance with the provisions of the 1991 Water Act.

Current charging recommendations are based on the MOGDEN Formula. The charging formula apportions a cost to each stage of the treatment process and takes into account the way that a particular firm's effluent differs from the normal, average composition of sewage in the region. Charges are made only for the elements of reception, conveyance, treatment and disposal actually given to the trade effluent.

The Mogden formula is:

$$C = R + V + (Ot/Os) B + (St/Ss)s$$

Some companies have modified this basic formula with the addition of one or more of the following factors: VB, VM or M.

Where:

C = Total charge per cubic metre for trade effluent.

- R = Unit cost per cubic metre of reception and conveyance of trade effluent in the public foul water sewer.
- V = Unit cost per cubic metre of preliminary and primary treatment of sewage treated and disposed of in wastewater treatment works.
- Ot = Chemical oxygen demand (COD) in mg/l of the trade effluent after 1 hour quiescent settlement.
- Os = COD in mg/l of average strength settled sewage.
- B = Unit cost per cubic metre of biological oxidation treatment of settled sewage.
- St = The total suspended solids, measured in mg/l of the trade effluent at pH 7 or at the pH of the mixed sewage.
- Ss = The suspended solids in mg/l of average strength crude sewage.
- s = Unit cost per cubic metre of treatment and disposal of primary sludge.
- Vb = Additional charge per cubic metre where there is biological treatment.
- Vm = Treatment and disposal for sea outfalls.
- M = Treatment and disposal charge of designated long sea outfalls.

5.9 Trade effluent charges 1994/95

	Average regional strength		Apportionment of charge							minimum charge £
	Os mg/l	Ss mg/l	R p/m ³	V p/m ³	Vb p/m ³	Vm p/m ³	M p/m ³	B p/m ³	S p/m ³	
Anglian	410	348	7.75	12.13	14.47	6.01	6.50	12.70	6.10	90.00
Dŵr Cymru	500	350	8.06	6.51	2.60	6.89	9.91	15.03	10.78	184.00
Northumbrian	386	187	0.17	0.08	0.00	0.00	0.00	0.13	0.07	212.00
North West	386	237	8.60	6.90	0.90	0.00	6.30	7.40	5.20	81.00
Severn Trent	377	347	12.66	11.61	0.00	0.00	0.00	11.93	7.22	108.00
Southern	452	512	17.31	12.64	14.69	8.77	2.24	16.68	11.41	89.00
South West	778	488	29.75	27.33	0.00	4.98	0.00	49.89	29.64	110.00
Thames	445	336	6.34	7.80	0.00	0.00	0.00	12.29	15.66	65.00
Wessex	802	313	6.81	10.37	0.98	12.71	23.91	23.47	13.12	140.00
Yorkshire	965	331	17.11	0.00	0.00	0.00	0.00	17.92	10.47	158.00
Northern Ireland	480	340	10.00	8.00	0.00	0.00	0.00	10.00	8.00	0.00
Scotland*	309	188	8.62	4.61	0.00	0.00	0.00	7.90	4.57	108.00

*only 7 out of 12 Authorities in Scotland have introduced charges

Total average charge is for average strength effluent. Trade effluents are charged using the following formula

$$C = R + ([V + VB] \text{ or } VM \text{ or } M) + B(Ot/Os) + S(St/Ss)$$

Yorkshire minimum charge is £51 if no sampling needed - Thames has a system of standing charges

Source: Water companies; Scottish Office; Water Executive Northern Ireland

5.10 Water company trade effluent charging formula 1993/94

Water service company	Current Charging Formula
Anglian	$C = R + V \text{ (or } V_b \text{ or } V_m \text{ or } M) + (O_t/O_s) B + (S_t/S_s) S$
Dŵr Cymru	$C = R + V = V_b + (O_t/O_s) B + (S_t/S_s) S$
Northumbria	$C = P + (O_t/O_s) B + (S_t/S_s) S$
North West	$C = R + M + V + B_1 + (O_t/O_s) B_2 + (S_t/S_s) S$
Severn Trent	$C = R + V + (O_t/O_s) B + (S_t/S_s) S$
Southern Water	$C = R + V + (O_t/O_s) B + (S_t/S_s) S$
South West	$C = R + V \text{ (or } V_m) + V_b + (O_t/O_s) B + (S_t/S_s) S$
Thames	$C = R + V + (O_t/O_s) B + (S_t/S_s) S$
Wessex	$C = R + V + (O_t/O_s) B + (S_t/S_s) S$
Yorkshire	$C = P + (O_t/O_s) B + (S_t/S_s) S$

Source: company charging booklets 1993/94 except Northumbrian Water who provided directly.

Infrastructure charges

Companies are permitted to levy infrastructure charges (as well as the direct costs of connection) when properties are connected to water and sewerage systems for the first time. Where these charges are for domestic supply they are subject to a limit.

In 1989 these charges were set to enable companies to recover all the costs associated with servicing additional

customers including the provision of additional resources and treatment works.

The Director General has judged that such charges should be restricted to the costs of developing the local network and that they should be limited to £200 for each service in 1995-96. Subsequently they will rise only in line with inflation.

5.11 Infrastructure charges

	1990/91		1991/92		1992/93		1993/94		1994/95	
	water £	sewerage £	water £	sewerage £	water £	sewerage £	water £	sewerage £	water £	sewerage £
Anglian	479	597	503	629	524	656	524	656	524	656
Dŵr Cymru	259	332	275	351	286	366	296	377	296	377
Northumbrian	111	240	120	247	125	257	128	265	130	269
North West	198	338	212	362	221	377	225	338	228	342
Severn Trent	498	356	532	380	554	396	570	408	570	408
Southern	365	485	378	492	394	513	406	528	411	535
South West	654	557	705	599	735	624	565	624	565	624
Thames	403	337	382	314	398	327	410	336	415	340
Wessex	551	983	611	1090	637	1136	482	860	488	871
Yorkshire	529	626	534	632	557	659	573	678	581	688

Source: Water companies

5.12 Disconnections for non payment of charges

Water service companies	non-domestic				
	1989/90	1990/91	1991/92	1992/93	1993/94
Anglian	18	46	15	31	49
Dŵr Cymru	99	92	81	136	72
Northumbrian	124	158	200	164	183
North West	213	110	177	49	152
Severn Trent	94	123	290	414	269
Southern	116	187	301	542	203
South West	0	9	11	28	27
Thames	0	9	93	667	844
Wessex	2	0	2	7	2
Yorkshire	69	141	217	180	126
WSCs	735	875	1,387	2,218	1,927
Water supply companies	852	657	1,004	881	709
England & Wales	1,587	1,532	2,391	3,099	2,636

Water service companies	domestic				
	1989/90	1990/91	1991/92	1992/93	1993/94
Anglian	362	415	1,306	214	978
Dŵr Cymru	1,243	1,305	2,938	2,316	527
Northumbrian	434	460	705	709	363
North West	756	889	2,074	495	363
Severn Trent	985	286	1,303	1,222	590
Southern	697	351	2,043	3,158	1,600
South West	245	210	381	300	149
Thames	14	7	61	852	1,195
Wessex	12	2	39	154	2
Yorkshire	999	1,492	2,384	1,721	1,149
WSCs	5,747	5,417	13,234	11,141	6,916
Water supply company	2,679	2,456	8,048	7,495	5,536
England & Wales	8,426	7,873	21,282	18,636	12,452

Source: OFWAT

5.13 Customer complaints to customer service committees (CSC)

CSC Region	number of complaints				complaints per 10,000 customers			
	1990/91	1991/92	1992/93	1993/94	1990/91	1991/92	1992/93	1993/94
Eastern	403	1,057	1,485	1,392	1.3	3.4	4.8	N/A
Northumbria	273	523	633	574	1.6	3.0	3.6	N/A
North West	605	976	1,084	885	2.1	3.4	3.8	N/A
Central	1,053	1,671	1,980	1,328	2.6	4.1	4.9	N/A
Southern	377	939	1,024	1,219	1.5	3.8	4.1	N/A
South West	165	939	1,190	1,154	2.5	14.1	17.8	N/A
Thames	560	1,844	3,421	3,675	0.9	2.8	5.2	N/A
Wales	389	812	1,126	1,290	2.9	5.9	8.2	N/A
Wessex	262	801	1,123	849	1.6	4.9	6.9	N/A
Yorkshire	526	1,076	1,729	1,936	2.6	5.2	8.4	N/A
Total	4,613	10,638	14,795	14,302				

Source: OFWAT (includes WSCs and Water Supply Companies)

Customer service standards

Each year water companies provide OFWAT with information on their performance against seven measures of service achieved during the year. The year end report is then published by OFWAT summarising the level of service delivered.

These cover:

DG1	Population at risk of water shortage	DG4	Population subject to hosepipe bans
DG2	Properties at risk of low pressure	DG5	Properties at risk of sewer flooding
DG3	Properties subject to unplanned supply interruptions of 12 hours or more	DG6	Billing queries not responded to within 20 days
		DG7	Written complaints not responded to within 20 days

5.14 Company performance 1990-91 to 1992-93

Indicator	Description	1990-91 %	1991-92 %	1992-93 %	%improvement (or deterioration) since 1990-91
DG1	Population at risk of water shortage	24	20	12	50
DG2	Properties at risk of low pressure	1.85	1.69	1.26	32
DG3	Properties subject to unplanned supply interruptions of 12 hours or more	0.42	0.20	0.27	36
DG4	Population subject to hosepipe bans	41	14	9	78
DG5	Properties at risk of sewer flooding	0.10	0.10	0.09	10
DG6	Billing queries not responded to within 20 days	3.84	3.25	3.99	(4)
DG7	Written complaints not repoded to within 20 days	8.82	5.86	8.61	2

Note

It is not appropriate simply to add up the totals for each indicator to determine the overall total of customers receiving a poor service. Some customers may be included in more than one row. For example, a customer at risk of water shortage (DG1) may also be subject to a hosepipe ban (DG4).

