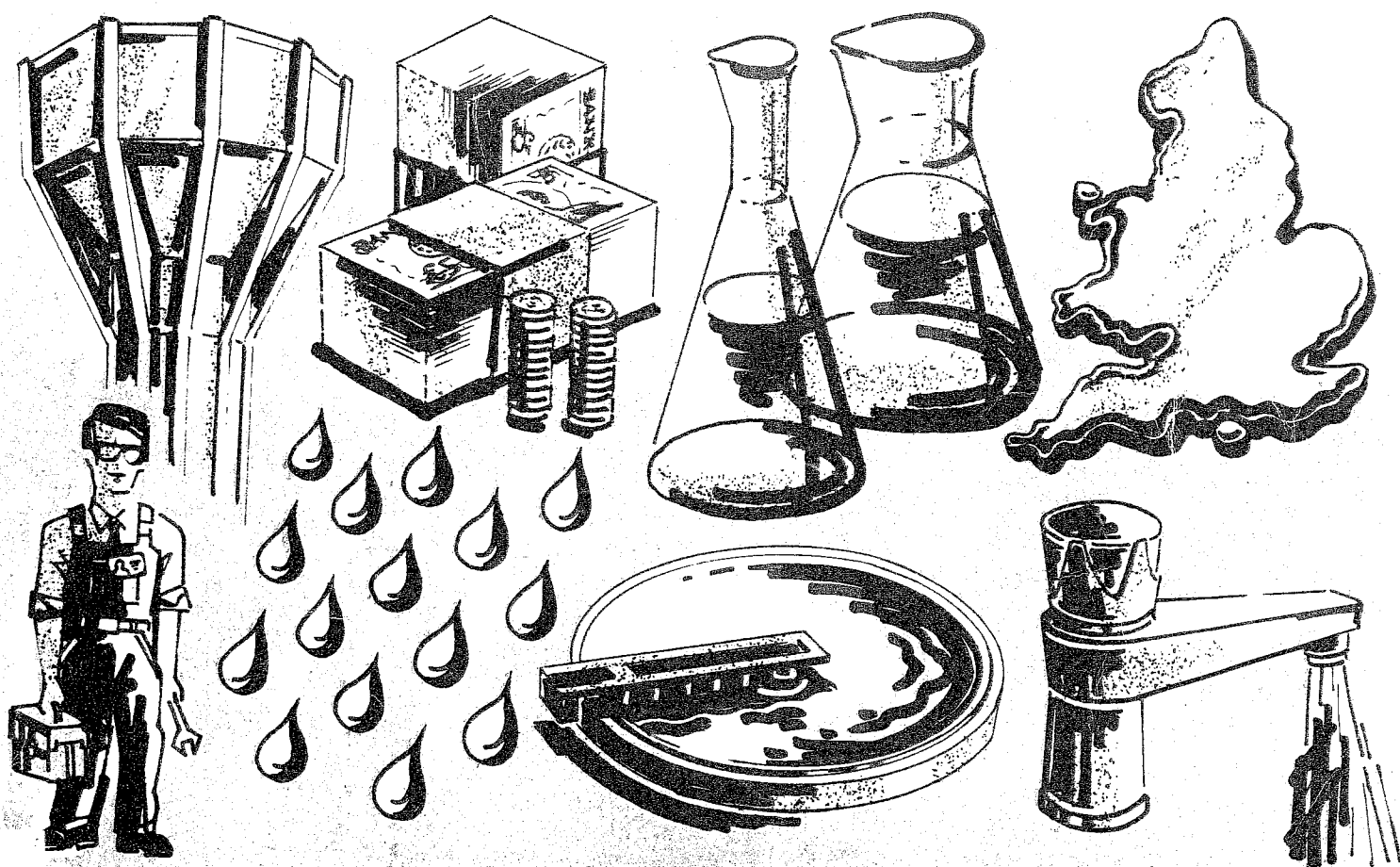


Source
Collection



WATERFACTS **'89**



Water Service Companies

North West Water Limited

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Dawson House
Great Sankey
Warrington WA5 3LW

Severn Trent Water Limited

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2297 Coventry Road
Sheldon
Birmingham B26 3PU

Dŵr Cymru Cyfyngedig

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fax 0874-4167

Plas-y-frynnon
Cambrian Way
Brecon
Powys LD3 7HP

South West Water Services Limited

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Northumbrian Water Limited

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Newcastle upon Tyne NE3 3PX

Yorkshire Water Services Limited

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fax 0274-731830

Broadacre House
Vicar Lane
Bradford BD1 5PU

Anglian Water Services Limited

tel 0480-433433

fax 0480-433055

Ambury Road
Huntingdon PE18 6NZ

Thames Water Utilities Limited

tel 0734-593333

fax 0374-593203

Nugent House
Vastern Road
Reading RG1 8DB

Southern Water Services Limited

tel 0903-205252

fax 0903-30511

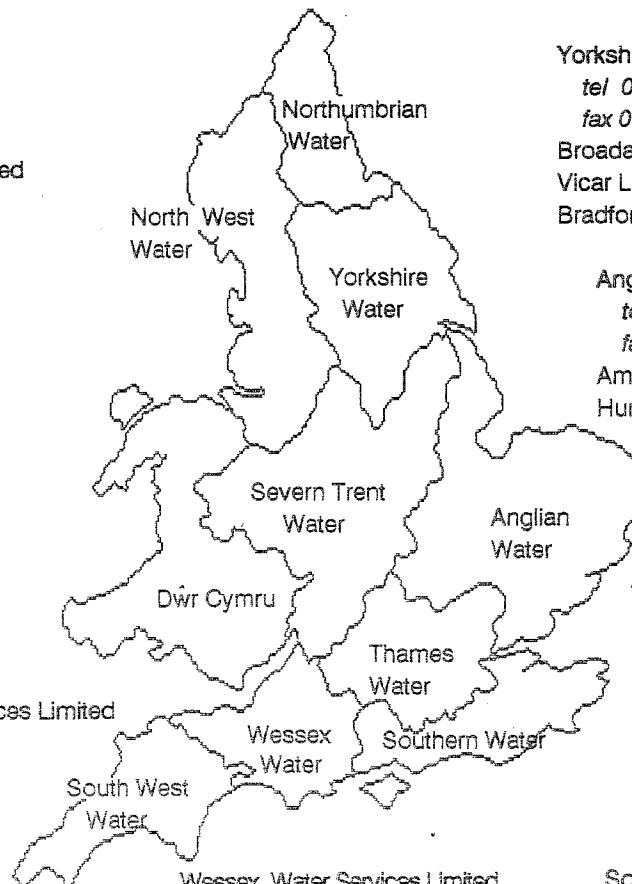
Guildbourne House
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Sussex BN11 1LD

Wessex Water Services Limited

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Contents

Section		page
	Foreword	v
1.	Organisation of water services	1
2.	Regulation of water services	5
	Operational information	
3.	Indices	10
4.	Water supply	12
5.	Sewerage services	16
6.	Charges, finance	18
7.	Manpower	27
8.	Water quality	28
9.	International	32
10.	Historic series	36

Foreword

This edition of *Waterfacts* relates to the financial year 1988-89.

This means that much of the information is about the 10 water authorities before they were restructured on 1 September 1989 as Water Service Company subsidiaries of Water Holding Companies whose shares were offered for sale on 22 November 1989. We have, however, included some information about these very significant changes from 1 September 1989.

The next edition will cover the financial year 1989-90 when there were 10 water authorities for five months and 10 Water Service Companies for the remaining seven months.

So readers of *Waterfacts* will have, in the main, complete series of information about water authorities and new information series about their successor bodies, the 10 Water Service Companies.

Once again we have included information about the 29 Statutory Water Companies and other water bodies. The section on international comparisons has been developed and will be extended, we hope, in future editions.

The water services industry has changed significantly and *Waterfacts* is changing with it. What will not change, however, is our aim to provide authoritative, factual information on which readers can depend. We would welcome readers' comments and suggestions and any criticisms also. In particular, please let us know if you have any amendments for future editions.

Michael Carney, Secretary, Water Services Association
Philip Turton, Editor, *Waterfacts*

1. Organisation of water services

Privatisation of Water Authorities

On 6 July 1989 the Water Bill was enacted. Under this Act, the functions of the water authorities relating to water supply (except in areas where those functions were carried out through Statutory Water Companies and subject to minor boundary changes) and the provision of sewerage services were transferred on 1 September 1989 to the Water Service Companies. The majority of the water authorities' property, rights and liabilities were also transferred to WSCs on the same date. Certain of the water authorities' other functions including pollution control, water resource management, fisheries, flood protection and alleviation and land drainage, together with the water authorities' other property, rights and liabilities were transferred to the National Rivers Authority (NRA), a new public body.

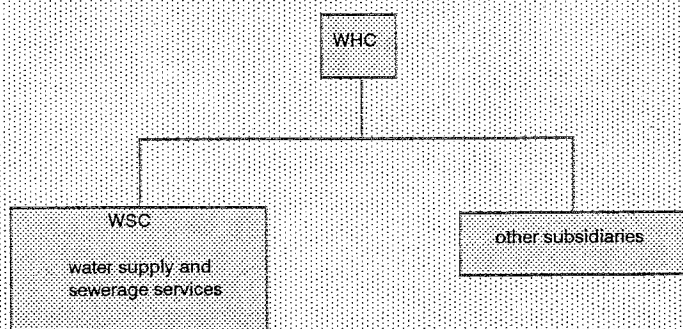
1A. Key dates in the Privatisation timetable in 1989

Water Act 1989 Royal Assent	6 July
Vesting day	1 September
Launch of flotation marketing campaign	6 September
Publication of pathfinder prospectus	3 November
IMPACT DAY	22 November
Offer closed	6 December
Stock exchange listing	12 December

The ten WSCs were appointed on 1 September 1989 under the Water Act 1989 as water and sewerage companies responsible for water supply and sewerage services within their water regions and sewerage regions respectively. The water and sewerage regions are broadly within the same geographical areas as their predecessor water authorities. The two regions broadly coincide, except where water is supplied by one of the 29 Statutory Water Companies or where water supply or sewerage services are carried out by neighbouring Water Service Companies. The regional boundaries of the companies are indicated in the map on the inside of the back cover.

The WSCs are the principal operating subsidiaries of the 10 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.

1B. Water Holding Companies (WHCs) and Water Service Companies (WSCs)



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.

1C. The formal titles and shortened forms of each of the Companies

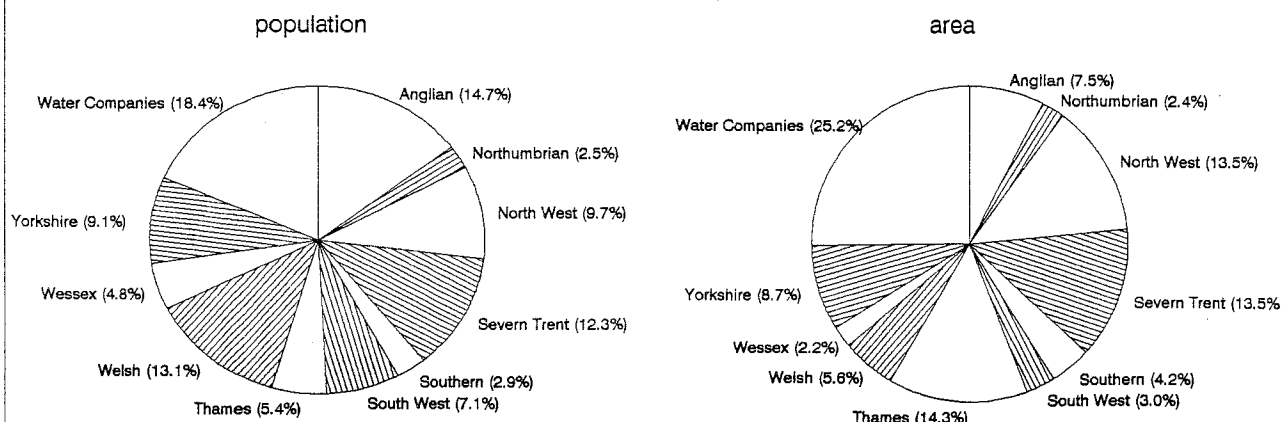
Water Holding Companies	known as	Water Service Companies	known as
Anglian Water Plc	Anglian	Anglian Water Services Limited	Anglian Water
Northumbrian Water Group Plc	Northumbrian	Northumbrian Water Limited	Northumbrian Water
North West Water Group Plc	North West	North west Water Limited	North West Water
Severn Trent Plc	Severn Trent	Severn Trent Water Limited	Severn Trent Water
Southern Water Plc	Southern	Southern Water Services Limited	Southern Water
South West Water Plc	South West	South West Water Services Limited	South West Water
Thames Water Plc	Thames	Thames Water Utilities Limited	Thames Water
Welsh Water Plc	Welsh	Dŵr Cymru Cyfyngedig	Dŵr Cymru
Wessex Water Plc	Wessex	Wessex Water Services Limited	Wessex Water
Yorkshire Water Plc	Yorkshire	Yorkshire Water Services Limited	Yorkshire Water

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

1D. Resident population and area 1989

	Area		Resident population	
	water supply	sewerage	water supply	sewerage
	km ²	km ²	millions	millions
Anglian Water	22,000	27,000	3.8	5.4
Northumbrian Water	3,850	9,400	1.2	2.6
North West Water	14,800	14,800	6.8	6.8
Severn Trent Water	18,960	21,650	6.9	8.3
Southern Water	4,450	10,450	2.1	4.0
South West Water	10,300	10,800	1.5	1.5
Thames Water	8,200	13,750	7.2	11.7
Dŵr Cymru	20,000	21,000	2.8	3.1
Wessex Water	7,350	10,000	1.1	2.5
Yorkshire Water	13,900	13,600	4.4	4.6
Total	125,000	150,000	37.8	50.5
Statutory Water Companies	28,000	-	12.7	-

fig 1d. Water Service Companies by population and area



1E. Water Services Association

1, Queen Anne's Gate, London SW1H 9BT
(01-222-8111) fax (01-222-1811)

The WSA is an association of water and sewerage undertakers appointed under sections 11 or 12 of the Water Act 1989. Currently its members are the ten water service companies listed in table 1C. The Association provides a forum for members to discuss among themselves and with representatives of Government and outside organisations matters relevant to the water industry. The WSA is governed by a council of its members.

