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New Issue

Water Account for Australia

1993–94 to 1996–97

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Australian Statistician

AUSTRALIAN BUREAU OF STATISTICS

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INQUIRIES

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PREFACE

This is one of a series of Australian Bureau of Statistics (ABS) publications reporting on estimates of Australia's naturally occurring resources. It presents a set of statistics for Australia's water resources for each State and Territory and the country as a whole. It is part of a broader project being undertaken by the ABS on environmental accounts. Statistics on the supply and use of water have been presented in an environmental accounting framework.

Data on water stocks have been presented for Victoria only because of lack of appropriate data for the other States and Territories. It is expected that in the future more data will be available through the National Land and Water Resources Audit which is undertaking a review of Australia's water resources.

Many individuals and organisations provided data for inclusion in this publication. The ABS wishes to acknowledge the contribution from Federal, State and local government departments, water authorities and a range of private sector organisations that provided data for this project. Without their contribution this publication would not have been possible.

The ABS is also indebted to many people who willingly provided their time to referee the draft manuscript.

In Australia, environmental accounting is still a relatively new endeavour. Suggestions and comments on this ABS publication, or environmental accounting in general, would be greatly appreciated and should be sent to the Director, Environment and Energy Statistics Section, Australian Bureau of Statistics, PO Box 10, Belconnen, ACT 2616.

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SYMBOLS AND ABBREVIATIONS

ABS	Australian Bureau of Statistics
AFFA	Australian Forestry and Fisheries Australia
AGSO	Australian Geological Survey Organisation
AGPS	Australian Government Publishing Service
AWRC	Australian Water Resources Council
ANZSIC	Australian and New Zealand Standard Industrial Classification
BoM	Bureau of Meteorology
DLWC	Department of Land and Water Conservation
DNRE	Department of Natural Resources and Environment
F	fractured rock
GL	gigalitre (1000 ML)
GMA	groundwater management area
ha	hectares
I-O	input-output
IOCC	Input-Output Commodity Code
IOBIG	Input-Output Broad Industry Group
IOIG	Input-Output Industry Group
IGP	Industry Gross Product
kL	kilolitre (1000 litres)
MAR	mean annual runoff
ML	megalitre (1 000 kL or 1 000 000 litres)
NHT	National Heritage Trust
NLWRA	National Land and Water Resources Audit
n.a.	not available
n.e.c.	not elsewhere classified
n.p.	not published
PAV	permissible annual volume
PIRSA	Primary Industries & Resources South Australia
S	sedimentary rock
SEEA	System of Integrated Environmental and Economic Accounting
SNA	System of National Accounts
SoE	State of the Environment
TDS	total dissolved solids
UN	United Nations
UNCED	United Nations Conference on the Environment and Development
WRC	Water and Rivers Commission
$b	billion (a thousand million) dollars
$m	million (a thousand thousand) dollars
—	nil or rounded to zero

CHAPTER 1 INTRODUCTION

BACKGROUND

This publication is the first attempt at producing an environmental account for water in Australia. The Water Account describes the physical flow of the water resource from the environment through various economic sectors in Australia. The data are presented in the form of water supply and water use tables for each State and Territory, and the country as a whole. These tables also present information on regulated discharge and effluent reuse. An attempt was also made to compile stock tables for surface water and groundwater resources. However, because of a lack of data, stock tables are compiled for Victoria only. Finally, water use data are linked to financial data to present some integrated environmental and economic indicators for various sectors of the Australian economy.

Australia is considered one of the driest inhabited continents (Smith 1998). Relative to other continents, Australia is also characterised as having high spatial and temporal variability in climatic conditions. This variability, combined with high levels of evapotranspiration, results in a low percentage of rainfall converted to streamflow (Pigram 1986). Therefore, the nature of Australia's climate, combined with a limited supply of water resources in major agricultural and urban areas, plays a significant role in the supply and use of water resources in Australia.

The provision and availability of good quality water affects all Australians. Ineffective and inappropriate use of water can result in environmental problems of national significance. In 1996–97 an estimated 68,703 GL of surface water and groundwater was extracted from the environment for various uses. Most of this amount was in-stream use (46,517 GL primarily for hydro-electric power generation) and discharged directly back to surface waters, resulting in net water consumption totalling 22,186 GL. The agricultural sector is by far the largest net consumer of water in Australia (15,502 GL in 1996–97).

This publication covers the financial years 1993–94 through to 1996–97. Information on water supply and use in Australia has not been reported on a comprehensive basis since the *1985 Review of Australia's Water Resources and Water Use* (AWRC 1987a; AWRC 1987b). This information will be valuable for a variety of stakeholders in water resource management. The conceptual framework employed to collect and present the data also facilitates the integration of physical and monetary data.

This report does not attempt to measure or estimate how variable climatic conditions may have altered water resource and usage levels. The Bureau of Meteorology (1994, 1995, 1996 and 1997) have described the weather conditions across Australia for the reference years which are summarised in Appendix 1.

POLICY ISSUES

Water is one of Australia's key resources. The provision of clean water for domestic and commercial use has long been accepted as a community service and the responsibility of government in Australia. However, the costs of maintaining and developing new infrastructure to ensure continual and sustainable supplies of water, together with a recent drive to minimise the role and expenditures of government in the provision of

POLICY ISSUES *continued*

basic services, has meant that attitudes towards water provision, use and reuse have been evolving quickly. As public attention has focused on water and the water industry it has been realised that there is a paucity of data on total water resources, in particular the use of water by various industries, aggregated at a State and national level. Government has responded to the increasing concern of resource degradation in Australia with a range of initiatives, some of which are summarised below:

- In 1994 the Council of Australian Governments (COAG) agreed on a water reform framework. The COAG Water Reform Framework has developed a national policy for the efficient and sustainable reform of Australia's rural and urban water industries (AFFA 1999). More details can be found on the COAG Water Reform Framework Internet site (URL: http://www.affa.gov.au/water-reform.html). COAG Water Reform is also linked to the National Competition Policy. The National Competition Council's second tranche assessment reviews each government's progress with implementing water reform. The second tranche assessment report is available from the National Competition Council Internet site (URL: http://www.ncc.gov.au).
- State of the Environment (SoE) Reporting is undertaken at a State and Commonwealth level. SoE Reporting provides detailed information about the environment, including water resources (URL: http://www.environment.gov.au/soe).
- A National Land and Water Resources Audit (NLWRA) is presently being conducted, funded through the Natural Heritage Trust (NHT) Program. The Audit's focus is to provide a broad vision of the extent and status of Australia's natural resources by bringing together existing data and identifying where gaps in data sets exist. The NLWRA operates in conjunction with the Commonwealth, States and Territories and aims to make the datasets more accessible to decision makers Australia wide (URL: http://www.nlwra.gov.au). One of the objectives of the audit is to produce a National Water Resources Assessment to show the extent of surface water and groundwater resources, quality, supply, capacity and use. The assessment is to consider all water uses including environmental requirements (NLWRA 1998).
- The National Water Quality Management Strategy is a joint Commonwealth and State government initiative which aims to provide nationally consistent water quality management with a range of policies and a series of national guidelines (URL: http://www.affa.gov.au/nwqms).
- Other Commonwealth government initiatives under the Natural Heritage Trust include the National River Health Program, the National Rivercare Program and the Murray Darling 2001 Program.