Source: Water companies

Finance and investment

Each year accounts are published for the plcs, the WSCs and the appointed business, the latter being regulated by OFWAT. In the following sections the data is for the appointed business except where stated and is on an historic cost basis. All prices are for the year in question except where stated.

Infrastructure accounting information is available from Waterfacts '93

6.1 Group profit and loss account 1993/94 (£M)

	Anglian	Welsh	North-umbria	North West	Severn Trent	Southern	South West	Thames	Wessex	Yorkshire	Total
Turnover											
of Group	687.9	512.1	298.6	924.2	998.0	347.7	251.6	1093.2	217.2	530.6	5,861.1
Operating costs	(520.2)	(365.7)	(221.0)	(605.9)	(668.7)	(215.9)	(145.6)	(809.2)	(125.0)	(370.2)	(4,047.4)
Other income	1.6	0.4	0.0	5.4	0.4	1.8	0.4	5.6	0.0	0.0	15.6
Operating profit	169.3	146.8	77.6	323.7	329.7	133.6	106.4	289.6	92.2	160.4	1,829.3
Net interest	(37.1)	(2.6)	(15.7)	(52.8)	(48.3)	(6.1)	(14.1)	(47.9)	2.0	(17.7)	(240.3)
Other adjustments	0.0	(0.1)*	0.9	(1.9)	0.0	0.2	0.7	0.0	9.1	0.7*	9.6
Profit before tax	132.2	144.1	62.8	269.0	281.4	127.7	93.0	241.7	103.3	143.4	1,598.6
Tax	(16.9)	(14.4)	(6.4)	(8.7)	(21.2)	(10.2)	(7.1)	(19.4)	(9.8)	(7.9)	(122.0)
Profit after tax	115.3	129.7	56.4	260.3	260.2	117.5	85.9	222.3	93.5	135.5	1,476.6
Dividends	(67.5)	(37.0)	(16.5)	(86.1)	(81.7)	(38.8)	(32.0)	(88.5)	(30.6)	(45.6)	(524.3)
Retained profit	47.8	92.7	39.9	174.2	178.5	78.7	53.9	133.8	62.9	89.9	952.3

* includes minority interests

Note: incorporates historic cost depreciation.

Source: Water companies

6.2 Group turnover 1989-93 (£M)

	89/90	90/91	91/92	92/93	93/94
Turnover	3,323.8	3,932.4	4,667.6	5,243.8	5,861.1

6.3 Water service company profit and loss account 1993/94 (£M)

	Anglian	Dŵr Cymru	North-umbria	North West	Severn Trent	Southern	South West	Thames	Wessex	York-shire	Total
Turnover of WSC	596.8	396.2	225.6	735.6	789.8	328.0	210.2	872.1	217.7	485.5	4,857.5
Appointed business	596.8	389.6	204.9	735.6	789.8	320.0	207.4	858.9	204.8	480.7	4,788.5
Non -appointed	0.0	6.6	20.7	0.0	0.0	8.0	2.8	13.2	12.9	4.8	67.1
Operating costs	(425.4)	(243.2)	(144.8)	(413.1)	(473.6)	(205.6)	(106.7)	(554.8)	(124.5)	(337.3)	(3,029.0)
Other income	1.4	0.4	0.0	6.4	0.1	0.4	0.2	10.2	(1.0)	6.6	24.7
Operating profit	172.8	153.4	80.8	328.9	316.3	122.8	103.7	327.5	92.2	154.8	1,853.2
Net interest	(33.1)	(4.4)	(14.6)	(36.1)	(22.2)	(41.6)	(13.3)	(43.9)	(15.0)	(13.8)	(238.0)
Other adjustments	0.0	0.0	0.0	0.0	0.0	1.7	0.2	0.0	0.5	1.0	3.4
Profit before tax	139.7	149.0	66.2	292.8	294.1	82.9	90.6	283.6	77.7	142.0	1,618.6
Tax	0.0	(9.4)	0.0	0.0	(5.3)	1.0	(0.5)	(0.3)	0.0	0.0	(14.5)
Profit after tax	139.7	139.6	66.2	292.8	288.8	83.9	90.1	283.3	77.7	142.0	1,604.1

Note: incorporates historic cost depreciation.

Source: Water companies

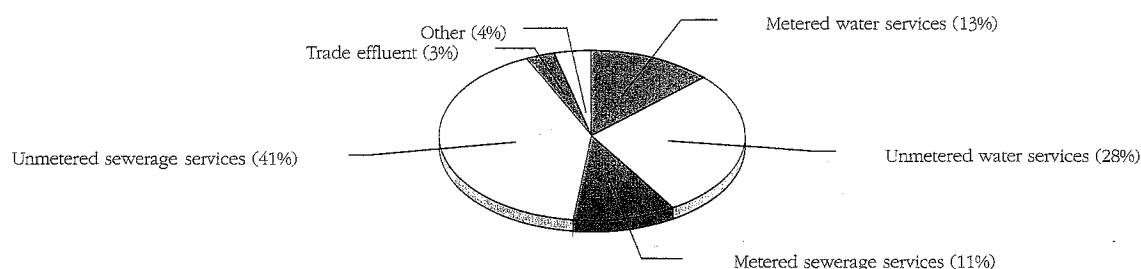
6.4 Income by turnover category 1993/94 - £M

	Water services		Sewerage services		Trade effluent	Other	Total
	metered	unmetered	metered	unmetered			
Anglian	72.9	165.4	51.5	251.7	16.9	38.4	596.8
Dŵr Cymru	72.0	134.7	30.8	127.2	7.1	17.8	389.6
Northumbrian	18.8	39.2	28.5	99.2	5.7	13.5	204.9
North West	113.5	209.4	111.4	241.8	30.9	28.6	735.6
Severn Trent	116.0	201.7	36.9	373.0	37.2	25.0	789.8
Southern	33.8	61.9	43.5	162.6	6.0	12.2	320.0
South West	30.2	59.6	26.5	83.9	3.5	3.7	207.4
Thames	79.6	246.0	88.2	387.9	23.2	34.0	858.9
Wessex	25.0	39.8	25.0	104.5	5.0	5.5	204.8
Yorkshire	79.0	156.6	63.7	150.5	19.3	11.6	480.7
Total	640.8	1,314.3	506.0	1,982.3	154.8	190.3	4,788.5

Note: data for appointed business

Source: Water companies

6.5 Income by turnover category 1993/94



6.6 Operating costs by category 1993/94 for water service companies - £M

	Anglian	Dŵr Cymru	North- umbrian	North West	Severn Trent	Southern	South West	Thames	Wessex	York- shire
Manpower costs	35.8	55.7	22.6	78.0	} 44.0	43.1	13.4	149.5	27.2	71.4
Other costs employment	0	1.9	1.6	7.2		2.7	0.0	10.6	-	8.1
Power	25.9	16.1	5.7	23.0	35.1	14.6	8.6	44.7	8.8	20.2
Rates	25.9	17.3	7.7	39.4	32.9	10.8	7.6	40.2	6.1	25.1
Sewerage agencies	(0.3)	10.0	6.7	15.9	17.5	0.2	2.2	0.0	5.4	9.8
Materials & consumables	17.8	21.8	8.3	17.6	10.4	7.6	4.0	26.7	8.6	17.4
Hired & contracted services	24.3	20.7	9.7	30.4	12.3	5.5	4.6	118.8	13.7	28.7
Infrastructure renewals	35.5	22.3	11.5	80.2	72.3	16.9	6.1	26.9	9.9	68.1
Depreciation (CC)	88.3	52.7	29.6	100.9	101.3	91.5	20.6	138.6	43.9	80.8
Other	219.0	42.9	46.5	73.9	210.9	67.5	46.5	63.9	15.4	36.1
Total	472.2	261.4	149.9	466.5	536.7	260.4	113.6	619.9	139.0	365.7