1F. Water Companies' Association

14 Great College Street
London SW1P 3RX (01- 222 - 3366)

All the statutory 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.

The 29 Statutory Water Companies and the area they supply are shown on the map on the inside of the back cover. They are subject to regulation of their water supply activities in the same way as the 10 WSCs.

1G. Associated national bodies

(i) Water Training

Tadley Court, Tadley Common Road, Tadley,
nr Basingstoke, Hants RG26 6TD (07356 - 3011)

Water Training is a company set up to satisfy the industry's training requirements. It covers the whole of the United Kingdom. The Council of WT consists of the ten Chairmen, two Convention of Scottish Local Authorities representatives, two from water companies, one from the Department of the Environment, Northern Ireland and one from the Scottish River Purification Boards' Association.

(ii) Water Industry Certification Scheme

1, Queen Anne's Gate, London SW1H 9BT

The Water Industry Certification Scheme (WICS) provides certification for products and management systems used in the construction of works for the water industry. It is sponsored by the Water Services Association, the Water Companies' Association, the Convention of Scottish Local Authorities and the Department of the Environment for Northern Ireland.

(iii) Foundation for Water Research

Henley Road, Medmenham, PO Box 16, Marlow
Bucks SL7 2HD (0491 - 571531)

The foundation is a private company limited by guarantee. Its principal activity is to commission and manage a £3.5 million programme of national research for the UK water industry, for which it is currently using WRc plc as its main contractor. It has over 250 subscribing members worldwide although its main income is derived from its UK water utility members.

(iv) Water Research Centre

Henley Road, Medmenham, PO Box 16, Marlow
Bucks SL7 2HD (0491 - 571531)

WRc is an independent research-based company whose scientific and engineering skills are applied to help governments and other regulatory agencies develop environmental policies and help utilities meet the required standards in the most cost-effective way.

WRc's principal UK customers are central government, the National Rivers Authority and the water utilities. It is active worldwide with a client list that includes the European Commission, overseas governments, World Health Organisation, development banks, municipal authorities and industrial corporations.

The company operates from two bases at Medmenham, Bucks (environmental management) and Swindon, Wilts (water and sewage management) with a current turnover of £26 million. In total WRc employs over 650 staff and maintains liaison offices in Stirling, Warrington and Hong Kong. Its US subsidiary is based in Huntingdon Valley, Pennsylvania. The Water Byelaws Advisory Service provides advice and testing services from its base in Slough.

(v) **Water in Scotland**

Scottish Development Department, St. Andrews House, Regent Road
Edinburgh EN1 3DE (031-556-8400)

The reorganisation of local government in Scotland in 1975 resulted in the functions of the regional water boards established under the Water (Scotland) Act 1967 - with the exception of the Central Scotland Water Development Board - being transferred to 12 regional or Islands councils, along with other services including sewerage and the sewage disposal. River purification boards have operated in Scotland since May 1975.

(vi) **Water in Northern Ireland**

3 Frederick Street, Belfast BT1 2NS (0232-244711)

Responsibility for all water and sewerage services in Northern Ireland lies with the Department of the Environment for Northern Ireland.

Information about these organisations and many others related to the water industry is given in *Who's Who in the water industry* published for the WSA by Turret Group plc and available from them at Turret House, 171 High Street, Rickmansworth, Herts WD3 1SN.

2. Regulation of water services

(a) Introduction

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 provide the services. Economic regulation in particular, is very different in England and Wales from that elsewhere. Drinking water and environmental regulation are broadly similar although the pace of change differs.

The Water Act 1989 reenacts certain legislation which previously applied to water authorities. However the regulatory arrangements in England and Wales in many respects have been redefined, extended or made more stringent and provide a more comprehensive framework of enforcement. The Water Act establishes the Secretary of State, the Director General of Water Services and the National Rivers Authority as the principal regulators of the industry. With certain exceptions, the regulatory provisions do not apply to business activities which are not connected with the carrying out of water and sewerage functions.

(b) Economic regulation

The *Director General of Water Services* (and the Secretary of State) has a primary duty to exercise and perform certain of his powers and duties under the Water Act in the manner he considers best calculated 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, each of the Secretary of State and the Director General must exercise and perform such 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; and
- facilitate effective competition between persons holding or seeking appointments under the Water Act as water or sewerage undertakers.

The Director General, Ian Byatt, was appointed in April 1989 for a period of five years. He controls a small staff (initially about 100) the cost of which is recovered from appointees by a licence fee. From 1 September 1989 all companies in England and Wales (water service companies and statutory water companies) 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 unforeseen or previously unquantifiable obligations placed on the companies may be eligible for cost pass through, and together with provisions in the Water Act, enable him 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.

In certain circumstances differences of view between the Director General and the undertaker can be referred to the *Monopolies and Mergers Commission* (MMC) for arbitration. If the company is dissatisfied with:

- (i) the Director General's review of 'K'
- (ii) the Director General's assessment of the need for price modification in respect of cost pass through expenditure
- (iii) any amendment by the Director General of the appointment

it may appeal to the MMC.

* Published by HMSO ISBN 0 11 752228 7 (water holding companies)
and ISBN 0 11 752257 0 (statutory water companies)

Separately, the MMC has a specific task in respect of mergers and takeovers, where an *automatic* referral is required in the event of one or both of the water companies having assets valued in excess of £30million. Furthermore, in coming to conclusions about the public interest in any such proposal the MMC must take account of the Director General's requirements for comparative competition.

(c) Drinking water regulation

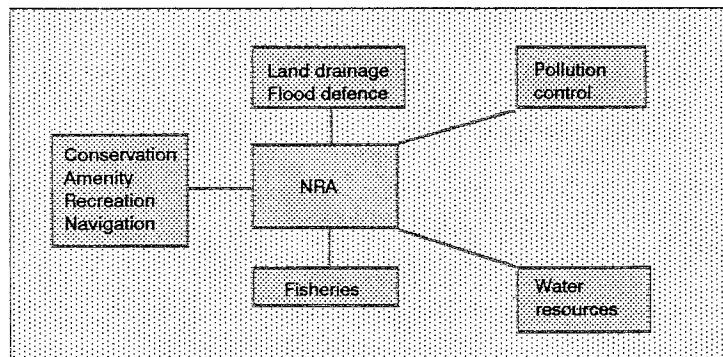
Under the Water Act each water company is under a general duty to develop and maintain an efficient and economical system of water supply within its area. It must also ensure that all such arrangements have been made for providing supplies of water to premises in its area, making such supplies available to people who demand them and for maintaining, improving and extending its mains and other pipes, as are necessary to enable it to meet its water supply obligation.

The Water Act requires water supplied for domestic purposes to be wholesome at the time of supply. Water quality regulations, reflecting the requirements of the EC Drinking Water Directive impose values for physical, chemical and biological parameters for water intended for drinking, washing and cooking purposes. A material breach of the regulations can lead to enforcement action by the *Secretary of State*. However he is empowered to accept 'undertakings' from companies which are programmes of works designed to facilitate compliance as soon as practicable. Most companies have offered, and the Secretary of State has accepted, undertakings in respect of non-compliance with a limited number of parameters. The supply of water unfit for human consumption is now a criminal offence.

Local authorities in England and Wales retain their public health responsibilities as to the wholesomeness of drinking water and have special powers to deal with private supplies.

(d) The regulation of water abstraction, and discharge of waste waters

The regulation of water abstractions and impoundments, and the discharge of waste waters is mainly the responsibility of the *National Rivers Authority* (NRA) which was established under the Water Act 1989. The NRA is a non departmental public body to which the river basin regulatory functions of the ten water authorities (WA) were transferred. Some 6500 former WA staff were vested in the new body which is responsible in England and Wales for the functions given in diagram below.



The NRA licences the abstraction of water and independently monitors river quality. It also consents discharges to river, including discharges from sewage treatment plants.

Discharges of waste water, including discharges from storm overflows and to coastal waters are subject to the terms and conditions set out in consents issued by the Secretary of State or the NRA. The discharge of substances dangerous to the aquatic environment, usually by-products from industrial processes (red list substances), are separately controlled by *Her Majesty's Inspectorate of Pollution*. The dumping of sewage sludge at sea is permitted by licence under the provisions of the Food and Environmental Protection Act 1987 (by the Ministry of Agriculture Fisheries and Food). The application of sewage sludge to land is regulated by the Department of the Environment.

(e) UK Legislation

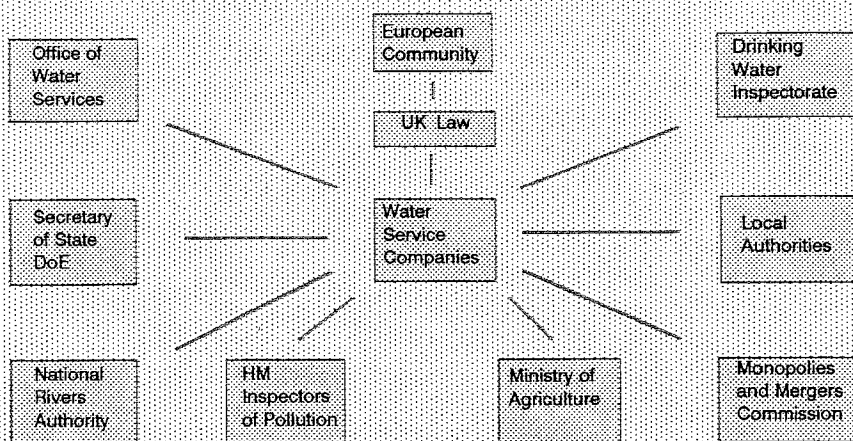
The principal UK legislation is the Water Act 1989. This provides a framework for the Appointments for water and sewerage undertakers and regulations. A list of the main statutory instruments relevant to the water industry made associated with or, as a consequence of, the Water Act follows:-