Each State and Territory also has a range of initiatives to manage water resources.

Policy issues addressed by this Account

One of the aims of environmental accounting is to assist in providing information to guide policy decisions at a national level. The Water Account data will have relevance at both the national and state level. The NLWRA will utilise much of the data collected by the ABS for this report. The ABS is working in consultation with the NLWRA to ensure that Commonwealth requests for similar data about water resources and use is undertaken in a coordinated manner. Water consumption data collected for this report will be very useful for SoE Reporting. The next SoE report for Australia is due to be released in 2001 and water is one of the key issues to be covered.

THE ENVIRONMENTAL ACCOUNTING FRAMEWORK

Environmental accounting work is proceeding in many countries in response to national and international recommendations. The United Nations Conference on the Environment and Development (UNCED) in 1992 and the resulting document, Agenda 21, proposes 'a program to develop national systems of integrated environmental and economic accounting in all countries' (UNCED 1992).

The System of National Accounts (SNA) supports policy making at a national level, however, historically the methods have had little regard for environmental matters. An important aim of environmental accounting is to assess the environmental sustainability of economic activities and economic growth by quantifying any depletion and degradation of a natural resource. An environmental account provides an information system which links the economic activities and uses of a resource to changes in the natural resource base.

Environmental accounting provides a link with the economy by depicting quantitative information on natural resources that can then be linked to economic data sets such as Australia's National Accounts. This allows for monitoring of the flow of the resource through the economy.

Data analysis for this publication follows the guidelines described in *Integrated Environmental and Economic Accounting—SEEA* (UN 1993a), a complement to the *System of National Accounts 1993* (UN 1993b). Supply and use tables provide the framework to link core components of the National Accounts to physical flow accounts. They are a component of physical input-output tables and allow physical flows of water between the economy and the environment to be compared with flows within the monetary input-output tables, a part of the SNA. These tables are presented in Chapter 3.

CONTENTS

The Water Account focuses on four financial years: 1993–94, 1994–95, 1995–96 and 1996–97. For comparative purposes other data sets presented include the *1985 Review of Australia's Water Resources and Water Use* (AWRC 1987a; AWRC 1987b). Australia is divided into 245 river basins and 61 groundwater provinces, shown in maps 1.1 and 1.2. Spatial disaggregation is important due to the variable hydrological conditions across Australia, however, spatially disaggregated data (river basin or groundwater province level) was unavailable for this report. All States and Territories are undergoing a review of water resources as part of the National Land and Water Resources Audit (NLWRA), and it is envisaged that additional resource information will be available for future water account publications. Climatic conditions for the reference years may still have impacted on the overall availability and use of water. Climatic information disaggregated by state from the Bureau of Meteorology (BoM) is summarised in Appendix 1.

Chapter 1 introduces the water account and briefly describes the data sources and methods used to create the stock and flow tables. A summary of the key results are also presented.