Note: data for appointed business, and incorporates current cost depreciation

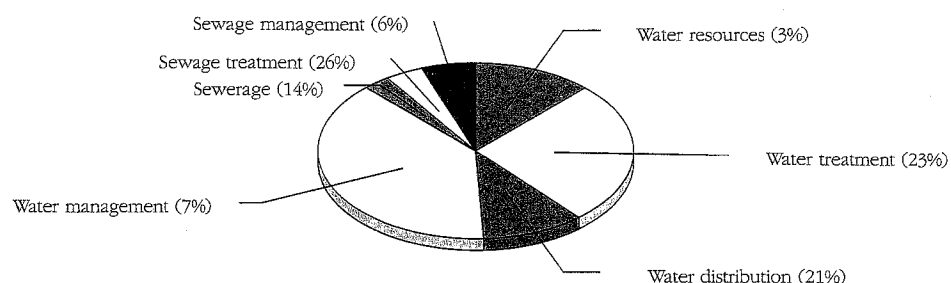
Source: Water companies

6.7 Capital expenditure by service 1993/94 (£M)

	Anglian	Dŵr Cymru	North- umbria	North West	Severn Trent	Southern	South West	Thames	Wessex	York- shire	Total WSC	Total water supply cos.	Total England & Wales
Water resources	2.4	3.2	0.0	12.1	3.2	10.2	3.2	14.3	2.1	11.2	61.9	18.8	80.7
Water treatment	114.2	54.2	0.0	62.6	132.4	5.7	16.5	101.3	11.8	75.4	574.1	70.1	644.2
Water distribution	72.5	40.8	14.9	83.2	76.6	13.1	34.9	60.3	18.0	46.1	460.4	113.9	574.3
Water management	15.8	7.1	4.4	59.1	16.8	2.2	9.7	38.8	5.2	11.2	170.3	36.1	206.4
Sewerage	43.2	26.9	7.9	47.7	71.2	44.9	22.5	77.0	28.6	34.9	404.8	-	404.8
Sewage treatment	91.9	46.4	38.5	107.3	108.7	70.4	107.6	71.9	41.6	36.5	720.8	-	720.8
Sewage management	31.5	1.9	4.4	51.6	25.3	5.7	10.5	27.2	7.8	5.4	171.3	-	171.3
Total	371.5	180.5	70.1	423.6	434.2	152.2	204.9	390.8	115.1	220.7	2,563.6	238.9	2,802.5

Source: Water companies

6.8 Capital expenditure by service in England and Wales 1993/94



Includes water service companies and water supply companies

Source: Water companies

6.9 Capital expenditure by service 1993/94 for water supply companies (£m)

Companies	water resources	water treatment	water distribution	water management	Total
Bournemouth and West Hampshire	0.0	2.6	1.4	1.8	5.8
Bristol	0.2	13.9	7.1	3.4	24.6
Cambridge	0.8	0.0	3.5	0.3	4.6
Chester	0.0	0.1	0.5	0.1	0.7
Cholderton	N/A	N/A	N/A	N/A	N/A
East Surrey	0.2	0.7	4.0	1.6	6.5
Essex and Suffolk	2.1	21.0	17.9	3.2	44.2
Folkestone and District	0.0	1.1	2.5	0.5	4.1
Hartlepool	0.1	0.0	0.7	0.2	1.0
Mid Kent	4.5	2.9	6.7	2.1	16.2
Mid Southern	1.9	3.4	6.6	3.0	14.9
North East Water	0.3	4.0	11.2	5.7	21.2
North Surrey	0.1	2.1	2.4	1.3	5.9
Portsmouth	1.0	0.9	5.8	1.1	8.8
South East Water	1.1	5.8	12.3	1.9	21.1
South Staffordshire	0.3	1.6	11.5	1.7	15.1
Sutton	0.4	0.2	0.9	1.1	2.6
Tendring Hundred	0.0	1.7	1.2	0.1	3.0
Three Valleys	5.7	7.2	14.1	6.3	33.3
Wrexham and East Denbighshire	0.0	0.1	2.7	0.5	3.3
York	0.1	0.8	0.9	0.2	2.0
Total	18.8	70.1	113.9	36.1	238.9

Source: Water companies

6.10 Total capital expenditure 1989/90 to 1993/94 (£m)

Water service companies	89/90	90/91	91/92	92/93	93/94	Total
Anglian	192.0	221.6	293.4	326.7	371.5	1,405.2
Dŵr Cymru	105.3	160.0	189.7	201.0	180.5	836.5
Northumbrian	65.9	98.4	104.5	110.0	70.1	448.9
North West	269.4	408.0	511.5	489.5	423.6	2,102.0
Severn Trent	262.2	394.7	577.5	539.6	434.2	2,205.2
Southern	125.5	132.6	162.1	114.7	152.2	687.1
South West	80.2	120.0	174.7	205.0	204.9	784.8
Thames	265.7	418.0	424.7	400.4	390.8	1,899.6
Wessex	100.0	96.6	137.8	130.2	115.1	579.7
Yorkshire	188.2	250.2	290.2	303.1	220.8	1,252.5
Total	1,654.4	2,300.1	2,866.1	2,820.2	2,563.7	12,201.5
Water supply companies	111.3	196.0	261.6	220.0	238.9	1,027.8
NRA	131.0	74.6	67.4	59.5	52.7	385.2
Scotland	127.4	144.5	171.1	224.3*	263.0*	930.3
Northern Ireland	40.1	44.7	51.4	64.6	82.0	282.8
UK	2,064.2	2,759.9	3,417.6	3,388.6	3,200.3	14,827.6

* estimate

Source: Water companies; Water Executive Northern Ireland; Scottish Office

6.11 Ten year investment included in price limits (£M)

	average annual capital expenditure	
	1995/96 to 1999/00	2000/01 to 2004/05
Water service companies		
Anglian	280	200
Dŵr Cymru	190	150
Northumbrian	140	110
North West	460	290
Severn Trent	380	240
Southern	240	160
South West	100	80
Thames	420	320
Wessex	100	70
Yorkshire	300	200
Total	2,610	1,820
Water supply companies		
Bournemouth & W Hampshire	7	4
Bristol	14	11
Cambridge	2	2
Chester	1	1
East Surrey	6	5
Essex & Suffolk	37	21
Folkstone	3	2
Hartlepool	1	1
Mid Kent	11	10
Mid Southern	15	12
North East	14	16
North Surrey	10	5
Portsmouth	7	5
South East	21	19
South Staffs	13	7
Sutton	3	2
Tendring Hundred	3	3
Three Valleys	34	31
Wrexham	2	2
York	2	1
Total	208¹	159¹
Industry total		
annual average	2,818	1,979
cumulative	14,090	9,895

Notes:

- ¹ Totals may not add due to rounding.
- ² Figures are at 1993-94 prices and do not include any allowance for possible movements in capital expenditure prices relative to RPI.
- ³ 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.

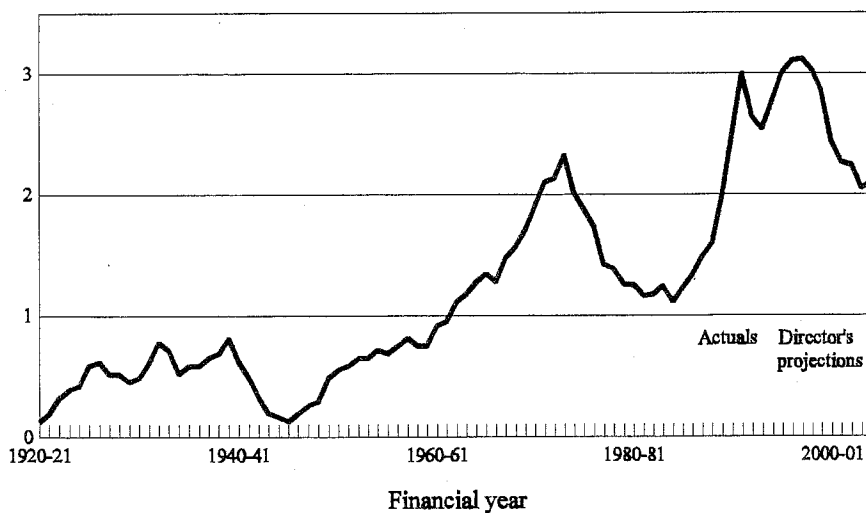
Source: OFWAT

The forward capital expenditure programme allowed for the next 10 years is £24 billion: £11 billion of this is for quality improvements, another £12 billion for maintenance of the serviceability of assets and £1 billion for enhanced levels of customer service and to maintain the balance of supply and demand; £14 billion of this relates to the 5 years from 1995 to 2000.

6.12 Capital expenditure

£ billion

(1993-94 cost terms)



Notes

The projected expenditures from 1995/96 is that allowed for in determining the price limits.

Source: OFWAT

6.13 Total fixed assets at 31 March 1994 – net book values (£m)

	Anglian	Dwr Cymru	North- umbria	North West	Severn Trent	Southern	South Thames West	Wessex	York- shire	Total
Land and buildings	1914.4	35.7	19.7	97.6	836.5	337.4	8.0	888.4	244.3	4,824.5
Infrastructure assets	10,860.8	467.0	448.6	1,244.0	1,294.6	448.0	388.4	1,032.4	372.0	17,103.5
Other	115.2	659.9	357.8	1,488.5	736.1	244.0	620.3	708.5	266.1	5,940.3
Total	12,890.4	1,162.6	826.1¹	2,830.1¹	2,867.2	1,029.4	1,016.7¹	2,629.3	882.4	27,868.3