2A. LIST OF STATUTORY INSTRUMENTS

no.	Description	Made	Coming into force
1147	The Water Supply (Water Quality) Regulations 1989 except for Regulations 13, 17, 18, 19	6 July 1989	1 September, 1 July 1990
1148	The Surface Waters (Classification) Regulations 1989	6 July 1989	1 September 1989
1149	The Controlled Waters (Lakes and Ponds) Order 1989	6 July 1989	1 September 1989
1150	The Control of Pollution (Revocations) Regulations 1989	6 July 1989	1 September 1989
1151	The Control of Pollution (Consents for Discharges etc) (Secretary of State Functions) Regulations 1989	6 July 1989	1 September 1989
1152	The Water and Sewerage (Conservation, Access and Recreation) (Code of Practice) Order 1989	6 July 1989	1 September 1989
1154	The Director General of Water Services' Register (Inspection and Charges) Order 1989	6 July 1989	1 September 1989
1155	The Water Reorganisation (Pensions etc) (Designated Persons) Order 1989	6 July 1989	1 September 1989
1156	The Trade Effluents (Prescribed Processes and Substances) Regulations 1989	6 July 1989	1 September 1989
1157	The Control of Pollution (Discharges by the National Rivers Authority) Regulations 1989	6 July 1989	1 September 1989
1158	The Control of Pollution (Radioactive Waste) Regulations 1989	6 July 1989	1 September 1989
1159	The Water Supply and Sewerage Services (Customer Service Standards) Regulations 1989	6 July 1989	1 September 1989
1160	The Control of Pollution (Registers) Regulations 1989	6 July 1989	1 September 1989
1161	The Water Reorganisation (Pensions etc) Regulations 1989	6 July 1989	1 September 1989
1162	The Water Appointment (Monopolies and Mergers Commission) Regulations 1989	7 July 1989	1 September 1989
1186	The Reservoirs (Panels of Civil Engineers) (Reappointment) Regulations 1989	6 July 1989	15 July 1989
1263	The Sludge (Use in Agriculture) Regulations 1989	24 July 1989	1 September 1989
1378	The Rivers (Prevention of Pollution) Act 1951 (Continuation of Byelaws) Orders 1989	3 August 1989	1 September 1989
1379	The Water and Sewerage (Works) (Advance Payments) Regulations 1989	3 August 1989	1 September 1989
1380	The Water (Local Statutory Provisions) (Consequential Amendments) Order 1989	3 August 1989	1 September 1989
1381	The Water Reorganisation (Pensions etc) (Amendment) Regulations 1989	3 August 1989	1 September 1989
1382	The Water Reorganisation (Pension etc) (Designated Persons) (Amendment) Order 1989	3 August 1989	1 September 1989
1383	The Water Supply and Sewerage Services (Customer Service Standards) (Amendment) Regulations 1989	3 August 1989	1 September 1989
1384	The Water Supply (Water Quality) (Amendment) Regulations 1989	3 August 1989	1 September 1989
1461	The Companies Act 1985 (Modifications for Statutory Water Companies) Regulations 1989	8 August 1989	1 September 1989
1465	The Water Authorities (Successor Companies) Order 1989	8 August 1989	9 August 1989
1530	(C.51) The Water Authorities (Transfer of Functions) (Appointed Day) Order 1989	18 August 1989	1 September 1989
1531	The Water Reorganisation (Holding Companies of Successor Companies) Orders 1989	18 August 1989	19 August 1989
1532	The Water reorganisation (Successor Companies) (Transfer of Loans) Order 1989	18 August 1989	1 September 1989
1557	(c.52) The Water Act 1989 (Commencement No. 2 and Transitional Provisions) Order 1989	25 August 1989	September 1989 pt 1 April 1990 pt 2
1561	(c.53) (S.128) The Water Act 1989 (Commencement No. 3 (Scotland) Order 1989	28 August 1989	1 September 1989
1588	The Local Government (Direct Labour Organisations) (Competition) Regulations 1989	2 September 1989	1 October 1989
1590	The Town and Country Planning General Development (Amendment) (No. 2) Order 1989	2 September 1989	29 September 1989

As at October 1989, see Water Bulletin for further updates

2B. Regulation



(f) EC Directives

The EC is especially active in environmental legislation; a list of relevant Directives, and proposals for Directives follows:-

2C. 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) 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.

(iii) 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, and 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.
- 80/ 68/EEC on protection of groundwater against pollution caused by certain dangerous substances.

(iv) 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.

(v) 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.
- 82/ 94/EEC amending Directive 73/404/EEC.

(vi) Sewage sludge disposal

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

(vii) 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 Directive 77/795/EEC.
- 88/346/EEC+ amending Directive 86/85/EEC to include major inland waters.

(viii) Public procurement of works and supplies

- 71/305/EEC on the coordination of procedures for the award of public works contracts.
- 77/62/EEC on coordinating procedures for the award of public supply contracts.
- 78/669/EEC amending Directive 71/305/EEC.
- 80/767/EEC adapting and supplementing Directive 77/62/EEC in respect of certain contracting authorities.
- 88/295/EEC amending Directive 77/62/EEC relating to the coordinating procedures for the award of public supply contracts and repealing certain provisions of Directive 80/767/EEC.

(ix) Other

- 87/216/EEC on the major accident hazards of certain industrial activities' 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.

* Directives which are discussed further in sections 3, 4 or 5. + A 'decision' rather than a 'Directive'.

2D. Proposed EC Directives

- COM(84)303 on procedures for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry.
- COM(85)373 on dumping of waste at sea.
- COM(86)733 on water quality objectives for chromium.
- COM(87)134 coordinating the laws, regulations and administrative provisions relating to the application of Community rules and procedures for the award of public supply and public works contracts.
- COM(89)303 on the establishment of the European Environment Agency and the European Environment Monitoring and Information Network.
- COM(88)335 on the procurement procedures of entities providing water, energy, and transport services.
- COM(88)335/3 on the procurement procedures of entities providing water, energy, and transport services (suggesting further modification).
- COM(88)354 amending Directive 71/305/EEC concerning the coordination of procedures for the award of public works contracts.
- COM(88)708 concerning the protection of fresh, coastal and marine waters against pollution caused by nitrates from diffuse sources.
- COM(89)478 on the amendments to 80/778/EEC, 76/160/EEC, 75/440/EEC and 79/869/EEC.
- COM(89)518 on municipal waste water treatment.

3. Indices and units

The Director General of Water Services will use the Retail Prices Index (RPI) when reviewing increases in charges. The November to November figure will be used to compare the increases.

When considering "cost pass through" the DG will use the Producer Prices Construction output index. For capital expenditure repricing an index specifically applied to the water industry, the Public Works Non-Roads Index (PWNRI), has been used. The respective weightings in the Retail Prices Index (RPI) for gas, telecoms and water are 2.1%, 1.6% and 0.7% respectively.

3A. Retail Prices Index

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1974	25.3	25.8	26.0	26.9	27.3	27.6	27.8	27.8	28.1	28.7	29.2	29.6
1975	30.4	30.9	31.5	32.7	34.1	34.8	35.1	35.3	35.6	36.1	36.6	37.0
1976	37.5	38.0	38.2	38.9	39.3	39.5	39.6	40.2	40.7	41.4	42.0	42.6
1977	43.7	44.1	44.6	45.7	46.1	46.5	46.6	46.8	47.1	47.3	47.5	47.8
1978	48.0	48.3	48.6	49.3	49.6	50.0	50.2	50.5	50.7	51.0	51.3	51.8
1979	52.5	53.0	53.4	54.3	54.7	55.7	58.1	58.5	59.1	59.7	60.3	60.7
1980	62.2	63.1	63.9	66.1	66.7	67.4	67.9	68.1	68.5	68.9	69.5	69.9
1981	70.3	70.9	72.0	74.1	74.6	75.0	75.3	75.9	76.3	77.0	77.8	78.3
1982	78.7	78.8	79.4	81.0	81.6	81.9	81.9	81.9	81.9	82.3	82.7	82.5
1983	82.6	83.0	83.1	84.3	84.6	84.8	85.3	85.7	86.1	86.4	86.7	86.9
1984	86.8	87.2	87.5	88.6	89.0	89.2	89.1	89.9	90.1	90.7	91.0	90.9
1985	91.2	91.9	92.8	94.8	95.2	95.4	95.2	95.5	95.4	95.6	95.9	96.0
1986	96.2	96.6	96.7	97.7	97.8	97.8	97.5	97.8	98.3	98.5	99.3	99.6
1987	100.0	100.4	100.6	101.6	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	

The series from 1974 was given in WATERFACTS 86.

3B. Repricing to 1988/89

Retail Prices Index					Public Works Non-Roads Index *		
	index	annual multiplier	outturn to 1988/89 outturn	November to November increase %	index	annual multiplier	outturn to 1988/89 outturn
1974/75	28.8		3.778		39.5		3.190
1975/76	35.9	1.246	3.032	25.2	47.5	1.203	2.653
1976/77	41.4	1.153	2.630	15.0	51.0	1.074	2.471
1977/78	47.2	1.140	2.307	13.0	54.0	1.059	2.333
1978/79	51.1	1.083	2.130	8.1	62.0	1.148	2.032
1979/80	59.2	1.158	1.840	17.4	77.5	1.250	1.626
1980/81	68.8	1.163	1.582	15.3	95.8	1.235	1.316
1981/82	76.8	1.114	1.418	12.0	96.8	1.008	1.306
1982/83	82.2	1.072	1.325	6.3	95.3	0.987	1.323
1983/84	86.0	1.046	1.266	4.8	95.0	0.995	1.330
1984/85	90.4	1.050	1.205	4.9	96.3	1.016	1.309
1985/86	95.7	1.059	1.137	5.5	101.8	1.057	1.238
1986/87	98.8	1.032	1.102	3.5	104.5	1.027	1.206
1987/88	102.7	1.040	1.060	4.1	111.5	1.067	1.130
1988/89	108.9	1.060	1.000	6.4	+126.0	1.130	1.000

PWNR figures issued September 1989 and 1985=100.

+1988/89 figure is provisional

3C. Producer Prices Construction Output Index

	quarter 2	quarter 3	quarter 4	quarter 1	average
1974/75	36	38	41	42	39.25
1975/76	43	45	46	46	45.00
1976/77	47	49	50	50	49.00
1977/78	51	52	53	54	52.50
1978/79	56	59	61	64	60.00
1979/80	67	74	77	82	75.00
1980/81	86	92	94	94	91.50
1981/82	94	93	92	91	92.50
1982/83	91	92	92	92	91.75
1983/84	92	93	93	94	93.00
1984/85	95	96	96	97	96.00
1985/86	99	101	103	104	101.75
1986/87	104	105	106	108	105.75
1987/88	110	113	115	119	114.25
1988/89	123	127	131	136	129.25
1989/90	140				

The basic regulation of increases in charges is by "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. This covers the vast majority of WSC charges. "K" is fixed initially as in the table, but from 1991 can be varied to allow for "cost pass through". This is where certain costs will qualify for being passed through to the customer and the standard licence refers to these.

"K" was due to be set for the Statutory Water Companies in January 1990.

3D. "K"

	years 1-5 %	years 6-10 %
Anglian	5.5	5.5
Northumbrian	7.0	3.0
North West	5.0	5.0
Severn Trent	5.5	2.0
Southern	* 5.5	0.0
South West	6.5	5.0
Thames	4.5	4.5
Dŵr Cymru	6.5	5.5
Wessex	4.5	4.5
Yorkshire	3.0	3.0

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

3E. 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	= 0.336 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

4. Water supply

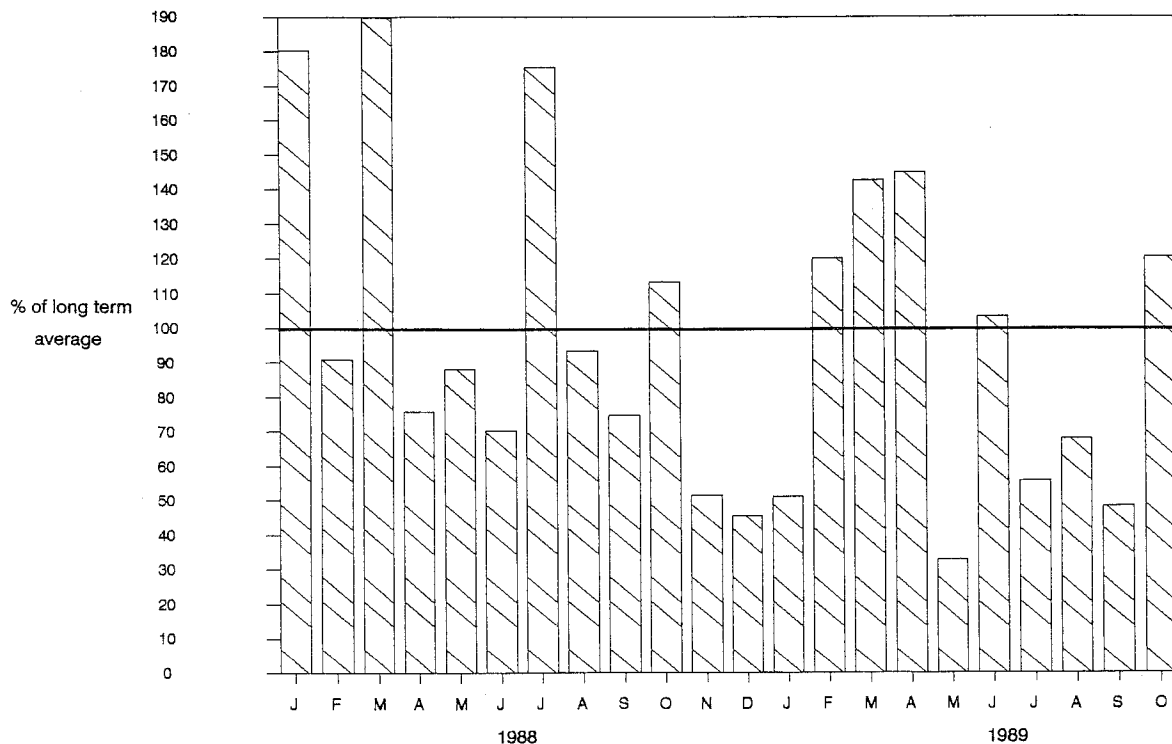
1989 was another drought year, following closely in water resources terms on the droughts of 1976 and 1984. A fuller account of the 1989 drought will be published by the WSA in 1990.

