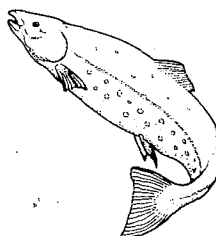
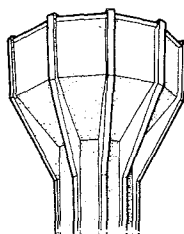
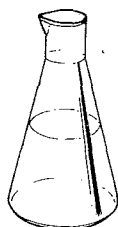
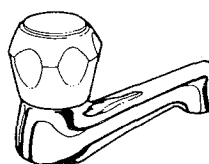


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OF WATER SUPPLY AND WASTEWATER
IN THE UNITED KINGDOM

Hugh Barty-King

WATER - THE BOOK

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*An inspiring and beautifully illustrated book
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Foreword by HRH The Prince of Wales

WSA

25

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FOREWORD

Since the 1991 edition of *Waterfacts* was published, the rate of flow of information has quickened further. This is mainly due to the increasing number of consultation documents that the industry has had to deal with in 1992. The National Rivers Authority has released consultation papers on water resources strategy, abstraction charges, groundwater protection and statutory river quality objectives. The Director General of Water Services has consulted on water metering and debt and disconnection. The Department of the Environment has joined in by releasing *Using water wisely*. These are just some of the main papers.

The quantity of data that the Director General requests from the companies continues to increase as does the physical monitoring of the industry by the National Rivers Authority and the Drinking Water Inspectorate.

This is all good news for the *Waterfacts* business. I hope this publication goes a long way to help those involved in the exacting task of producing responses, supplying information, designing publicity material, marketing, research and the numerous activities, inside and outside the industry, that require basic information.

Last year we promised a 'major review of the content and format of *Waterfacts*'. Guided by readers' comments we decided to continue to build on the existing format. We will continue to make design improvements to enhance the impact of the publication and to extend the information into areas that our readers see as important.

Philip Turton, Editor, *Waterfacts*

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“SAFE WATER IS THE FOUNDATION FOR HEALTH AND HEALTH IS THE FOUNDATION FOR DEVELOPMENT”



Water is essential. No one can survive without it. For millions of the world's poorest people, fetching water for their daily needs means a long walk, often to a polluted source. Poor sanitation makes a bad situation worse.

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WaterAid is a charity which helps communities to build their own safe water supplies. We provide the funds to enable Kenyans to sink tubewells, for Indians to fit handpumps and for Ghanaians to dig their own wells by hand.

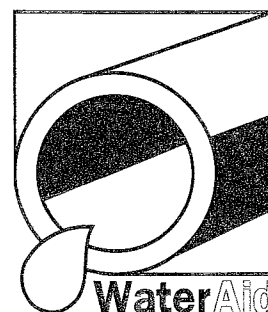
The people we work with are left with the knowledge to maintain and repair their new water system, with a pride in it and with a sense of ownership.

£10 buys a spade to dig wells; £45 a tonne of cement to line them. Your support will make a lasting contribution. Already 1.5 million have benefited.

With your help, many more will benefit.

If you'd like to know how you can help please contact:

WaterAid, 1 Queen Anne's Gate, London SW1H 9BT Tel: 071-233 4800
Charity Reg No: 288701



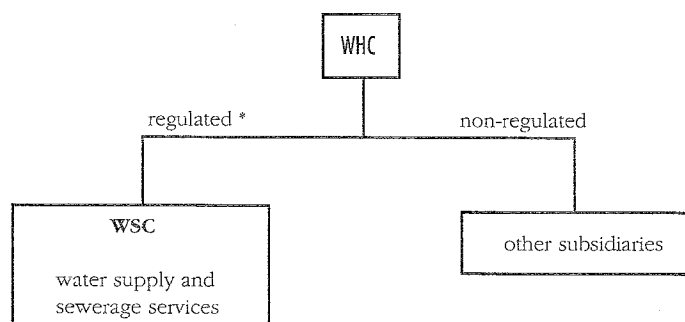
1. ORGANISATION OF WATER SERVICES

Water Service Companies (WSC)

The ten WSCs were appointed on 1 September 1989 under the Water Act 1989 to provide water supply and sewerage services in their areas. The water and sewerage areas are broadly the same except where water is supplied by one of the 22 water supply companies (see page 3) or where water supply or sewerage services are carried out by neighbouring water service companies.

The WSCs are the principal operating subsidiaries of the ten Water Holding Companies (WHCs) which are plcs established under the Companies Acts. It is the WSCs, the 'core businesses', which have statutory responsibilities relating to water and sewerage services and are licensed to provide these services within their boundaries. The principal regulatory provisions, applying to water and sewerage undertakers are set out in the Water Act, in regulations made under it and in the conditions of the Appointments. Most of the recent business activities of each of the water groups consist of water supply and the provision of sewerage services and are, accordingly, regulated under these provisions. With certain exceptions, the regulatory provisions do not apply to business activities of the water groups which are not connected with the carrying out by the water service companies of their water and sewerage functions.

fig 1a. Water Holding Companies (WHC) and Water Service Companies (WSC)



** the regulated business consists of the water supply and wastewater activities within the WSC, not the WSC itself*

1A. 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 Limited
Northumbrian Water Limited
North West Water Limited
Severn Trent Water Limited
Southern Water Services Limited
South West Water Services Limited
Thames Water Utilities Limited
Dŵr Cymru Cyfyngedig
Wessex Water Services Limited
Yorkshire Water Services Limited

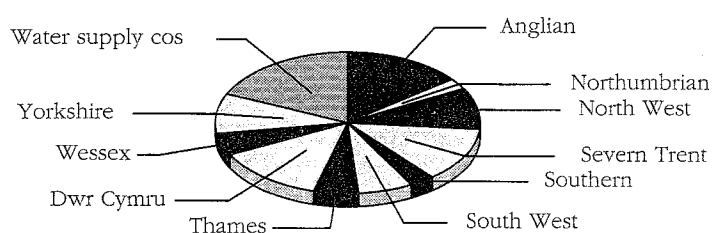
Details of the board members and chief officers of each of the companies are listed in *Who's Who in the Water Industry*. This is published for the Water Services Association by the Turret Group plc and available from:- Turret House, 171 High Street, Rickmansworth, Herts WD3 1SN, tel 0923 777000, fax 0923 771297.

1B. Resident area and population

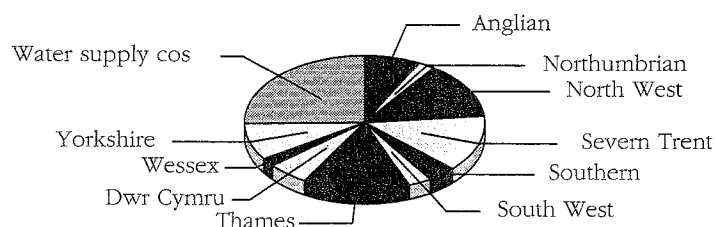
	Area		Resident population	
	water supply	sewerage	water supply	sewerage
	km ²	km ²	million	million
Anglian	22,000	27,500	3.9	5.6
Northumbrian	3,850	9,400	1.2	2.6
North West	14,415	14,445	6.8	6.8
Severn Trent	18,960	21,650	6.9	8.3
Southern	4,450	10,450	2.1	4.3
South West	10,300	10,800	1.5	1.5
Thames	8,200	13,750	7.2	11.5
Dwr Cymru	20,400	21,300	2.8	3.1
Wessex	7,350	10,000	1.1	2.5
Yorkshire	13,900	13,600	4.4	4.6
WSCs	124,000	152,000	37.9	50.8
Water supply companies	28,000	-	12.9	-
England and Wales	152,000		50.8	
Scotland	77,750		5.1	
Northern Ireland	14,150		1.6	
UK	244,000		57.5	

fig 1b. Water service companies by population and area

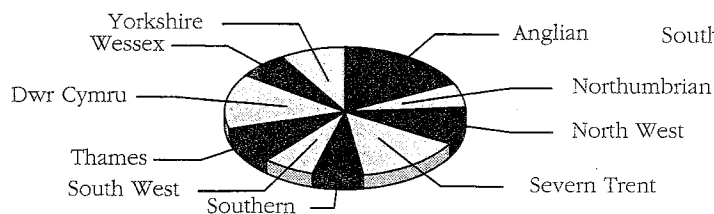
Water supply area



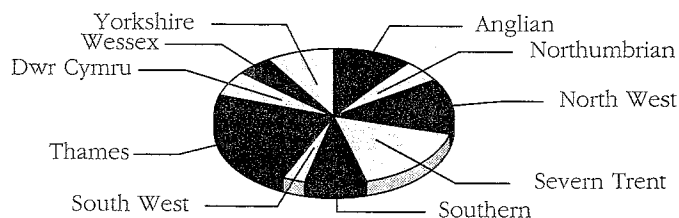
Water supply population



Sewerage area



Sewerage population



Water Services Association (WSA)

1 Queen Anne's Gate, London, SW1H 9BT, tel 071-957-4567, fax 071-222-1811

The WSA is an association of water and sewerage undertakers. The main functions of the WSA are:

- to promote and protect the common interests of the members of the Association, ensuring that UK and EC institutions are made aware of members' common needs and interests.
- to provide a forum for members to discuss among themselves and with representatives of government and outside organisations matters relevant to the water industry.
- to distribute accurate and relevant information about the water industry and provide public relations and public information services.

The WSA is governed by a Council of its members, currently one member from each of the ten water service companies. From 1 January 1993 the Chairman of the Association is Sir Michael Straker CBE, DL, Chairman of Northumbrian Water Limited. WSA members are the ten water service companies in England and Wales listed in table 1A and shown in the map in section 10.

Water supply companies

There are 22 water companies that supply water only. Several of these companies, which existed prior to privatisation, have opted for plc status and this is shown on table 3E. The water supply companies and the areas they supply are shown in the map in section 10. 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 Companies' Association (WCA)

1, Queen Anne's Gate, London SW1H 9BT, tel 071-222-0644, fax 071-222-3366

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

Water in Scotland

Scottish Office Environment Department, Engineering and Waste Directorate, 27 Perth Street, Edinburgh EH3 5RB, tel 031-244-3040, fax 031-244-2903

The functions of the regional water boards, established under the Water (Scotland) Act 1967 were, with the exception of the Central Scotland Water Development Board, taken over by the nine regional and three islands councils, which also provide other services, including sewerage and sewage disposal. The control of pollution in Scotland is administered by the river purification authorities (RPAs) which were established under the Rivers (Prevention of Pollution) (Scotland) Acts 1951 and 1965. There are currently seven River Purification Boards (RPBs) who between them cover the entire Scottish mainland. The three islands councils (Orkney, Shetland and Western Isles) act as river purification authorities in their areas. On 20 January 1992 the Government published a consultation paper *Improving Scotland's environment - the way forward*, in which they outlined their proposals to set up a Scottish Environment Protection Agency (SEPA) with responsibility for controlling pollution to air, land and water. SEPA will assume the responsibilities of HMIP, the RPAs, the 53 district and three island councils in respect of the waste regulatory powers and the local air pollution controls conferred on them under Part 1 of the Environmental Protection Act 1990. The structure of water supply and sewage services in Scotland is also under review.

Water in Northern Ireland

Department of the Environment Water Services, 3 Frederick Street, Belfast BT1 2NS, tel 0232-244711, fax 0232-330790

Responsibility for all water and sewerage services in Northern Ireland lies with the Department of the Environment for Northern Ireland. In February 1992 the Government announced that these services were to be privatised.

Water Industry Certification Scheme (WICS)

1, Queen Anne's Gate, London SW1H 9BT, tel 071-957 4567, fax 071-222-1811

WICS is an independent third party certification scheme accredited by NACCB for product conformity and BS 5750 certification. It provides a quality assurance service to the water industry, its suppliers and contractors, and offers:



certification of quality management systems to BS 5750



product conformity certification to water industry specifications, British and European standards



assessment for products or systems where no established standard exists

WICS is sponsored and guaranteed by its members: WSA, WCA, Convention of Scottish Local Authorities and Department of the Environment for Northern Ireland. It is a company limited by guarantee. All decisions regarding certification are the responsibility of an independent certification committee consisting of experts from both the water industry, its manufacturers and contractors, supplemented by representatives from professional bodies and government. NACCB accreditation indicates that the scheme is operated in a totally impartial manner.

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

1, Queen Annes Gate, London SW1H 9BT, tel 071-957-4525, fax 071-222 1811

The water services industry has recognised the need for occupational standards that reflect not only existing practice but emerging demands which will lead towards best practice within its employment sector. To this end the then industry lead body for the water services, the Water Services Association, developed and prepared a range of National Vocational Qualifications (NVQs) for the workforce in water services and associated industries. In September 1991 the Certification and Assessment Board for the Water Industry was set up by the Water Services Association and the Water Companies' Association to manage and award the National Vocational Qualifications prepared by and for the water services. In March 1992 the Department of the Environment, Northern Ireland - Water Service became the third member of the Company.

CABWI is a company limited by guarantee and has seven directors. Four are nominated by the Water Services Association, two members are nominated by the Water Companies' Association, and one by the Department of the Environment, Northern Ireland - Water Service. For the workforce in Scotland, the Scottish Vocational Education Council (SCOTVEC) and CABWI have signed an agreement to become a joint awarding body to award joint certificates and units of accreditation. CABWI has also, along with City and Guilds and SCOTVEC, become an awarding body under the Street Works (Qualification of Supervisors and Operatives) Regulations 1992.

Further details can be obtained from Ian Bryan, company secretary and scheme administrator.

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

1 Queen Anne's Gate, London, SW1H 9BT, tel 071 957 4525, fax 071-222 1811

BETWI has been incorporated as a company to become the industry training organisation (ITO) and lead body in training matters. Membership consists of the Water Services Association, the Water Companies' Association, the Department of the Environment - Northern Ireland - Water Service and the Confederation of Scottish Local Authorities.

Further details from Ian Bryan, company secretary.

Foundation for Water Research (FWR)

Allen House, The Listons, Liston Road, Marlow, Bucks SL7 1FD, tel 0628-891589, fax 0628-472711

The Foundation is collectively funded by its members to manage a national programme of water research. The membership consists of the water service companies, water supply companies (excluding Cholderton), DoE in England and Wales as well as Northern Ireland, OFWAT, NRA and Scottish bodies. There are also about 100 consultants and industrial compa-

nies as well as 60 educational establishments. There is a core research programme which is the subject of a contract with WRc plc until 1994. The core research programme is worth £3.9 million in 1991/92. Additional research is subject to selective tender. There are four WSA/FWR Technical Committees (Environmental, Process Systems, Sewers & Water Mains and Telecommunications). This structure was renewed during 1992 as part of a general review of research requirements of water operators. Details of the new structure and its relationship to FWR will be published in Waterfacts 1993.

Water Research Centre (WRc)

Henley Road, Medmenham, Marlow, Bucks SL7 2HD, tel 0491-571531, fax 0491-579094

WRc is an independent company. Besides the UK it has bases in Europe, North America and the Far East. It has a turnover of over £33 million and a staff of over 700. There is a major science and technology centre in Swindon:

Frankland Road, Blagrove, Swindon, Wilts, SN5 8YF, tel 0793-511711, fax 0793-511712.

There are other major offices in Scotland, Stockport, Philadelphia and Rome. The WRc Evaluation and Testing Centre, at Slough, which evaluates consumer products for suitability, is being expanded particularly in response to the recent EC Construction Products directive. Its address is:

WRc Evaluation and Testing Centre, 660 Ajax Avenue, Slough, Berks SL1 4BG, tel 0753-537277, fax 0753-537277

Water Training International (WTi)

Tadley Court, Tadley Common Road, Tadley, nr Basingstoke, Hants RG26 6TD tel 0734-813011, fax 0734-817000

Water Training International is an independent company. It covers the whole of the United Kingdom. The Council of WTi consists of the ten WSC representatives, two Convention of Scottish Local Authorities representatives, two from water supply companies, one from the Department of the Environment, Northern Ireland and one from the Scottish River Purification Boards Association. WTi has major training centres at Tadley, Derby, York and Ayrshire.

Institute of Hydrology (IH)

Maclean Building, Crowmarsh Gifford, Wallingford OX10 8BB, tel 0491-38800, fax 0491-32256

IH is one of the component institutes of the Natural Environment Research Council. Besides its central facility at Wallingford it has catchment research staff at Plynlimon, mid Wales and Balquhiddy, near Stirling, Scotland. It has a turnover exceeding £6.5 million per year and a staff of over 170. Commissioned research for public and private sector customers in the UK, the rest of Europe and further afield accounts for 75 per cent of that turnover.

IH has four divisions - hydrological processes, environmental hydrology, applications research and policy.

WaterAid

1 Queen Anne's Gate, London SW1H 9BT tel 071-233 4800 Fax: 071-233-3161

Charity Registration Number: 288701

More than two billion people lack access to safe water throughout the world and three billion lack even basic sanitation. WaterAid works with people to overcome these problems. All projects use technologies that are low in cost and easy to operate and maintain. Local people take the lead in building and maintaining their water supplies and improved sanitation. To date more than 1.5 million people have benefited from WaterAid-funded projects. Over a million more will have safe water and sanitation from projects already planned or underway. With your help many more can benefit.

The Institution of Water and Environmental Management (IWEM)

15 John Street, London WC1N 2EB, tel 071-831-3110, fax 071-405-4967

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 11,000 of whom almost 2,500 are from overseas.

Institution of Water Officers (IWO)

Heriot House, 12 Summerhill Terrace, Newcastle upon Tyne NE4 6EB, tel 091-230-5150, fax 091-230-2880

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

ing 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 secretary, administers national policy as decided by the National Council and the membership, and coordinates regional activities.

British Water Industries Group (BWIG)

9 Harley Street, London W1N 2AL, tel 071-436-7541, fax 071-436-7393

BWIG has a coordinating, advisory role for all sectors of the UK water industry relating to work overseas. It was established to improve the level of export business in the water and wastewater sectors and to promote overseas projects.