Note

Figures are based on historical accounting except where marked¹

Source: Water companies

6.14 Main assets 1993/94

	Anglian	Dŵr Cymru	North- umbria	North West	Severn Trent	South- ern	South West	Thames	Wessex	York- shire	Water Supply Companies	England & Wales	Scotland ¹	Northern Ireland
Sources														
reservoirs (impounding)	16	91	20	64	10	4	26	0	12	105	30	378	330	55
boreholes	48	77	3	135	178	120	40	137	120	101	445	1,404	35	42
river abstractions	27	72	3	53	15	10	37	14	6	9	63	309	237	-
service/water towers	417	878	119	539	636	224	369	356	344	479	462	4,823	-	-
Water Treatment works														
total	159	153	8	152	204	112	43	126	117	129	283	1,486	616	103
Sewage Treatment works														
preliminary/ none	36	129	7	15	0	36	104	0	8	7	-	342	494	-
primary	29	216	88	146	62	36	24	2	22	69	-	694	632	-
secondary	682	519	283	422	673	315	445	283	220	464	-	4,306	398	-
tertiary	361	109	12	50	277	16	9	86	108	97	-	1,125	50	-
Total sewage	1,108	973	390	633	1,012	403	582	371	358	637	-	6,467	1,574	951
Underground assets														
mains - km	33,200	24,910	7,648	40,152	40,822	12,987	14,974	30,979	10,447	27,476	71,502	315,097	46,953	21,641
sewers - km	29,000	16,245	13,409	30,060	51,413	21,791	7,490	83,474	13,942	24,139	-	290,963	27,827	9,110
Pumping stations														
sewage	3,969	1,430	486	1,475	2,461	1,905	648	2,286	1,178	1,253	-	17,091	-	661
water	258	586	78	549	674	209	261	224	320	412	1,284	4,855	-	305
Storm overflows	2,534	2,500	1,334	2,337	2,162	933	1,032	2,617	1,002	1,845	-	18,296	-	-
Outfalls														
long sea outfalls	4	19	3	11	0	19	7	0	6	6	-	75	-	-
Total Sea & estuarial outfalls	36	129	33	62	0	49	-	0	-	-	-	309	807 ²	-

¹ based on 1992/93 Returns

² 1988

³ data from 1992/93

Source: Water Supply Companies; Scottish Office; Northern Ireland Executive

Manpower

7.1 Manpower

Full-time equivalent employees at March 31

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1991	1992	1993	1994
Anglian	6,744	6,700	6,560	5,826	5,549	5,264	5,184	5,102	5,068	3,629	3,927	3,970	3,942
Dwr Cymru	5,736	5,677	5,424	5,179	4,709	4,746	4,845	4,618	4,406	3,455	3,505	3,437	3,352
Northumbrian	2,309	2,151	2,077	1,919	1,759	1,636	1,523	1,459	1,463	1,193	1,222	1,317	1,370
North West	9,120	8,782	8,629	8,276	8,166	8,055	8,134	7,936	7,688	6,762	5,722	5,571	5,541
Severn Trent	10,886	10,502	10,182	9,720	9,269	8,908	8,493	8,174	7,890	7,054	7,456	7,000	6,757
Southern	4,101	3,948	3,720	3,494	3,336	3,183	3,160	3,162	3,185	2,259	2,226	2,428	2,453
South West	2,450	2,276	2,255	2,194	2,023	2,008	2,003	1,958	1,938	1,855	2,084	2,144	2,141
Thames	11,945	11,753	11,227	10,321	9,089	8,896	9,152	9,210	9,321	7,400	7,218	6,974	6,752
Wessex	2,398	2,291	2,266	2,182	2,050	1,994	1,925	1,891	1,907	1,755	1,821	1,871	1,771
Yorkshire	6,522	6,506	6,021	6,052	5,835	5,472	5,254	4,981	4,941	4,074	4,031	3,813	3,930
WSCs	62,211	60,586	58,361	55,163	51,785	50,162	49,673	48,491	47,807	39,436	39,212	38,525	38,009

Water

Supply

Companies	8,641	8,369	8,190	8,010	7,821	7,340	7,101	6,865	6,768	7,000	7,101	6,356	6,576
NRA*										6,805	7,591	8,195	7500
Scotland	6,318	6,226	6,121	6,144	6,129	6,155	6,182	6,194	6,094	6,229	6,514	6,608	6665
Northern													
Ireland	2,892	2,708	2,605	2,524	2,518	2,510	2,605	2,552	2,569	2,598	2,633	2,533	2,463
UK	80,062	77,889	75,277	71,841	68,253	66,167	65,561	64,102	63,238	62,068	63,051	62,217	61,213

* The NRA was set up in 1989 and most of the staff transferred from the water authorities

Source: Water companies; NRA; Scottish Office; Water Executive Northern Ireland.

International

8.1 Abstractions for water according to source (million m³)

	True ground water		Spring water		Surface water		Total water abstraction	
	1980	1991	1980	1991	1980	1991	1980	1991
Austria *1	198	221	221	225	5	4	424	450
Belgium	435	465	0	0	217	250	652	715
Denmark *2	362	346	0	0	3	2	365	348
Finland	196	226	0	0	252	220	448	446
France		3800				2280	-	6080
Germany *3	4199	4142	546	460	1893	1934	6638	6536
Hungary	297	803	60	40	443	95	800	938
Italy (1984)	3290	4025	2535	3167	892	1273	6717	8465
Luxembourg	2	2	27	30	16	14	45	46
Netherlands	667	846	0	0	337	381	1004	1227
Norway	135	145	0	0	765	765	900	910
Spain	684	1234	0	0	2426	2895	3110	4129
Sweden	239	222	0	0	716	744	955	966
Switzerland	449	506	473	469	181	218	1103	1193
UK	1910	2132	0	0	5060	5488	6970	7620

*1 - OVGW statistics (60% population)

*2 - DVF statistics (75% population)

*3 - estimates include former GDR

Source: IWSA 19th International IWSA Congress October 1993

8.2 Water delivery (million m³)

	Household and small business		Industry and others		Total delivery		Population millions	
	1980	1991	1980	1991	1980	1991	1980	1991
Austria *1	252	359	155	77	407	436	7.55	7.86
Belgium	366	416	208	179	574	595	9.85	10.02
Denmark *2	193	202	112	95	305	297	5.12	5.15
Finland	218	230	171	197	389	427	4.78	5.00
France	2085	3300	1120	1300	3205	4600	53.88	56.80
Germany *3	3869	4106	2002	1581	5871	5687	7.48	78.30
Hungary	387	520	376	280	763	800	10.71	10.30
Italy (1984)	3945	4652	1295	1384	5240	6036	56.43	57.52
Luxembourg	24	26	10	13	34	39	0.36	0.39
Netherlands	733	949	192	217	925	1166	14.14	14.83
Norway	230	258	370	294	600	552	4.09	4.23
Spain	2146	1854	794	871	2940	2725	37.43	38.81
Sweden	516	531	298	261	814	792	8.31	8.64
Switzerland	532	655	380	366	912	1021	6.39	6.90
UK	3160	3405	2070	2051	5230	5456	56.31	57.60

*1 - OVGW statistics (60% population)

*2 - DVF statistics (75% population)

*3 - estimates include former GDR

Source: IWSA 19th International IWSA Congress October 1993

8.3 Specific water consumption (litres/inhabitant/day)

	Household and small		Industry and others		Total delivery	
	1980	1991	1980	1991	1980	1991
Austria *1	155	215	100	46	255	261
Belgium	104	116	59	50	163	166
Denmark *2	175	175	102	82	277	257
Finland	148	150	117	129	265	279
France	109	161	58	64	167	225
Germany *3	141	144	73	55	214	199
Hungary	110	153	107	83	217	236
Italy (1984)	211	214	69	63	280	277
Luxembourg	183	183	76	91	259	274
Netherlands	142	173	37	40	179	213
Norway	154	167	247	190	401	357
Spain	157	131	58	61	215	192
Sweden	195	195	120	96	315	291
Switzerland	229	260	162	145	391	405
UK	154	161	100	98	254	259

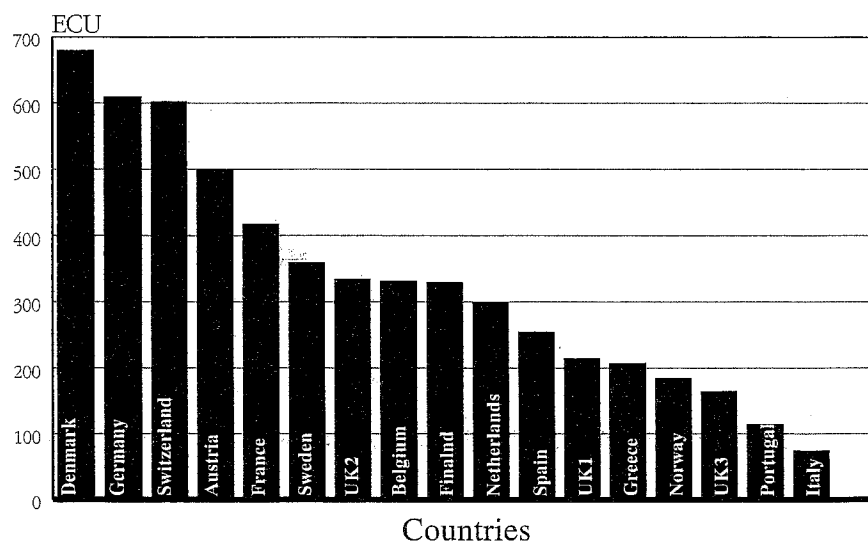
*1 - OVGW statistics (60% population)

*2 - DVF statistics (75% population)