4A. Monthly rainfalls (mm)

	averages							1988										1989				
	1941-70	resid- ual	Sep	Oct	Nov	Dec	total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct					
Anglian	611	150	36	56	36	21	621	31	34	48	74	14	62	44	37	29	44					
Northumbrian	879	450	63	87	72	38	877	32	70	55	49	25	65	19	87	21	85					
North West	1217	750	10	119	66	86	1231	68	123	113	92	33	102	34	118	28	135					
Severn Trent	773	300	50	61	38	34	762	35	65	69	87	23	53	37	40	37	83					
Southern	787	310	43	79	32	20	712	31	63	75	81	11	50	32	28	29	80					
South West	1194	680	66	148	56	56	1220	68	135	115	92	18	38	36	63	99	141					
Thames	704	225	41	68	28	16	649	31	60	65	77	14	46	38	40	32	66					
Dŵr Cymru	1334	870	106	122	62	65	1309	80	140	151	89	23	65	49	78	57	164					
Wessex	864	410	50	107	32	22	819	44	89	87	74	25	33	47	45	52	103					
Yorkshire	818	380	47	94	56	38	852	24	64	66	78	24	84	38	47	19	83					
England/Wales	912	460	62	94	50	41	931	44	78	84	84	22	63	41	61	40	100					
Average 1941/70			73	90	83	83	912	90	912	86	65	59	58	67	61	73	90					

rainfall data is from the Meteorological Office's MORECS system.

fig 4a. Rainfall



Water is abstracted from rivers, reservoirs, lakes and groundwater for the purpose of supplying the public with potable water. The National Rivers Authority licences abstractions of water by Water Services Companies, Statutory 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. 99.2% of the population is supplied with public water supply.

4B. Public water supplied 1974-1988/9 *

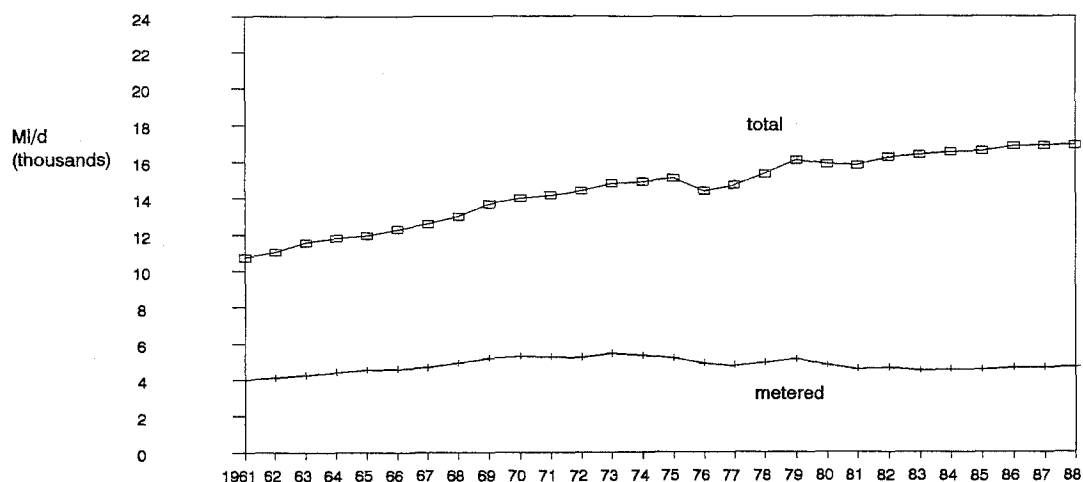
	Resident population	Unmetered	Metered	Non- potable	Total
	000s	MI/d	MI/d	MI/d	MI/d
1974	49159	9555	4801	548	14904
1975	49157	9907	4668	534	15109
1976	49142	9519	4359	539	14417
1977	49440	9961	4211	552	14724
1978	49443	10407	4352	584	15343
1979	49508	10961	4490	643	16094
1980	49603	11083	4247	546	15876
1981	49634	11224	4029	561	15814
1982	49601	11548	4106	561	16215
1983/4	49654	11842	3996	516	16354
1984/5	49764	11956	3990	558	16504
1985/6	49924	12036	3965	575	16576
1986/7	50075	12195	4088	571	16854
1987/8	50075	12216	4059	604	16879
1988/89	50243	12177	4114	605	16896

* Includes water companies.

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

From 1961 to 1975 water consumption rose at about 2.5% a year and there were forecasts of a doubling of demand by the end of the century. The drought of 1976, coupled with an economic recession and a move away from water using industries, resulted in a slow rise in demand of about 0.5% a year during the 1980s.

fig 4b. Public water supplies 1961 to 1988/89



4C. Public water supplied in 1988/89

	Water authority supply only				Total supply including water companies			
	un-metered	metered potable	non-potable	total	un-metered	metered potable	non-potable	total
	MI/d	MI/d	MI/d	MI/d	MI/d	MI/d	MI/d	MI/d
Anglian	807	343	36	1186	1236	504	36	1776
Northumbrian	261	150	250	661	528	272	259	1059
North West	1692	631	91	2414	1692	631	91	2414
Severn Trent	1370	532	0	1902	1689	634	0	2323
Southern	555	178	7	740	1000	330	7	1337
South West	368	115	0	483	368	115	0	483
Thames	2243	477	0	2720	3208	749	0	3957
Welsh	776	231	136	1143	822	256	138	1216
Wessex	281	129	5	415	598	234	74	906
Yorkshire	1004	376	0	1380	1036	390	0	1425
Total	9357	3162	525	13044	12177	4114	605	16896

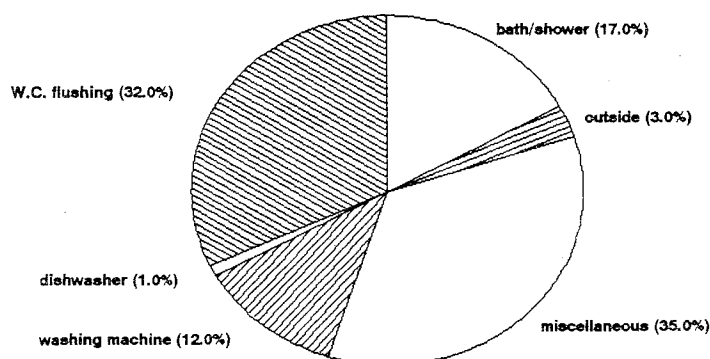
In *WATERFACTS 1986* there was a summary of water used in manufacturing various common products such as bread, coffee, cars etc. In *WATERFACTS 1987* information on household water use by household size and socio-economic group was presented, extracted from *Components of household water demand* and 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 136 litres/head/day in 1989.

In *WATERFACTS 1984* information was given on quantities of water used for drinking by type of drink.

4D. Water use appliance ownership and use

	Ownership level %	Use per day per household	Litres per use		
Washing machine - auto	30	0.75	110	External use	3
other	45	0.3	30	Clothes washing machine	12
Dishwasher	3	0.8	55	Luxury appliances	1
Bath	95	0.6	80	Toilet flushing	32
WC	99	10.5	9.5	Bathing and showering	17
Shower	25	0.55	35	Miscellaneous	35
Sprinkler, hosepipe	na	na	na		
				total of 136 litres/head/day	100

fig 4e. Average household water use



4E. Miscellaneous

A shower uses about 5 litres/minute and a sprinkler can use 1 m³/hour.
3% 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.

4F. Metering trials

It should be noted that by April 2000 the Water Service Companies will need to develop a replacement system for charges to currently non-metered customers; after April 2000 rateable values will not be available for computing water charges. New domestic properties are now having water meters installed.

The Public Utility Transfers and Water Charges Act (1988) was passed in April 1988. This enabled the water authorities to set up metering experiments to examine how demand for water would prevail in varying types of property under differing charging methods.

The Secretary of State then announced 1 April 1989 as the date from which meters could be installed for new connections.

The areas designated for metering experiments are shown below. Full details are given in *National Metering Trials - Interim Report No.1*, December 1988.

fig 4f. Metering trial areas



5. Sewerage, sewage and sludge disposal

The total volume of sewage that arrives at sewage works in England and Wales is about 19,000 MI/d. This includes about 1,000 MI/d of trade effluent.

5A. Sewerage and sewage treatment by population 1987/88

	Resident 000s	Connected to sewer %	Served by STWs %	not connected to sewer %	connected to sea outfalls short %	long %
England and Wales	50,100	96	83	4	12.5	4.5

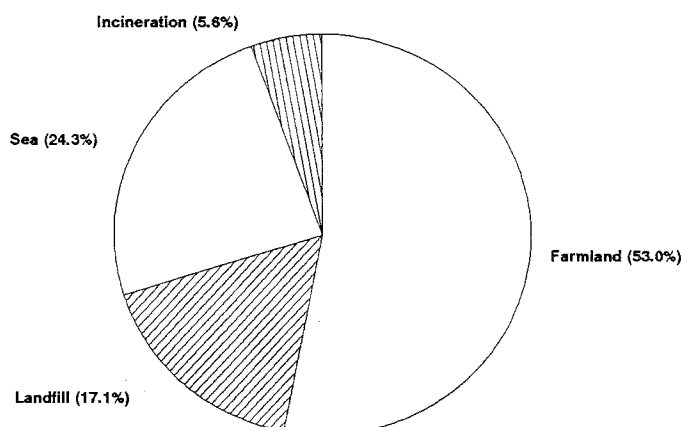
5B. Disposal of sewage sludge 1988

	Farmland	Landfill	Sea	Incinerator	Total
000s of tonnes dry solids					
Anglian	97	9	16	0	122
Northumbrian	9	9	17	0	35
North West	28	25	61	6	120
Severn Trent	82	63	0	30	175
Southern	37	10	9	3	59
South West	9	1	4	0	14
Thames +	140	10	100	0	250
Welsh	20	0	10	0	30
Wessex	29	3	10	0	42
Yorkshire	55	33	5	14	107
England and Wales	506	163	232	53	954

The disposal of sludge from sewage works is strictly controlled :

- (i) disposal to landfill is becoming restricted due to the lack of available local sites;
- (ii) dispersal 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;
- (iii) disposal of sewage sludge to land is undertaken in accordance with guidelines issued by the former NWC/DoE Standing Committee on the Disposal of Sewage Sludge. These will be 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



5C. Local authority sewerage agencies

Section 15 of the Water Act 1973 imposed a duty on water authorities to endeavor 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 an 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.

6. Finance

6A. Numbers of customers 1989/90

	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	1399	1899	40	68	25	9	78	68
Northumbrian	428	946	14	37	1	1	22	26
North West	2550	2495	93	80	6	6	*117	*86
Severn Trent	2529	2982	81	90	40	45	164	339
Southern	802	1458	22	42	2	4	50	58
South West	554	510	24	28	3	3	69	32
Thames	2843	4351	120	188	5	8	108	157
Welsh	978	1027	35	40	33	17	81	60
Wessex	356	811	51	76	7	8	41	33
Yorkshire	1644	1730	70	73	5	5	79	58
Total	14083	18209	550	722	126	105	809	917
Statutory Water Companies	4688	-	155	-	21	-	208	-
England/Wales	18771	18209	705	722	147	92	1017	917

The information is at March 1989 at the time of setting the 1989/90 charges.

* number of meters, not customers

From 1990/91 the water service company charges will exclude the environmental services charge. These elements are now National Rivers Authority responsibilities. The following tables complete the the series of charges up to privatisation when DoE had control over the water authorities' financial targets. Future charges will be subject to the DG's scrutiny.