British Effluent and Water Association (BEWA)

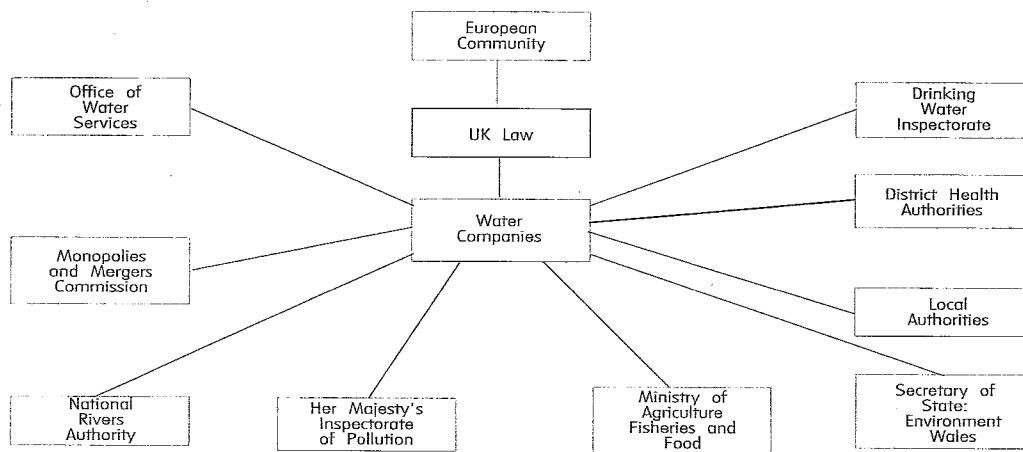
5 Castle Street, High Wycombe, Bucks HP13 6RZ, tel 0494-444544, fax 0494-446185

BEWA is the representative trade association of the water, effluent and sewage treatment plant industry and its membership includes the majority of the leading companies in this sector. Full members of the Association must be companies 'actively engaged and fully established in the UK as designers, contractors, manufacturers or suppliers of specialised equipment and/or associated chemicals and/or services, in the water and effluent treatment plant industry and who accept responsibility for the process designed, marketed or engineered'. Specialist and newly created companies may apply for subscriber membership of one of the four technical committees - municipal, industrial, disinfection or BEWA quality water group. BEWA publishes a buyer's guide, codes of practice, fact sheets and statistics.

2. 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, Regional Councils and in Northern Ireland, the Department of the Environment for Northern Ireland provides the services. Economic regulation, in particular, is different in England and Wales from that elsewhere.

FIG 2A. REGULATION IN ENGLAND AND WALES



Since the last Waterfacts the Government has decided to set up a new environmental protection agency. On 15 July 1992, Michael Howard, Secretary of State for the Environment announced that the new EPA would bring together all of the functions of the National Rivers Authority, Her Majesty's Inspectorate of Pollution and the waste regulation work of local authorities. Legislation will be introduced at the earliest opportunity.

2A. 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 (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 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.

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

- paying a grant-in-aid, setting financial duties and controlling overall staff numbers and conditions of service
- designating water protection zones and making drought orders
- approving charges schemes for water abstraction 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; and
- undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of those 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, Ian Byatt, was appointed in April 1989 for a period of five years. He controls a staff of just over 132, the cost of which is recovered from appointees by a licence fee. From 1 September 1989 all water service companies and water companies in England and Wales operate under terms of an individual appointment which in particular, sets out the maximum charge increases ('K') for the basket of regulated services. The terms of the appointment also define the circumstances where 'K' may be modified, and together with provisions in the Water Act, enable the DG to monitor the standards of customer service, including assessments of the state of underground assets to protect against progressive deterioration of the water pipe and sewer systems.

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 (CSCs) addresses are given in the map in section 10.

Drinking Water Inspectorate (DWI)

The Inspectorate was formed in January 1990 and now has a complement of 28 posts of which 18 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 sufficiency and 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 affect drinking water quality adversely
- 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, with the assistance of the consultants Messrs Watson Hawksley and Messrs Rofe, Kennard and Lapworth, inspected all water companies during 1991. It plans to use consultants in future in order to bring a wide range of expertise and different views into the inspection process, and to provide a measure against which the Inspectorate can assess its own performance.

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

- when a water quality standard set by 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.

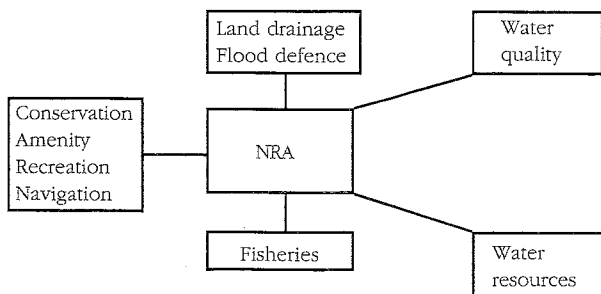
National Rivers Authority (NRA)

The NRA is an independent statutory body set up in September 1989 under the Water Act 1989. It is a non-departmental public body with 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. It inherited some income that was collected by the water authorities (e.g. land drainage precepts, charges for abstraction), it has powers to recover from dischargers the costs of enforcing water pollution control, 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 water environment for which it has responsibility includes all rivers, lakes, reservoirs, estuaries, coastal waters up to three miles from the shoreline (and for migratory fish up to six miles from the shoreline) and water stored naturally under the ground. By the terms of the Water Act these are all 'controlled waters' and it is an offence to cause 'any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters'. The NRA has the power to decide whether water quality in any place is up to prescribed standards; and if not, to determine the most immediate and practical way to bring about an improvement. It constantly monitors water quality by taking samples and analysing them at points all over the country and throughout the year. The NRA has regulatory control over thousands of direct discharges.

The NRA Chairman is Lord Crickhowell, former Secretary of State for Wales. It has a head office in Bristol, another office in London and ten regional units - a total staff complement of approximately 7,850 - and is responsible for:

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

fig 2b. NRA responsibilities



- navigation
- licensing the abstraction of water
- independently monitoring river quality and discharges from sewage treatment plants
- the enforcement of new water quality objectives to be imposed by the Secretary of State in 1992.

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. The NRA are in the process of revising the charges scheme for water abstraction for introduction in April 1993.

Land drainage and flood protection

Since privatisation land drainage and flood protection has been transferred to the NRA, although water and sewerage companies will 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) and these responsibilities were inherited by the NRA. 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 fresh water fisheries is vested in the NRA, whilst reservoir fisheries are the responsibility of the water companies and extend into coastal and estuarial waters.

Pollution control

In England and Wales the NRA is responsible for pollution control of water courses. Statutory quality objectives - designed to maintain and improve water quality - form the framework within which the NRA discharges its pollution control functions. Statutory quality objectives are set by the Secretary of State after public consultation. 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 exercise 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 will develop and implement an integrated approach to pollution regulation to achieve the best overall environmental outcome.

Functions of importance to the 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 etc. 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 (BATNEEC) 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 his 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.

Monopolies and Mergers Commission (MMC)

The principal role of the MMC is very much that of a 'court of appeal' both for the DG and for the WSCs. 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 five-yearly review of 'K'
- the Director General's interim adjustments to 'K' between reviews
- any amendment by the Director General to the Instrument of Appointment

This appeal procedure does set up a counter-balance to the considerable power of the Director General. In the event of any merger or acquisition activity within the industry, the MMC will also play a role. Where the target company holds 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 of the regulatory agencies - OFTEL, OFGAS, OFWAT and now OFFER. The Director General of Fair Trading (DGFT) exercises powers under the Fair Trading Act 1973 and the Competition Act 1980. 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 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.



2B. 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.

2C. 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. Again, details are available from each company.

2D. List of statutory instruments (As at August 1992, 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 Byelaws) 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
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) (S.128) The Water Act 1989 (Commencement 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 (Pipelining 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 (Pipelining etc....	9/01/1990	09/01/1990
72	The Internal Drainage Boards (Finance) Regulations 1990	22/01/1990	24/01/1990
118	The National Rivers Authority (Levies) Regulations 1990	29/01/1990	31/01/1990
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
173	The Drainage Rates (Forms) Regulations 1990	7/02/1990	1/03/1990
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 (Pipelining 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, Hartlepoons and Mid Kent (pipelining and Other Works) (Codes of Practice) Order 1990	25/05/1990	25/05/1990

1187 The Nitrate Sensitive Areas (Designation) (Amendment) Order 1990	6/06/1990	7/06/1990
1339 The Thames Water Utilities Limited (Local Statutory Provisions) (Consequential Repeals) Order 1990	28/06/1990	28/06/1990
1354 The Northumbria Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990
1355 The Southern Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990
1356 The South West Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990
1357 The Yorkshire Regional Flood Defence Committee (Appointed Day) Order 1990	29/06/1990	29/06/1990
1617 The Portsmouth Water (Constitution and Regulation) Order 1990	1/08/1990	31/08/1990
1629 The Trade Effluents (Prescribed Processes and Substances) (Amendment) Regulations 1990	6/08/1990	31/08/1990
1642 The Anglian Regional Flood Defence Committee (Appointed Day) Order 1990	13/07/1990	13/07/1990
1643 The Anglian Regional Flood Defence Committee Order 1990	13/07/1990	1/08/1990
1644 The North West Regional Flood Defence Committee (Appointed Day) Order 1990	13/07/1990	13/07/1990
1645 The Severn-Trent Regional Flood Defence Committee (Appointed Day) Order 1990	13/07/1990	13/07/1990
1647 The Wessex Regional Flood Defence Committee Order 1990	13/07/1990	1/08/1990
1658 The Mid Kent Water (Constitution and Regulation) Order 1990	27/07/1990	27/07/1990
1670 The Bristol, Rickmansworth, Sunderland and South Shields and Sutton (Pipelaying and Other Works) etc..... 1991	8/08/1990	30/11/1990
31 The Cholderton (Pipelaying and Other Works) (Code of Practice) Order 1991	7/01/1991	7/01/1991
324 The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991	22/02/1991	1/09/1991
346(S35) The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (Scotland) Regulations 1991	26/02/1991	1/09/1991
368 The Eastbourne, Newcastle & Gateshead and N Surrey (Pipelaying and Other Works) (Codes of Practice) Order 1991	21/02/1991	21/02/1991
461 The North West (Pipelaying and Other Works) (Code of Practice) Order 1991	27/02/1991	27/02/1991
1172 (S.116) The Water Act 1989 (Commencement No.5) (Scotland) Order 1991	3/05/1991	3/05/1991
1294 The Lee Valley and South Staffordshire (Pipelaying and Other Works) (Codes of Practice) Order 1991	21/05/1991	21/05/1991
1333(S129) The Water Supply (Water Quality) (Scotland) Amendment Regulations 1991	5/06/1991	1/07/1991
1409 The Water (Compulsory Works Powers) (Notice) Regulations 1991	13/06/1991	17/07/1991
1479 The North Surrey Water Company (Constitution and Regulation) Order 1991	27/06/1991	01/08/1991
1596 The Essex (Constitution and Regulation) Order 1991	11/07/1991	06/08/1991
1597 The Bathing Waters (Classification) (Regulations) 1991	11/07/1991	09/08/1991
1609(S144) The Bathing Waters (Classification) (Scotland) Regulations 1991	3/07/1991	9/08/1991
1733 The Mid Southern Water Company (Constitution and Regulation) Order 1991	24/07/1991	20/08/1991
1837 The Water Supply (Water Quality) (Amendment) Regulations 1991	03/09/1991	01/01/1992
2018 The Tending Hundreds Waterworks Company (Constitution and Regulation) Order 1991	4/09/1991	1/12/1991
2285 The Water (Prevention of Pollution) (Code of Practice) Order 1991	1/10/1991	22/10/1991
2313 The Bristol Waterworks Company (Constitution and Regulation) Order 1991	16/10/1991	12/11/1991
2463 The South Staffordshire Waterworks Company (Constitution and Regulation) Order 1991	28/10/1991	25/11/1991
2539(S200) The Control of Pollution (Radioactive Waste) (Scotland) Regulations 1991	7/11/1991	2/12/1991
2790 The Private Water Supplies Regulations 1991	10/12/1991	1/01/1992
2912 The Wrexham and East Denbighshire Water Order 1991	12/12/1991	27/01/1992
1992		
17 The Eastbourne Water Company (Constitution and Regulation) Order 1991	08/01/1992	04/02/1992
18 The Mid-Sussex Water Company (Constitution and Regulation) Order 1992	08/01/1992	04/02/1992
19 The West Kent Water Company (Constitution and Regulation) Order 1992	08/01/1992	04/02/1992
124 The Lee Valley Water PLC (Constitution and Regulation) Order 1992	22/01/1992	21/02/1992
125 The Rickmansworth Water PLC (Constitution and Regulation) Order 1992	22/01/1992	21/02/1992
337 The Surface Water (Dangerous Substances) (Classification) Regulations 1992	20/02/1992	20/03/1992
339 The Trade Effluents (Prescribed Processes and Substances) Regulations 1992	20/02/1992	20/03/1992
395(S39) The Water (Prevention of Pollution) (Code of Practice) (Scotland) Order 1992	25/02/1992	27/03/1992
424 The Colne Valley Water Company PLC (Constitution and Regulation) Order 1992	02/03/1992	30/03/1992
530(S61) The Environmental Protection (Determination of Enforcing Authority Etc) (Scotland) Regulations 1992	6/03/1992	1/04/1992
574(S63) The Surface Waters (Dangerous Substances) (Classification) (Scotland) Regulations 1992	9/03/1992	1/04/1992
575(S64) The Private Water Supplies (Scotland) Regulations 1992	9/03/1992	1/04/1992
978 The Newcastle and Gateshead and Sunderland and South Shields Water (Amendment of Local Enactments) Order 1992	27/03/1992	31/03/1992
1096 The Spray Irrigation (Definition) Order 1992	27/04/1992	18/05/1992
1159(S106) The Tay River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1160(S107) The Tweed River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1161(S108) The Solway River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1162(S109) The Forth River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1163(S110) The North-East River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1164(S111) The Highland River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1165(S112) The Clyde River Purification Board (Establishment) Variation Order 1992	12/05/1992	16/05/1992
1214 The Folkestone and District Water Company (Constitution and Regulation) Order 1992	26/05/1992	23/06/1992
1988 The Bournemouth and District Water Company (Constitution and Regulation) Order 1992	17/08/1992	14/09/1992
1993 The West Hampshire Water Company (Constitution and Regulation) Order 1992	18/08/1992	15/09/1992

2E. 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.
89/428/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 biogradability 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

(x) Other

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.

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

2F. Proposed EC Directives

COM(85)373 on dumping waste at sea.

COM(88)8 amending COM(85)373.

COM(85)733 on water quality objectives for chromium.

COM(88)29 amending COM(85)733.

COM(88)752 amending 80/778/EEC, 76/160/EEC and 79/869/EEC.

COM(89)303 on the establishment of the European Environment Agency and the European Environment Monitoring and Information Network.

COM(90)9 amending 76/464/EEC.

COM(90)85 amending 86/278/EEC.

COM (91)219 amending 85/374/EEC.

COM (91)347 amending 90/531/EEC.

2G. Environmental European Court of Justice cases

	1985	1986	1987	1988	1989	1990	1991	Total
Belgium	7	1	0	2	3	1	na	14
Denmark	1	0	0	0	0	0	na	1
France	2	0	0	4	2	2	na	10
FRG	2	0	0	4	4	1	na	11
Greece	1	0	2	0	2	0	na	5
Ireland	1	1	0	3	0	0	na	5
Italy	3	1	1	4	7	0	na	16
Luxembourg	1	1	0	2	1	0	na	5
Netherlands	1	0	1	1	1	0	na	4
Portugal	-	-	-	-	-	0	na	0
Spain	-	-	-	0	2	2	na	4
United Kingdom	0	0	0	0	1	1	na	2
Total	19	4	4	20	23	7	na	77

Source: Parliamentary Question 25.4.90

Note: best available information. 1989 and 1990 not complete

2H. Cost of regulation 1991/92

	Expenditure £M	Investment £M	Manpower March 1992
OFWAT	6.0	0.4	132
NRA			
Flood protection	210.4	31.1	3594
Water resources	61.6	12.0	796
Pollution control	67.0	11.8	1572
Other	34.2	6.0	1887
DWI	na	na	27

Source: Annual reports

Note: does not include the expenditure of water companies on regulation

3. INDICES AND UNITS

The basic regulation of increases in charges is 'RPI+K'. Thus for a 'basket' of items the overall charges can rise by 'K' percentage points more than the annual rise in inflation. The 'basket' covers unmeasured water supply and sewerage services, measured water supply and sewerage services as well as trade effluent. 'K' is fixed initially by DoE as shown in the table, but can be varied in certain circumstances. This can either be an increase due to 'unforeseen or previously unquantifiable obligations' eg South West, placed on the companies or a decrease such as where the Director General has decreed that the cost price of capital expenditure has been overestimated. The Director General is preparing for a periodic review of 'K' with new 'K' from 1995/96. As part of this exercise the companies are putting together the second asset management plan (AMP2).

3A. Water service companies 'K'

	Original settings		1992/93	
	1990-95	1996-2000	K+U	Actual
	%	%	%	%
Anglian	5.5	5.5	5.6	5.1
Northumbrian	7.0	3.0	7.0	6.0
North West	5.0	5.0	5.0	4.5
Severn Trent	5.5	2.0	5.5	4.5
Southern	* 5.5	0.0	6.1	4.7
South West	+ 6.5	5.0	11.5	11.5
Thames	4.5	4.5	4.6	4.0
Dwr Cymru	6.5	5.5	6.5	4.8
Wessex	4.5	4.5	4.5	4.0
Yorkshire	3.0	3.0	3.6	2.8

* actually 5.5% for three years and 3.5% for two years

+ interim determinations increased to 11.5 for three years from 1992/93

U is the carry over from the previous year

3B. Water supply companies 'K'

	Original	K+U	Actual
	1992/93		1992/93
Bournemouth and West Hampshire	12.0	13.5	10.0
Bristol	4.0	4.1	3.0
Cambridge	8.0	8.3	7.0
Chester	4.5	4.5	2.5
Cholderton	6.0	6.0	4.3
East Surrey	2.0	2.0	0.0
East Worcester	11.0	11.1	8.8
Essex	5.0	6.5	3.5
Folkestone and District	8.0	9.2	8.0
Hartlepoons	3.5	3.6	3.6
Mid Kent	2.5	2.5	2.0
Mid Southern	10.0	10.0	6.5
North East Water	6.0	6.0	2.6
North Surrey	8.5	8.6	7.0
Portsmouth	5.5	5.5	3.5
South East Water	8.0	8.0	6.4
South Staffordshire	5.0	6.5	3.8
Suffolk	13.0	13.0	9.5
Sutton	8.5	8.6	7.5
Tendring Hundred	13.0	13.0	12.0
Three Valleys	4.0	4.0	4.0
Wrexham and East Denbighshire	15.0	22.3	8.4
York	3.0	3.6	1.9

The Director General of Water Services uses the Retail Prices Index (RPI) as the main repricing index when reviewing increases in charges and uses the percentage change in RPI in the twelve months to the November prior to the charging year. For example, the figure for 1992/93 is 4.3 per cent, the change from November 1991.

3C. Retail Prices Index (RPI)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1987	100.0	100.4	100.6	101.8	101.9	101.9	101.8	102.1	102.4	102.9	103.4	103.3
1988	103.3	103.7	104.1	105.8	106.2	106.6	106.7	107.9	108.4	109.5	110.0	110.3
1989	111.0	111.8	112.3	114.3	115.0	115.4	115.5	115.8	116.6	117.5	118.5	118.8
1990	119.5	120.2	121.4	125.1	126.2	126.7	126.8	128.1	129.3	130.3	130.0	129.9
1991	130.2	130.9	131.4	133.1	133.5	134.1	133.8	134.1	134.6	135.1	135.6	135.7
1992	135.6	136.3	136.7	138.8	139.3	139.3	138.8	138.9	139.4			

Note: indices for 1975 to 1986 were given in Waterfacts 1991

3D. RPI repricing to 1991/92

	financial year	annual multiplier	outturn to 1991/92	November to November increase %
1987/88	102.7	1.040	1.313	4.1
1988/89	108.9	1.060	1.239	6.4
1989/90	117.4	1.078	1.149	7.7
1990/91	128.7	1.097	1.047	9.7
1991/92	134.9	1.047	1.000	4.3

Note: indices for 1975 to 1986 were given in Waterfacts 1991

The Director General uses the Notified Index when considering investment expenditure. The Notified Index was defined by the Secretary of State to be the Construction Output Prices Index deflated by the Retail Prices Index. Changes in the Notified Index from the levels assumed at 'K' setting are one of the relevant changes of circumstance which can trigger an interim determination of 'K'.