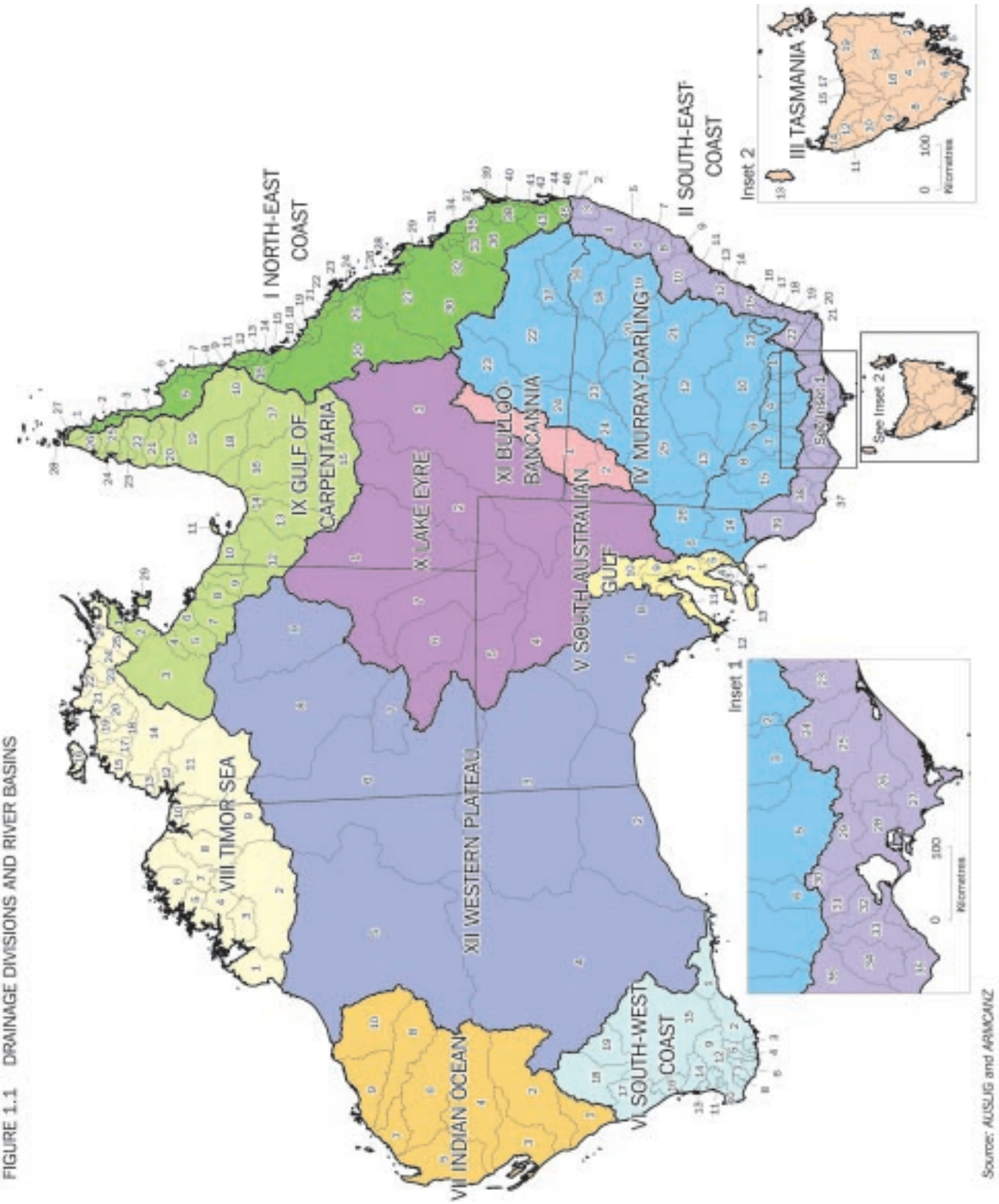


FIGURE 1.1 DRAINAGE DIVISIONS AND RIVER BASINS

I NORTH-EAST COAST

1 Jacky Jacky Creek
2 Olive–Pascoe Rivers
3 Lockhart River
4 Stewart River
5 Normanby River
6 Jeannie River
7 Endeavour River
8 Daintree River
9 Mossman River
10 Barron River
11 Mulgrave–Russell Rivers
12 Johnstone River
13 Tully River
14 Murray River (Qld)
15 Hinchinbrook Island
16 Herbert River
17 Black River
18 Ross River
19 Haughton River
20 Burdekin River
21 Don River
22 Proserpine River
23 Whitsunday Island
24 O'Connell River
25 Pioneer River
26 Plane Creek
27 Styx River
28 Shoalwater Creek
29 Water Park Creek
30 Fitzroy River (Qld)
31 Curtis Island
32 Calliope River
33 Boyne River
34 Baffle Creek
35 Kolan River
36 Burnett River
37 Burrum River
38 Mary River (Qld)
39 Fraser Island
40 Noosa River
41 Maroochy River
42 Pine River
43 Brisbane River
44 Stradbroke Island
45 Logan–Albert Rivers
46 South Coast

II SOUTH-EAST COAST

1 Tweed River
2 Brunswick River
3 Richmond River
4 Clarence River
5 Bellinger River
6 Macleay River
7 Hastings River
8 Manning River
9 Karuah River
10 Hunter River
11 Macquarie–Tuggerah Lakes
12 Hawkesbury River
13 Sydney Coast–Georges River
14 Wollongong Coast
15 Shoalhaven River
16 Clyde River–Jervis Bay
17 Moruya River
18 Tuross River
19 Bega River
20 Towamba River
21 East Gippsland
22 Snowy River
23 Tambo River
24 Mitchell River (Vic)
25 Thomson River
26 Latrobe River
27 South Gippsland
28 Bunyip River
29 Yarra River
30 Maribyrnong River
31 Werribee River
32 Moorabool River
33 Barwon River
34 Lake Corangamite
35 Otway Coast
36 Hopkins River
37 Portland Coast
38 Glenelg River
39 Millicent Coast

III TASMANIA

1 Flinders–Cape Barren Islands
2 East Coast
3 Coal River
4 Derwent River
5 Kingston Coast
6 Huon River
7 South–West Coast
8 Gordon River
9 King–Henty Rivers
10 Pieman River
11 Sandy Cape Coast
12 Arthur River
13 King Island
14 Smithton–Burnie Coast
15 Forth River
16 Mersey River
17 Rubicon River
18 Tamar River
19 Piper–Ringarooma Rivers

IV MURRAY–DARLING

1 Upper Murray River
2 Kiewa River
3 Ovens River
4 Broken River
5 Goulburn River
6 Campaspe River
7 Loddon River
8 Avoca River
9 Murray–Riverina
10 Murrumbidgee River
11 Lake George
12 Lachlan River
13 Benanee
14 Mallee
15 Wimmera–Avon Rivers
16 Border Rivers
17 Moonie River
18 Gwydir River
19 Namoi River
20 Castlereagh River
21 Macquarie–Bogan Rivers
22 Condamine–Culgoa Rivers
23 Warrego River
24 Paroo River
25 Darling River
26 Lower Murray River

V SOUTH AUSTRALIAN GULF

1 Fleurieu Peninsula
2 Myponga River
3 Onkaparinga River
4 Torrens River
5 Gawler River
6 Wakefield River
7 Broughton River
8 Mambray Coast
9 Willochra Creek
10 Lake Torrens
11 Spencer Gulf
12 Eyre Peninsula
13 Kangaroo Island

VI SOUTH-WEST COAST

1 Esperance Coast
2 Albany Coast
3 Denmark River
4 Kent River
5 Frankland River
6 Shannon River
7 Warren River
8 Donnelly River
9 Blackwood River
10 Busselton Coast
11 Preston River
12 Collie River
13 Harvey River
14 Murray River (WA)
15 Avon River
16 Swan Coast
17 Moore–Hill Rivers
18 Yarra Yarra Lakes
19 Ninghan

VII INDIAN OCEAN

1 Greenough River
2 Murchison River
3 Wooramel River
4 Gascoyne River
5 Lyndon–Minilya Rivers
6 Ashburton River
7 Onslow Coast
8 Fortescue River
9 Port Hedland Coast
10 De Grey River

VIII TIMOR SEA

1 Cape Leveque Coast
2 Fitzroy River (WA)
3 Lennard River
4 Isdell River
5 Prince Regent River
6 King Edward River
7 Drysdale River
8 Pentecost River
9 Ord River
10 Keep River
11 Victoria River
12 Fitzmaurice River
13 Moyle River
14 Daly River
15 Finniss River
16 Bathurst and Melville Islands
17 Adelaide River
18 Mary River (WA)
19 Wildman River
20 South Alligator River
21 East Alligator River
22 Goomadeer River
23 Liverpool River
24 Blyth River
25 Goyder River
26 Buckingham River

IX GULF OF CARPENTARIA

1 Koolatong River
2 Walker River
3 Roper River
4 Towns River
5 Limmen Bight River
6 Rosie River
7 Mcarthur River
8 Robinson River
9 Calvert River
10 Settlement Creek
11 Mornington Island
12 Nicholson River
13 Leichhardt River
14 Morning Inlet
15 Flinders River
16 Norman River
17 Gilbert River
18 Staaten River
19 Mitchell River (WA)
20 Coleman River
21 Holroyd River
22 Archer River
23 Watson River
24 Embley River
25 Wenlock River
26 Ducie River
27 Jardine River
28 Torres Strait Islands
29 Groote Eylandt