6B. National average charges

(i) Household water services bills

	1978/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90
p/week	73	81	100	115	129	138	148	165	178	190	205	228
index - 1975/76=100	138	153	189	218	243	261	279	313	336	358	386	430

(ii) Measured water charge

p/m ³	14.0	14.9	18.1	20.1	22.1	22.8	23.5	25.8	27.6	29.3	31.9	35.2
index - 1975/76=100	150	160	194	216	238	245	252	277	298	315	342	430
p/m ³ - equated charge		15.8	19.7	22.4	24.7	25.5	26.4	29.0	30.9	32.9	35.8	39.5

(iii) Retail prices index (for October each year)

January 1974=100	210	236	272	304	324	341	358	377	388	406	432	464
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fig 6b. Average water service bills

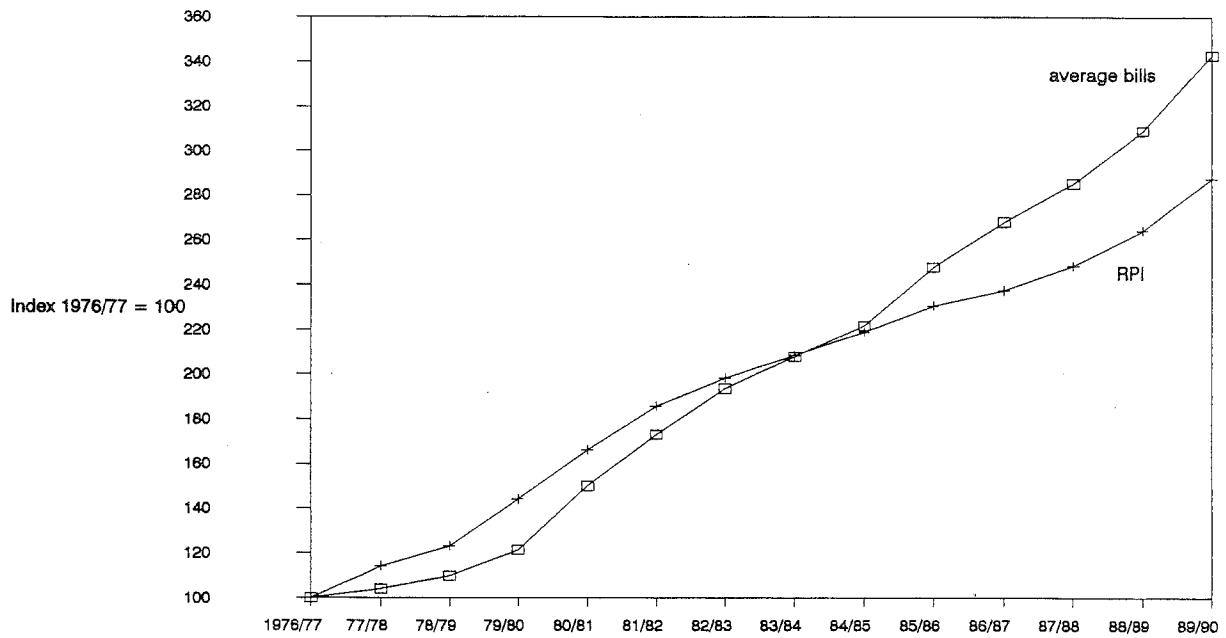
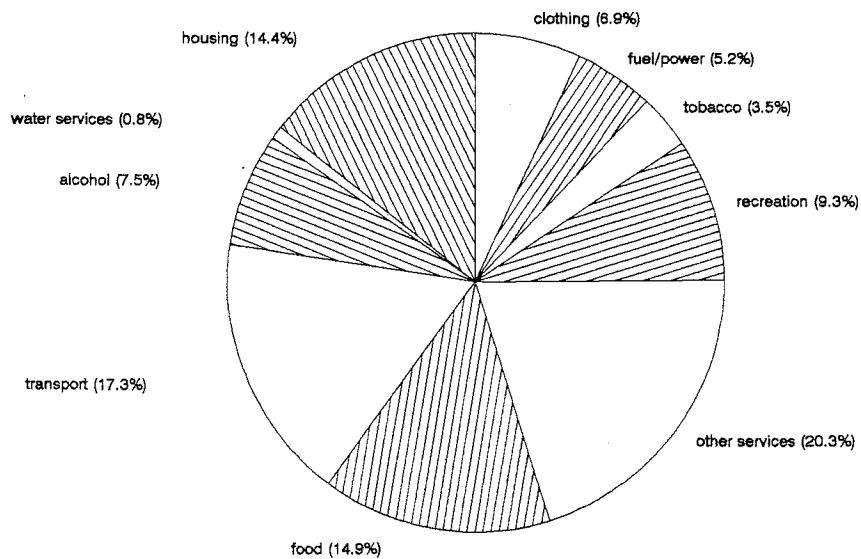


fig 6c. Household expenditure



6C. Miscellaneous

£1 will buy 2	litres of bottled water	1 litre of bottled water costs 50.00p
£1 will buy 3,000	litres of tap water	1 litre of tap water costs 0.03p
1m ³ of tap	water costs	£0.30
1m ³ of bottled water costs		£ 500

6D. Average charges 1989/90

	Average household bill						Measured supply			
	water supply		sewerage		environmental services		total		88/89	89/90
	88/89	89/90	88/89	89/90	88/89	89/90	88/89	89/90		
	£	£	£	£	£	£	£	£	p/m ³	p/m ³
Anglian	55.86	63.69	79.34	88.69	2.18	2.84	137.38	155.22	32.06	33.61
Northumbrian	48.34	49.86	45.29	51.30	1.00	1.00	94.63	102.16	28.46	31.07
North West	46.06	50.99	52.19	57.97	1.19	1.20	99.44	110.16	32.30	35.60
Severn Trent	42.94	47.56	53.27	58.67	1.45	1.08	97.66	107.31	33.50	36.90
Southern	47.72	50.77	66.46	72.54	1.42	1.05	115.60	124.36	29.50	31.40
South West	54.57	61.53	71.07	81.78	2.75	2.96	128.39	146.27	33.50	38.80
Thames	46.09	50.45	45.70	48.80	1.04	0.91	92.83	100.16	25.58	27.96
Welsh	67.60	75.81	64.65	71.35	2.32	2.54	134.57	149.70	35.14	38.61
Wessex	55.24	60.49	70.44	76.77	1.81	1.98	127.49	139.24	32.90	37.60
Yorkshire	54.50	61.82	49.98	58.65	0.82	1.10	105.30	121.57	31.90	36.80
Weighted average	49.58	55.12	56.16	62.24	1.41	1.41	107.25	118.77	31.85	35.22

A full series of average water service bills from 1976/77 were given in earlier WATERFACTS.

6E. Trade effluent charges 1989/90

	Average regional strength		Apportion 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/m ³	p/m ³	
Anglian	575	342	5.08	7.96	1.54	3.95	4.27	9.34	3.94	54
Northumbrian	386	187	7.86	4.02	-	-	-	7.48	3.79	35
North West	362	245	5.02	4.08	-	3.82	-	4.84	3.03	
Severn Trent	337	292	7.02	6.44	-	-	-	6.70	3.85	65
Southern *	452	512	10.70	9.08	7.81	1.27	1.18	10.30	7.05	55
South West	680	465	14.41	14.46	-	3.00	-	21.90	16.28	53
Thames **	457	333	3.89	4.77	-	-	-	7.52	9.58	69
Welsh	500	350	4.47	3.60	1.43	3.48	5.49	8.32	5.87	
Wessex	802	313	3.84	6.13	0.65	3.82	7.78	14.10	8.3	90
Yorkshire *	971	321	-	10.58	-	-	-	11.07	6.47	74

Total average charge is for the 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 = the total suspended solids (mg/litre) of crude sewage

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

* Yorkshire minimum charge is £12 if no sampling needed, ** Thames has a system of standing charges

The information in this section is mainly taken from the last accounts of the water authorities and completes the series. As from 31st March, 1990, accounts will continue to be provided on a historical cost basis, but current cost accounting is likely to become more important. After 1 September 1989 responsibility for development of water resources, land drainage and environmental services transferred to the National Rivers Authority.

6F. Income from charges by classification

(i) 1988/89

	Water supply		Trade effluent	Sewerage		Environ-mental	Land drainage precepts	Abstr-action	Other	Total
	measured £M	unmeasured £M	£M	measured £M	unmeasured £M	£M	£M	£M	£M	£M
Anglian	42.5	81.7	11.4	29.6	162.4	7.6	27.7	3.2	29.5	395.6
Northumbrian	25.6	24.0	2.5	15.7	52.2	2.5	1.3	7.8	3.6	135.2
North West	76.1	128.8	22.7	64.4	147.1	6.5	13.8	0.5	18.2	478.1
Severn Trent	70.0	119.4	23.9	23.8	221.3	10.0	15.4	7.9	17.1	508.8
Southern	20.3	41.3	4.9	24.0	103.8	4.8	11.8	1.9	8.9	221.7
South West	15.7	32.7	2.1	11.6	40.2	3.3	3.5	0.2	3.5	112.8
Thames	52.2	160.5	20.6	47.9	238.8	14.3	42.2	5.2	35.5	617.2
Welsh	41.3	71.0	4.0	20.0	72.9	7.0	8.0	5.6	9.6	239.4
Wessex	15.6	23.7	2.9	15.6	67.7	3.1	6.0	0.7	5.6	140.9
Yorkshire	46.2	100.3	16.8	37.5	99.5	3.7	9.3	0.8	8.8	322.9
Total	405.5	783.4	111.8	290.1	1205.9	62.8	139.0	33.8	140.3	3172.6

(ii) 1974/75 to 1988/89

	Water supply		Trade effluent	Sewerage		Environ-mental	Land drainage precepts	Abstr-action	Other	Total
	measured £M	unmeasured £M	£M	measured £M	unmeasured £M	£M	£M	£M	£M	£M
1974/75	96.7	143.2	11.0	<-- 320.1 -->		6.7	23.0	4.7	20.9	626.3
1975/76	133.4	203.9	14.5	<-- 448.9 -->		8.8	27.8	8.9	25.1	871.3
1976/77	146.0	246.0	22.4	<-- 514.7 -->		14.5	35.1	11.2	23.0	1012.9
1977/78	172.3	281.2	34.5	<-- 565.2 -->		17.9	39.2	13.3	29.6	1153.2
1978/79	191.9	301.9	35.4	<-- 597.0 -->		20.0	43.9	14.6	43.0	1247.7
1979/80	213.8	340.3	51.8	<-- 642.5 -->		22.1	49.5	18.8	48.0	1386.8
1980/81	242.4	427.7	57.3	<-- 788.1 -->		30.1	62.4	22.3	51.2	1681.5
1981/82	270.4	487.3	60.2	<-- 888.1 -->		33.2	74.5	26.1	48.4	1888.2
1982/83	283.0	528.5	66.6	141.9	817.8	34.4	81.3	25.3	63.6	2042.4
1983/84	287.9	548.8	71.5	178.4	810.0	36.4	84.8	23.6	78.5	2119.9
1984/85	302.2	567.6	76.8	193.8	865.0	38.5	88.1	23.5	81.4	2236.9
1985/86	323.2	629.2	88.8	213.6	965.0	40.6	95.4	27.0	84.9	2467.7
1986/87	352.1	678.4	92.7	243.9	1040.9	56.2	128.7	28.1	134.3	2755.4
1987/88	377.0	722.9	100.8	263.6	1111.5	60.6	133.6	29.1	160.2	2958.2
1988/89	405.5	783.4	111.8	290.1	1205.9	62.8	139.0	33.8	140.3	3172.6

Totals include grants and other charges, but excludes internal (mainly abstraction) charges.

Other includes rents, bulk supplies, permits, grants and contributions.

Statutory Water Company income in 1987/88 was £303M.