3E. Construction Output Prices Index (PPI)

	quarter 2	quarter 3	quarter 4	quarter 1	average
1987/88	110	113	115	119	114.2
1988/89	123	127	132	136	129.5
1989/90	140	144	145	147	144.0
1990/91	147	147	145	143	145.5
1991/92	141	139	136	133	137.3

Note: indices for 1975 to 1986 were given in Waterfact 1991

3F. Units used in text with conversion factors

Length	1 inch	=	25.4 mm	(millimetre)	1 mm	=	0.0394 inch
	1 yard	=	0.914 m	(metre)	1 m	=	1.094 yard
	1 mile	=	1.609 km	(kilometre)	1 km	=	0.621 miles
Area	1 acre	=	0.4047 ha	(hectare)	1 ha	=	2.471 acre
	1 km ²	=	100 ha		1 km ²	=	0.386 sq. mile
Volume	1 gallon	=	4.546 litres		1 litre	=	0.220 gallons
	1000 gallons	=	4.546 m ³		1 m ³	=	220 gallons
Flow	1 mgd	=	4.546 Ml/d	(megalitres/day)	1 Ml/d	=	0.220 mgd
	1 mgd	=	4.546 tcmd	(1000m ³ /day)	1 tcmd	=	0.220 mgd
Weight	1 pound	=	0.454 kg	(kilogram)	1 kg	=	2.2046 lbs
	1 ton	=	1.016 tonnes		1 tonne	=	0.984 tons

3G. Water supply company data 1991/92

Water supply company	Area km2	Population 000s	Water Supplied ML/d
Bournemouth and West Hampshire	1041	424	154
Bristol	2391	1022	320
Cambridge	1175	273	74
Chester	142	117	30
East Surrey	733	321	108
East Worcester	785	232	74
Essex	1539	1408	405
Folkestone and District	420	146	55
Hartlepoons	90	90	44
Mid Kent	2050	527	155
Mid Southern	1502	707	222
North East Water	5143	1295	357
North Surrey	526	467	139
Portsmouth	868	642	202
South East Water	2109	611	158
South Staffordshire	1507	1217	358
Suffolk	1311	251	77
Sutton	100	281	66
Tendring Hundred	352	139	36
Three Valleys	3213	2341	702
Wrexham and East Denbighshire	700	151	45
York	340	175	48
Total	28037	12837	3829

Water supply company	Turnover £M	Investment £M	Connections 000s	Average Household bill 1992/93 £/year	Employees no.
Bournemouth and West Hampshire	19.3	4.7	175	77.00	226
Bristol	47.9	18.1	435	80.00	623
Cambridge	12.4	6.0	112	86.57	176
Chester	5.4	1.7	45	99.44	68
East Surrey	21.9	6.8	136	132.21	204
East Worcester	12.2	5.6	100	102.08	116
Essex	61.7	21.9	592	83.27	583
Folkestone and District	8.1	2.1	68	82.76	117
Hartlepoons	5.1	0.6	37	65.95	73
Mid Kent	28.7	15.2	222	108.80	412
Mid Southern	31.9	8.9	270	92.92	327
North East Water	59.0	12.8	568	73.00	782
North Surrey	19.6	11.2	190	70.67	183
Portsmouth	22.0	8.3	274	60.50	320
South East Water	44.0	28.9	273	150.94	459
South Staffordshire	42.1	11.0	517	65.30	731
Suffolk	14.5	8.6	108	89.60	200
Sutton	11.1	4.2	119	89.50	150
Tendring Hundred	8.2	6.1	66	113.12	103
Three Valleys	97.5	57.1	965	82.27	1040
Wrexham and East Denbighshire	9.2	3.4	62	115.31	111
York	6.9	1.1	75	75.74	97
Total	588	244	5409	85.73	7101

Source: Water supply companies handbook - 1992/93

4. WATER SUPPLY

From November 1988 to March 1992 rainfall over eastern and south east England was only about 80 per cent of average resulting in low groundwater levels. In both 1989 and 1990 there were very dry spells over the whole of England and Wales in the spring and summer resulting in hosepipe bans covering a population of 20 million people. The early summers of 1991 and 1992 were cooler and wetter, but the summers became increasingly warm and there were bans covering 6.5 million people by August 1992.

4A. Monthly rainfalls (mm)

NRA region	annual averages		1991			total 1991	1992								
	1941-70	residual	Oct	Nov	Dec		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Anglian	611	150	26	54	24	472	45	17	62	43	48	34	89	82	92
Northumbria	879	450	75	109	78	788	33	46	106	103	31	19	61	104	108
North West	1217	750	125	169	119	1082	57	97	139	89	62	31	72	137	114
Severn Trent	773	300	55	68	39	628	59	31	67	50	59	55	87	117	72
Southern	787	310	51	81	23	682	18	33	59	84	30	26	75	105	73
South West	1194	680	123	112	52	1046	44	68	75	100	31	23	83	171	100
Thames	704	225	36	66	16	591	28	25	51	65	60	39	77	107	89
Welsh	1334	870	154	142	65	1136	76	79	114	91	80	48	93	212	112
Wessex	864	410	83	72	30	777	36	39	55	81	24	49	64	127	94
Yorkshire	818	380	63	94	62	674	47	41	89	66	34	33	81	94	98
England/Wales	912	460	77	95	49	771	48	41	70	75	49	45	87	126	103
Average 1941/70			83	97	90	912	86	65	59	58	67	61	73	90	83
Scotland	1431		165	227	141	1473	139	167	208	123	80	52	103	217	187
Average 1941/70			148	142	156	1431	137	104	92	90	91	92	112	129	137
Northern Ireland	1095	640	108	121	107		67	83	148	110	45	42	92	165	
Average 1951/80			100	102	110	1026	103	69	71	63	69	71	79	92	97

Rainfall data is from the Meteorological Office MORECS system

Residual rainfall is that minus evaporation

fig 4a. Rainfall for England and Wales - October 1988 to September 1992

% variation from normal

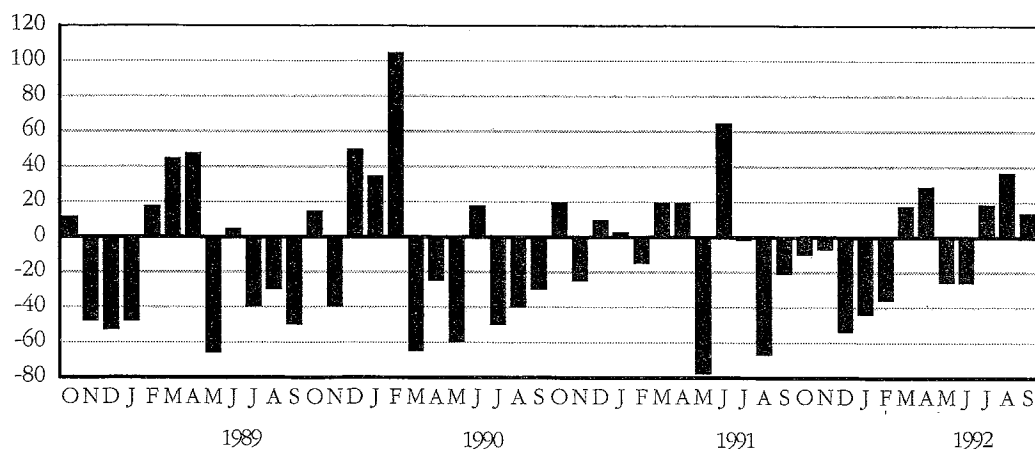
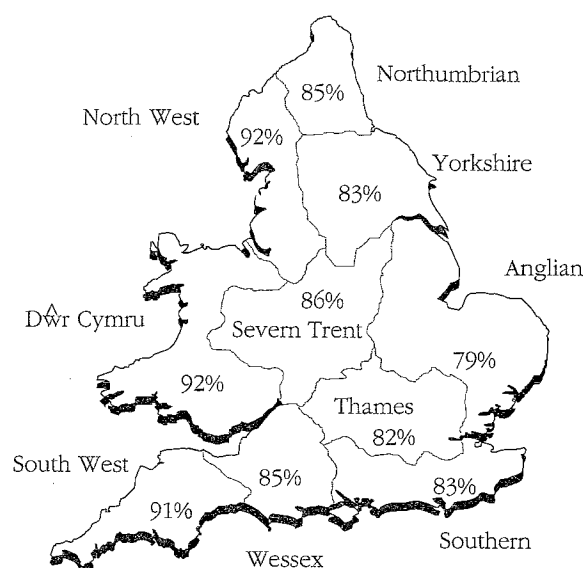


fig 4a-1. The main dry spells 1988-1991 (% of normal)

NRA region	May-Sept 1989 %	March-May 1990 %	Nov 1988 - Mar 1992 %
Anglian	56	52	79
Northumbria	27	59	85
North West	23	63	92
Severn Trent	55	39	86
Southern	41	39	83
South West	59	36	91
Thames	52	36	82
Welsh	45	41	92
Wessex	66	33	85
Yorkshire	27	45	83
England/Wales	48	45	85
return period for E/W 1 in x years	300	100	35

Rainfall as % of long term average - Nov 1988 to March 1992



4B. Water cycle

Each year over the Earth as a whole:-

	km ³
total volume of water	1,454,000,000
water evaporated from oceans	453,000
returning to oceans as rain, sleet and snow	12,000
carried over continents	41,000
evaporated from land surface	72,000
annual precipitation over land	113,000

Source: UNESCO Sources No.13

The volume of water and replenishment times on the Earth is estimated as:-

	% replenishment	
oceans	93.93	2,600 years
groundwater	4.12	5,000 years
glaciers	1.65	10,000 years
lakes	0.016	10 years
soil moisture	0.005	11 months
atmospheric vapour	0.001	10 days
rivers	0.0001	12 days

4C. Licensed water abstractions

NRA Region	water supply		industry *		spray irrigation		agriculture including fish farming and watercress		CEGB
	surface	ground	surface	ground	surface	ground	surface	ground	
	MI/d	MI/d	MI/d	MI/d	MI/d	MI/d	MI/d	MI/d	
Anglian	1000	798	65	230	75	70	0	15	2
Northumbria	1082	103	23	17	0	0	0	0	0
North West	1642	288	896	186	3	1	34	6	56
Severn Trent	1506	915	260	182	56	25	14	10	3004
Southern	396	584	31	113	6	1	0	321	0
South West	476	55	92	18	3	1	0	29	72
Thames	1646	2288	402	136	2	4	117	79	106
Welsh	2275	77	536	30	5	1	102	11	8042
Wessex	382	455	118	27	6	2	5	159	0
Yorkshire	1748	173	261	70	9	20	3	4	269
England/Wales	12153	5736	2684	1009	165	125	275	634	11551

Data is mainly for 1989/90

* excluding water power (hydro electric), saline and tidal abstractions

Water is abstracted from rivers, reservoirs, lakes and groundwater for the purpose of supplying the public with potable water. The National Rivers Authority licenses abstractions of water by Water Service Companies, Water Companies, industry, agriculture and also private supplies. There are about 100,000 private supplies of which only about 200 supply more than 500 people. A few large industries which require water that is clean, but not treated to drinking water standards, receive non-potable supplies. Generally domestic supplies are not metered whereas industrial supplies (and some commercial) are metered. About 99.2 per cent of the population is supplied with public water supply.

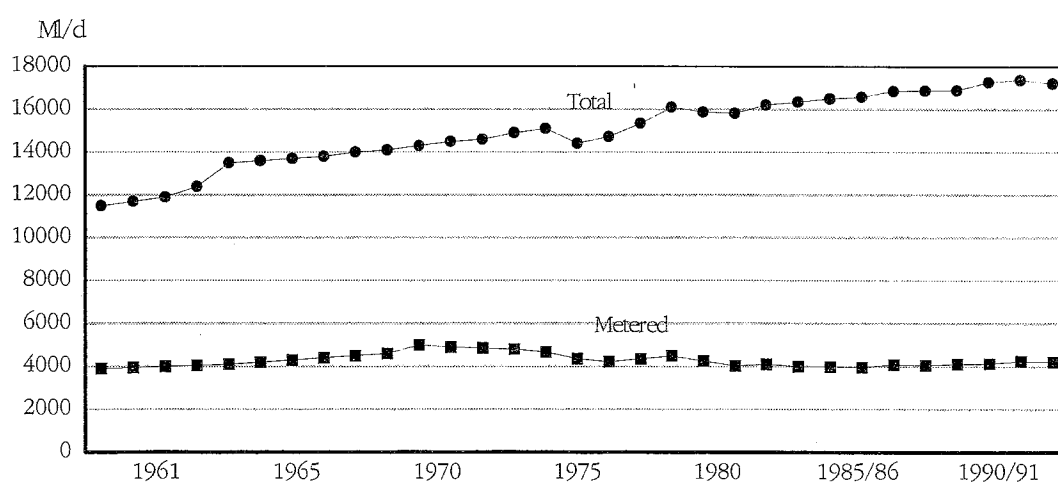
4D. Public water supplied 1974 to 1991/92

	Resident population	Unmetered	Metered	Non-potable	*Total	Scotland	Northern Ireland	UK
	000s	Ml/d	Ml/d	Ml/d	Ml/d	Ml/d	Ml/d	Ml/d
1974	49159	9555	4801	548	14904			
1975	49157	9907	4668	534	15109			
1976	49142	9519	4359	539	14417			
1977	49440	9961	4211	552	14724			
1978	49443	10407	4352	584	15343	2294	655	18292
1979	49508	10961	4490	643	16094	2301	685	19080
1980	49603	11083	4247	546	15876	2237	686	18799
1981	49634	11224	4029	561	15814	2262	663	18739
1982	49601	11548	4106	561	16215	2246	687	19148
1983/4	49654	11842	3996	516	16354	2233	691	19278
1984/5	49764	11956	3990	558	16504	2199	682	19385
1985/6	49924	12036	3965	575	16576	2198	678	19452
1986/7	50075	12195	4088	571	16854	2243	679	19776
1987/8	50243	12216	4059	604	16879	2194	680	19753
1988/9	50393	12177	4114	605	16896	2205	679	19780
1989/90	50562	12424	4135	714	17273	2248	674	20195
1990/91	50878	12549	4256	576	17381	2300	680	20361
1991/92	50878	12399	4258	552	17209	2262	680	20151

* includes water supply companies

Data for public water supply for 1961 to 1973 was given in WATERFACTS 1986

fig 4d. Public water supplies 1961 to 1991/92



4E. Drought orders

	1976	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91
Drought orders	116	0	17	0	2	0	13	5	82	0	0	0	1	74	65	39

Source: Parliamentary Question 6.11.91, 1991 data to November.

4F. Public water supplied in 1991/92

	+ Un-measured ML/d	Measured potable ML/d	Non- potable ML/d	Total ML/d	
Anglian	810	327	39	1176	+ 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).
Northumbrian	281	154	* 232	667	
North West	1894	601	96	2591	
Severn Trent	1417	562	0	1979	
Southern	452	198	10	660	
South West	376	123	0	499	
Thames	2198	540	0	2738	
Dwr Cymru	815	242	141	1198	
Wessex	281	122	6	409	
Yorkshire	1056	402	0	1458	
Total	9580	3271	524	13375	

Water supply companies	2819	987	28	3834
England and Wales	12399	4258	552	17209
Scotland	1596	626	40	2262
Northern Ireland	537	143	0	680
UK	14532	5027	592	20151

* considered as part of the non-appointed business in 1991/92

England and Wales	ML/d	
Measured household	192	This table refers to water delivered to the household or non-household. It excludes 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).
Measured non-household	4041	
Unmeasured household	7946	
Unmeasured non-household	667	

4G. Public water supply to 2011

NRA region *	1990 ML/d	2011 ML/d
Anglian	1839	2343
Northumbria	1114	1218
North West	2550	2446
Severn Trent	2398	2573
Southern	1324	1577
South West	493	598
Thames	4032	4723
Welsh	1216	1417
Wessex	861	1135
Yorkshire	1457	1587
England & Wales	17284	19617

* regions include water supply companies in contrast to 4F

Source: NRA 'Demand and resources of water undertakers in England & Wales.' March 1991. (includes water supply companies)

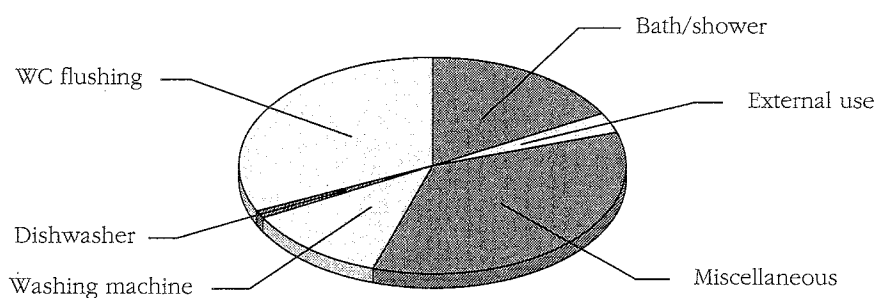
In July 1992 the Department of the Environment issued a consultation paper *Using water wisely*. It covers issues such as water resources and demand, recycling and water use, leakage, water metering and water byelaws. Comments were due by 31 October 1992.

In *WATERFACTS 1986* there was a summary of water used in manufacturing various common products such as bread, coffee, cars etc. In *WATERFACTS 1987* information on household water use by household size and socio-economic group was presented, extracted from *Components of household water demand* and available from the WSA. The data is based on studies in the late 1970s since when there has been a rise of about 2 litres/day in average household consumption to about 140 litres/head/day in 1991. There is considerable variation from region to region. In *WATERFACTS 1984* information was given on quantities of water used for drinking by type of drink.

4H. Water use appliance ownership and use

	Ownership level %	Use per day per household	Litres per use		%
Washing machine	85	0.75	110	External use	3
Dishwasher	10	0.8	55	Clothes washing machine	12
Bath	95	0.6	80	Luxury appliances	1
WC	99	10.5	9.5	Toilet flushing	32
Shower	25	0.55	35	Bathing and showering	17
Sprinkler, hosepipe	na	na	na	Miscellaneous	35
Total of 140 litres/head/day					100

fig 4h. Average household water use



4I. Miscellaneous

A shower uses about 5 litres/minute and a sprinkler can use 1m³/hour.
3 per cent of household use is for drinking use, that is about 10 litres/day per household.

The water industry brochure published in 1989 gave the following figures for industrial water use.

It takes typically about 454 litres to produce 1 ton of ready mixed concrete.