X LAKE EYRE

1 Georgina River
2 Diamantina River
3 Cooper Creek
4 Lake Frome
5 Finke River
6 Todd River
7 Hay River

XI BULLOO–BANCANNIA

1 Bulloo River
2 Lake Bancannia

XII WESTERN PLATEAU

1 Gairdner
2 Nullarbor
3 Warburton
4 Salt Lake
5 Sandy Desert
6 Mackay
7 Burt
8 Wiso
9 Barkly

FIGURE 1.2 GROUNDWATER PROVINCES

Source: AGSO

1F	Coen	22S	Eucla	43F	Halls Creek		
2S	Laura	23F	Albany–Fraser	44S	Bonaparte		
3F	Tasman	24S	Bremer	45F	Ord–Victoria		
4S	Clarence–Moreton	25F	Leeuwin	46F	Pine Creek		
5F	New England	26S	Perth	47S	Melville		
6S	Sydney	27S	Collie	48S	Arafura		
7F	Lachlan	28F	Yilgarn–Southwest	49S	McArthur		
8S	Gippsland	29F	Yilgarn–Gold Fields	50S	Daly River		
9S	Western Port	30F	Yilgarn–Murchison	51S	Wiso		
10S	Port Phillip	31F	Northampton	52F	Tennant Creek		
11S	Otway Highlands	32S	Carnarvon	53S	Georgina		
12S	Otway	33F	Capricorn	54F	Mt Isa–Cloncurry		
13SF	Tasmania	34F	Marymia	55S	Great Artesian		
14S	Murray	35F	Banemall	56S	Officer		
15F	Olary	36F	Calvie–McFadden	57F	Musgrave		
16F	Mt Lofty–Flinders Ranges	37F	Sylvania	58S	Amadeus		
17S	St Vincent	38F	Hamersley	59S	Arunta		
18F	Yorke Peninsula	39F	Pilbara	60S	Ngalia		
19S	Pirie–Torrens	40F	Paterson	61F	Tanami		
20F	Stuart	41S	Canning				
21F	Gawler	42F	Kimberley				

CONTENTS *continued*

In Chapter 2 tables showing long term measures of surface water and groundwater assets are presented, and an annual water pathway has also been produced. Data were compiled for Victoria only. The asset tables show long term availability of water resources. A time series of stock information is presented to demonstrate the changes in the resource over time. The water pathway analysis reports the annual inputs, consumption and output of water for Victoria during the four years investigated. Data was supplied by the Department of Natural Resources, Victoria. Detailed data were not available for other States.

Chapter 3 presents data which demonstrates how water as a commodity flows to and from the environment and through the economy. Supply tables show the volume of water supplied by particular sectors, and use tables show the use of water by particular sectors.

A limitation of this account is the provision of data on water quality. Ideally, the supply and use tables would include an indication of the quality of water used, and the quality of water returned to the environment. However, this information is difficult to obtain and was not collected. Inclusion of water quality data will be reviewed for the next edition.

SUMMARY RESULTS

Overview

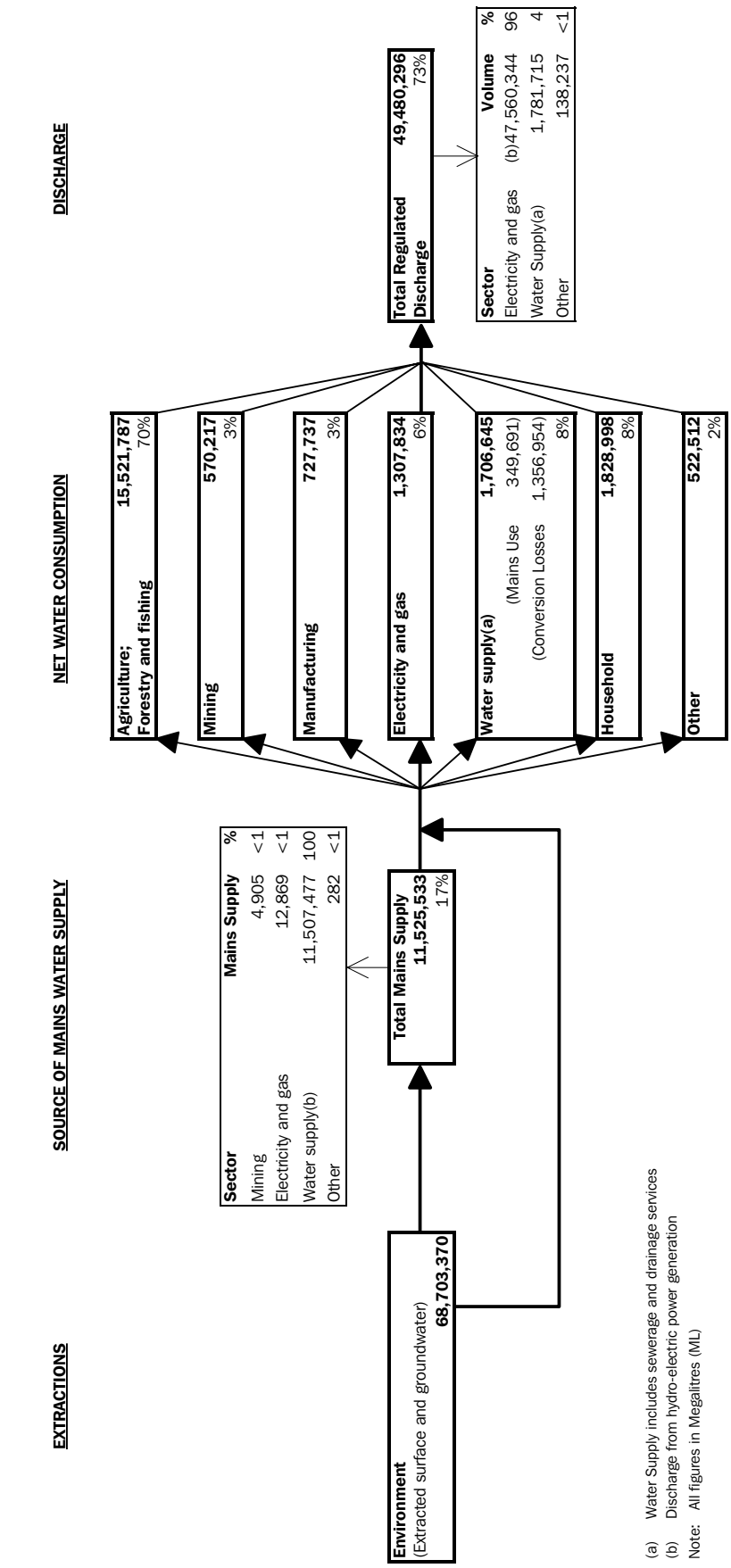
The patterns of water use observed over the collection period (1993–94 to 1996–97) were similar, so the analyses presented below focus predominantly on the 1996–97 data. In Australia in 1996–97 an estimated 68,703 GL of surface water and groundwater was extracted from the environment, of which 11,525 GL was distributed via mains for use (diagram 1.3, table 1.4). Discharge of water back to the environment (directly to surface waters) totalled 49,480 GL, of which 46,517 GL was from hydro-electric stations and water from other sources that was used and discharged in-stream. Net water consumption, therefore, was 22,186 GL. Net water consumption at an industry level also includes an adjustment for net use of mains water.