6G. Turnover by service

(i) 1988/89	Anglian	North-umbrian	North West	Severn Trent	South-ern	South Thames West	Welsh	Wessex	York-shire
	£M	£M	£M	£M	£M	£M	£M	£M	£M
Water resources	3.2	8.1	0.5	10.0	1.9	0.7	6.1	5.9	0.9
Water supply	145.2	52.3	219.8	198.6	67.5	51.3	238.0	119.6	152.3
Sewerage services	210.3	71.0	237.4	273.9	135.7	54.0	310.3	98.5	154.0
Environmental services	7.6	2.5	6.5	10.0	4.8	3.3	14.3	7.0	3.7
Land drainage	29.0	1.3	13.9	15.5	11.8	3.5	42.5	8.1	10.5
other	0.3	0.0	0.0	0.8	0.0	0.0	6.0	0.3	1.5
Total	395.6	135.2	478.1	508.8	221.7	112.8	617.2	239.4	322.9

(ii) 1984/85 to 1988/89	1984/85	85/86	86/87	87/88	88/89
	£M	£M	£M	£M	£M
Water resources	33.4	34.2	36.1	37.0	38.0
Water supply	910.1	1001.7	1105.4	1183.9	1286.8
Sewerage services	1161.4	1291.9	1405.3	1502.7	1631.6
Environmental services	47.3	49.9	56.3	60.0	62.8
Land drainage	90.8	97.9	130.5	138.5	142.3
other	0.1	0.4	2.7	4.2	11.1
Total	2243.2	2476.0	2736.3	2926.3	3172.6

6H. Profit by service

(i) 1988/89	Anglian	North-umbrian	North West	Severn Trent	South-ern	South Thames West	Welsh	Wessex	York-shire
	£M	£M	£M	£M	£M	£M	£M	£M	£M
Water resources	-1.0	1.7	-1.3	-4.2	-1.5	0.0	-6.4	-2.1	-10.4
Water supply	59.2	18.9	51.9	53.5	21.3	19.4	70.5	13.4	50.3
Sewerage services	112.2	38.6	101.7	135.7	72.2	31.7	122.	46.8	72.8
Environmental services	0.5	-0.4	0.3	1.6	1.6	-0.4	2.3	-3.0	0.2
Land drainage	3.3	0.1	4.5	4.5	-1.5	0.0	18.5	0.5	0.5
other	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0
total	177.1	59.4	163.6	198.2	94.9	52.5	206.7	81.7	116.9
other income	2.9	0.5	6.5	6.8	2.8	1.8	0.9	1.5	3.5
Interest	101.1	49.2	116.8	89.5	30.5	14.9	19.8	50.8	-59.6
Profit	75.0	10.2	46.8	108.7	63.2	36.4	186.9	30.9	55.9
Extraordinary items	-1.2	-0.5	-1.2	-2.8	0.6	0.6	-3.2	-1.0	0.7
Profit for the year	74.8	9.7	45.6	105.9	63.8	37.0	183.7	29.9	56.6

(ii) 1984/85 to 1988/89	1984/85	85/86	86/87	87/88	88/89
	£M	£M	£M	£M	£M
Water resources	-13.1	-15.3	-20.9	-21.0	-27.1
Water supply	251.3	314.2	340.4	349.7	396.2
Sewerage services	488.2	586.3	657.0	748.5	777.0
Environmental services	4.5	6.4	7.6	4.9	3.0
Land drainage	17.8	18.5	35.5	34.6	32.7
other	0.0	0.0	0.1	0.5	0.6
Total	765.0	928.5	1040.8	1157.3	1208.4
other income	16.3	18.4	21.1	40.1	26.0
Interest	572.1	598.5	591.	578.5	563.4
Profit	192.9	330.0	459.8	585.4	645.0
Extraordinary items	-39.9	0.0	-45.2	-3.3	-13.0
Profit for the year	153.0	330.0	404.6	582.1	632.0

6l. Revenue expenditure by category

(i) 1988/89

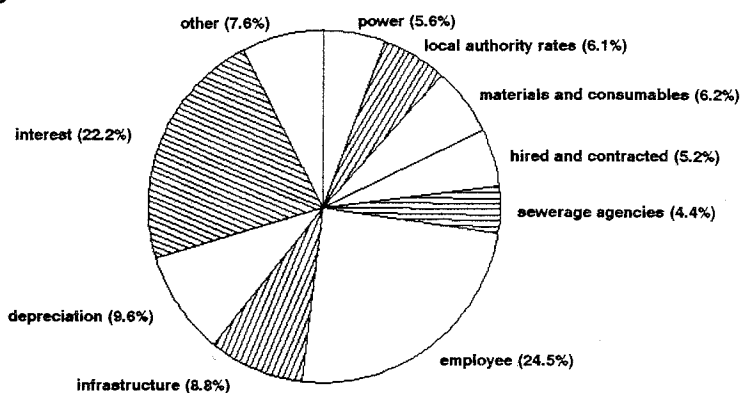
	Anglian	North- umbrian	North West	Severn Trent	South- ern	South West	Thames	Welsh	Wessex	York- shire
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Employee	60.1	21.1	90.9	95.6	39.3	19.7	157.8	51.4	24.6	60.2
power	18.9	3.9	16.5	23.7	9.9	5.2	34.1	9.5	5.9	14.1
local authority rates	16.4	7.1	29.8	27.5	7.7	4.5	24.3	10.4	4.8	21.4
materials and consumables	19.6	4.8	20.9	23.1	12.2	6.0	23.7	16.2	7.8	23.5
hired and contracted	22.3	9.0	13.1	18.8	7.5	5.4	5.8	21.4	11.3	16.2
sewerage agencies	7.9	5.8	22.4	18.3	7.3	2.7	24.3	9.4	4.8	7.8
other	22.4	17.3	33.7	39.2	11.0	10.1	36.2	15.3	4.9	2.8
Total operating costs	167.6	68.8	227.3	246.2	94.9	53.6	370.5	133.6	64.0	146.0
Infrastructure	17.1	13.2	67.6	49.9	10.7	3.8	19.0	9.7	6.8	25.0
Depreciation **	39.8	8.2	25.8	36.8	24.7	8.4	36.2	17.6	14.1	31.0
Interest	101.1	49.2	116.8	89.5	30.5	14.9	19.8	50.8	31.2	59.6

(ii) 1978/79 to 1988/89

	1978/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Employee +									580.0	592.7	620.7
power	64.5	76.7	93.7	108.0	118.6	121.0	128.9	131.3	129.7	132.3	141.7
local authority rates	59.7	67.5	82.8	98.7	111.8	102.6	109.1	111.9	140.8	121.6	153.9
materials & consumables									140.8	149.3	157.8
hired and contracted									143.0	153.6	130.8
sewerage agencies	54.8	65.2	77.8	82.6	92.3	93.0	96.2	97.8	101.3	105.0	110.7
other											192.9
Total operating costs											1572.5
Infrastructure											222.8
Depreciation **	132.7	146.5	160.2	153.8	169.1	183.0	198.6	224.3	261.1	297.1	242.6
Supplementary deprec.	99.1	467.3	549.4	513.8	526.6	545.7	564.9	590.2	575.7	558.5	563.4

** depreciation includes intangible assets written off and leasing charges

fig 6l. Operating expenditure



Infrastructure Accounting

Accounts of the 10 water authorities of England and Wales for the financial year ending 31st March, 1989 were based on a major change in accounting policy. This change has been called infrastructure accounting and is intended to ensure that the accounting treatment of capital expenditure items is more appropriate than in the past. It has been accepted not only by the 10 water authorities, but also by the government and the authorities' accountants. In addition, it will be adopted by the statutory water companies.

Infrastructure accounting is based upon a new classification of water authority 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% of balance sheet asset values and on a current cost basis, approximately 75%

Expenditure on the network of infrastructure assets, previously classified as capital expenditure, will be 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 will be 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.

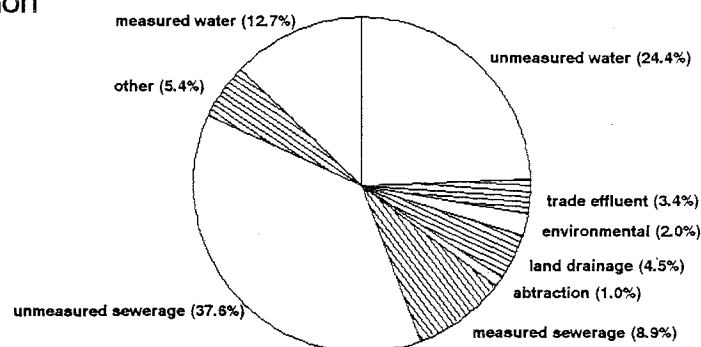
E fficiency - expenditure which reduces costs or increases income and thereby improves the efficiency of the network.

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

Neither category of infrastructure expenditure will be 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 will be 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 6f. Income by classification



6J. Capital expenditure by service

(i) 1988/89

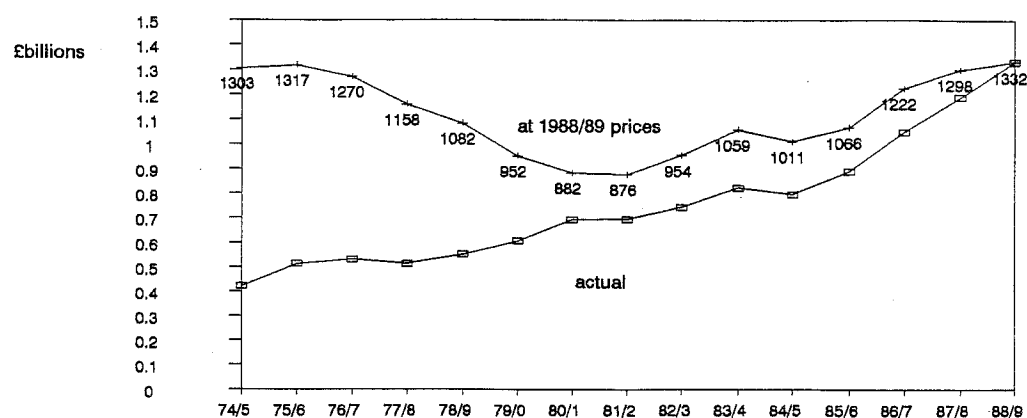
	Anglian	North- umbrian	North West	Severn Trent	South- ern West	South Thames	Welsh	Wessex	York- shire	Total
	£M	£M	£M	£M	£M	£M	£M	£M	£M	£M
Water resources	1.3	0.1	0.0	3.7	0.7	12.6	2.3	3.0	0.6	26.3
Water supply	42.2	7.7	51.8	46.2	19.7	12.9	83.6	25.5	19.9	347.0
Sewerage	26.5	9.3	38.7	25.4	14.5	8.5	27.8	8.6	13.8	193.5
Sewage treatment/disposal	32.7	7.3	38.4	42.8	27.8	13.3	34.2	16.3	26.6	274.5
Environmental services	0.4	0.4	1.0	0.5	0.5	0.4	4.6	0.3	0.1	8.3
Other	26.8	3.2	19.7	38.9	15.4	4.3	17.6	25.7	7.9	181.9
Land drainage	21.3	0.2	4.2	5.9	6.6	2.5	16.2	2.7	4.4	68.2
Total	151.2	28.2	153.8	163.4	85.2	54.5	186.3	82.1	73.3	1099.7

6K. Total investment expenditure 1984/85 to 1988/89 *

	old series				capital infrastructure renewals		total
	1984/85	85/86	86/87	87/88	88/89	88/89	88/89
	£M	£M	£M	£M	£M	£M	£M
Anglian	108.0	121.9	144.1	164.7	151.2	17.1	168.3
Northumbrian	27.2	39.3	36.9	39.4	28.2	13.2	41.4
North West	151.3	167.3	188.8	206.7	153.8	67.6	220.4
Severn Trent	113.1	125.3	155.7	166.7	163.4	49.9	213.3
Southern	65.3	70.2	74.2	83.9	85.2	10.7	96.9
South West	41.4	40.6	42.0	51.8	54.5	3.8	58.3
Thames	109.4	116.0	148.0	181.5	186.3	19.0	207.3
Welsh	41.3	54.4	61.7	67.8	82.1	9.7	89.8
Wessex	41.6	54.6	64.7	78.6	73.3	6.8	80.1
Yorkshire	99.2	99.9	130.6	145.5	121.7	25.0	146.7
Total	798.7	889.5	1046.7	1186.6	1099.7	222.8	1332.5

* see note on infrastructure accounting. The total for 1988/89 is compatible with the earlier series.

fig 6k. Investment 1974/75 to 1988/89



6L. Ten year expenditure programmes to 31 March 2000 (at November 1989 prices)

	water supply			sewerage		other	total	infrast- ructure	non- infrast- ructure	
	resources	treatment	distribution	sewers	treatment	outfalls				
	£M	£M	£M	£M	£M	£M	£M	£M	£M	
Anglian Water	40	380	1000	690	850	190	310	3460	1560	1900
Northumbrian Water	10	65	220	235	195	95	65	885	425	460
North West Water	235	425	1230	1110	710	255	315	4280	2440	1840
Severn Trent Water	90	750	1010	810	1000	0	420	4080	1920	2160
Southern Water	95	45	230	225	385	275	75	1330	460	870
South West Water	35	90	315	300	240	215	95	1290	665	625
Thames Water	320	640	660	985	895	0	310	3810	1450	2360
Dwr Cymru	30	265	550	355	205	120	230	1755	795	960
Wessex Water	70	50	230	510	280	45	90	1275	745	530
Yorkshire Water	170	350	540	510	520	30	300	2420	1200	1220
Total	1095	3060	5985	5730	5280	1225	2210	24585	10660	13925

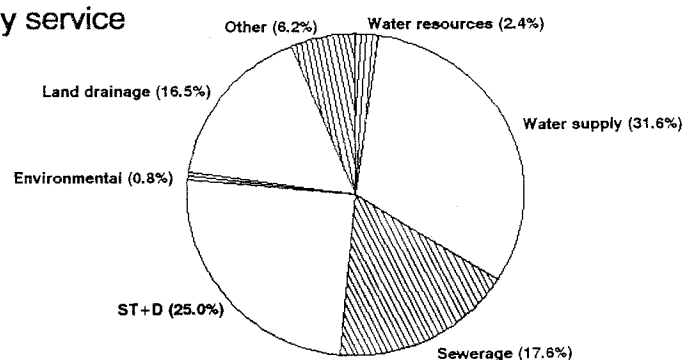
November 1989 data from the Prospectus which also gives a five year breakdown.