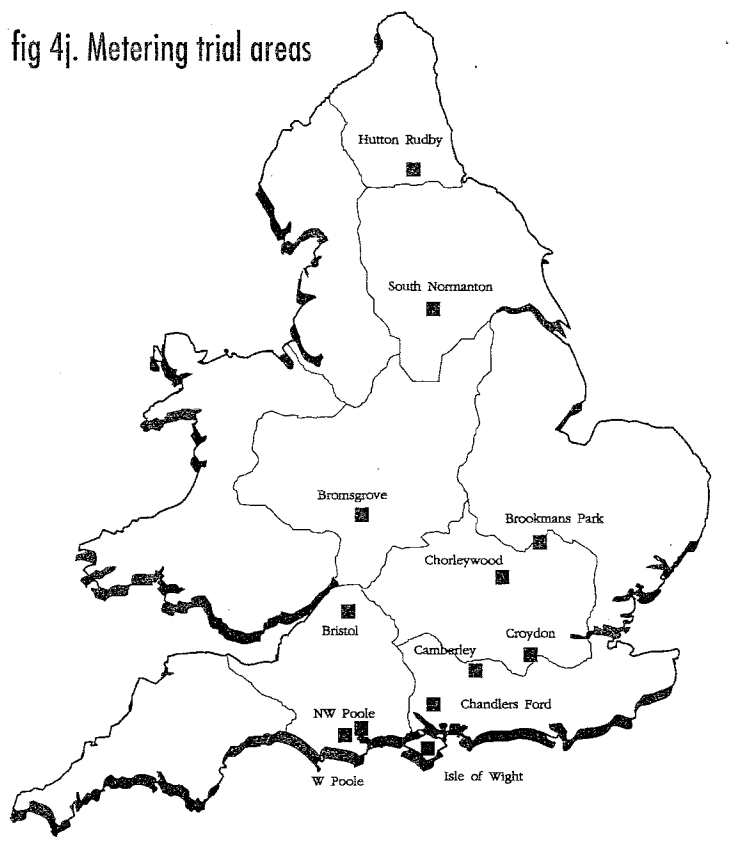
4,546 litres to produce 1 ton of steel.

30,000 litres to build the average car.

8 pints to brew a pint of beer.



fig 4j. Metering trial areas



4J. Metering trials

By April 2000 the water companies have to replace rateable values as the main method of charging for domestic customers.

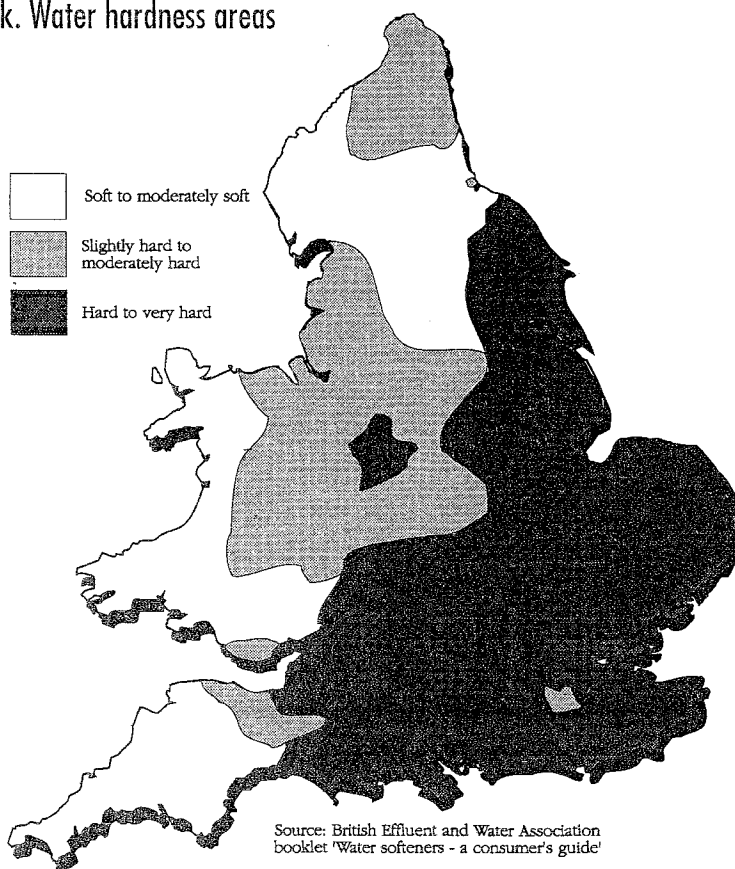
One of the alternatives available is metering, however, this would be a major change resulting in significant additional costs and changes to the level of bills to individual customers. To assess the effects and practicability of metering the Government established a three year trial in twelve areas.

The areas designated for metering experiments are shown below. Full details are given in *National Metering Trials - Second Interim Report* July 1990, available from the Water Services Association, £10. About 57,000 properties of which about 48,000 are on the Isle of Wight. The final report is due in 1993.

4K. 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 only shows a general indication of the type of water you would expect to find.

fig 4k. Water hardness areas



Source: British Effluent and Water Association booklet 'Water softeners - a consumer's guide'

4L. Drinking water quality compliance 1991 (with Water Supply (Water Quality) Regulations 1989, as amended)

Total no. of water supply zones 2577

parameter	total no. of determinations	no. of determinats. not complying	% of determinats. complying	no. of zones in which regulatory requirement has not been met	% of zones in which regulatory requirement comply	no. of zones covered by undertakings *
total pesticides	48034	4426	90.8	376	85	760
nitrite	46058	2228	95.2	317	12	299
trihalomethanes	20541	761	96.3	127	5	204
lead	58635	1736	97.0	661	26	2714
iron	89185	2515	97.2	799	69	2388
nitrate	41430	1170	97.2	94	96	124
individual pesticides	828990	23159	97.2	788	31	800
PAH	17360	354	98.0	176	93	116
coliforms	173909	2385	98.6	177	93	120
manganese	75711	731	99.0	268	90	1114
aluminium	75305	552	99.3	225	91	657
hydrogen ion	99759	584	99.4	196	92	267
odour	28668	67	99.8	52	98	1
taste	28479	68	99.8	57	98	1
turbidity	90849	203	99.8	148	94	1586
faecal coliforms	172376	324	99.8	276	89	85
colour	87127	49	> 99.9	35	99	701
all other parameters	641300	412	> 99.9	158	94	
Total of all parameters	2,623,746	41724	98.4			

* an undertaking requires the Company to take steps to comply with the standard

The Drinking Water Inspectorate produced its second annual report in 1992 and it contained the information above. The report included tables for each individual company and the most significant parameters below were summarised for the whole country. There are about 60 parameters that are tested for (although in a few cases one parameter may cover a number of closely related substances). From 1 July 1990 the water companies have been required to provide a drinking water register where information can be examined by members of the public.

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. Forty two standards allow no latitude. If monitoring reveals a concentration or value of a parameter 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.

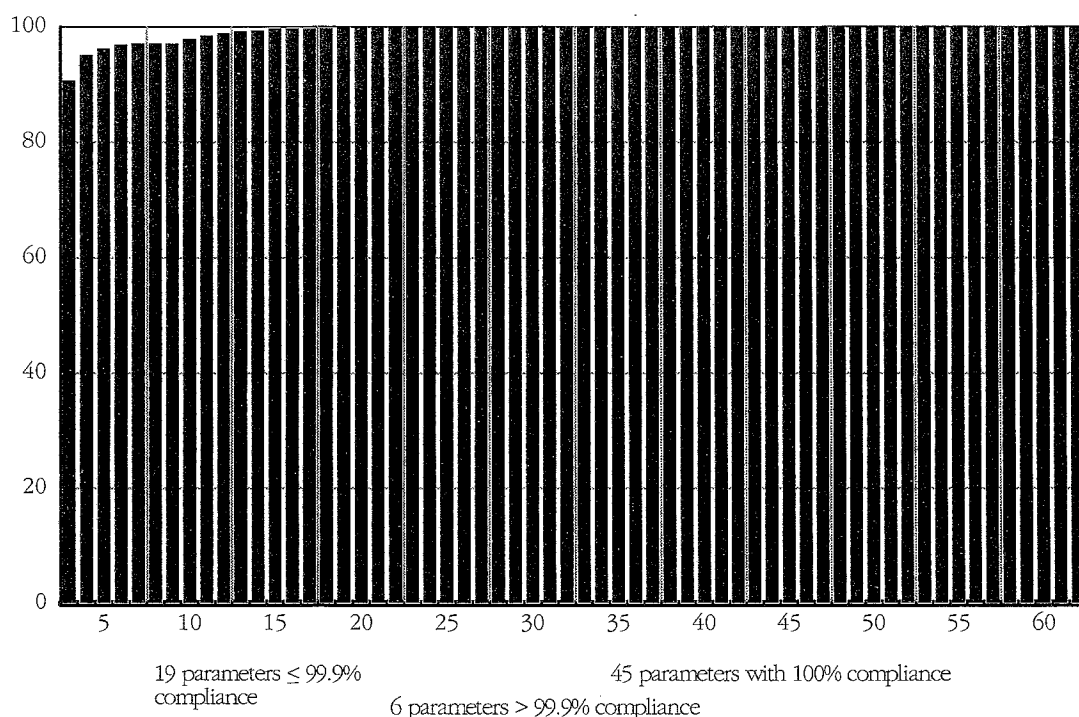
Many of the standards have been set to secure aesthetic quality which means that the water will not have an unpleasant taste, odour or appearance. Other standards, set specifically for health reasons, usually incorporate wide margins of safety. Hence, an occasional excursion above a standard is not indicative, necessarily, that health has been endangered or that water is unfit to drink. Thus, however trivial a breach of the regulations may be, it will appear on the record, indicating that the water supplied was unwholesome.

Figure 4l shows the results of the drinking water sampling programme 1991. Each bar represents one of the substances (or parameters) for which water is tested, for example nitrate or lead or magnesium. The length of the bar represents how

far the samples complied with the standards required for that parameter. 100% compliance means that all the samples, taken in every supply zone throughout the company's area met the required standard for that substance.

Each water company will show 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.

fig 4l. Drinking water compliance



4M. Fluoridation

Districts in England where artificial fluoridated water was received in 1988 (there has been little change since):-

all population in the district	some of the population in the district	
North West Durham	East Cumbria	Doncaster
Gateshead	West Cumbria	Dudley
Newcastle	Durham	Wolverhampton
Bassetlaw	South West Durham	Worcester
Sandwell	Northumberland	Bromsgrove and Redditch
Walsall	North Tyneside	North Warwickshire
Solihull	Grimsby	South Warwickshire
North Birmingham	Scunthorpe	Rugby
East Birmingham	Huddersfield	Coventry
Central Birmingham	Chester	Mid Staffordshire
West Birmingham	Crewe	East Staffordshire
South Birmingham	North Derbyshire	Oxford
	South Derbyshire	Wycombe
	North Lincolnshire	North Bedfordshire
	South Lincolnshire	South Bedfordshire
	Central Nottingham	South West Hertfordshire

4N. Nitrate Sensitive Areas

	percentage of total holding			
	premium	0-25	25-75	75-100
1. Sleaford (Lincolnshire)	85	380	290	200
2. Branston Booths (Lincolnshire)	95	380	290	200
3. Ogbourne St George (Wiltshire)	55	380	290	200
4. Old Chalford (Oxfordshire)	55	330	265	200
5. Egford (Somerset)	55	380	290	200
6. Boughton (Nottinghamshire)	75	280	240	200
7. Wildmoor (Hereford & Worcs)	70	280	240	200
8. Wellings (Staffs & Shropshire)	65	280	240	200
9. Tom Hill (Staffs)	70	280	240	200
10. Kilham (Humberside)	55	330	265	200

Ten areas have been designated as nitrate sensitive areas (NSAs), (subject to Commission clearance under article 93,3 of the Treaty of Rome), and that intensive advisory campaigns should be conducted in a further nine areas.

Payments will be made to those farmers in nitrate sensitive areas who voluntarily undertake to observe restrictions on their agricultural practices. These payments will vary depending on the nitrate sensitive area in line with overall differences in the costs of compliance between different areas.

Farmers who participate in the basic scheme will in addition be able to enter the premium scheme, by converting some or all of their arable land to various forms of grassland. Payments will vary depending on the nitrate sensitive area (since overall assessments of the costs of compliance differ), the option chosen, and the proportion of a farmer's land affected (since the latter affects the fixed cost savings). The premium scheme requirements will help to protect the environment generally and promote conservation.

Premium rates (which are paid in addition to basic rates) will be adjusted, in relation to those shown above, as follows:

For unfertilised grazed grass	£30/ha less
For grass with up to 100 kg N/ha	£110/ha less
For grass and woodland	£100/ha less

For the latter, payments under the farm woodland scheme should also apply.

Intensive pig and poultry farmers will receive individually assessed payments towards the cost of additional storage (pig farmers only) and/or transport requirements calculated against number of livestock.

The advisory areas will be as follows:

1. The Swells (Gloucestershire)
2. Bircham and Fring (Norfolk)
3. Hillington, Gayton and Congham (Norfolk)
4. Sedgeford (Norfolk)
5. Fowlmere (Cambridgeshire)
6. Far Baulker (Nottinghamshire)
7. Dotton and Colaton (Devon)
8. Cringle Brook (Lincolnshire and Leicestershire)
9. Bourne Brook (Warwickshire)

All farms in the advisory areas will be visited by an ADAS officer and encouraged voluntarily to follow practices designed to reduce the risk of nitrate leaching at little or no cost to themselves or even a small benefit.

Source: Parliamentary Question 3.4.90

5. SEWERAGE, SEWAGE AND SLUDGE DISPOSAL

The EC Urban Waste Water Treatment Directive 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 Directive specifically requires the elimination of sewage sludge dumping 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.

5A. Sewerage and sewage treatment by population

	Population connected to sewer		Served by sewage treatment works				Connected to sea outfalls	
	000s	% of resident connecte	preliminary or none	primary	secondary	tertiary	short	long
			%	%	%	%	%	%
Anglian	5130	93	12	5	62	21	6	3
Northumbrian	2551	98	29	37	29	5	22	2
North West	6734	98	9	22	69	0	18	1
Severn Trent	8175	97	0	0	71	29	0	0
Southern	4069	95	31	13	45	11	4	26
South West	1325	88	17	18	65	0	16	1
Thames	11314	98	0	0	92	8	0	0
Dwr Cymru	2910	93	47	5	45	3	47	
Wessex	2305	93	11	23	51	15	7	5
Yorkshire	4394	97	19	1	69	10	8	1
England & Wales	48907	96	18	12	60	10	6	4
Scotland	4916	94	28	26	45	1		
Northern Ireland	1150	81						
UK	55000	95						

5

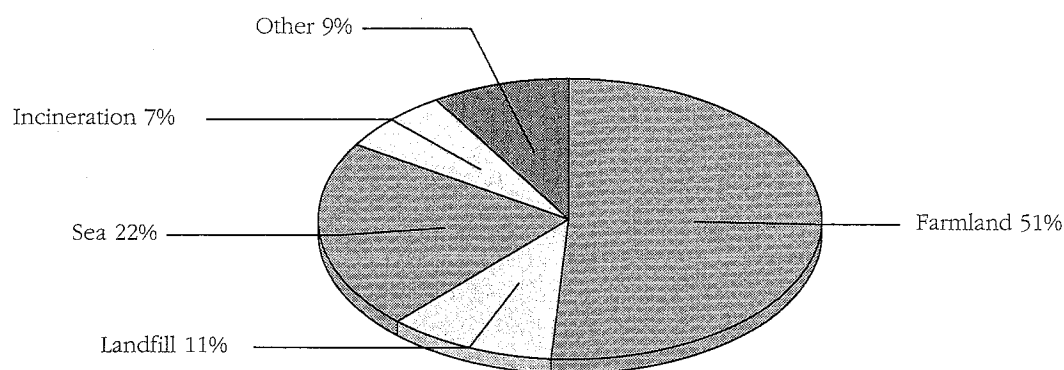
5B. Disposal of sewage sludge 1991

	Farmland	Landfill	Sea	Incinerator	Other	Total
000s of tonnes dry solids						
Anglian	95	3	11	0	10	119
Northumbrian	4	12	15	0	1	32
North West	28	19	55	8	8	118
Severn Trent	65	41	0	29	30	165
Southern	41	2	9	5	9	66
South West	12	1	2	0	0	15
Thames	118	0	86	0	23	227
Dwr Cymru	23	0	8	0	3	34
Wessex	26	2	11	0	0	39
Yorkshire	67	28	9	26	0	130
England and Wales	479	108	206	68	84	945
%	51%	11%	22%	7%	9%	100%
Scotland	16	11	62	1	10	100
Northern Ireland	12	4	11	0		27
UK	507	123	279	69	94	1072
%	47%	12%	26%	6%	9%	100%

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 NWC/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.

fig 5b. Sludge disposal in England and Wales



5C. Sewer and sewage treatment works loads 1991/92

Sewage effluent	Ml/d	Load to STWs on COD/year	tonnes
Measured domestic	1508	Trade effluent	441,042
Trade effluent	1113	Septic tanks	29,560
Wastewater measured	2464		
Wastewater unmeasured	7053		

5D. Local authority sewerage arrangements

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 agreement or by either party giving reasonable notice. Sewerage undertakers may not give any such notice which expires before 1 April 1992. *WATERFACTS 88* listed the sewerage agencies that transferred during the lifetime of the water authorities.

5E. Discharge consents

NRA region	Total consents	All sewage treatment works	WSC sewage treatment works
Anglian	26887	921	710
Northumbria	4198	225	179
North West	946	378	378
Severn Trent	10272	1820	813
Southern	938	273	273
South West	9625	720	610
Thames	4663	6396	395
Welsh	7396	941	729
Wessex	9100	320	272
Yorkshire	11989	988	346
England & Wales	86014	12982	4705

Source: 'NRA Facts 1990'

5F. Sewage treatment works consents

NRA region	Number of works					Number tested					Number complied with consent				
	1986	1987	1988	1989	1990	1986	1987	1988	1989	1990	1986	1987	1988	1989	1990
Anglian	782	760	775	788	710	774	754	748	702	704	465	494	540	582	635
Northumbria	196	182	178	181	179	196	182	178	181	179	159	155	152	167	178
North West	458	448	441	439	378	458	448	441	439	378	396	393	398	397	366
Severn Trent	773	753	808	810	813	762	742	751	847	781	583	582	639	778	755
Southern	282	274	273	463	463	282	274	271	273	271	228	235	230	239	247
South West	226	226	232	na	610	188	219	228	231	231	133	154	161	169	170
Thames	374	382	378	400	410	374	379	378	379	379	307	309	318	330	353
Welsh	803	764	710	753	729	668	611	650	650	629	556	503	543	559	552
Wessex	272	272	272	272	272	272	270	272	266	247	236	241	255	239	239
Yorkshire	380	360	360	346	346	380	351	354	347	346	292	277	293	317	317
England & Wales	4546	4421	4427	4452	4910	4354	4230	4271	4315	4145	3355	3343	3529	3777	3812

% compliance

77%	79%	83%	87%	92%
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Source: 'Digest of Environmental Statistics' 1991. Data is for WSC sewage treatment works

The table gives works with numeric consents. There are 2,000 or so small works, serving less than 500 people, with descriptive consents only

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.