The agriculture sector was the largest net user of water, totalling 15,502 GL in 1996–97, accounting for 70% of net water use in Australia. Of this amount, pasture, livestock, grains and other agriculture accounted for 8,795 GL or 57% of the total agricultural water consumption. Other significant consumers in this sector included the cotton (1,841 GL), sugar (1,236 GL), and rice (1,643 GL) industries. Agricultural activities depended heavily on both mains supplied (54% of water used) and self-extracted water resources (46%).

The electricity and gas industry was the largest gross user of water (47,830 GL), however, the majority of this amount was in-stream use by the hydro-electricity generation sector, the bulk of which was discharged back to surface waters (46,509 GL).

Graphs and tables 1.4 through to 1.23 provide summary as well as detailed sectoral and State information relating to net water consumption. Tables 1.24 to 1.39 at the end of this chapter provide summary information on total water supply and use for each State and Territory. Effluent reuse is also presented in these tables and totalled 134 GL for 1996–97. These tables are presented in greater detail in Chapter 3.

1.3 WATER SUPPLY AND CONSUMPTION, Australia—1996–97



(a) Water Supply includes sewerage and drainage services
(b) Discharge from hydro-electric power generation

Note: All figures in Megalitres (ML)

1.4 SUPPLY AND USE OF WATER IN AUSTRALIA—1996–97

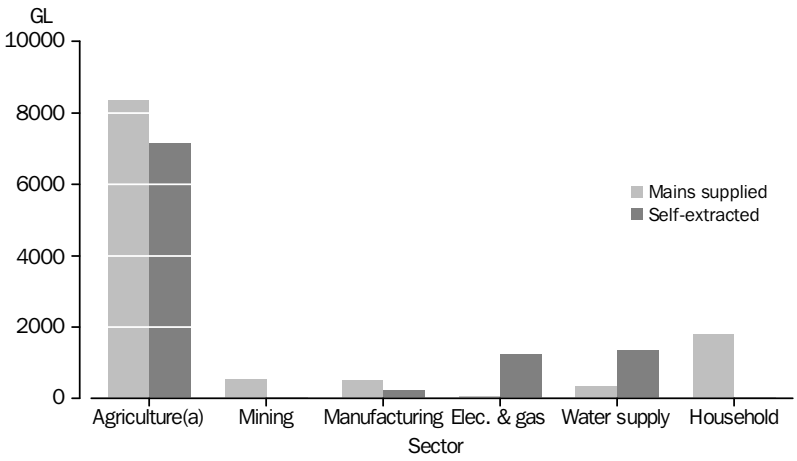
Sector	*Self-extracted use* ML	*Mains supply* ML	*Mains use* ML	*In-stream discharge* ML	*Net water consumption(a)* ML
Agriculture	7 156 488	—	8 346 485	—	15 502 973
Services to agriculture, hunting and trapping; Forestry and fishing	13 164	—	14 240	8 589	18 815
Mining	544 746	4 905	30 376	—	570 217
Manufacturing	216 666	—	511 071	—	727 737
Electricity and gas	47 771 365	12 869	58 387	46 509 049	1 307 834
Water supply; sewerage and drainage services	12 864 431	11 507 477	349 691	—	1 706 645
Other	103 588	282	419 207	—	522 513
Household	32 923	—	1 796 076	—	1 828 999
Total	**68 703 371**	**11 525 533**	**11 525 533**	**46 517 638**	**22 185 733**

(a) Net water use = Self-extracted use + Mains use – Mains supply – In-stream discharge

Source of water

Approximately half of the water consumed in Australia is supplied through mains infrastructure (graph 1.5). The largest consumers of mains-supplied water are the agriculture sector (including services to agriculture; and forestry and fishing), and households. The agriculture sector was also the largest consumer of self-extracted water. However, the electricity and gas; and water supply, sewerage and drainage services industries were also significant consumers of self-extracted water.

1.5 SOURCE OF NET WATER CONSUMPTION, By Sector—1996–97



(a) Agriculture includes services to agriculture, hunting and trapping; and forestry and fishing.

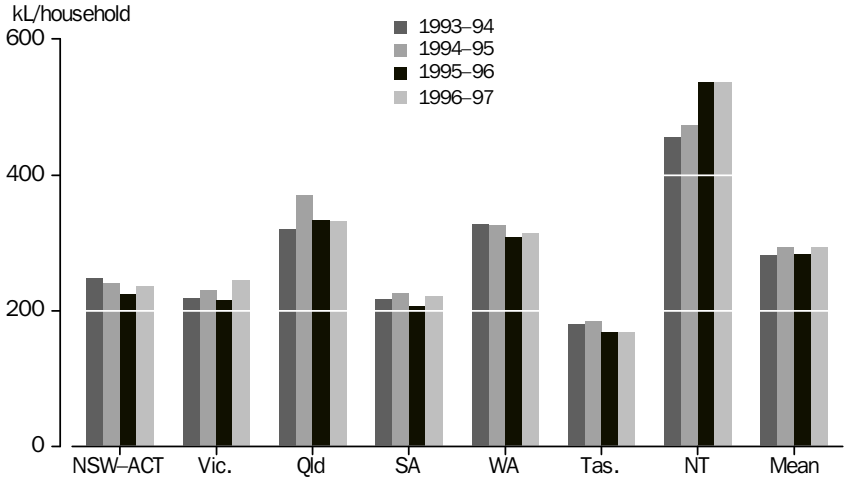
States

A majority of total net water consumption occurs within NSW–ACT (39%), Victoria (30%) and Queensland (17%), with South Australia, Western Australia, Tasmania and the Northern Territory totalling 14% (see table 1.20). The ACT accounts for approximately 1% of the NSW–ACT totals.

Information on water assets was available for Victoria only. In Victoria, mean annual runoff (MAR) was less than 15% of precipitation, and in 1998, an estimated 30% of MAR was allocated to economic uses.

Mean water use per household is highest in the Northern Territory (500kL/year), Queensland (340kL/year) and Western Australia (320kL/year). Mean household water use in NSW–ACT, Victoria and South Australia was between 218 and 237 kL/year. Tasmania had the lowest mean household water usage of 176kL/year (graph 1.6).