6M. Main assets of the Water Service Companies

	Anglian	North- umbrian	North West	Severn Trent	South- ern	South West	Thames	Dwr Cymru	Wessex	York- shire	Total
Reservoirs											
supply	15	22	168	40	3	36	24	91	15	108	522
service/water towers	419	113	570	700	221	440	300	900	360	580	4603
Treatment works											
water	167	35	203	205	115	57	124	223	115	165	1409
sewage	1091	435	643	1083	393	610	399	894	359	637	6524
Underground assets											
mains - authority km	28990	8600	37500	38000	11500	13200	30000	22900	9900	29500	230090
- companies km	10810	8020	0	7111	12360	0	20326	1879	8554	924	69984
sewers km	25100	12000	34000	38000	24600	8100	50000	16200	14000	26500	248500
Pumping stations											
sewage	3812		1170	2251	1640	550	2000	1100	1080	1186	
water	234	75	400		106		290				
Storm overflows	989	1381	2817	2284	383	1031	2405	1800	1128	1900	16118
Sea and estuarial outfalls	55	485	102	0	57	227	0	140	40	47	1153

Storm overflows number are those identified.

fig 6J. Capital expenditure by service



7. Manpower

Table 7A gives "full-time equivalents" (including temporary appointments), employed in the water industry. Estimates of those employed by the local authorities in the sewerage agencies have been included to give a more complete picture of the numbers involved in providing water services.

7A. Manpower

Full-time equivalent employees at March 31 *

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Anglian	6978	6951	6744	6700	6560	5826	5549	5264	5184	5102	5068
Northumbrian	2448	2384	2309	2151	2077	1919	1759	1636	1523	1459	1463
North West	9379	9300	9120	8782	8629	8278	8166	8055	8134	7936	7766
Severn Trent	11240	11107	10886	10502	10182	9720	9269	8908	8493	8174	7890
Southern	4207	4256	4101	3948	3720	3494	3336	3183	3160	3162	3185
South West	2551	2489	2450	2276	2255	2194	2023	2008	2003	1958	1938
Thames **	12061	11993	11945	11753	11227	10321	9089	8896	9152	9210	9321
Welsh	5594	5656	5736	5677	5424	5179	4709	4746	4845	4618	4406
Wessex	2425	2465	2398	2291	2266	2182	2050	1994	1925	1891	1907
Yorkshire	6338	6415	6522	6506	6010	6054	5835	5472	5254	4981	4959
Authorities	63221	63016	62211	60586	58350	55167	51785	50162	49673	48491	47903
Statutory Water Companies		8602	8641	8369	8190	8010	7821	7340	7101	6865	

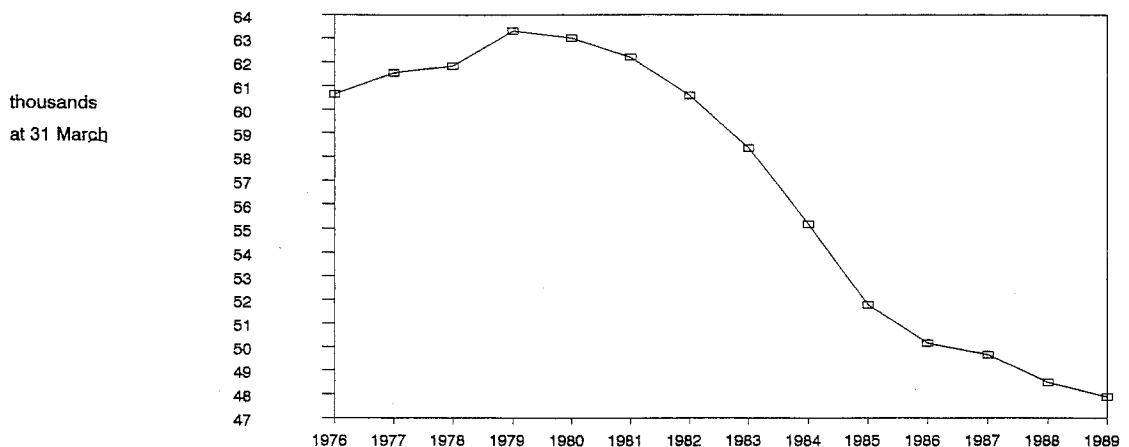
* includes a full-time equivalent of part-time employees

+ includes 75 employees transferred from NWC to Severn Trent Water on 1.10.83

** 225 were transferred from GLC to Thames Water, April 1986

** water authorities only and excludes temporary appointments

fig 7a. Manpower



8. Water quality

8A. Drinking water quality

The drinking water Directive of the European Communities (Directive relating to the quality of water intended for human consumption, to give it its full title) was approved by the Council of Ministers in July 1980 for implementation five years later in July 1985.

The Directive defines the quality of drinking water supplies in terms of 66 parameters in Groups A to F.

A	Organoleptic	B	Physico-chemical
C	Substances undesirable in excessive amounts	D	Toxic substances
E	Microbiological	F	Minimum concentration for softened water

Maximum admissible concentrations are laid down for 44 of these parameters. Guidance and comments are provided for the other 22 parameters.

The Directive enables member states to make derogations in order to take account of situations arising from the nature and structure of the ground and situations arising from exceptional meteorological conditions provided that such derogations do not relate to toxic or microbiological factors or constitute a public health hazard.

On 16 November 1989 in a letter to the European Commission the DoE issued a programme for improving drinking water standards. The main points were as follows:-

"Improvement programmes of Water Service Companies in England and Wales would bring virtually all drinking water supplies up to standard by 1995. This includes the standards for aluminium, nitrate and lead.

The water industry will be spending £1.4 billion at 1987/88 prices over the next five years on their programmes. For some pesticides the limit in the EC Directive is not currently achievable by any member state because the technology for full-scale treatment is not yet sufficiently developed or because effective solutions have not yet been found."

(i) Full compliance

All supplies comply with the standard for the following parameters:

5	Temperature	6	Hydrogen ion	17	Dry Residues	23	Kjeldahl Nitrogen
24	Oxidisability	29	Phenols	31	Surfactants	43	Silver
44	Arsenic	47	Cyanide	48	Chromium	49	Mercury
50	Nickel	52	Antimony	53	Selenium	59	Faecal Streptococci
60	Sulphite - reducing clostridia						

(ii) Relaxations

(a) Article 9 derogations have been granted subject to review at the end of 1994 or earlier for the following:

1	Colour	9	Sulphate	12	Magnesium	13	Sodium
14	Potassium	15	Aluminium	28	Dissolved or emulsified hydrocarbons		
34	Manganese						

These relaxations affect approximately 3% of the population.

(b) Time-limited Article 9 relaxations have been granted in respect of the following parameters subject to requirements that improvement works are undertaken by the date when the relaxation expires:

1	Colour	2	Turbidity	3	Odour	4	Taste
15	Aluminium	21	Nitrite	22	Ammonium	33	Iron
34	Manganese						

(iii) Undertakings under section 20 of the Water Act 1989.

(a) Remedial work at water treatment works:

physico-chemical parameters:

no.	parameter	completion date
15	Aluminium	regular breaches by end 1992 occasional breaches by end 1994
33	Iron	end 1995
34	Manganese	end 1992 (1 supply only)
2	Turbidity	most breaches by end 1992 occasional breaches by end 1994

parameters concerning substances undesirable in excessive amounts

20	Nitrate	most by end 1992 remainder 1993-1995
21	Nitrite	by end 1995
22	Ammonium	by end 1995
38	Fluoride	by end 1994 (2 supplies only)
37	Phosphorus	by end 1994 (7 supplies only)

toxic substances

51	Lead	by end 1989
46	Cadmium	by end 1990
55	Pesticides	see text at beginning

minimum required concentration for softened water intended and for human consumption

1	Total hardness	by end 1992
3	Alkalinity	by end 1992 (2 supplies only)

(b) Remedial work on water distribution system:

2,33,34	Turbidity	priority programme by end of 1994
	Iron	priority programme by end of 1994
	Manganese	priority programme by end of 1994
	Aluminium	priority programme by end of 1994
57,58	Coliforms	by end 1991, a small number of minor supplies may take longer
	Faecal coliforms	by end 1991, a small number of minor supplies may take longer
56	Polycyclic aromatic hydrocarbons	on-going programme to investigate failures specific programmes complete by June 1992

As a result of Section II of the Control of Pollution Act of 1974, ("COPA II"), brought into force in 1984, sewage treatment works are 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.

8B. Sewage treatment works consents

	Number			Number tested			Number failed consent		
	1986	1987	1988	1986	1987	1988	1986	1987	1988
Anglian	782	760	775	774	754	748	309	260	208
Northumbrian	196	182	178	196	182	178	37	27	26
North West	458	448	441	458	448	441	62	55	43
Severn Trent	773	753	808	762	742	751	179	160	112
Southern	282	274	273	282	274	271	54	39	41
South West	226	226	232	188	219	228	55	65	67
Thames	374	382	378	374	379	378	67	70	60
Welsh	803	764	710	668	611	650	112	108	107
Wessex	272	272	272	272	270	272	39	29	17
Yorkshire	380	360	360	380	351	354	88	74	61
Total	4546	4421	4427	4354	4230	4271	1002	887	742

River quality surveys in future will be conducted by the National Rivers Authority as will the number of pollution incidents. The table below gives the river quality for the last two river quality surveys. The next survey will be in 1990.

8C. River quality surveys in England and Wales

Freshwater rivers/canals Class	1980 survey		1985 survey		Estuaries Class	1980 survey		1985 survey	
	km	%	km	%		km	%	km	%
1A Good	13830	34	13470	33	A Good	1870	68	1860	68
1B Good	14220	35	13990	34	B Fair	620	23	650	24
2 Fair	8670	21	9730	24	C Poor	140	5	130	5
3 Poor	3260	8	3560	9	D Bad	110	4	90	3
4 Bad	640	2	650	2	total	2730	100	2730	100
total	40630	100	41390	100					

In an answer to a parliamentary question in October 1989, the Minister stated that "overall, around £1.1 billion will be spent improving bathing waters over the next ten years". He went on to say that "by the mid 1990s we expect around 95 per cent of our bathing waters to meet the Directive's standards and the full programmes compliance should be completed within 10 years".

8D. Bathing water quality 1988 (Directive 76/160/EEC)

Compliance with Directive

	pass	fail	total
Anglian	19	9	28
Northumbrian	9	10	19
North West	6	27	33
Severn Trent	0	0	0
Southern	27	38	65
South West	92	17	109
Thames	0	2	2
Welsh	37	11	48
Wessex	30	8	38
Yorkshire	21	1	22
England and Wales	241	123	364
Scotland	12	11	23
Northern Ireland	14	2	16

Note: Compliance has been assessed on the directive's rules where at least 20 samples has 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.

In May 1988 the WAA issued a water briefing on *Bathing Water Quality* setting out the current situation. It also described the "Blue Flag" campaign in which 17 beaches in the British Isles were awarded blue flags for clean beaches and bathing waters in 1988. The campaign is organised by the Tidy Britain Group and sponsored by the WSA.

8E. Compliance for coliforms in 1988 bathing season

% of 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

8F. Population served by outfalls

	long		short		total	
	no.	population	no.	population	no.	population
England	27	2.137	344	5.155	371	7.292
Wales	6	0.142	54	1.044	60	1.186
Scotland	11	1.650	108	0.555	119	2.205
Northern Ireland	2	0.335	39	0.169	41	0.504
UK	46	4.264	545	6.923	591	11.187

Source: DoE evidence to House of Commons Environment Committee, September 1989

9. International

9A. Water supply 1987

	Population resident	% connected	Water delivered	ground water	house- hold	Average household household water use	water price 1.1.87	VAT rate 1985
	000s	000s	MI/d	%	%	l.head.day	\$/m ³	%
Austria	7570	56	1580	99	64	131	0.68	
Belgium	9864	98	1820	67	65	108	0.87	6
Denmark	5119	92	1060	99	67	194	0.367	22
Finland	4926	81	1310	49	54	156	0.56	
France	55300	99	15260	64	70	147	0.723	7
Hungary (1984)	10657	83	2500	89	59	150	0.23	
Italy (1984)	57202	91	18710	88	75	220	0.224	9
Luxemburg	366	99	120	70	67	171	0.58	0
Netherlands	14615	100	3030	70	82	159	0.785	5
Norway	4152	87	2470	15	47	175	0.28	
Spain	38750	96	11500	26	73	158	0.28	
Sweden	8363	87	2650	25	66	199	0.43	
Switzerland	6573	99	3100	83	66	264	0.49	
UK	56600	99	19500	28	63	135	0.50	0
West Germany	61140	98	13700	72	67	146	0.99	7

* England and Wales households are not measured so figures based on 136 litres/head.day consumption.