River quality surveys are conducted by the National Rivers Authority who also record the number of pollution incidents. The table below gives the river quality for the last two river quality surveys. The next survey will be for 1995.

5G. River quality surveys

(i) England and Wales

Freshwater rivers/canals	1985 survey		1990 survey		Estuaries	1985 survey		1990 survey	
	km	%	km	%		km	%	km	%
Class					Class				
1A Good	13470	33	12403	29	A Good	1860	68	1805	66
1B Good	13990	34	14531	34	B Fair	650	24	655	24
2 Fair	9730	24	10760	25	C Poor	130	5	178	7
3 Poor	3560	9	4022	9	D Bad	90	3	84	3
4 Bad	650	2	662	2	Total	2730	100	2722	100
Total	41390	100	42378	100					

(ii) Scotland and Northern Ireland

Freshwater rivers/locks and canals	Scotland 1990 survey		Northern Ireland rivers only 1985 survey		Estuaries	Scotland 1990 survey		Northern Ireland 1985 survey	
	km	%	km	%		km	%	km	%
Class					Class				
1A Good	49452	97	204	15	A Good	641	78	99	84
1B Good			954	69	B Fair	153	18	0	0
2 Fair	1203	2	157	11	C Poor	31	4	20	16
3 Poor	238	1	75	5	D Bad	0	0	0	0
4 Bad	71	0	0	0	Total	825	100	119	100
Total	50964	100	1390	100					

5H. River quality 1991/92

NRA region	Class 1A good km	Class 1B good km	Class 2 fair km	Class 3 poor km	Class 4 bad km	Total km
Anglian	277	2057	1722	388	9	4453
Northumbria	1671	727	307	75	8	2788
North West	2409	840	1512	875	264	5900
Severn Trent	881	2573	2486	646	85	6671
Southern	562	1110	422	120	11	2225
South West	610	1531	1109	786	42	4078
Thames	1230	1620	1035	178	4	4067
Welsh	2484	1655	432	212	13	4796
Wessex	739	897	929	123	15	2703
Yorkshire	2304	1930	913	710	177	6034
England & Wales	13167	14940	10867	4113	628	43715
Total 1990/91	12905	14407	10372	3944	653	42281

Source: 'NRA Annual Report 1991/92'. Includes rivers and canals

5I. Estuarial quality 1990

NRA region	Class A good km	Class B fair km	Class C poor km	Class D bad km	Total km
Anglian	404	72	36	2	514
Northumbria	46	52	23	14	135
North West	221	104	59	68	452
Severn Trent	42	12	2	0	56
Southern	291	81	16	0	388
South West	322	28	0	0	350
Thames	50	62	0	0	112
Welsh	328	84	8	0	420
Wessex	54	61	5	0	120
Yorkshire	5	17	18	0	40
Shared estuaries					
Humber	28	37	0	0	65
Severn	43	28	0	0	71

Source: NRA 'Quality of rivers, canals and estuaries in England and Wales 1990.'

5J. Pollution incidents reported

NRA region	Total		Significant		Major		Successful prosecutions	
	1990/91	1991/92	1990/91	1991/92	1990/91	1991/92	1990/91	1991/92
Anglian	2009	2290	100	900	20	15	31	48
Northumbria	1291	1421	814	616	23	18	29	30
North West	3958	3974	145	717	180	61	84	99
Severn Trent	6150	6222	2754	2111	71	72	65	76
Southern	1872	1762	225	96	17	7	12	20
South West	3193	3323	591	383	172	41	69	40
Thames	3234	3238	260	174	24	14	54	71
Welsh	2746	3317	168	144	30	16	70	27
Wessex	1800	1644	1240	728	12	13	29	76
Yorkshire	2399	2333	880	740	149	81	47	49
Total	28652	29524	7177	6609	698	338	490	536

Waterfacts 1991 contained 1988/89 and 1989/90 data.

Definitions have changed for 'significant' and 'major' in 1990/91.

Source: 'NRA Annual report 1991/92'.

5K. Pollution incidents by category 1989/90

	Total	Serious	Successful prosecutions
Industrial chemicals	1909	327	71
Organic industrial wastes	672	88	23
Agricultural Pesticides/Fertilisers	112	19	1
Organic farm wastes	2744	602	151
Oil	5850	681	27
Sewage treatment works	2882	525	5
Sewage other	3489	318	1
Other	9067	693	30
Total	26725	3253	309

Source: 'NRA Facts 1990'.

Sewage treatment and sewage include many non-WSC owned. See tables 5E, 5F

In an answer to a parliamentary question on 25 January 1990, the Minister stated that 'We have already announced a £1.4 billion (£1.2 billion for England and Wales) capital investment programme over the next 10 years as a result of which we expect over 95 per cent of our bathing waters to meet the directive's standards by the mid-1990s and to achieve full compliance within 10 years'. An additional £1.5 billion investment programme to treat all sewage before discharge was announced on 5 March 1990.

There are 407 bathing waters designated in England and Wales. Prior to 1987 there were only 27 bathing waters designated. Compliance has been assessed on the directive's rules where at least 20 samples have been analysed. In other cases, provided that at least 12 samples have been analysed, the water was assumed to comply where not more than one sample failed the numerical standards.

5L. Bathing water quality (Directive 76/160/EEC)

Compliance with directive

NRA Region	1987		1988		1989		1990		1991	
	pass	total	pass	total	pass	total	pass	total	pass	total
Anglian	18	28	19	28	23	28	27	29	29	33
Northumbria	9	19	9	19	20	32	21	32	21	33
North West	10	30	6	33	11	33	10	33	10	33
Severn Trent	0	0	0	0	0	0	0	0	0	0
Southern	38	65	27	65	45	65	48	66	45	67
South West	96	109	92	109	113	132	118	133	105	133
Thames	0	2	0	2	3	3	3	3	2	3
Welsh	28	47	37	48	40	48	35	50	45	51
Wessex	32	38	30	38	31	38	39	39	36	39
Yorkshire	20	22	21	22	18	22	17	22	19	22
England and Wales	251	360	241	364	304	401	318	407	312	414
% compliance	70% (56%)*		66%		76%		78%		75%	
Scotland	19	23	12	23	16	23	12	23	15	23
Northern Ireland			14	16	16	16	15	16	15	16
UK	267		403		336		440		343	
% compliance	70% (56%)*		66%		76%		79%		76%	

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

5M. Compliance for coliforms in 1988 bathing season

% samples failing	Total coliforms		Faecal coliforms	
	no.	%	no.	%
0	266	66	191	47
0 to 5	54	13	77	19
5+ to 10	29	7	50	12
10+ to 15	12	3	21	5
15+ to 20	19	5	15	4
20+	23	6	49	12
Total	403	100	403	100

Source: DoE evidence to House of Commons Environment Committee, September 1989. UK beaches in 1988

5N. Coastal and estuarial discharges by treatment in UK

	Coastal		Estuarial	
	no.	population millions	no.	population millions
None	38	1.128	17	1.339
Preliminary	61	3.195	36	2.308
Primary	11	0.504	35	3.682
Secondary	2	0.033	63	8.667
UK	102	4.860	151	15.996

Source: DoE Survey, March 1990. For discharges serving more than 10,000 people

50. Pollution entering the sea

All potential pollutants

% contribution

Run-off and land-based discharges
 Atmosphere
 Maritime transportation
 Dumping (including waste water and industrial)
 Offshore production

44
 33
 12
 10
 1
100

Source: UN 'State of the Marine Environment'. Report and Studies No.39 1990

6. CHARGES AND CUSTOMERS

6A. Numbers of customers 1992

	Unmeasured supply				Measured supply			
	households		non-households		households		non-households	
	water	sewerage	water	sewerage	water	sewerage	water	sewerage
	000s	000s	000s	000s	000s	000s	000s	000s
Anglian	1397	1893	35	48	38	52	98	75
Northumbrian	453	1033	14	68	1	5	23	28
North West	2522	2577	91	75	29	29	149	118
Severn Trent	2545	2985	62	72	97	102	182	164
Southern	768	1434	10	17	84	90	41	50
South West	545	501	19	20	18	9	68	40
Thames	2855	4425	136	169	72	106	120	170
Dwr Cymru	990	1034	33	45	30	30	67	44
Wessex	398	852	10	29	16	24	41	37
Yorkshire	1659	1742	40	52	29	30	93	75
WSCs	14132	18476	450	595	414	477	882	801
Water supply cos	4802	-	178	-	109	-	246	-
England / Wales	18934	18476	628	595	523	477	1128	801
Scotland	2047	1979	166	179	*0	*0	53	2
Northern Ireland	568	na	31	na	0	0	38	na
UK	21549	*21000	825	*774	523	477	1219	*803

* estimated - domestic properties do not normally have a metered supply

6B. Average charges

(i) Household water services bills *

	1981/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93
£/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

(ii) Measured water charge

	1981/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93
pence/m ³	20.1	22.1	22.8	23.5	25.8	27.6	29.3	31.9	35.2	40.4	47.2	52.8

* for water and sewerage services combined. Charges are for the year and not repriced

fig 6b. Average water service bills

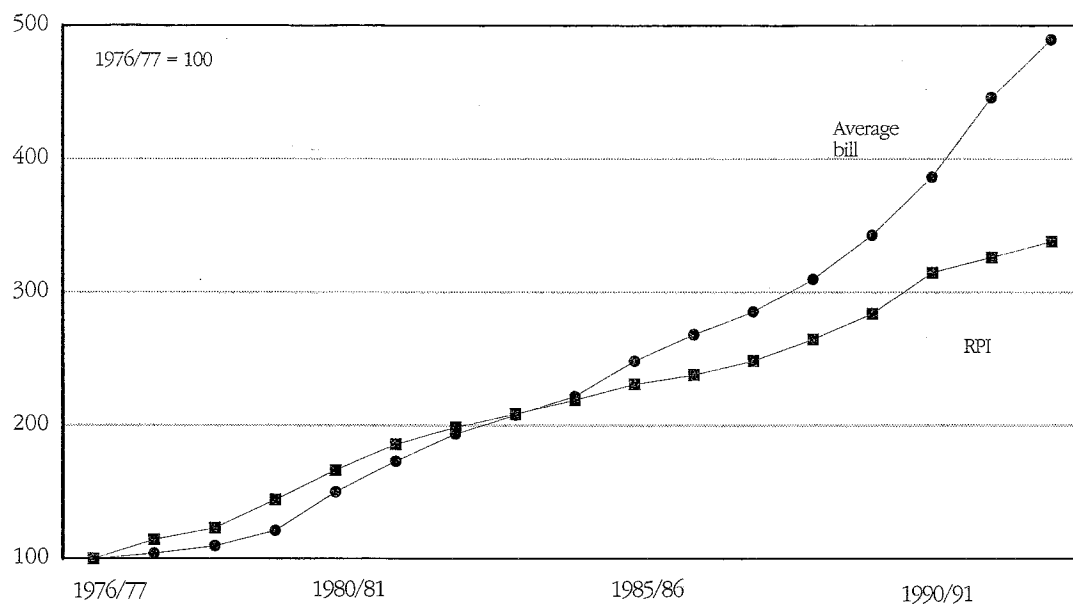
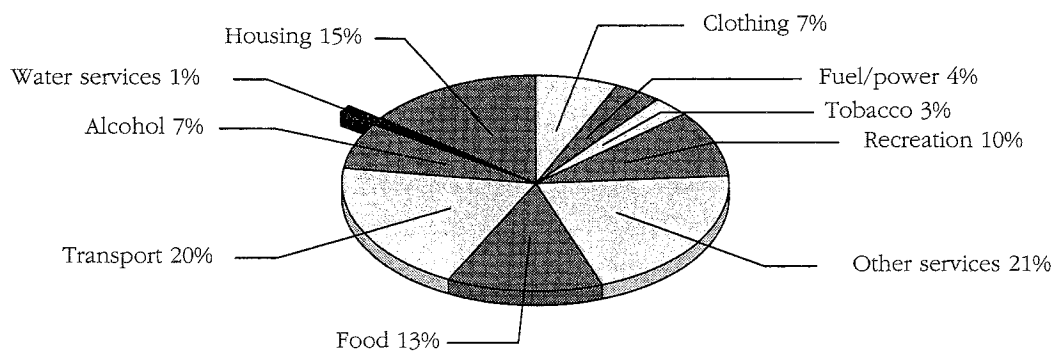


fig 6c. Household expenditure



6C. Miscellaneous

£1 will buy **2** litres of **bottled** water
 £1 will buy **3,000** litres of **tap** water

1 litre of **bottled** water costs **50.00p**
 1 litre of **tap** water costs **0.03p**

1m³ of **tap** water costs **£0.30**
 1m³ of **bottled** water costs **£ 500**

**1 pint of water costs 0.02 pence, 1 pint of milk costs 30 pence and
 1 pint of beer might cost you £1.50**

6D. Average charges 1992/93

	Average household bill						Measured supply	
	water supply		sewerage		total		1991/92	1992/93
	1991/92	1992/93	1991/92	1992/93	1991/92	1992/93	p/m ³	p/m ³
	£	£	£	£	£	£		
Anglian	93.79	106.08	110.65	120.97	204.44	227.05	48.46	53.38
Northumbrian	66.05	73.06	75.98	84.64	142.03	157.70	38.74	42.75
North West	66.76	72.75	75.95	83.30	142.71	156.05	46.40	51.00
Severn Trent	61.29	67.21	76.50	83.96	137.79	151.17	48.15	52.40
Southern	66.38	72.01	96.17	102.28	162.55	174.29	40.70	44.40
South West	82.56	93.26	109.32	134.58	191.88	227.84	51.10	57.00
Thames	66.31	69.39	64.29	69.39	130.60	138.78	37.33	40.93
Dwr Cymru	104.28	113.19	90.93	98.87	195.21	212.06	54.30	62.68
Wessex	80.09	87.21	96.07	104.52	176.16	191.73	53.81	58.45
Yorkshire	79.71	85.31	73.70	80.68	153.41	165.99	47.40	51.90
Weighted average	73.51	81.11	81.00	88.45	154.51	169.56	47.20	52.78
Water supply cos		85.73						59.40
Scotland	49.37	55.95	included in community charge				35.02	37.34

6E. Trade effluent charges 1992/93

	Average regional strength		Apportionment of charge							minimum charge
	Os	Ss	R	V	VB	VM	M	B	S	
	mg/l	mg/l	p/m ³	p/m ³	p/m ³	p/m ³	p/m ³	p/kg	p/kg	
Anglian	426	371	6.68	10.46	2.02	5.19	0.42	11.39	5.61	78.00
Northumbrian	386	187	13.96	6.84	0.00	0.00	0.00	10.84	5.50	175.00
North West	389	234	7.30	5.90	0.80	0.00	5.50	6.40	4.30	69.00
Severn Trent	767	323	9.88	9.07	0.00	0.00	0.00	10.67	5.84	90.00
Southern	452	512	15.06	11.01	1.78	7.63	1.95	14.51	9.94	78.00
South West	767	487	22.42	22.69	0.00	0.00	3.94	36.58	25.38	84.00
Thames	445	336	5.54	6.81	0.00	0.00	0.00	10.74	13.68	56.00
Dwr Cymru	500	350	6.75	5.45	2.17	5.77	8.29	12.58	8.86	154.00
Wessex	802	313	5.56	8.95	0.85	5.13	9.65	19.81	11.45	120.00
Yorkshire	971	321	14.13		0.00	0.00	0.00	14.78	8.64	130.00
Northern Ireland	480	340	10.00	8.00	0.00	0.00	0.00	10.00	8.00	

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

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

C = total charge for trade effluent treatment

R = reception and conveyance charge

V = volumetric and primary treatment cost/m³

VB = additional charge/m³ where there is a biological treatment

VM = treatment and disposal charge for sea outfalls

M = treatment and disposal charge for designated long sea outfalls

Ot = the chemical oxygen demand (COD) of effluent after one hour quiescent settlement at pH7

Os = COD of crude sewage after one hour quiescent settlement

B = biological oxidation cost/m³ of settlement sewage

St = total suspended solids (mg/litre) of the trade effluent at pH7

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

S = treatment and disposal costs of primary sludges/m³ of sewage

Yorkshire minimum charge is £43 if no sampling needed - Thames has a system of standing charges

6F. Infrastructure charges

	1990/91		1991/92		1992/93	
	water	sewerage	water	sewerage	water	sewerage
	£	£	£	£	£	£
Anglian	479	597	503	629	524	656
Northumbrian	111	240	120	247	125	257
North West	198	338	212	362	221	377
Severn Trent	498	356	532	380	554	396
Southern	365	485	378	492	394	513
South West	654	557	705	599	735	624
Thames	403	337	382	314	398	327
Dwr Cymru	259	332	275	351	286	366
Wessex	551	983	611	1090	637	1136
Yorkshire	529	626	534	632	557	659

6G. Disconnections for non payment of charges

(a) total (domestic and non-domestic)

	1991/92	1990/91	1989/90	1988/89	1987/88	1986/87	1985/86	1984/85
Anglian	1321	461	380	1880	1586	2268	774	218
Northumbrian	905	618	558	870	480	300	59	70
North West	2251	1018	969	779	775	858	238	110
Severn Trent	1574	409	1079	1101	932	1000	1074	650
Southern	2344	538	813	1354	1164	1152	1249	115
South West	392	219	245	100	324	404	404	76
Thames	1564	16	14	935	1594	576	225	76
Dwr Cymru	3019	1397	1342	1117	2067	950	350	90
Wessex	41	2	14	83	32	0	0	0
Yorkshire	2601	1633	1068	999	560	293	198	25
WSCs	16012	6311	6482	9218	9514	7801	4571	1430
Water supply companies	7665	2913	3531	6037	na	na	na	na
England & Wales	23677	9224	10013	15255	na	na	na	na

Source: OFWAT

(b) total (domestic)

	1991/92	1990/91	1989/90
Anglian	1306	415	362
Northumbrian	705	460	434
North West	2074	889	756
Severn Trent	1284	286	985
Southern	2043	351	697
South West	381	210	245
Thames	1471	704	531
Dwr Cymru	2938	1305	1243
Wessex	39	2	12
Yorkshire	2384	1492	999
WSCs	14625	6114	6264
Water supply companies	6661	1559	2162
England & Wales	21286	7673	8426

Source: OFWAT

6H. Customer complaints to CSC 1991/92

Customer Service Committee Region	no. of complaints		complaints per 10,000 customers	
	1991/92	1990/91	1991/92	1990/91
Eastern	709	272	3.2	1.2
Northumbria	230	139	2.0	1.2
North West	976	605	3.4	2.1
Central	1319	830	3.8	2.4
Southern	437	186	2.6	1.1
South West	939	165	14.3	2.5
Thames	1313	337	2.7	0.7
Wales	782	376	6.3	3.0
Wessex	434	162	4.3	1.6
Yorkshire	1054	510	5.3	2.6
	8193	3582		

Source: OFWAT annual report. The complaints are those to CSCs not those directly to the companies.