*3 - estimates include former GDR

Source: IWSA 19th International IWSA Congress October 1993

8.4 Total household bill for water and sewerage services 1993 (at 200m³pa)



UK1: Birmingham (unmeasured) UK2: Birmingham (measured) UK3: Edinburgh

Source: CRI

8.5 Sewage treatment - % population served

	1970	1975	1980	1985	1990			
					primary	secondary	tertiary	total
Belgium	3.8	5.5	22.9		45	0	0	45
Denmark	54.3	70.6		90.0	25	65	5	95
France	40.0		61.5	63.7	40	0	0	40
Germany (West)	61.8	74.8	81.8	86.5	11	81	8	100
Greece			0.5		18	0	0	18
Ireland			11.2		15	54	1	70
Italy	14.0		30.0		na	na	na	na
Luxembourg	28.0		81.0	83.0	8	84	0	92
Netherlands		45.0	68.0	81.0	7	75	3	85
Portugal	3.1	6.0	10.0	12.0	20	23	2	45
Spain		14.3	17.9	29.0	17	9	0	26
UK			82.0	83.0	10	80	10	100

Source: WHO 'International drinking water supply and sanitation decade'. April 1990 for 1990 data

Source: 'OECD Environmental Data - compendium 1987' for 1970 to 1985 data

8.6 Sewage connections and volumes

	% population served by sewage works	% connected to sewer	total no. sewage works	no. of sewage works serving > 100,000
Belgium	25	58	292	13
Denmark	92	94	1805	18
France	50	65	7805	-
Germany (West)	86	91	8456	137
Greece	10	40	26	2
Ireland	25	66	530	2
Italy			3783	102
Luxembourg	76	96	324	1
Netherlands	88	92	485	64
Portugal	37	38	166	-
Spain	43	80	1595	-
UK	83	96	7645	102
England & Wales	83	96	6524	-

Source: Commission of EC. 'Updating of statistical data about sewage works',
Feb 1990. Most data for 1988.

8.7 Sludge disposal 1990

	Agriculture %	Landfill %	Incineration %	Sea %	Total '00s dry tonnes per annum
Belgium	80	18	2	0	35
Denmark	50	25	25	8	130
France	na	na	na	na	700
Germany (West)	32	56	10	0	2500
Greece	15	85	0	0	200
Ireland	23	28	0	49	23
Italy	32	67	2	1	800
Luxembourg	50	50	0	0	15
Netherlands	53	29	10	8	280
Portugal	11	28	0	61	25
Spain	na	na	na	na	300
UK	54	15	3	28	1075

Source: WHO 'International drinking water supply and sanitation decade'. April 1990 and 'Proceedings of WSA Workshop on the proposed EC Directive concerning municipal waste water treatment' May 1990

8.8 Quality of bathing water 1989-93

Compliance with coliform parameters of EC directive

Sea water

Fresh water

	1989	1990	1991	1992	1993	1989	1990	1991	1992	1993
Belgium	94	90	85	90	82	85	86	75	58	59
Denmark	89*	-	93	95	96	-	-	90	92	95
Germany	73*	-	64	73	76	-	-	37	38	44
Greece	47*	65*	90	97	96	-	-	33	100	100
Spain	80	-	88	93	95	57	-	48	61	65
France	84	-	87	79	82	75	-	84	78	79
Ireland	96	-	97	94	96	-	-	-	100	100
Italy	84	-	90	92	88	61	-	87	79	81
Luxembourg	-	-	-	-	-	55	75	50	75	80
Netherlands	91*	82*	86*	86	87	-	-	-	75	69
Portugal	-	87	86	83	81	-	-	-	-	29
UK	76	77	76	79	80	-	-	-	-	-

* data marked with asterisks are for sea and fresh waters combined as no separate data are available

Source: EC Quality of Bathing Water 1993

8.9 Bathing water quality in EC member states 1993

		no. of sampling points	no. with inadequate sampling frequency	no. of points complying	% complying
Belgium	sea	39	0	32	82
	fresh	85	5	50	59
	sea and fresh	124	5	82	66
Denmark	sea	1180	2	1135	96
	fresh	108	0	103	95
	sea and fresh	1288	2	1238	96
Germany	sea	436	32	333	76
	fresh	1702	721	758	44
	sea and fresh	2138	753	1091	51
Greece	sea	1250	10	1201	96
	fresh	4	0	4	100
	sea and fresh	1254	10	1205	96
Spain	sea	1405	6	1341	95
	fresh	312	23	202	65
	sea and fresh	1717	29	1543	90
France	sea	1856	166	1526	82
	fresh	1660	127	1306	79
	sea and fresh	3516	293	2832	81
Ireland	sea	90	0	86	96
	fresh	5	0	5	100
	sea and fresh	95	0	91	96
Italy	sea	4288	287	3755	88
	fresh	665	54	538	81
	sea and fresh	4953	341	4293	87
Luxembourg	fresh	20	0	16	80
Netherlands	sea	45	6	39	87
	fresh	456	110	313	69
	sea and fresh	501	116	352	70
Portugal	sea	312	34	252	81
	fresh	24	16	7	29
	Sea and fresh	336	50	259	77
UK	sea	457	0	365	80

Source: EC Quality of Bathing Water 1993

Other water organisations

Board for Education and Training in the Water Industry (BETWI)

1 Queen Anne's Gate, London, SW1H 9BT, Tel: 0171 957 4517, Fax: 0171 957 4641

BETWI is the lead body and industry training organisation (ITO) for the water sector. As ITO it provides a focal point for all education and training matters within the water sector and is the principal point of contact with the Employment Department. As an ITO, BETWI has three roles:

- monitoring the future skill requirements and training in the water industry sector;
- developing and promoting occupational standards and vocational qualifications; and
- encouraging employers in the industry to improve their training effort.

Incorporation as a company limited by guarantee took place on 14 October 1992. Membership consists of the Water Services Association of England and Wales, Water Companies' Association, Department of Environment Northern Ireland - Water Service and the Convention of Scottish Local Authorities (COSLA).

British Water (BW)

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 957 4554, Fax: 0171 957 4565

British Water is the trade association for the UK water and waste-water industry worldwide and was formed in 1993 by merger of BEWA and BWIG, the activities of which it has continued and expanded. It aims to promote the development of markets for British goods, services and technical expertise in the water industry at home and overseas.

Membership is approaching 200 companies ranging from small and medium-sized enterprises to major international corporations. The membership is drawn from accountancy firms, construction contractors, consultants, M & E suppliers, financial services, pipeline manufacturers, process contractors, pump and valve suppliers, research and training establishments and water services companies.

Services provided for members are designed to support their own business development activities and include representing their interests to government, Whitehall and Brussels on legislative and regulatory issues affecting the industry; monitoring technical developments through the British Water committee structure and developing appropriate action programmes; organising overseas trade missions, seminars and exhibitions; compiling and publishing statistics.

The Certification and Assessment Board for the Water Industry (CABWI)

1, Queen Anne's Gate, London SW1H 9BT, Tel: 0171 957 4517, Fax: 0171 957 4641

CABWI is the awarding and certification body for the water industry's National Vocational Qualifications (NVQs) in England, Wales and Northern Ireland.

For the workforce in Scotland, there is a joint certification agreement, between the Scottish Vocational Education Council (SCOTVEC) and CABWI to award joint certificates and units of accreditation in the form of Scottish Vocational Qualifications (SVQs).

CABWI is also an awarding body, alongside City & Guilds and SCOTVEC, for the new Street Works qualifications for Supervisors and Operatives contained in the two sets of Regulations which cover England, Wales and Scotland, under the New Road and Street Works Act 1991.

Incorporated as a company limited by guarantee on 12 August, 1991, CABWI has three members: the Water Services Association of England and Wales, Water Companies' Association and Department of the Environment Northern Ireland - Water Service.

Foundation for Water Research (FWR)

Allen House, The Listons, Liston Road, Marlow, Bucks SL7 1FD, Tel: 01628 891589, Fax: 01628 472711

The Foundation for Water Research (FWR) is an independent, non-profit making, membership-based organisation founded to encourage and co-ordinate collaborative research on water-related topics for the benefit of its Members.

FWR was established in its present form in 1989, having been incorporated originally as the Water Research Association in 1953.

Membership of FWR includes the principal water industry organisations in the UK, consultants, industrial companies, and a wide selection of academic institutions. FWR also has a significant representation of Members from overseas.

FWR funds and manages a programme of research, developed in consultation with Members, which is intended to stimulate innovation and to provide a sound scientific basis for issues of common concern.

Institute of Hydrology (IH)

Maclean Building, Crowmarsh Gifford, Wallingford OX10 8BB, Tel: 01491 838 800, Fax: 01491 32256

IH is one of the component institutes of the Natural Environment Research Council. Besides a central laboratory at Wallingford, it has research staff at Plynlimon, mid-Wales, at Stirling, Scotland and at several overseas locations. It has a turnover exceeding £7.0 million per year and a staff of over 180. Its mission is to obtain a greater understanding of the hydrological cycle and the component physical, chemical and biological processes at local, regional and global scales. Much of its research is directed toward monitoring and predicting the effects of natural environmental change and the activities of man on the hydrological cycle.

A core programme of research is funded by NERC but about 75% of IH work involves contract research for UK government departments, international agencies, overseas governments, consultants and public and private sector businesses.

The Institution of Water and Environmental Management (IWEM)

15 John Street, London WC1N 2EB, Tel: 0171 831 3110, Fax: 0171 405 4967

IWEM is a multi-disciplinary, professional and examining body for engineers, scientists and other professionally qualified personnel engaged in water and environmental management. The main objects of the institution are to advance the practice of water and environmental management for the public benefit and to promote education, training, study and research in those areas. IWEM's membership is over 12,000 of whom almost 1,500 are from overseas.