1.6 HOUSEHOLD WATER USE



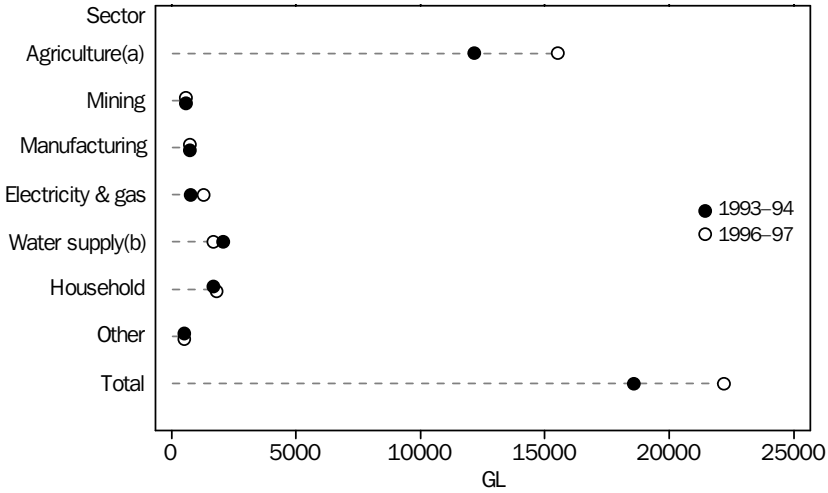
Note: Derived from ABS 1999b

Differences between years

Over the four years from 1993–94 to 1996–97 total net water consumption has risen 19% from 18,575 GL to 22,186 GL (graph 1.7). However, water use is variable on a year to year basis and any trends extrapolated from this data should be viewed with caution. A majority of the rise (3,434 GL) is accounted for by the agriculture sector, with a significant water use increase in the livestock, pasture, grains and other agriculture sector, and to a much lesser extent the cotton and rice industries (graph 1.8).

Differences between years *continued*

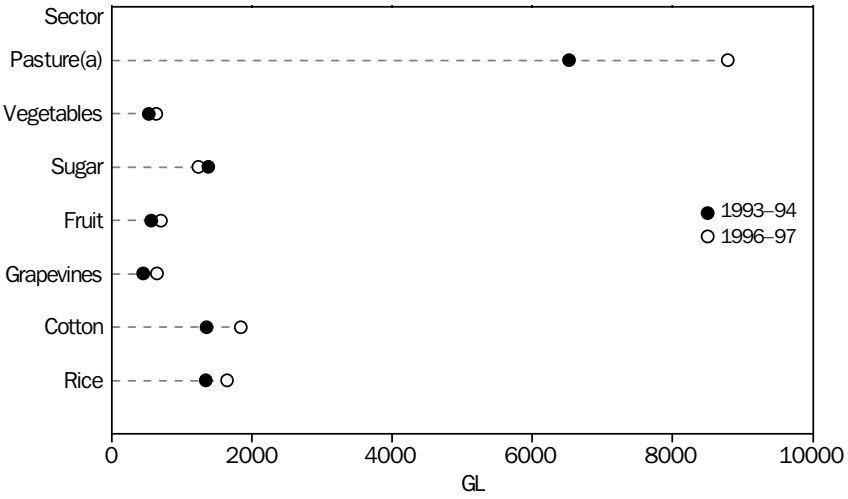
1.7 NET WATER CONSUMPTION, By Sector



(a) Agriculture includes services to agriculture, hunting and trapping; and forestry and fishing.

(b) Includes sewerage and drainage services.

1.8 NET WATER CONSUMPTION, Agriculture



(a) Pasture includes livestock, pasture, grains (excluding rice) and other agriculture.

Net water consumption per capita (total net water consumption / total population) for Australia from 1993–94 to 1996–97 has varied from 1.04 to 1.20 ML/capita, with a mean water use per capita of 1.12 ML (graph 1.9). Mean household water use between 1993–94 to 1996–97 has varied from 282kL/year in 1993–94 to 294 kL/year in 1996–97, with a mean of 288kL/year (graph 1.6).

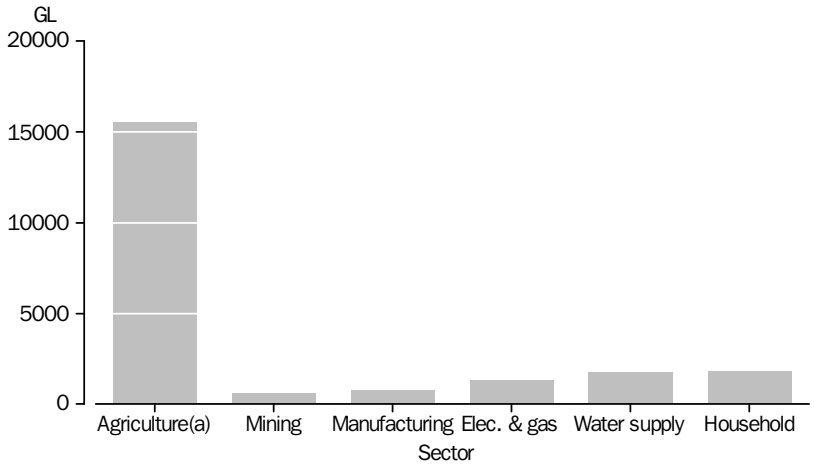
Differences between years *continued*

1.9 NET WATER CONSUMPTION, Per Capita

Sectors

In 1996–97 the agriculture sector accounted for the majority of net water consumption with 8,795 GL used by livestock, pasture, grains and other agriculture. Other agriculture sectors combined had a net water consumption of 6,726 GL, resulting in a total agricultural net water consumption of 15,503 GL (excluding services to agriculture; forestry and fishing) (graph 1.10, table 1.11), which comprised 70% of the total net water consumption for Australia. The household sector was the next largest user of water resources, with use for 1996–97 totalling 1,829 GL or 8.2% of total net water consumption (graph 1.10).

1.10 NET WATER CONSUMPTION, By Sector—1996–97



(a) Agriculture includes services to agriculture; hunting and trapping; and forestry and fishing.

Sectors *continued*

1.11 WATER USE, EMPLOYMENT AND IGP, By Selected Industries—1996–97

Sector	*Employment* '000	*Industry gross product (IGP)* $m	*Net water use* ML	*Exports* $m
Agriculture(a)	301.5	9 121	15 502 973	8 991
Services to agriculture, hunting and trapping; Forestry and fishing	39.0	1 721	18 814	1 785
Mining	76.8	20 836	570 217	17 938
Manufacturing	1 021.4	63 615	727 737	48 494
Electricity and gas	42.0	9 733	(b)1 307 834	—
Water supply, sewerage and drainage services	19.3	3 955	1 706 645	—
Selected service industries(c)	5 225.2	(d)162 372	463 748	1 725

(a) Includes dryland and irrigation farming.

(b) Excludes in-stream use of water for hydro-electricity generation.