6I. Abstraction charges 1993/94 (proposed)

NRA region	standard unit charge (£/1000m ³)
Anglia	272
Northumbrian	139
North West	605
Severn Trent	830
Southern	186
South West	165
Thames	337
Welsh	376
Wessex	162
Yorkshire	510

There is an internal charge of £100 and a minimum charge of £25.

The NRA published their proposed scheme of abstraction charges for 1993/94 in July 1992.

The annual charge = $V \times A \times B \times C \times \text{SuC}$

where, V = annual licensed volume

A = source factor

B = season factor

C = loss factor

SuC = standard unit charge

Full details are available in this publication.

For the year 1991/92 the NRA introduced a national charge for discharge to controlled waters. The formula is as follows:-

$$\text{Charge} = \text{Volume} \times \text{Content} \times \text{Receiving water} \times \text{Unit charge}$$

6J. Discharge charges 1992/93

Volume	cubic metres /day	factor	Content	band	factor	Receiving water	factor
0 - 5		0.4	A - complex organic, pesticides		15.0	Ground	0.5
> 5 - 100		1.0	B - potentially toxic, metals etc		5.0	Coastal	0.8
> 100 - 1000		2.0	C - organic sewage/trade effluent		3.0	Surface	1.0
> 1000 - 10000		3.0	D - general trade effluent		2.0	Estuarial	1.5
> 10000 - 50000		5.0	E - site drainage		1.0		
> 50000 - 150000		9.0	F - low environmental effect		0.5		
>150000		14.0	G - minimal environmental effect		0.3		

Unit charge:
1991/92 £270

7. INVESTMENT, FINANCE AND ASSETS

Each year there are annual accounts 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. All prices are those for the year in question except where stated in tables 7H and 7I.

7A. Turnover and profit 1991/92

	Anglian	North-umbrian	North West	Severn Trent	Southern	South West	Thames	Dwr Cymru	Wessex	York-shire	Total
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Turnover of plc	523.1	203.5	789.1	821.7	290.5	166.5	899.3	*341.9	190.8	441.2	4667.6
Turnover of WSC											
<i>appointed business</i>	513.3	172.7	640.1	692.1	275.3	158.6	753.7	332.1	179.3	429.6	4146.8
<i>non -appointed</i>	1.6	20.8	-	-	8.4	1.8	-	1.9	11.1	1.2	46.8
Operating costs	319.3	127.9	399.1	451.4	178.1	94.6	519.7	213.9	112.9	308.7	2725.6
Other income	0.2	0.0	2.9	3.6	0.1	2.2	12.5	1.5	-0.4	5.5	28.1
Operating profit	194.2	44.8	243.9	244.3	97.3	66.2	246.5	119.7	66.0	126.4	1449.3
Net interest	-21.7	-6.7	-2.8	18.6	-39.5	23.1	-15.1	16.8	-8.4	-1.3	-37.0
Other adjustments	1.5	0.0	0.0	0.0	1.8	0.2	0.0	2.2	0.3	0.9	6.9
Profit before tax	174.0	38.1	241.1	262.9	59.6	89.5	231.4	138.7	57.9	126.0	1419.2
Tax	0.0	5.1	0.0	0.0	-9.6	1.0	-1.5	-10.0	0.4	0.0	-14.6
Profit	174.0	43.2	241.1	262.9	50.0	90.5	229.9	128.7	58.3	126.0	1404.6

Turnover of the water only companies in 1991/92 was £595 million

Note: incorporates historic cost depreciation. * for Welsh Water plc

7B. Turnover by service 1991/92

	Anglian	North-umbrian	North West	Severn Trent	Southern	South West	Thames	Dwr Cymru	Wessex	York-shire	Total
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Water services	228.0	58.7	305.0	290.6	87.8	76.9	322.2	191.9	61.7	219.4	1842.2
Sewerage services	285.3	114.0	335.1	401.5	187.5	81.7	425.0	140.2	117.6	210.2	2298.1
Other	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	6.5
Total	513.3	172.7	640.1	692.1	275.3	158.6	753.7	332.1	179.3	429.6	4146.8

Note: data for appointed business

Infrastructure accounting

Accounts of the ten water authorities of England and Wales for the financial year ended 31 March, 1989 were based on a major change in accounting policy. This change has been called infrastructure accounting and was intended to ensure that the accounting treatment of capital expenditure items is more appropriate than in the past. It was accepted not only by the ten water authorities, but also by the government and the authorities' accountants.

Infrastructure accounting is based upon a new classification of water company assets. These have been divided into:

- (a) **Ordinary assets** - which are capitalised and depreciated over their estimated asset lives in the conventional way.
- (b) **Infrastructure assets** - which are usually underground assets and comprise a network of:

Water mains, sewers, impounding and raw water storage reservoirs, dams, sea outfalls.

The significance of infrastructure assets in water service company balance sheets varies considerably. On a historical cost accounting basis they comprise, on average, approximately 50 per cent of balance sheet asset values and on a current cost basis, approximately 75 per cent.

Expenditure on the network of infrastructure assets, previously classified as capital expenditure, is divided into 2 categories:

- (a) **Infrastructure maintenance expenditure** - required to maintain the network and to ensure it continues to operate at existing levels. Such expenditure is charged to the profit and loss account annually.
- (b) **ENGE Expenditure** - relating to:

E nhancements - expenditure to enhance the network of assets.

N ew demand - expenditure to cater for new demand.

G rowth - expenditure to cater for growth in existing demand.

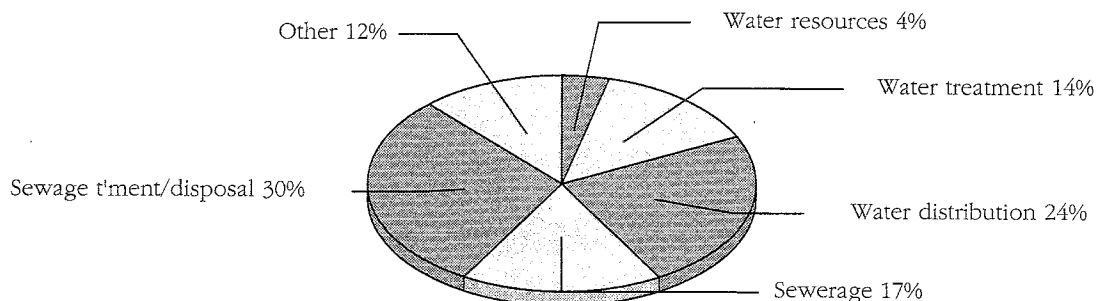
E fficiency - expenditure which reduces costs or increases income and thereby improves the efficiency of the network.

Such capital expenditure, aimed at improving rather than just maintaining the network, is capitalised.

Neither category of infrastructure expenditure is depreciated. This is justified on the grounds that the network has no finite life but must be maintained indefinitely. As a result, a policy of depreciation over a fixed asset life is not considered appropriate. It is replaced by the annual revenue charge for maintenance expenditure.

Finally, there is one further small complication. This relates to infrastructure maintenance expenditure undertaken to maintain assets which, by normal standards, should have been undertaken long previously. This is called 'backlog expenditure' and it is capitalised in the same way as ENGE expenditure, not written off to the profit and loss account. Clearly this will affect different water service companies in different ways.

fig 7a. Capital expenditure by service



7C. Income by turnover category 1991/92

	Water services		Sewerage services		Trade effluent	Other	Total
	metered	unmetered	metered	unmetered			
	£M	£M	£M	£M	£M	£M	£M
Anglian	65.3	136.7	41.0	216.3	14.2	39.8	513.3
Northumbrian	23.4	31.7	24.2	83.3	4.4	5.7	172.7
North West	104.3	179.7	26.8	277.5	26.4	25.4	640.1
Severn Trent	104.6	167.1	36.9	323.1	32.4	28.0	692.1
Southern	30.2	53.2	35.7	141.4	5.4	9.4	275.3
South West	25.6	47.6	19.6	58.7	2.8	4.3	158.6
Thames	72.1	224.9	69.3	324.5	20.8	42.1	753.7
Dwr Cymru	65.4	111.8	28.2	103.7	6.0	17.0	332.1
Wessex	24.5	33.7	21.9	89.5	4.2	5.5	179.3
Yorkshire	70.9	139.8	52.7	136.7	17.3	12.2	429.6
Total	586.3	1126.2	356.3	1754.7	133.9	189.4	4146.8

Note: data for appointed business

7D. Operating costs by category 1991/92

	Anglian	North-umbrian	North West	Severn Trent	South-ern	South West	Thames	Dwr Cymru	Wessex	York-shire	Total
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Manpower costs	59.3	18.4	79.9	107.5	37.9	28.7	156.1	56.3	29.7	68.3	642.1
costs of other employment	3.8	1.7	5.1	3.1	2.1	1.7	11.3	3.3	1.0	5.6	38.7
Power	24.6	4.8	20.8	30.4	12.2	7.7	41.3	14.6	8.7	19.6	184.7
Rates	25.3	7.3	38.4	32.0	9.5	8.1	42.7	15.9	6.4	24.7	210.3
Sewerage agencies	9.4	6.2	15.9	17.2	8.4	2.8	28.0	10.0	5.6	9.2	112.7
Materials and consumables	25.9	7.9	16.8	28.2	13.4	6.8	25.7	22.3	9.1	17.7	173.8
Hired and contracted services	26.3	10.9	19.4	33.4	10.7	9.0	84.6	14.6	12.8	24.7	246.4
Infrastructure renewals	37.6	21.5	74.1	100.9	17.7	6.3	25.7	18.2	12.5	38.5	353.0
Depreciation (CC)	73.5	10.3	81.5	132.6	81.3	17.5	104.2	47.2	39.4	70.1	657.6
Other	67.5	38.9	84.1	45.6	41.5	12.8	53.5	31.0	10.2	58.4	443.5
Total	353.2	127.9	436.0	530.9	234.7	101.4	573.1	233.4	135.4	336.8	3062.8

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

7E. Capital expenditure by service 1991/92

	Anglian	North-umbria	North West	Severn Trent	Southern	South West	Thames	Dwr Cymru	Wessex	Yorkshire	Water supply companies	Total
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Water resources	9.2	0.9	17.8	9.4	6.3	3.3	24.3	3.2	2.4	13.3	34.0	124.1
Water treatment	47.3	5.9	71.3	119.3	6.6	21.5	37.5	36.0	15.8	39.5	47.6	448.3
Water distribution	58.8	28.7	92.2	118.9	18.2	39.9	109.9	48.0	28.6	55.5	152.1	751.4
Water management	11.2	1.6	48.1	31.0	1.3	8.5	34.2	15.7	4.2	9.1	27.9	193.0
Sewerage	40.6	27.1	90.6	103.5	34.2	14.8	72.0	22.9	43.5	42.3		491.5
Sewage treatment	104.0	37.0	132.6	148.9	90.8	80.8	120.3	53.0	38.9	110.3		916.6
Sewage mangement	22.3	3.3	58.9	46.5	4.7	5.9	26.5	10.9	4.4	8.8		192.0
Total	293.4	104.5	511.5	577.5	162.1	174.7	424.7	189.7	137.8	278.8	261.6	3116.3

7F. Total investment expenditure 1985/86 to 1991/92

	1985/86	86/87	87/88	88/89	89/90	90/91	91/92
	£M	£M	£M	£M	£M	£M	£M
Anglian	106.0	123.0	140.7	141.3	192.0	221.6	293.4
Northumbrian	39.3	36.9	39.4	41.4	65.9	98.4	104.5
North West	163.0	184.3	201.6	216.9	269.4	408.0	511.5
Severn Trent	119.8	149.3	159.7	206.9	262.2	394.7	577.5
Southern	62.6	65.6	71.2	89.8	125.5	132.6	162.1
South West	36.1	37.2	46.7	51.6	80.2	120.0	174.7
Thames	108.8	127.1	169.8	184.5	265.7	418.0	424.7
Dwr Cymru	54.4	61.7	67.8	89.8	105.3	160.0	189.7
Wessex	49.1	59.4	72.8	74.5	100.0	96.6	137.8
Yorkshire	94.6	126.7	142.5	148.8	188.2	250.2	278.8
Total	833.7	971.2	1112.2	1245.5	1654.4	2300.1	2854.7
Water supply Companies	75.4	77.7	88.2	99.8	111.3	196.0	261.6
NRA	-	-	-	112.0	131.0	74.6	67.4
Scotland	93.5	102.9	88.6	110.6	127.4	144.5	167.4
Northern Ireland	25.2	25.8	25.3	25.2	27.7	33.0	37.1
UK	1027.6	1177.6	1324.3	1593.1	2051.8	2748.2	3388.2

7G. Total fixed assets at 31 March 1992 (net book values)

	Anglian	North-umbrian	North West	Severn Trent	Southern	South West	Thames	Dwr Cymru	Wessex	Yorkshire	Total
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Land and buildings	6.5	18.6	46.9	629.3	301.0	12.6	763.3	32.8	183.2	375.8	2369
Infrastructure assets	759.2	387.1	1051.6	1091.6	372.1	302.7	902.7	379.1	321.4	470.4	6038
Other	1023.3	274.0	1097.8	485.1	201.5	341.4	396.5	499.7	212.1	567.2	5100
Total	1789.6	679.7	2196.3	2206.0	874.6	656.7	2062.5	911.6	716.7	1413.4	13507

7H. Ten year expenditure programmes to 31 March 2000 (at November 1989 prices)

	Water supply			Sewerage			Other	Total
	resources	treatment	distribution	sewers	treatment	outfalls		
	£M	£M	£M	£M	£M	£M	£M	£M
Anglian	40	380	1000	690	850	190	310	3460
Northumbrian	10	65	220	235	195	95	65	885
North West	235	425	1230	1110	710	255	315	4280
Severn Trent	90	750	1010	810	1000	0	420	4080
Southern	95	45	230	225	385	275	75	1330
South West	35	90	315	300	240	215	95	1290
Thames	320	640	660	985	895	0	310	3810
Dwr Cymru	30	265	550	355	205	120	230	1755
Wessex	70	50	230	510	280	45	90	1275
Yorkshire	170	350	540	510	520	30	300	2420
Total	1095	3060	5985	5730	5280	1225	2210	24585
Water supply companies	2110							2110
Additional expenditure since prospectus	Coastal discharges							1700
	Sludge to sea							500
	Pesticides							1000
	Sewage works							100
	Total							30000

Source: *The Prospectus and "The cost of quality"*, OFWAT, August 1992.

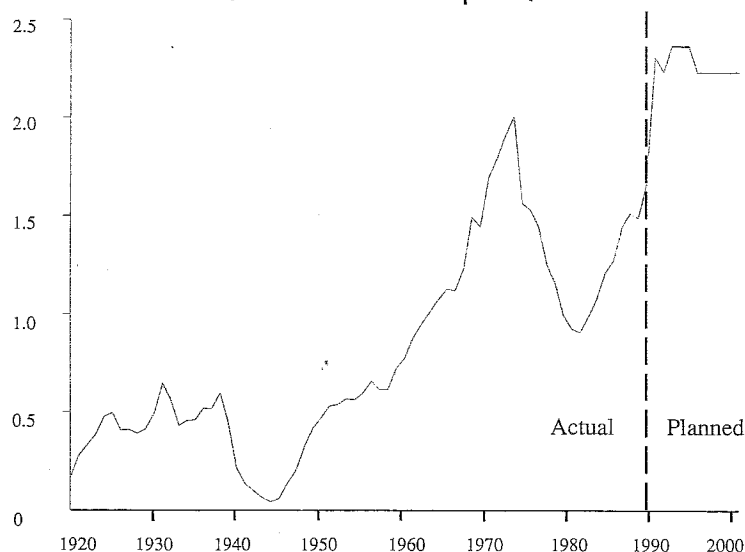
7I. Investment 1989/90 to 1994/95 by service (at 1991/92 prices)

	£M		£M
Water resources	727	Sewerage	2890
reservoir development	468	new development	561
reservoir safety	99	flooding from sewers	814
aqueduct refurbishment	90	storm overflows	337
new obligations	4	sewer rehabilitation	862
other	66	pumping station rehabilitation	162
Water treatment	2790	new obligations	56
new development	395	other	98
water quality (nitrates)	155	Sewage treatment	5557
water quality (other)	1463	new development	352
works refurbishment	508	COPA II (current consents)	1511
new obligations	186	long term river quality objectives	243
other	83	long term estuarial quality objectives	355
Water distribution	3780	sludge disposal	375
new development	809	bathing beaches	1172
discolouration	637	other sea outfalls	178
bacteriological quality	123	sewage works refurbishment	810
all communication pipes	295	new obligations	418
inadequate pressure	321	other	143
supply interruptions	447	Management and general	1070
other relining and renewal	388	ICA / telemetry	635
other assets	346	vehicles and plant	113
new obligations	44	land and buildings	123
other	370	other	199
Management and general (water)	1109		
ICA / telemetry	597		
vehicles and plant	155		
land and buildings	166		
other	191		
		Grand total	17922

Includes water supply companies

Source: OFWAT

fig 7h. Investment 1920 to 2000 (at November 1989 prices)



Note: Prospectus data, excludes the £3.3 billion extra future expenditure as shown in table 7H

7J. Main assets

	Anglian	North-umbrian	North West	Severn Trent	Southern	South West	Thames	Dwr Cymru	Wessex	Yorkshire	Water supply companies	Total	Scotland	Northern Ireland
Sources														
reservoirs (impounding)	10	17	158	11	3	26	7	90	9	108	33	472	353	57
boreholes	141	3	162	162	99	49	123	26	113	69	408	1365	52	
river abstractions	4	3	46	15	7	38	15	128	6	20	40	322	243	
service/water towers	452	123	410	700	221	440	291	900	360	482		4379		
Treatment works														
water	79	9	93	31	26	44	31	165	36	71	178	763	628	105
sewage - total	1122	394	732	1026	408	687	395	861	365	671		6661	1150	925
preliminary/none	59	3	97	0	39	117	0	139	14	26		494	539	
primary	20	31	155	63	20	125	0	92	2	102		610	634	
secondary	727	351	478	744	233	445	351	722	262	479		4792	394	
tertiary	316	9	2	219	116	0	38	47	87	64		898	59	
Underground assets														
mains - km	32400	8850	37780	38975	12250	14680	30800	23670	10270	31150	71060	311885	46080	20972
sewers - km	28030	13120	35080	52010	24400	8340	82960	16650	13540	23940		298070	28000	9700
Pumping stations														
sewage	3776	462	1223	1969	1886	577	1958	1349	1135	1297		15632		
water	236	79	432		106		290	610	305	459		2517		
Storm overflows	1186	1381	2375	3333	683	1050	2404	2000	1497	2081		17990		
Sea & estuarial outfalls														
long outfalls	48	44	97	9	40	172	0	139	32	26		607	852	
	4	1	2	0	16	3			5	2		29		

7K. Assets data for England and Wales 1991/92

(a) Sewage treatment works

Works size - kg BOD5/day	no.	Treatment type	no.
<15	2878	None/preliminary	494
15-29.99	777	Primary	610
30-119.99	1322	Secondary	4792
120-599.99	975	Tertiary	898
600-5999.99	645	Total	6794
>6000	121	Ammonia consents > 5mg/l	403
Total	6718	Ammonia consents < 5mg/l	192