1.00\$ = £1.87 at 1.1.87

VAT rates as at December 1985, Ireland is 0%

Source: Unpublished data updating *International Waterstatistics 1970-1986* (IWSA).

9B. River quality

	Date of survey	% of river lengths in each class				
		1A	1B	2	3	4
Belgium	1975-79	35	21	17	16	11
Denmark	(estimate) 1986	<----- 80 -----> <----- 20 ----->				
France	1981	8	26	60	6	
West Germany	1985	6.5	38	40	14	1.5
Greece	(estimate)	20	40	20	15	5
Ireland	1980/81	<----- 84 -----> <----- 14 -----> <----- 2 ----->				
Italy	(no survey)					
Luxemburg	1984	47	25	13	11	4
Netherlands	1978	12	65	18	4	1
UK						
England and Wales	1985	33	34	24	9	2
Scotland	1980	<----- 95 ----->				
Northern Ireland	1985	15	69	11	5	0

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

9C. Sewage connections and volumes

	sewage treated Mm ³ /day	% connected sewer	no. of sewage works
Belgium	-	72	233
West Germany	20	91	8167
Denmark	3	92	3036
France	7	-	7519
Greece	-	45	9
Ireland	0.5	64	911
Italy	6	78	3119
Luxembourg	0.2	95	63
Netherlands	4	80	501
Portugal	-	-	-
Spain	3	91	97
UK	14	96	
England/Wales	-	96	6427

Source: WRc - Survey of European sludge treatment and disposal practices . 1984 data.

9D. Population served by sewage works

	1970 %	1975 %	1980 %	1985 %
Belgium	3.8	5.5	22.9	
West Germany	61.8	74.8	81.8	86.5
Denmark	54.3	70.6		90.0
France	40.0		61.5	63.7
Greece			0.5	
Ireland			11.2	
Italy	14.0		30.0	
Luxembourg	28.0		81.0	83.0
Netherlands		45.0	68.0	81.0
Portugal	3.1	6.0	10.0	12.0
Spain		14.3	17.9	29.0
UK			82.0	83.0
England/Wales			82.0	83.0

Source:- OECD Environmental data - compendium 1987.

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
West Germany								
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
Ireland	50.0	71.4	100.0	85.7				
Italy				61.3				37.2
Luxemburg								
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 as 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. Sludge disposal (000s tonnes of dry sludge/annum)

	Agriculture	land-fill	incineration	sea	total
Belgium	8	15	6	0	29
West Germany	698	1286	196	0	2180
Denmark	68	68	15	0	151
France	234	446	170	0	850
Greece	0	15	0	0	15
Ireland	7	4	0	12	23
Italy	270	440	90	0	800
Luxembourg	12	3	0	0	15
Netherlands	127	55	6	11	199
Portugal	-	-	-	-	-
Spain	173	28	0	79	280
UK	455	92	35	434	1016

Source: WRc - Survey of European sludge treatment and disposal practices : 1984 data.

9G. Largest private water utilities

	Country	Capitalisation £bn	Population supplied %
Generale des Eaux	France	3.3	36
Thames Water	UK	1.5	14
Lyonnais des Eaux	France	1.1	16
Severn Trent Water	UK	1.0	14
other UK WHCs	UK	0.3 to 1.0	
American waterworks	USA	0.3	
Gelsenwasser	Germany	0.2	

source: Smith New Court Sept 1989

9H. European and international organisations

(i) EUREAU

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 Association and Austria and Switzerland are associate members.

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

Commission I:	Water resources, Treatment and Quality.
Commission II:	Standardisation and Certification.
Commission III:	Legislation and Economics.

(ii) European Institute for Water

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.

(iii) CEN (Comite European de Normalisation)

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.

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 elimination 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 Institute being the UK representative. The Water Services Association has several representatives on various specialist committees.

(iv) International Water Supply Association (IWSA)

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 Services Companies as well as other UK bodies.

v) European Water Pollution Control Association

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. The UK member is the IWEM.

(vi) International Association on Water Pollution, Research and Control (IAWPRC)

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.

10A. Historic series of key data

			Unit	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82
Rainfall			mm *	752	794	925	903	1001	977	999	973
Water abstraction	PWS -surface		MI/d *	10002	10294	10142	9985	10795	11082	11052	10796
	- groundwater		MI/d *	5153	5066	4867	4762	5033	5185	5143	5309
	industry		MI/d *	7080	6560	6655	6958	6626	6762	5034	4973
	spray irrigation		MI/d *	78	111	161	116	81	106	92	117
	CEGB		MI/d *	14988	13714	13211	13406	12529	12710	10474	9284
Water supply	metered		MI/d	4801	4668	4359	4211	4352	4490	4247	4029
	unmetered		MI/d	9555	9907	9519	9961	10407	10961	11083	11224
	non-potable		MI/d	548	534	539	552	584	643	546	561
	total		MI/d	14904	15109	14414	14724	15343	16094	15876	15814
Water pollution incidents	farm		no. *	-	-	-	-	-	1484	1671	2317
	total		no.	-	-	-	-	-	-	12500	12500
Charges - measured			p/m3	6.32	9.32	11.09	12.82	14.01	14.92	18.10	20.10
	- unmeasured										
	water supply		£	-	13.31	15.81	17.74	18.99	21.35	26.54	30.11
	sewerage and ESC		£	-	14.13	18.86	18.27	19.01	20.63	25.44	29.90
	total bills		£	-	27.44	34.64	36.01	38.00	41.98	51.98	60.01
Income	from charges		£M	626.3	871.5	1012.9	1153.2	1247.7	1386.8	2682.5	1888.2
Expenditure	employees		£M	148.7	199.2	234.0	259.8	305.9	366.1	436.7	492.1
	power		£M	26.7	37.0	46.7	56.0	64.5	76.7	93.7	108.0
	depreciation		£M	75.2	95.3	110.7	123.9	132.7	146.5	160.2	153.8
	interest		£M	222.4	270.1	317.3	346.7	399.1	467.3	549.4	513.8
	sewerage agencies		£M	31.6	40.5	45.1	48.7	54.8	65.2	77.8	82.6
	total		£M	320.3	437.4	514.5	601.2	696.3	833.7	988.3	1081.5
External finance	limit		£M	-	-	-	-	-	-	-	424.1
	actual		£M	-	-	-	-	-	-	-	420.9
Rate of return	specified		%	-	-	-	-	-	-	-	-
	actual		%	-	-	-	-	-	-	-	1.13
Net CC assets			£M	-	-	-	-	-	-	-	-
Debt			£M	2186	2404	2734	2979	3184	3394	3559	3892
Capital expenditure	water resources		£M	19.4	35.1	38.4	55.6	56.3	49.2	55.9	41.2
	water supply		£M	100.1	128.9	150.2	136.4	148.8	164.1	177.5	194.0
	sewerage		£M	278.0}	308.9}	181.0	150.3	162.0	171.8	204.5	191.6
	sewage treatment/disposal		£M	}	}	115.7	109.2	110.4	126.5	143.1	148.4
	environmental services		£M	0.5	1.6	1.9	2.4	3.7	4.8	5.0	4.8
	land drainage		£M	17.0	27.5	31.4	40.8	52.5	72.2	80.9	84.1
	other		£M	7.5	12.2	13.5	19.2	17.5	17.0	26.2	32.6
	total		£M	422.0	512.9	530.8	512.7	550.0	604.5	692.3	695.3
Manpower	total		FTEs	59107	60649	61540	61837	63221	63016	62211	60586
	employment costs		£M	174.0	234.5	270.7	299.1	343.9	416.7	496.9	559.9
	accidents		no.	-	-	-	2228	2323	2294	2146	2043
Salmon catches	rod		no. *	24740	24590	10590	18980	17350	14120	22060	22180
	commercial		no. *	80470	89510	43740	75180	75880	61430	69360	95840
Indices	RPI (October)			113.2	142.5	163.5	186.5	201.1	235.6	271.0	303.7
	PWNR			39.5	47.5	51.0	54.0	62.0	77.5	95.8	96.8

* denotes calendar year data

10A. Historic series of key data (cont.)

			Unit	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	Table
Rainfall		mm *		973	884	899	885	955	931	931	4A
Water abstraction	PWS -surface	MI/d *		11062	10925	10987	11347	11325	11926		
	- groundwater	MI/d *		5265	5299	5415	5294	5267	5308		
	industry	MI/d *		4729	4093	3892	3939	4114	3712		
	spray irrigation	MI/d *		139	171	199	107	167	102		
	CEGB	MI/d *		8931	8254	7052	4369	4315	4577		
Water supply	metered	MI/d		4106	3996	3990	3965	4088	4059	4113	4C
	unmetered	MI/d		11548	11842	11956	12036	12195	12214	12173	4C
	non-potable	MI/d		561	516	558	575	571	604	604	4C
	total	MI/d		16215	16354	16504	16576	16854	16878	16892	4C
Water pollution incidents	farm	no. *		2428	2795	2828	3510	3427	3870		
	total	no.		12300	15250	18648	19892	21095	23253		
Charges - measured		p/m3		22.11	22.82	23.50	25.77	27.60	29.31	31.85	6D
- unmeasured	water supply	£		33.18	34.87	36.18	39.92	43.20	45.82	49.58	6D
	sewerage and ESC	£		33.91	37.13	40.67	45.93	49.50	52.99	57.44	6D
	total bills	£		67.09	72.00	76.85	85.85	92.84	98.81	107.02	6D
Income	from charges	£M		2042.2	2119.9	2236.9	2467.7	2713.6	2958.2	3172.6	6F
Expenditure	employees	£M		510.5	536.0	542.2	538.9	564.9	592.7	620.7	6I
	power	£M		118.6	121.0	128.9	131.9	129.2	132.3	141.7	6I
	depreciation	£M		169.1	183.0	198.6	224.3	257.8	297.1	242.6	6I
	interest	£M		526.6	545.7	564.9	590.2	575.7	558.5	563.4	6I
	sewerage agencies	£M		92.3	93.0	96.2	97.8	101.3	105.0	110.7	6I
	total	£M		1162.5	1214.8	1242.7	1285.3	1334.4	1371.8		
External finance	limit	£M		420.9	3661	279.6	236.6	131.2	50.6	-8.9	
	actual	£M		391.3	350.0	286.4	207.5	107.2	48.1		
Rate of return	specified	%		-	1.39	1.00	1.45	1.62	1.87	2.25	
	actual	%		1.42	1.27	1.41	1.99	2.54	2.48		
Net CC assets		£M		-	-	26306	28035	28635	29582		
Debt		£M		4221	4452	4898	5086	5153	5209		
Capital expenditure	water resources	£M		38.7	35.3	27.5	30.4	25.7	26.6		6J
	water supply	£M		212.8	266.0	260.0	290.9	346.0	420.8		6J
	sewerage	£M		216.3	233.4	237.3	268.7	297.8	307.8		6J
	sewage treatment/disposal	£M		153.5	153.4	147.0	165.2	188.7	214.4		6J
	environmental services	£M		4.2	4.0	3.2	5.5	6.7	10.8		6J
	land drainage	£M		74.1	68.2	57.8	49.8	114.3	134.4		6J
	other	£M		46.4	64.1	65.0	78.8	67.3	71.9		6J
	total	£M		745.4	824.4	797.8	889.5	1046.7	1186.6	1332.5	6J
Manpower	total	FTEs		58350	55167	51785	50162	49673	48491	47903	7A
	employment costs	£M		581.6	607.3	604.5	596.9	628.1	653.6		
	accidents	no.		1726	1485	1429	1379	1560	1450		
Salmon catches	rod	no. *		13510	14811	11021	19601	20348	18649		
	commercial	no. *		30020	102168	85354	75930	90514	53738		
Indices	RPI (October)			324.5	340.7	357.7	377.1	388.4	102.9	109.5	3A
	PWNR			95.3	95.0	96.3	101.8	104.5	111.5	122.0	3B