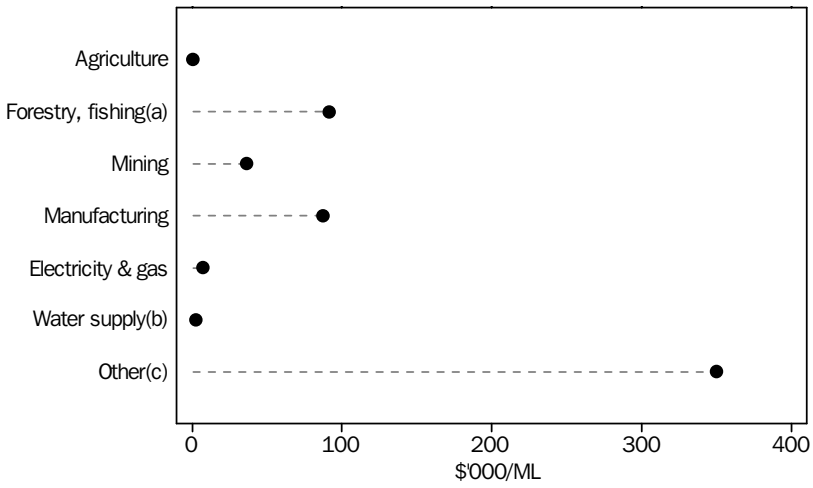
(c) See table 1.18 for industries included.

(d) Excludes finance and insurance (IGP not relevant for these industries).

Source: ABS unpublished data, FASTTRACCS; ABS unpublished data, Labour Force Survey; ABS 1999c.

Intensive use of water by the agriculture sector results in a low industry gross product (IGP) per ML ratio of $588/ML (includes IGP for both dryland and irrigated agriculture). This contrasts with the less water intensive service industries (excluding utilities) which had an IGP per ML water use totalling $350,000/ML in 1996–97 (graph 1.12). All other sectors fall between these two extremes, with the utilities sectors (water supply, sewerage and drainage; and the electricity and gas industries) being the next most water intensive (graph 1.12).

1.12 INDUSTRY GROSS PRODUCT PER ML USED, By Sector—1996–97



(a) Includes services to agriculture; hunting and trapping.

(b) Includes sewerage and drainage services.

(c) See table 1.18 for industries included.

Agriculture

Agriculture is by far the largest net consumer of water in Australia. The contribution of irrigated agriculture to the economy is presented in table 1.13. An estimation of the value of irrigated production was based on work by Poulton (2000). Irrigated production accounted for approximately 26% of the total gross value of production from agriculture which was estimated at $28,156 million in 1996–97. Irrigated pasture covered the largest area of irrigated land, accounting for approximately 935,000 hectares; it is a major component of the livestock, pasture, grains and other agriculture sector.

1.13 WATER USE AND GROSS VALUE FOR IRRIGATED AGRICULTURE—1996–97

	Gross value(a)	*Net water use*	*Irrigated area(b)*
	$m	ML	ha
Livestock, pasture, grains and other agriculture	(c)2 540	8 795 428	1 174 687
Vegetables	1 119	634 913	88 782
Sugar(d)	517	1 236 250	173 224
Fruit	1 027	703 878	82 316
Grapes	613	648 574	70 248
Cotton(e)	1 128	1 840 624	314 957
Rice	310	1 643 306	152 367
Total	(f)**7 254**	**15 502 973**	**2 056 580**

(a) Gross value of irrigated agriculture production based on Poulton (2000).

(b) Based on data from ABS 1999a, *AgStats*.

(c) Comprises of: stock products from irrigated agriculture (excluding milk) have a gross production value of $148 million; milk products from irrigated agriculture have an estimated gross production value of $1,259 million; and irrigated crops (mostly cereals) within this category have an estimated gross production value of $1,133 million.

(d) Sugarcane for crushing.

(e) Cotton lint (includes the value of cotton seed).

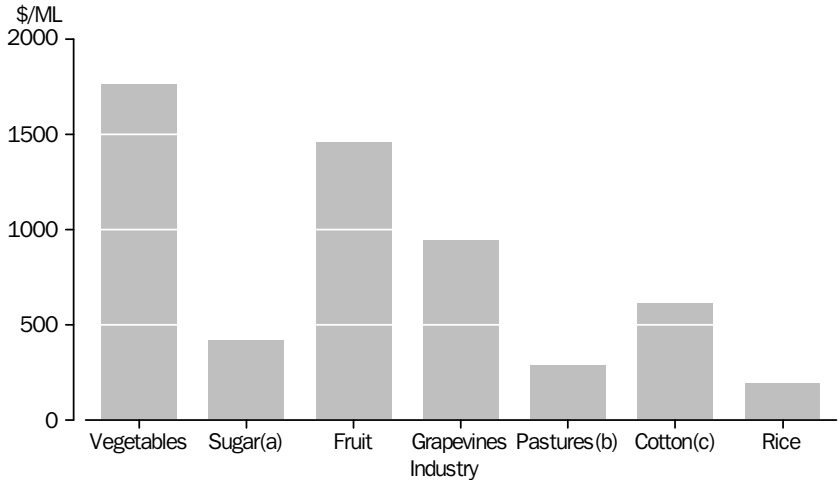
(f) The gross value of production for agriculture including dryland and irrigation farming is $28,156 million.

Source: ABS Agriculture, unpublished data.

The vegetable and fruit industries returned the highest gross value per ML water used for irrigated agriculture, at $1,760/ML and $1,460/ML respectively (graph 1.14). The water intensive activity of rice growing resulted in the lowest ratio of gross value per ML water used ($189/ML), followed by $289/ML for irrigated pastures, other grains and livestock.

Agriculture *continued*

1.14 GROSS VALUE PER ML WATER USED, By Irrigated Agriculture—1996–97



(a) Sugarcane for crushing.

(b) Includes livestock, grains (except rice) and other agriculture.

(c) Cotton lint (includes value of cotton seed).

Manufacturing

The highest water users in the manufacturing industry include basic metals and products (152,935 GL); and paper, printing and publishing (123,526 GL) (table 1.15). Manufacturing contributes significantly to the Australian economy with a total IGP of almost $64 billion (tables 1.11 and 1.15). Industry Gross Product per ML water used was lowest for clothing and footwear ($32,700/ML); wood and wood products ($35,600/ML); and basic metals and products ($39,500/ML) (graph 1.16). Manufacturing sectors with a high IGP/ML ratio include included transport equipment ($682,053/ML); other machinery and equipment ($408,060/ML); and rubber and plastic products manufacturing ($358,306/ML) (graph 1.16).

The manufacturing sector is also one of Australia's largest employers, with just over one million full-time equivalent employees in 1996–97. Most manufacturing industries used less than 1.5 ML/employee (graph 1.17). The petroleum and coal products industry, being a relatively small employer, had a much higher than average rate of water use per employee compared to other manufacturing industries (about 6.7 ML/employee).