(b) Water treatment works

Works size - Ml/day	% of supply	no.	Treatment type	% of supply	no.
<1	0.5	132	Surface physical	11.5	77
1-4.99	4.5	211	Surface physical & chemical	19.7	250
5-24.99	16.2	232	Surface additional	21.3	81
25-99.99	32.7	97	Ground simple	9.7	208
>100	16.2	36	Ground complex single	5.0	65
Simple disinfection	29.9	1034	Ground complex multiple	2.7	19
Total	100	1742	Simple disinfection	29.9	1034

(c) Water mains

	km		no.
Total length of mains	312,803	Communication pipes replaced *	211,238
Unlined iron/steel *	187,934	Mains burst per 1000km	210
Mains renewed *	1,988		km
Mains relined *	2,306	Mains 150mm and below	229,199
Mains abandoned *	2,179	Mains >150 <300mm	48,829
New mains *	1,847	Mains >300mm	34,776

* figures for WSCs only

(d) Sewers and sewerage

	no.		no.
Emergency overflows	11,951	Sewer collapses per 1000km	18
Combined sewers overflows	5,787		



8. MANPOWER

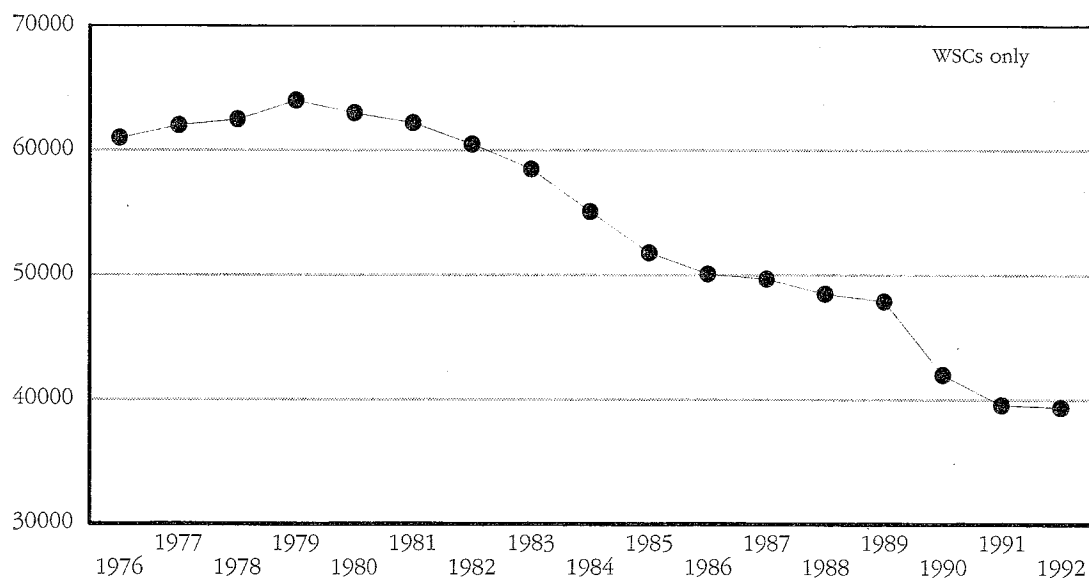
8A. Manpower

Full-time equivalent employees at March 31

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1991	1992
Anglian	6744	6700	6560	5826	5549	5264	5184	5102	5068	3629	3927
Northumbrian	2309	2151	2077	1919	1759	1636	1523	1459	1463	1193	1222
North West	9120	8782	8629	8278	8166	8055	8134	7936	7766	6839	5928
Severn Trent	10886	10502	10182	9720	9269	8908	8493	8174	7890	7054	7456
Southern	4101	3948	3720	3494	3336	3183	3160	3162	3185	2259	2226
South West	2450	2276	2255	2194	2023	2008	2003	1958	1938	1855	2084
Thames	11945	11753	11227	10321	9089	8896	9152	9210	9321	7400	7218
Dwr Cymru	5736	5677	5424	5179	4709	4746	4845	4618	4406	3455	3505
Wessex	2398	2291	2266	2182	2050	1994	1925	1891	1907	1755	1821
Yorkshire	6522	6506	6021	6052	5835	5472	5254	4981	4941	4074	4031
WSCs	62211	60586	58361	55165	51785	50162	49673	48491	47885	39513	39418
Water supply cos	8641	8369	8190	8010	7821	7340	7101	6865	6768	7000	7101
NRA *										6805	7591
Scotland	6318	6226	6121	6144	6129	6155	6270	6194	6094	6229	6230
Northern Ireland	2892	2708	2605	2524	2518	2510	2605	2552	2507	2598	2543
UK	80062	77889	75277	71843	68253	66167	65649	64102	63254	62145	62883

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

fig 8a. Manpower



9. INTERNATIONAL

9A. Water supply 1988/89

	resident population *	% urban	% connected	water abstracted	ground water for public supply	house- hold	average household use	household water price 1.1.87
	000s		000s	ML/d	*%	**%	l/head/day	\$/m ³
Austria	7707	56	58	1178	96	64	145	0.68
Belgium	9869	70	98	1915	67	65	108	0.87
Denmark	5239	84	92	1005	98	67	190	0.37
Finland	4945	60	81	1255	49	53	151	0.56
France	56123	73	99	15890	70	71	159	0.72
Germany (West)	59622	84	98	13670	89	75	145	0.99
Greece	8481	66			40			
Hungary	10672	53	94	2720	10	62	205	0.23
Ireland	3841	55			25			
Italy (1984)	58410	72	91	17535	91	75	220	0.22
Luxembourg	369	57	99	125	66	67	176	0.58
Netherlands	14826	86	100	3155	67	82	167	0.78
Norway	4203	43						
Portugal	12261	43			94			
Spain	39580	62	96	11340	20	68	126	0.28
Sweden	8369	83	87	2700	49	66	194	0.43
Switzerland	6446	57	99	3135	75	64	264	0.49
UK	56600	90	99	20465	35	62	136	0.50

** England and Wales households not measured, so based on 140 litres/head.day.

£1.00 - \$1.87 at 1.1.87

Source: IWSA and * WHO 'International drinking water supply and sanitation decade' April 1990

9A1. Water not meeting national standards

	% of water not meeting national standards	
Belgium	4 / 75 / 5	these are for the two regions and Brussels groundwater / surface water
Finland	3 / 0-7	
France	10	
Germany	*15 - 20	
Italy	> 50	
Netherlands	20	mainly pesticides
Norway	*50	
Portugal	5 - 36	
Switzerland	*1	
UK	*1	

Source: IWSA Congress in Copenhagen, 1991. * approximate figures

9B. Population served by sewage treatment works

1990

	1970 %	1975 %	1980 %	1985 %	none %	primary %	secondary %	tertiary %
Belgium	3.8	5.5	22.9		55	45	0	0
Denmark	54.3	70.6		90.0	5	25	65	5
France	40.0		61.5	63.7	60	40	0	0
Germany (West)	61.8	74.8	81.8	86.5	0	11	81	8
Greece			0.5		82	18	0	0
Ireland			11.2		30	15	54	1
Italy	14.0		30.0		na	na	na	na
Luxembourg	28.0		81.0	83.0	8	8	84	0
Netherlands		45.0	68.0	81.0	15	7	75	3
Portugal	3.1	6.0	10.0	12.0	55	20	23	2
Spain		14.3	17.9	29.0	74	17	9	0
UK			82.0	83.0	0	10	80	10

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

9C. Sewage connections and volumes

	% population served by sewage works	% connected to sewer	Total no. of 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.

9D. River quality

% of river lengths in each class

	date of survey	1A	1B	2	3	4
Belgium	1975-79	35	21	17	16	11
Denmark (estimate)	1986	80			20	
France	1985	8	26	60	6	
Germany (West)	1985	6.5	38	40	14	1.5
Greece (estimate)		20	40	20	15	5
Ireland	1980/81	84			14	
Italy (no survey)						
Luxembourg	1984	47	25	13	11	4
Netherlands	1978	12	65	18	4	1
UK						
England & Wales	1985	33	34	24	9	2
Scotland	1980	95		4	0.5	0.5
Northern Ireland	1985	15	69	11	5	0

Source: 'Survey of European River Quality', P.Newman

9E. Quality of bathing water 1983-86 (% conforming with EC Directive)

	Sea water				Fresh water			
	1983	1984	1985	1986	1983	1984	1985	1986
Belgium	13.3	26.7	26.7	50.0	65.1	70.2	73.5	77.1
Denmark	77.9	77.0	83.6	76.6		in sea		
France	76.4	80.0	83.7	85.7	64.8	77.7	78.7	79.4
Germany (West)								
Ireland	50.0	71.4	100.0	85.7				
Italy				61.3				37.2
Luxembourg								
Netherlands	84.8	84.8	87.8	90.6		100.0	100.0	100.0
UK				44.1				

There are some differences in coverage and interpretation between countries and this has made direct comparisons rather difficult although the Commission is putting on pressure for comprehensive returns.

Source: 'Quality of bathing water 1983-86' published by the Commission of the European Communities in 1988.

9F. Bathing water quality 1989/90

		no. of districts	no. of sampling points	no. of points complying	% complying
Belgium	1990 sea	12	39	35	90
	1990 fresh	50	59	51	86
	sea + fresh	62	98	86	88
Denmark	1989 sea + fresh	178	1370	1224	89
Germany	1989 sea + fresh	917	1668	1213	73
Greece	1990 sea + fresh	282	689	446	65
Spain	1989 sea	314	1096	876	80
	1989 fresh	141	184	104	57
	sea + fresh	455	1280	980	77
France	1989 sea	625	1751	1478	84
	1989 fresh	1620	1972	1473	75
	sea + fresh	2245	3723	2951	79
Ireland	1989 sea		67	64	96
Italy	1989 sea	592	3833	3205	84
	1989 fresh	262	615	373	61
	sea + fresh	854	4448	3578	80
Luxembourg	1990 fresh	12	20	15	75
Netherlands	1990 sea+ fresh	410	410	338	82
Portugal	1989 sea	70	210	183	87
UK	1990 sea	371	446	345	79

9G. Sludge disposal 1990

	Agriculture %	Landfill %	Incineration %	Sea %	Total '000s 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

Source: 'Proceedings of WSA Workshop on the proposed EC Directive concerning municipal waste water treatment' May 1990

9H. Largest private utilities

	UK rank	European rank	Market capital £M	Turnover £M	Profit £M	Employee
British Telecom	1	2	18565	12315	2302	247912
British Gas	8	14	9542	7983	1051	80481
Compagnie Generale des Eaux		46	8491	17393	520	153901
Lyonnaise des Eaux		131	3634	3822	247	31295
Thames	94	254	1139	611	179	7790
North West	97	275	1056	511	75	7100
Severn Trent	100	287	997	544	129	7298
Anglian	109	313	884	401	86	4328
Yorkshire	145	433	599	354	57	4591
Southern	172		466	225	60	2790
Dwr Cymru	177		453	255	39	3711
South West	193		383	121	45	1712
Wessex	225		306	147	27	1639
Northumbrian	275		202	150	10	1404
Total UK water			6495	3319	707	42363

Source: Financial Times 11.1.91. BT and British Gas included for comparison

9I. Investment 1990

	Clean water		Wastewater	
	\$USM	Annual % growth	\$USM	Annual % growth
Belgium	117	10	85	22
Denmark	9	5	140	7
France	1103	8	922	17
Germany (West)	1705	6	1611	8
Greece	81	16	36	24
Ireland	53	9	31	22
Italy	765	14	580	20
Luxembourg	9	6	23	7
Netherlands	397	7	391	7
Portugal	122	15	126	17
Spain	412	17	125	25
UK	1464	10	1518	14
EC	6237	9	5588	14

Note: annual increase in capital expenditure over the next five years

Source: World Water and Environmental Engineer Jan/Feb 1992

9J. European and international organisations

EUREAU

Chausée de Waterloo 255-bte 6, 1060 Brussels, Belgium tel: 010 32 2 537 4302 fax: 010 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 EC countries are full members, the UK is represented by the Water Services. Other European countries can apply to be associate 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 Waste Water Group (EWWG)

1 Queen Anne's Gate, London, SW1H 9BT tel: 071 957 4522 fax: 071 222 1811

EWWG 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 of the EC and other European institutions. It has been set up by the water industries of Britain, France, Italy, Spain and Portugal. It expects other countries to join shortly. Currently Britain has the Presidency and WSA provides the Secretariat.

President: John Bellak (Chairman, Severn Trent plc)

Secretary: Peter Hall (WSA)

European Institute for Water

181 Rue de la Pompe, 75116 Paris, France tel: 010 33 1 47 55 62 20 fax: 010 33 1 47 55 62 21

Founded under the auspices and with the help of the Commission of the European Communities, this is a professional institute which obtains soundings and ideas from the legislator to the user for new water quality directives (dealing with both clean and dirty water) and also the implementation of and proposals for changing existing directives.

Meetings of the European Institute for Water are structured as seminars and designed so that written conclusions and recommendations are produced which could be of use to the Commission of the European Communities.

The Water Services Association has a seat on the Administrative Council.

European Water Pollution Control Association

Markt 71, D-5205 Sankt Augustin 1, Germany tel: 010 49 22 41 2 32 0

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 and the UK member is IWEM.

CEN (Comite European de Normalisation)

Rue de Stassart, 36, 1050 Brussels, Belgium tel: 010 32 2 519 6811 fax: 010 32 2 519 6819

Standardisation activity at the European level is dealt with by CEN (European Committee for Standardisation) and CENELEC (European Committee for Electrotechnical Standardisation). Together these bodies make up the Joint European Standards Institution (ESI). The aim of European standardisation is the harmonisation of standards on a Europe-wide basis in order to facilitate the exchange of goods and services by eliminating barriers to trade which might result from requirements of a technical nature. The national standardisation institutes of 18 countries support CEN (the 12 EC and the 6 EFTA countries), the British Standards Institution is the UK representative. The Water Services Association has several representatives on various specialist committees.

ESI adopt international standards as European Standards wherever possible. Many British Standards and international standards are identical.

International Water Supply Association (IWSA)

1 Queen Anne's Gate, London SW1H 9BT tel: 071 957 4567 fax: 071 222 7243

The International Water Supply Association was formed in 1947. Seventy eight countries are in full corporate membership and about 700 associate and individual members in 105 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.

International Association on Water Quality (IAWQ)

1 Queen Anne's Gate, London SW1H 9BT tel: 071 222 3848 fax: 071 233 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.

10. MAPS AND PUBLICATIONS

Water related statistical publications

1. The UK water industry - charges for water services 1992/93
2. The UK water industry - costs of water services 1991/92

Published by the Centre for the Study of Regulated Industries (CRI), which is a special unit of the Public Finance Foundation (PFF), which in turn was founded by the Chartered Institute of Public Finance and Accountancy (CIPFA). The publication is sponsored by the Office of Water Services (OFWAT) and the advisory panel includes the Water Services Association, the Water Companies Association, DoE - Northern Ireland and the Scottish Office Environment Department.

The charges publication was produced in May 1992 (ISBN 0 85299 538 5, 50 pages) and costs £10
The costs publication was produced in March 1992 (ISBN 0 85299 524 5, 50 pages) and costs £15

Both publications are available from:

Public Finance Foundation, 3 Robert Street, London WC2N 6BH, tel: 071-895-8823, fax: 071-895-8825.

3. Capital investment and financial performance of the water companies in England and Wales
4. Levels of service for the water industry of England and Wales

OFWAT produce consultation papers and reports from time to time. The above publications are two with a mainly statistical bias. OFWAT publications are available from OFWAT, Centre City Tower, 7 Hill Street, Birmingham B5 4UA, tel: 021-625 1300.

5. NRA Facts 1992

Issue 1 was produced in July 1991 and the seventy page document costs £5 from the National Rivers Authority. There are tables of information on water resources, pollution control, flood defence, fisheries, recreation, conservation and navigation. Issue number two is due in late 1992.

6. Digest of environmental statistics

The 1991 issue, number 14 in the series, includes a water quality chapter including sewage treatment works compliance, river quality, pollution incidents and bathing water surveys.

The 120 page book (ISBN 0-11-752415-8) is published by HMSO, price £13.50.
Tel: 071-873 9090. Please quote ISBN when ordering HMSO publications.

7. Drinking water 1991

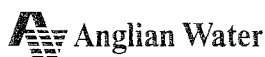
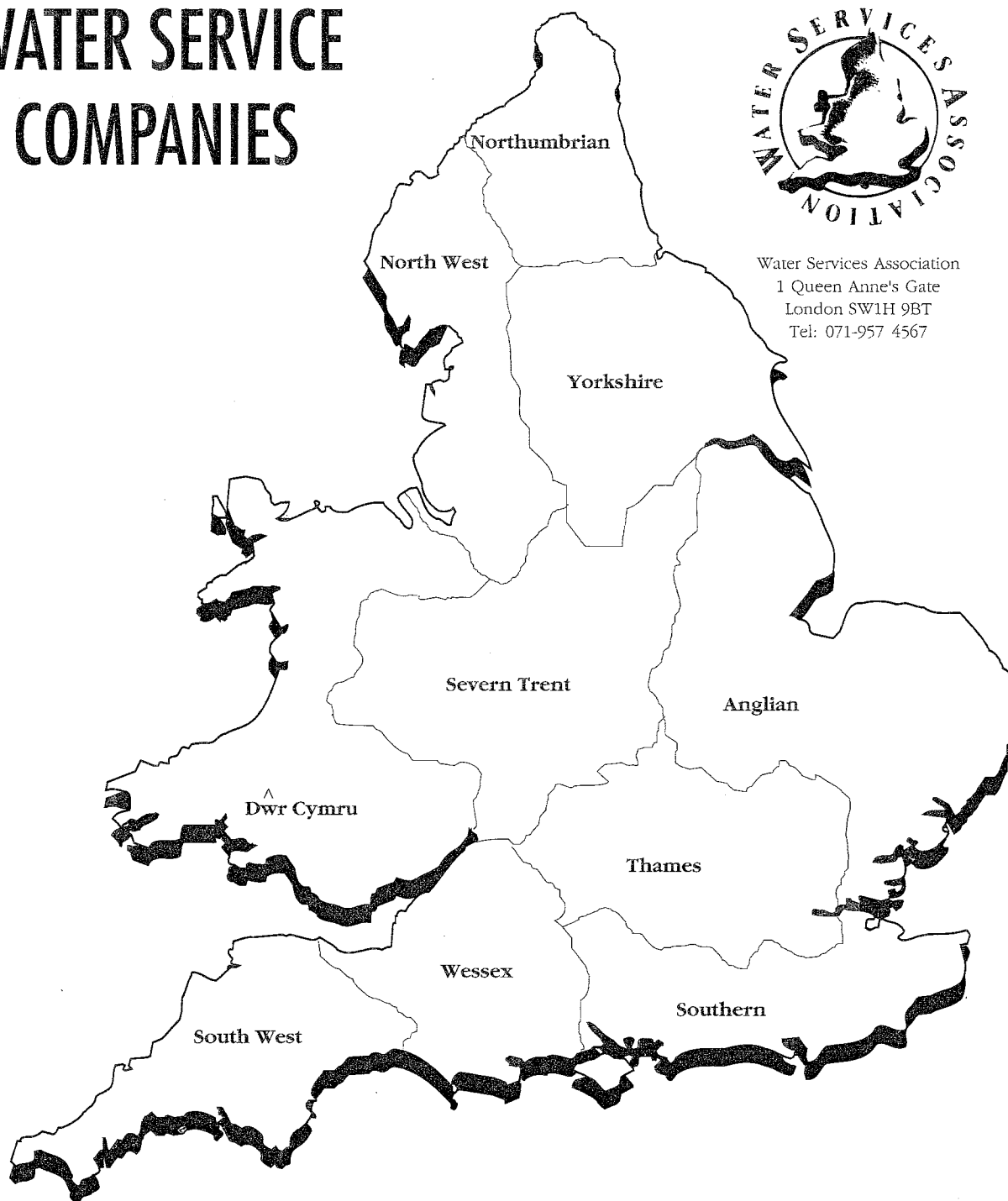
The report by the chief inspector of the the Drinking Water Inspectorate gives full results for all of the water companies. The 270 page book (ISBN 0 11 752676 2) is published by HMSO, price £25

HMSO publications (plus EC directives) can be obtained from HMSO publications centre, PO Box 276, London SW8 5DT.
Tel.: (071) 873 9090. For publications ISBNs must be quoted, for EC directives the source Official Journal number must be quoted.