Institution of Water Officers (IWO)

Heriot House, 12 Summerhill Terrace, Newcastle upon Tyne NE4 6EB, Tel: 0191 230 5150, Fax: 0191 230 2880

Established in 1945 - formerly Association of Water Officers (until July 1990). The objectives of the Institution are to provide a means for members to advance their technical and administrative knowledge of the water industry. This is achieved through meetings, conferences, exhibitions and works visits.

The Institution is run by a National Council comprising ten representatives of the membership and ten officers. The membership is broken into nine areas covering the whole of Britain and in addition there is extensive overseas membership. The headquarters office, run by the General Manager, administers national policy as decided by the National Council and the membership, and coordinates regional activities.

Society of British Water Industries

38 Holly Walk, Leamington Spa, Warwicks, CV32 4LY
Tel: 01926 831 530, Fax: 01926 831 931

SBWI serves the interests of the major UK manufacturers and contractors who supply the Water Industry. Members meet regularly in Sections devoted to specific interests: Pipeline Equipment; Metering/Instrumentation & Control Equipment; Contracting, including service laying to turnkey projects.

The main aim of the Society is to help members serve the Water Industry better, by keeping them well informed about topical issues, providing seminars and speakers when required, and

liaising with other bodies. Members are also represented on appropriate standards-making committees.

UK Water Industry Research Limited (UKWIR)

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 957 4521/4507, Fax: 0171 957 4552

UKWIR provides a framework for the procurement of a common research programme for UK water operators on 'one voice' issues. Its members (Water Services Association, The Water Companies' Association, Convention of Scottish Local Authorities and the Department of the Environment (Northern Ireland)) have joined together to form an 'operators' club to carry out collaborative research.

Starting from 1 April 1994 a rolling programme for three years has been agreed by the UKWIR Board with a total expenditure of £4 million per annum. Work is being done in collaboration with Government Departments, including the DoE, DWI, HMIP, MAFF and NRA. Proposals for research and development projects are initiated by the water industry committees, consisting of representatives from the companies and authorities, who are the members of UKWIR.

The majority of the work contained in the programme has been put out to open tender. Individual projects are being managed by project managers drawn from among the industry's research and development managers with central coordination.

Water Aid

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 233 4800, Fax: 0171 233 3161

Charity Registration Number: 288701

Created by the people and organisations of the UK's water industry, WaterAid is an independent charity working to end the illness and disease caused by unsafe water and inadequate sanitation in some of the world's poorest countries.

All projects supported by Wateraid use simple and practical technologies that are low in cost and easy to operate and maintain. Local people take the lead in building and maintaining their water systems to ensure a lasting water supply.

To date more than two million people have benefited from WaterAid-funded projects throughout Africa and Asia. With your continued support many more can benefit.

Water Industry Certification Scheme (WICS)

BSI Product Certification, PO Box 375, Milton Keynes MK14 6LL, Tel: 01908 312 636, Fax: 01908 695 157

WICS is an independent third party certification scheme accredited by NACCB for product conformity and quality management system certification. It provides a quality assurance service to the water industry, its suppliers and contractors, and offers:

- Certification of quality management systems to BS/EN/ISO9000 product conformity certification to water industry specifications

WICS is wholly owned by The British Standards Institution and is a company limited by guarantee. NACCB accreditation indicates that the scheme is operated in a totally impartial manner.

WRc plc

Henley Road, Medmenham, Marlow, Bucks SL7 2HD, Tel: 01491 571 531, Fax: 01491 579 094

WRc is an R&D and consultancy company specialising in the fields of water, wastewater and environmental management. It employs over 450 staff and current turnover is £30m.

It is an independent company controlled by our staff and operating from two major science and technology centres at Medmenham and Swindon.

WRc plc

Frankland Road, Blagrove, Swindon, Wiltshire, SN5 8YF
Tel: 01793 511 711, Fax: 01793 511 712

WRc also maintains UK regional offices in Scotland and Warrington, and overseas operations in the United States, Hong Kong, Brussels and Italy.

The WRc Evaluation and Testing Centre, at Oakdale, Wales, evaluates consumer products for suitability. Its address is: WRc Evaluation and Testing Centre, Fern Close, Pen Y Fan Industrial Estate, Oakdale, Gwent NP1 4EH
Tel: 01495 248 454, Fax: 01495 249 234

Water Training International (WTi)

Tadley Court, Tadley Common Road, Tadley, nr Basingstoke, Hants RG26 6TB, Tel: 01734 813 011, Fax: 01734 817 000

The Company offers 280 different competency based training courses. The courses cover a wide variety of managerial, legal and technical skill areas.

WTi's 60 full-time training professionals are supported by a network of over 500 visiting lecturers/associates to help run the courses in the most up to date form.

The Company owns 4 purpose-built training centres located near Basingstoke, Derby, York and Glasgow.

Over 40% of WTi's business is now 'customised' to suit individual customer needs, and over 30% of its business is derived outside the water sector.

Many of WTi's programmes are endorsed by nationally recognised bodies, including City & Guilds; BTEC; CABWI; IWEM and IWO.

Around 16,000 people each year benefit from attending a WTi training event.

European and international organisations

CEN (Comité Européen de Normalisation)

Rue de Stassart, 36, 1050 Brussels, Belgium Tel: 00 32 2 519

6811, Fax: 00 32 2 519 6819

The European Committee for Standardisation (CEN), together with the European Committee for Electrotechnical Standards (CENELEC) and European Telecommunications Standards Institution (ETSI), is the standards body whose role is to prepare and publish European Standards. The members of CEN are the national standards bodies of 18 countries (12 EU and 6 EFTA). Thus the UK member is the British Standards Institution (BSI).

The aim of harmonisation of standards is to eliminate barriers to trade arising from varying national technical standards. BSI will withdraw any British Standard which conflicts with a European Standard (EN) and publish the European Standard as a BS:EN. The UK water industry is represented on BSI technical committees and the BSI delegations to relevant CEN technical committees.

EUREAU

Chausée de Waterloo 255-bte 6, 1060 Brussels, Belgium, Tel: 00 32 2 537 4302, Fax: 00 32 2 539 2142

Eureau is a non-profit organisation within the framework of the European Communities with the following objectives:

- to promote and develop jointly the study of all scientific, technical, economic, administrative and legal problems concerning the catchment, treatment and supply of water in the member countries of the European Communities.
- to identify, propose, encourage and take all necessary steps in the context of the general interest for the solution of these problems and the implementation of such solutions.
- to represent the common interests of its members to the public or private community organisations responsible for dealing with problems concerning the catchment, treatment and supply of water.
- to make the European Communities aware of these problems.

The European Commission and European Free Trade Association countries are full members. The UK is represented by the Water Services Association. Other European countries can apply to be observer members.

From 1 January 1990, the committee structure (requiring two UK representatives to be appointed to each Commission) is:

- Commission I: Water resources, treatment and quality
- Commission II: Standardisation and certification
- Commission III: Legislation and economics

European Institute for an Integrated Policy for Resources, Management and Development (IERAD)

334 Avenue Bugeaud, 75116 Paris, France
Tel: 00 33 1 47 55 62 20 Fax: 00 33 1 47 55 62 21

IERAD represents a restructuring and a widening in scope of the European Institute for Water (EIW), which was founded in 1983. Like EIW, it is an independent, politically neutral and non profit making organisation. Retaining the wide experience that EIW gained in the water area on questions of institutional structures, resource management, science and technology, IERAD now looks more broadly at issues of the rational use of human and natural resources, bringing together environmental considerations with those of management and development. Water related questions remain high on the Institute's list of priorities, but in the wider context described above.

The Institute is currently working with countries in the Mediterranean regions, in South America, and in Central and Eastern Europe, with Member States of the European Union, and with the European Commission.

European Water Pollution Control Association

Theodor-Heuss-Allee 17, D-53773 Hennef/Sieg, Germany Tel: 00 49 22 42 8 72 0, Fax: 00 49 22 42 8 72135

Established in 1981 as a non-governmental organisation registered in Bonn. Activities are aimed at advancing knowledge in water protection and in furthering interaction and collaboration between countries in the technical and scientific practice of water management. Its membership is mainly professional bodies. The UK member is IWEM.

European Waste Water Group (EWWG)

1 Queen Anne's Gate, London, SW1H 9BT, Tel: 0171 957 4522, Fax: 0171 957 4666

EWWG is an alliance of wastewater operators which seeks an integrated approach throughout Europe to the problems of waste water and sludge, recognising the search for achievable and affordable solutions and the need for an exchange of views between operators and the Commission and other institutions

in the EC. It was set up in 1991 and now has members and associates in all member states. Italy has the Presidency and WSA currently provides the Secretariat.

International Association on Water Quality (IAWQ)

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 222 3848, Fax: 0171 233 1197

The association is set up to promote the professional advancement of the science and practice of water pollution control. There is a UK committee which has two Water Services Association representatives.

International Water Supply Association (IWSA)

1 Queen Anne's Gate, London SW1H 9BT, Tel: 0171 957 4567, Fax: 0171 222 7243

The International Water Supply Association was formed in 1947. Sixty nine countries are in full corporate membership and about 800 associate and individual members in 100 countries participate in its activities which are aimed at improving knowledge of public water supplies and promoting the exchange of information among all those with responsibility for and interest in water supply. There is a British Committee which has representatives from each of the Water Service Companies as well as other UK bodies.

Appendices

Appendix 1 List of statutory instruments

(As at 30 June 1993, see Water Bulletin for further updates)

no.	Title	Made	In force
1989			
1147	The Water Supply (Water Quality) Regulations 1989	6/07/1989	1/09/1989
1148	The Surface Waters (Classification) Regulations 1989	6/07/1989	1/09/1989
1149	The Controlled Waters (Lakes and Ponds) Order 1989	6/07/1989	1/09/1989
1150	The Control of Pollution (Revocations) Regulations 1989	6/07/1989	1/09/1989
1151	The Control of Pollution (Consents for Discharges etc.) Secretary of State Functions) Regulations 1989	6/07/1989	1/09/1989
1152	The Water and Sewerage (Conservation, Access and Recreation) (Code of Practice) Order 1989	6/07/1989	1/09/1989
1154	The Director General of Water Services' Register (Inspection and Charges) Order 1989	6/07/1989	1/09/1989
1155	The Water Reorganisation (Pensions etc.) (Designated Persons) Order 1989	6/07/1989	1/09/1989
1156	The Trade Effluents (Prescribed Processes and Substances) Regulations 1989	6/07/1989	1/09/1989
1157	The Control of Pollution (Discharges by the National Rivers Authority) Regulations 1989	6/07/1989	1/09/1989
1158	The Control of Pollution (Radioactive Waste) Regulations 1989	6/07/1989	1/09/1989
1159	The Water Supply and Sewerage Services (Customer Service Standards) Regulations 1989	6/07/1989	1/09/1989
1160	The Control of Pollution (Registers) Regulations 1989	6/07/1989	1/09/1989
1161	The Water Reorganisation (Pensions etc.) Regulations 1989	6/07/1989	1/09/1989
1162	The Water Appointment (Monopolies and Mergers Commission) Regulations 1989	7/07/1989	1/09/1989
1186	The Reservoirs (Panels of Civil Engineers) (Reappointment) Regulations 1989	6/07/1989	15/07/1989
1263	The Sludge (Use in Agriculture) Regulations 1989	24/07/1989	1/09/1989
1378	The Rivers (Prevention of Pollution) Act 1951 (Continuation of Bye-laws) Orders 1989	3/08/1989	1/09/1989
1379	The Water and Sewerage (Works) (Advance Payments) Regulations 1989	3/08/1989	1/09/1989
1380	The Water (Local Statutory Provisions) (Consequential Amendments) Order 1989	3/08/1989	1/09/1989
1381	The Water Reorganisation (Pensions etc.) (Amendment) Regulations 1989	3/08/1989	1/09/1989
1382	The Water Reorganisation (Pension etc.) (Designated Persons) (Amendment) Order 1989	3/08/1989	1/09/1989
1383	The Water Supply and Sewerage Service (Customer Service Standards) (Amendment) Regulations 1989	3/08/1989	1/09/1989
1384	The Water Supply (Water Quality) (Amendment) Regulations 1989	3/08/1989	1/09/1989
1461	The Companies Act 1985 (Modifications for Statutory Water Companies) Regulations 1989	8/08/1989	1/09/1989
1462	The Local Government Superannuation (water) Regulations 1989	8/08/1989	1/09/1989
1465	The Water Authorities (Successor Companies) Order 1989	8/08/1989	9/08/1989
1530(C.51)	The Water Authorities (Transfer of Functions) (Appointed Day) Order 1989	18/08/1989	1/09/1989

no.	Title	Made	In force
1531	The Water Reorganisation (Holding Companies of Successor Companies) Orders 1989	18/08/1989	19/08/1989
1532	The Water reorganisation (Successor Companies) (Transfer of Loans) Order 1989	18/08/1989	1/09/1989
1557(c.52)	The Water Act 1989 (Commencement No. 2 and Transitional Provisions) Order 1989	25/08/1989	1/04/1990
1561(c.53)	The Water Act 1989 (Commencement (S.128) No. 3 (Scotland) Order 1989	28/08/1989	1/09/1989
1588	The Local Government (Direct Labour Organisations) (Competition) Regulations 1989	2/09/1989	1/10/1989
1590	The Town and Country Planning General Development (Amendment) (No. 2) Order 1989	2/09/1989	29/09/1989
1939	The Water (Pensions and Compensation) (Transfer of Liabilities) Regulations 1989	19/10/1989	17/11/1989
1968	The Water (Consequential Amendments) Regulations 1989	25/10/1989	27/11/1989
2017	The Water Reorganisation (Capital Allowances) Order 1989	1/11/1989	15/11/1989
2018	The Water Reorganisation (Nominated Holding Companies) (Extinguishment of loans) Order 1989	1/11/1989	15/11/1989
2144	The Colne Valley (Pipelaying and Other Works) (Code of Practice) Order 1989	18/11/1989	18/11/1989
2278	The Water Act (Commencement No. 4) Order 1989	3/12/1989	1/04/1990
2286	The Surface Waters (Dangerous Substances) (Classification) Regulations 1989	4/12/1989	1/01/1990
2314	The Reservoirs Act 1975 (Application Fees) (Amendment) Regulations 1989	6/12/1989	1/01/1990
2479	The Water Undertakers (Rateable Values) Order 1989	22/12/1989	23/12/1989
1990			
36	The Bournemouth and District, South West, Tendring Hundred and West Hampshire (Pipelaying etc...) Regulations 1990	9/01/1990	09/01/1990
72	The Internal Drainage Boards (Finance) Regulations 1990	22/01/1990	24/01/1990
119	The Water Supply (Water Quality) (Scotland) Regulations 1990	23/01/1990	1/07/1990
120(S.12)	The Controlled Waters (Lochs and Ponds) (Scotland) Order 1990	23/01/1990	1/05/1990
121(S.13)	The Surface Waters (Classification) (Scotland) Regulations 1990	23/01/1990	1/05/1990
126(S.15)	The Surface Waters (Dangerous Substances) (Classification) (Scotland) Regulations 1990	29/01/1990	27/02/1990
503	The Local Government Superannuation (Funds etc.) Regulations 1990	7/03/1990	1/04/1990
524	The Isles of Scilly (Water and Sewerage) (Miscellaneous Provisions) Order 1990	8/03/1990	1/04/1990
564	The General Drainage Charges (Forms) Regulations 1990	9/03/1990	1/04/1990
876	The Thames Water Utilities Limited (Pipelaying and Other Works) (Code of Practice) Order 1990	26/03/1990	26/03/1990
880	The Sludge (Use of Agriculture) (Amendment) Regulations 1990	5/04/1990	8/05/1990
1013	The Nitrate Sensitive Areas (Designation) Order 1990	26/04/1990	1/06/1990
1083	The Water (Target Investment Limited) Order 1990	16/05/1990	11/06/1990
1128	The York Waterworks (Constitution and Regulation) Order 1990	24/05/1990	22/06/1990
1180	The Anglian, Hartlepool and Mid Kent (pipelaying and Other Works) (Codes of Practice) Order 1990	25/05/1990	25/05/1990