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1 Queen Anne's Gate
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Tel: 071-957 4567



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Anglian House
Ambury Road
Huntingdon PE18 6NZ
Tel: 0480 443000
Fax: 0480 443115



South West Water
Peninsula House
Rydon Lane
Exeter EX2 7HR
Tel: 0392 219666
Fax: 0392 434966



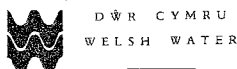
Northumbrian Water
Abbey Road
Pity Me
Durham DH1 5FJ
Tel: 091 383 2222
Fax: 091 384 1920



Thames Water
Nugent House
Vastern Road
Reading RG1 8DB
Tel: 0734 591159
Fax: 0734 593203



North West Water
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Great Sankey
Warrington WA5 3LW
Tel: 0925 234000
Fax: 0925 233360



Dwr Cymru
Plas-y-Ffynnon
Cambrian Way
Brecon Powys LD3 7HP
Tel: 0874 623181
Fax: 0874 624167



Severn Trent Water
2297 Coventry Road
Birmingham B26 3PU
Tel: 021 722 4000
Fax: 021 722 4800



Wessex Water
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Passage Street
Bristol Avon BS2 0JQ
Tel: 0272 290611
Fax: 0272 293137



Southern Water
Yeoman Road
Worthing
West Sussex BN13 3NX
Tel: 0903 264444
Fax: 0903 262100

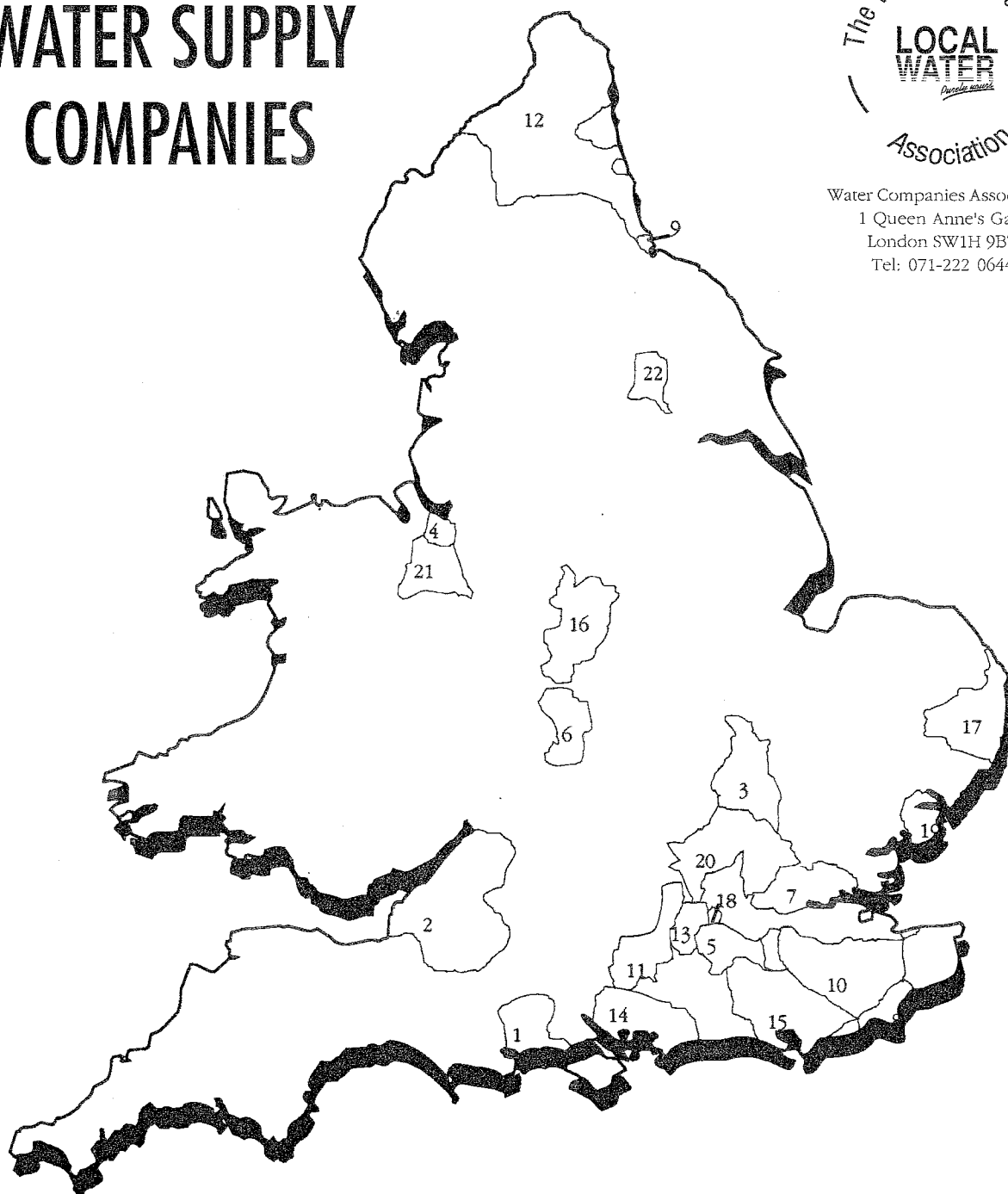


Yorkshire Water
West Riding House
67 Albion Street
Leeds LS1 5AA
Tel: 0532 448201
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WATER SUPPLY COMPANIES



Water Companies Association
1 Queen Anne's Gate
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1. Bournemouth Water plc &
West Hampshire Water plc
Tel: (0202) 499000
2. Bristol Water Plc
Tel: (0272) 665881
3. Cambridge Water Company
Tel: (0223) 247351
4. Chester Waterworks Company
Tel: (0244) 320501
5. East Surrey Water Plc
Tel: (0737) 765933
6. East Worcestershire Waterworks
Company
Tel: (0527) 575205
7. Essex Water Company
Tel: (0245) 491234

8. Folkestone & Dover Water Services Ltd
Tel: (0303) 276951
9. Hartlepoons Water Company
Tel: (0429) 274405
10. Mid Kent Water Plc
Tel: (0634) 240313
11. Mid Southern Water Plc
Tel: (0252) 835031
12. North East Water Plc
Tel: (091) 265 4144
13. North Surrey Water Ltd
Tel: (0784) 455464
14. Portsmouth Water Plc
Tel: (0705) 486333
15. South East Water Limited
Tel: (0323) 649207

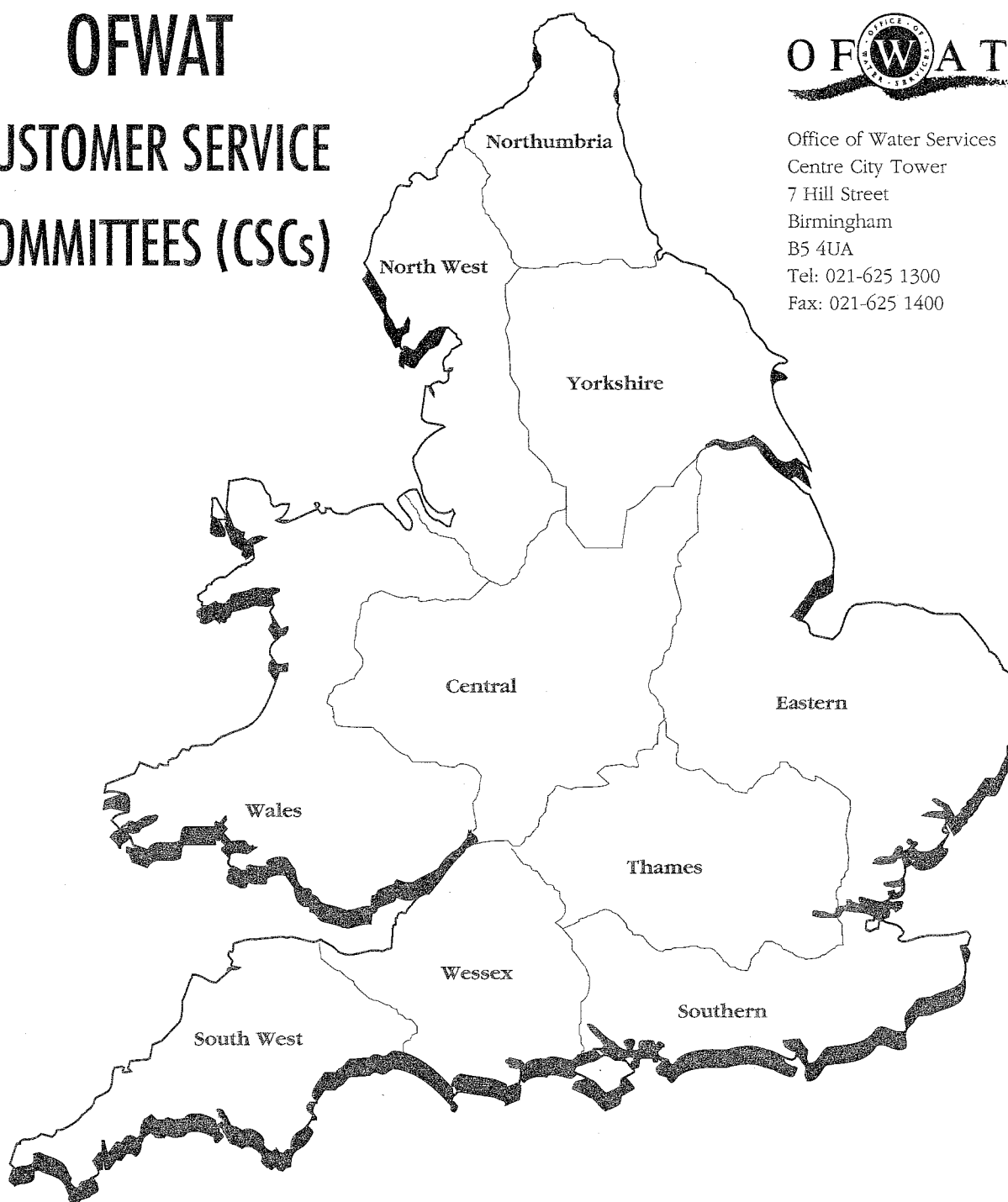
16. South Staffordshire Water Plc
Tel: (0922) 38282
17. Suffolk Water Company
Tel: (0502) 572406
18. Sutton District Water Plc
Tel: (081) 643 8050
19. Tendring Hundred Water Services Ltd
Tel: (0206) 392155
20. Three Valleys Water Services Plc
Tel: (0707) 268111
21. Wrexham & East Denbighshire Water
Company
Tel: (0978) 291777
22. York Waterworks Plc
Tel: (0904) 622171

OFWAT

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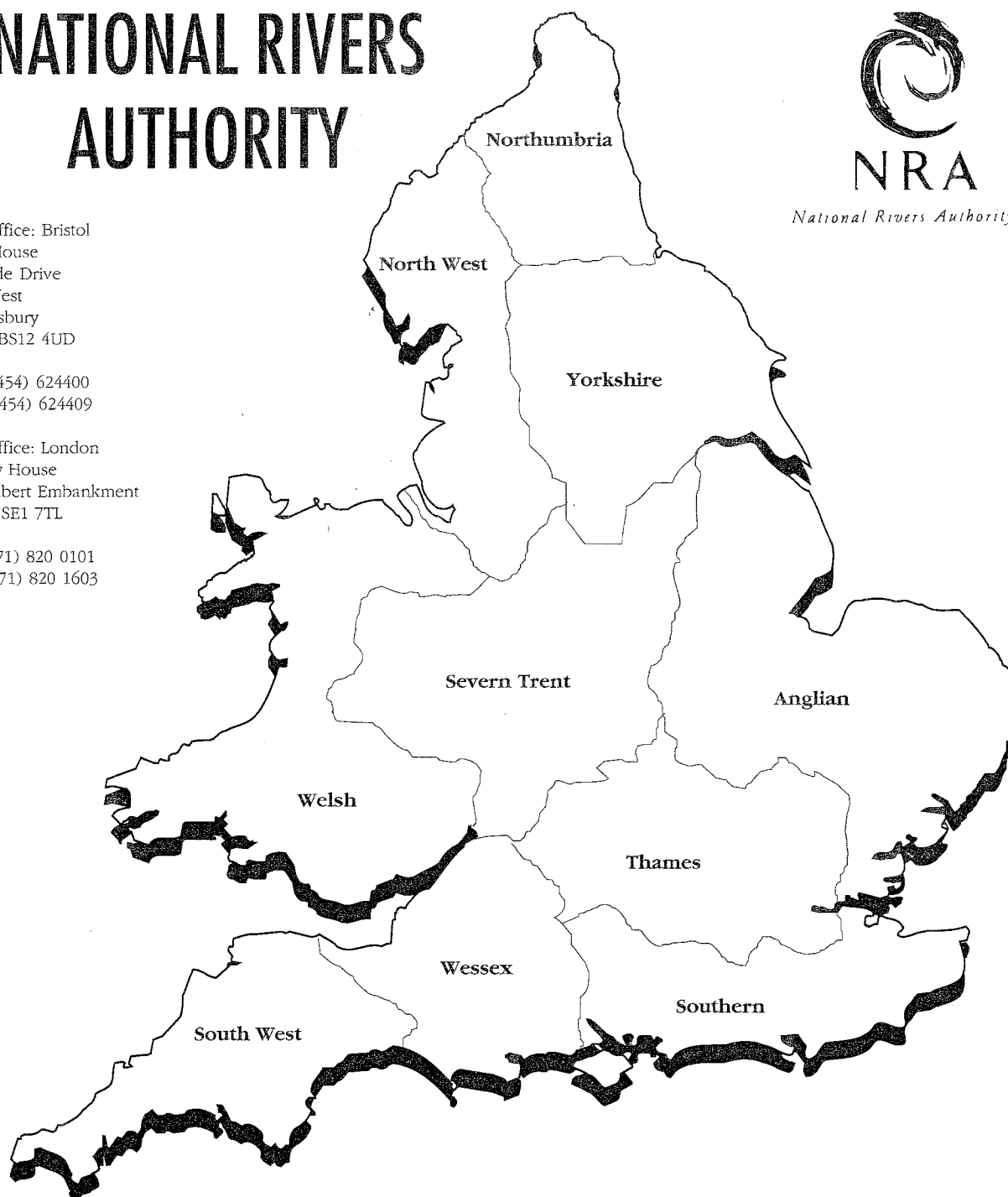
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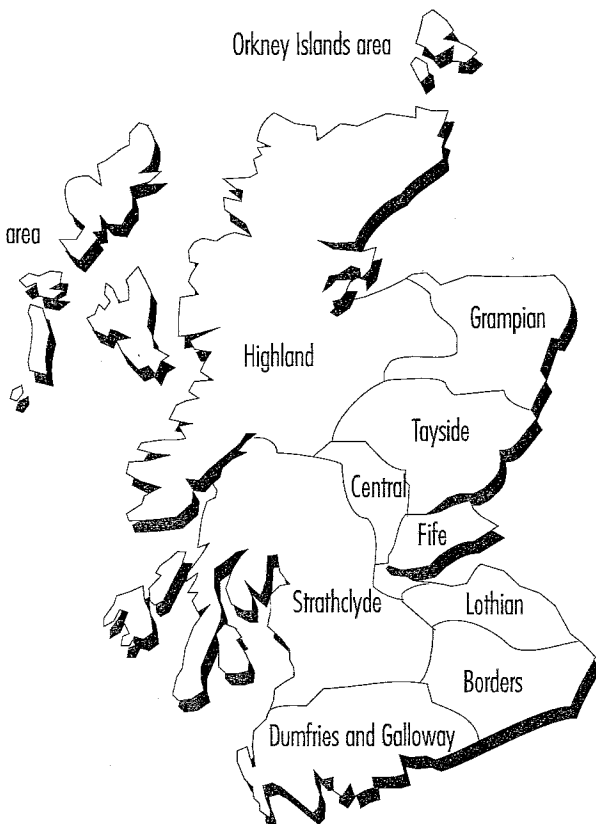
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Shetland Islands area



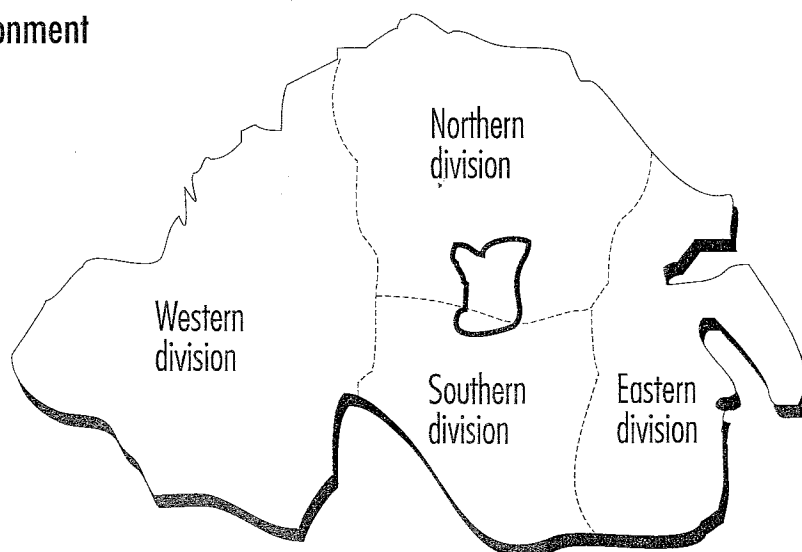
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Department of the Environment
- Water services





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