no.	Title	Made	In force	no.	Title	Made	In force
1187	The Nitrate Sensitive Areas (Designation) (Amendment) Order 1990	6/06/1990	7/06/1990	2285	Regulation) Order 1991	4/09/1991	1/12/1991
1339	The Thames Water Utilities Limited (Local Statutory Provisions) (Consequential Repeals) Order 1990	28/06/1990	28/06/1990	2313	The Water (Prevention of Pollution) (Code of Practice) Order 1991	1/10/1991	22/10/1991
1354	The Northumbria Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990	2463	The Bristol Waterworks Company (Constitution and Regulation) Order 1991	16/10/1991	12/11/1991
1355	The Southern Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990	2539	The South Staffordshire Waterworks Company (Constitution and Regulation) Order 1991	28/10/1991	25/11/1991
1356	The South West Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990	2790	The Control of Pollution (Radioactive Waste) (Scotland) Regulations 1991	7/11/1991	2/12/1991
1357	The Yorkshire Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990	2912	The Private Water Supplies Regulations 1991	10/12/1991	1/01/1992
1617	The Portsmouth Water (Constitution and Regulation) Order 1990	1/08/1990	31/08/1990	2912	The Wrexham and East Denbighshire Water Order 1991	12/12/1991	27/01/1992
1629	The Trade Effluents (Prescribed Processes and Substances) (Amendment) Regulations 1990	6/08/1990	31/08/1990	1992			
1642	The Anglian Regional Flood Defence Committee (Appointed Day) Order 1990	13/07/1990	13/07/1990	17	The Eastbourne Water Company (Constitution and Regulation) Order 1991	08/01/1992	04/02/1992
1643	The Anglian Regional Flood Defence Committee Order 1990	13/07/1990	1/08/1990	18	The Mid-Sussex Water Company (Constitution and Regulation) Order 1992	08/01/1992	04/02/1992
1644	The North West Regional Flood Defence Committee (Appointed Day) Order 1990	13/07/1990	13/07/1990	19	The West Kent Water Company (Constitution and Regulation) Order 1992	08/01/1992	04/02/1992
1645	The Severn-Trent Regional Flood Defence Committee (Appointed Day) Order 1990	13/07/1990	13/07/1990	124	The Lee Valley Water PLC (Constitution and Regulation) Order 1992	22/01/1992	21/02/1992
1647	The Wessex Regional Flood Defence Committee Order 1990	13/07/1990	1/08/1990	125	The Rickmansworth Water PLC (Constitution and Regulation) Order 1992	22/01/1992	21/02/1992
1658	The Mid Kent Water (Constitution and Regulation) Order 1990	27/07/1990	27/07/1990	337	The Surface Water (Dangerous Substances) (Classification) Regulations 1992	20/02/1992	20/03/1992
1670	The Bristol, Rickmansworth, Sunderland and South Shields and Sutton (Pipelaying and Other Works) etc...	8/08/1990	30/11/1990	339	The Trade Effluents (Prescribed Processes and Substances) Regulations 1992	20/02/1992	20/03/1992
1991				395(S39)	The Water (Prevention of Pollution) (Code of Practice) (Scotland) Order 1992	25/02/1992	27/03/1992
31	The Cholderton (Pipelaying and Other Works) (Code of Practice) Order 1991	7/01/1991	7/01/1991	424	The Colne Valley Water Company PLC (Constitution and Regulation) Order 1992	02/03/1992	30/03/1992
324	The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991	22/02/1991	1/09/1991	530(S61)	The Environmental Protection (Determination of Enforcing Authority etc) (Scotland) Regulations 1992	6/03/1992	1/04/1992
346(S35)	The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (Scotland) Regulations 1991	26/02/1991	1/09/1991	574(S63)	The Surface Waters (Dangerous Substances) (Classification) (Scotland) Regulations 1992	9/03/1992	1/04/1992
368	The Eastbourne, Newcastle & Gateshead and N Surrey (Pipelaying and Other Works) (Codes of Practice) Order 1991	21/02/1991	21/02/1991	575(S64)	The Private Water Supplies (Scotland) Regulations 1992	9/03/1992	1/04/1992
461	The North West (Pipelaying and Other Works) (Code of Practice) Order 1991	27/02/1991	27/02/1991	978	The Newcastle and Gateshead and Sunderland and South Shields Water (Amendment of Local Enactments) Order 1992	27/03/1992	31/03/1992
1172 (S.116)	The Water Act 1989 (Commencement No.5) (Scotland) Order 1991	3/05/1991	3/05/1991	1096	The Spray Irrigation (Definition) Order 1992	27/04/1992	18/05/1992
1294	The Lee Valley and South Staffordshire (Pipelaying and Other Works) (Codes of Practice) Order 1991	21/05/1991	21/05/1991	1159(S106)	The Tay River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1333 (S129)	The Water Supply (Water Quality) (Scotland) Amendment Regulations 1991	5/06/1991	1/07/1991	1160(S107)	The Tweed River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1409	The Water (Compulsory Works Powers) (Notice) Regulations 1991	13/06/1991	17/07/1991	1161(S108)	The Solway River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1479	The North Surrey Water Company (Constitution and Regulation) Order 1991	27/06/1991	01/08/1991	1162(S109)	The Forth River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1596	The Essex (Constitution and Regulation) Order 1991	11/07/1991	06/08/1991	1163(S110)	The North-East River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1597	The Bathing Waters (Classification) (Regulations 1991	11/07/1991	09/08/1991	1164(S111)	The Highland River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1609 (S144)	The Bathing Waters (Classification) (Scotland) Regulations 1991	3/07/1991	9/08/1991	1165(S112)	The Clyde River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1733	The Mid Southern Water Company (Constitution and Regulation) Order 1991	24/07/1991	20/08/1991	1214	The Folkestone and District Water Company (Constitution and Regulation) Order 1992	26/05/1992	23/06/1992
1837	The Water Supply (Water Quality) (Amendment) Regulations 1991	03/09/1991	01/01/1992	1988	The Bournemouth and District Water Company (Constitution and Regulation) Order 1992	17/08/1992	14/09/1992
2018	The Tendring Hundreds Waterworks Company (Constitution and			1993	The West Hampshire Water Company (Constitution and Regulation) Order 1992	18/08/1992	15/09/1992
				2374	The East Worcestershire Waterworks Company (Constitution and Regulation) Order 1992	6/10/1992	3/11/92

no.	Title	Made	In force	no.	Title	Made	In force
1993							
61	National Rivers Authority (Levies) Regulations 1993	14/01/1993	16/01/1993	848	Standards) (Amendment) Regulations 1993	8/03/1993	1/04/1993
165	General Drainage Charges (Relevant Quotient) Regulations 1993	31/01/1993	16/01/1993		Local Government (Direct Service Organisations) (Competition) Regulations 1993	24/03/1993	10/05/93
223	Drainage Rates (Forms) Regulations 1993	9/02/1993	3/03/1993	1149	Coast Protection (Variation of Excluded Waters) Regulations 1993	19/04/1993	28/05/1993
500	Water Supply and Sewerage Services (Customer Service			1241	South West Regional Flood Defence Committee Order 1993	10/05/93	1/06/1993

Appendix 2 EC Directives

(i) Water for drinking

- 80/777/EEC on the approximation of the laws of the member states relating to the exploitation and marketing of natural mineral waters.
- 80/778/EEC relating to the quality of water intended for human consumption.

(ii) Wastewater

- 91/271/EEC concerning urban waste water treatment.

(iii) Quality for various uses

- 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water in member states.
- 76/160/EEC concerning the quality of bathing water.
- 78/659/EEC on the quality of freshwaters needing protection or improvement in order to support fish life.
- 79/869/EEC concerning the methods of measurement and frequencies of samples and analysis of surface water intended for the abstraction for drinking in the member states (reference methods for 75/440/EEC).
- 79/923/EEC on the quality required of shellfish waters.
- 91/676/EEC concerning the protection of fresh, coastal and marine waters against pollution caused by nitrates from diffuse sources.

(iv) Discharge of dangerous substances

- 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.

This Directive has given rise to several 'Daughter Directives'.

- 82/176/EEC on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry.
- 83/513/EEC on limit values and quality objectives for cadmium discharges.
- 84/156/EEC on limit values and quality objectives for mercury discharges by sectors other than by chlor-alkali electrolysis industry.
- 84/491/EEC on limit values and quality objectives for discharges of hexachlorocyclohexane, in particular lindane.
- 86/280/EEC on limit values and quality objectives for discharges of certain dangerous substances included in List I in the Annex to Directive 76/464/EEC (covers DDT, PCP and CTC).
- 88/347/EEC amending Annex II to Directive 86/280/EEC relating to aldrin, dieldrin, endrin, isodrin (the 'Drins'), hexachlorobenzene (HCB), hexachlorobutadiene (HCBd), and chloroform.
- 90/415/EEC amending Annex II to Directive 86/280/EEC on limit values and quality objectives for discharges of certain dangerous substances included in list I of the Annex to Directive 76/464/EEC.
- 80/68/EEC on protection of groundwater against pollution caused by certain dangerous substances.

(v) Controls over industry

- 78/176/EEC on waste from the titanium dioxide industry.
- 82/883/EEC on procedures for surveillance and monitoring of the environments affected by wastes from the titanium dioxide industry (reference methods for 78/176/EEC).
- 83/29/EEC amending Directive 78/176/EEC.
- 87/217/EEC on prevention and reduction of environmental pollution by asbestos.
- 91/112/EEC on procedures for harmonizing the programmes for the reduction and eventual elimination of pollution caused by waste from the

titanium oxide industry.

(vi) Controls over products

- 73/404/EEC on the approximation of the laws of the member states relating to detergents.
- 73/405/EEC on the approximation of the laws of the member states relating to methods of testing the biodegradability of anionic surfactants.
- 82/242/EEC amending Directive 73/404/EEC.
- 82/243/EEC amending Directive 73/405/EEC.
- 86/94/EEC amending Directive 73/404/EEC.

(vii) Sewage sludge disposal

- 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage is used in agriculture.

(viii) Information exchange

- 77/795/EEC* establishing a common procedure for the exchange of information on the quality of surface freshwater in the Community.
- 83/189/EEC* on laying down a procedure for the provision of information in the field of technical standards and regulations.
- 86/85/EEC* establishing a Community information system for the control and reduction of pollution caused by the spillage of hydrocarbons and other harmful substances at sea.
- 86/574/EEC* amending 77/795/EEC.
- 88/346/EEC* amending 86/85/EEC to include major inland waters.
- 91/692/EEC* on standardising and rationalising reports on the implementation of certain directives relating to the environment
- 92/446/EEC* concerning questionnaires relating to directives in the water sector

(ix) Public procurement of works and supplies, and products and assessment

- 89/106/EEC on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products.
- 90/531/EEC on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors.
- 90/683/EEC concerning the modules for the various phases of the conformity assessment procedures which are intended to be used in the technical harmonisation directives.
- 92/13/EEC coordinating the laws and administrative provisions relating to the application of Community rules on the procurement procedures of entities operating in the water, energy, transport and telecommunications sector
- 93/38/EEC on procurement procedures of entities operating in the water, energy, transport and telecommunications sector

(x) Other

- 79/409 on special protection areas for birds.
- 82/501/EEC on the major accident hazards of certain industrial activities.
- 87/217/EEC amending Directive 82/501/EEC.
- 88/610/EEC amending Directive 82/501/EEC.
- 85/337/EEC on the assessment of effects of certain public and private projects on the environment.
- 85/374/EEC on the approximation of the laws, regulations and administrative provisions of the member states concerning liability for defective products.
- 90/313/EEC on freedom of access to information on the environment
- 92/43/EEC on special areas of conservation for habitats.

* A 'Decision' rather than a 'Directive'.



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