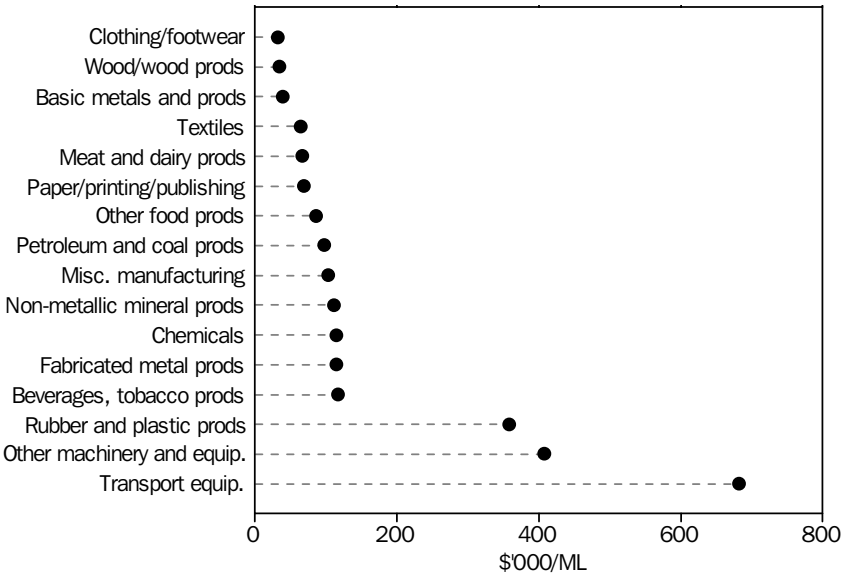
Manufacturing *continued*

1.15 EMPLOYMENT AND IGP, Manufacturing Industries—1996–97

Industry	Employment '000	Industry gross product $m	Net water use ML	Exports $m
Meat and dairy products	58	3 468	51 857	5 617
Other food products	80	5 507	63 719	4 429
Beverages, tobacco products	17	2 502	21 314	984
Textiles	33	1 596	24 736	1 986
Clothing and footwear	60	1 669	50 973	846
Wood and wood products	40	2 062	57 886	671
Paper, printing and publishing	119	8 653	123 526	791
Petroleum and coal products	2	1 318	13 398	1 931
Chemicals	53	5 067	44 029	2 952
Rubber and plastic products	40	2 707	7 555	499
Non-metallic mineral products	43	2 645	23 536	378
Basic metals and products	64	6 034	152 935	13 849
Fabricated metal products	106	5 072	43 890	808
Transport equipment	98	5 807	8 514	4 243
Other machinery and equipment	133	7 432	18 213	7 803
Miscellaneous manufacturing	71	2 252	21 657	710

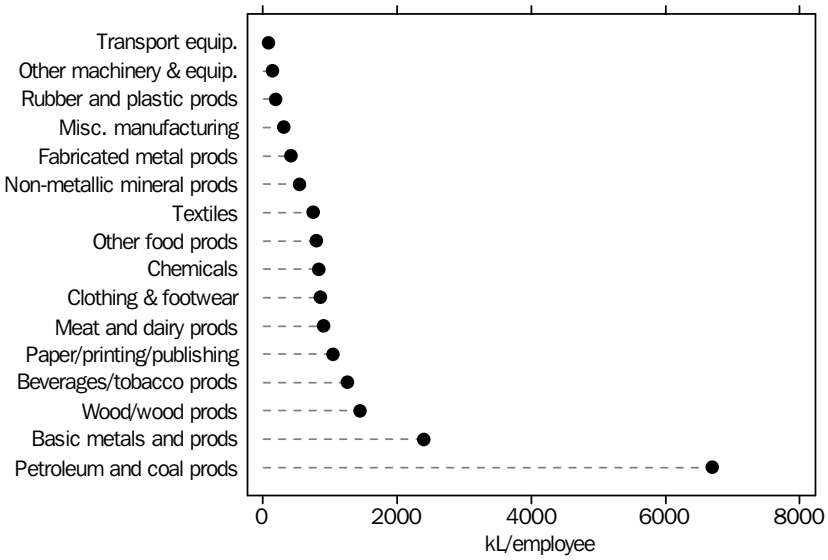
Source: ABS unpublished data, FASTTRACCS; ABS unpublished data, Labour Force Survey; ABS 1998.

1.16 INDUSTRY GROSS PRODUCT ($) PER ML WATER USED, Manufacturing—1996–97



Manufacturing *continued*

1.17 WATER USED PER EMPLOYEE (kL), Manufacturing—1996–97



Service and other selected industries

Generally speaking, the service industries are not high users of water (table 1.18). Employment in these industries is high (particularly wholesale and retail; and finance, property and business industries), with relatively high IGP occurring for several industries. Industry gross product per ML water used was highest for the construction industry ($1.1m/ML), followed by the wholesale and retail industry ($674,000/ML) (graph 1.19). Exceptions are the water supply, sewerage and drainage services industry (due to distribution losses, environmental flow allocations etc.), and the electricity and gas sector. These industry groups produced $2,317/ML and $7,442/ML of IGP, respectively.

Service and other selected industries *continued*

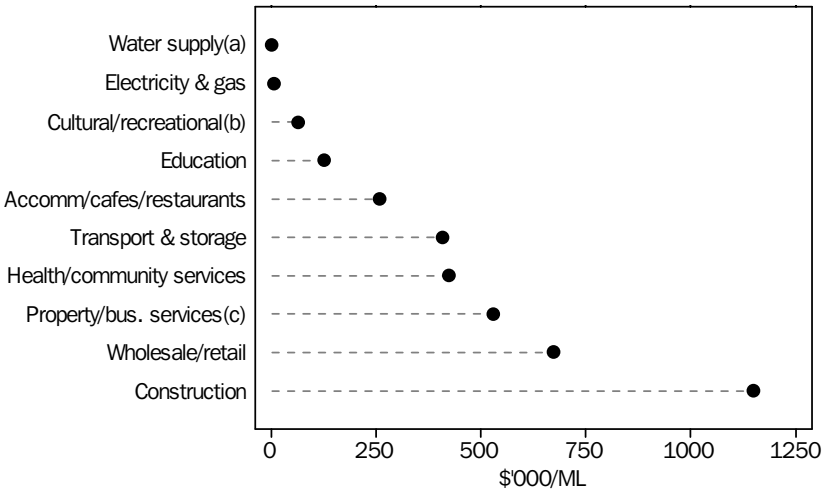
1.18 EMPLOYMENT AND IGP, Selected Industries—1996–97

Industry	Employment '000	Industry gross product $m	Net water use ML
Construction	504	15 503	13 491
Wholesale and retail trade	1 271	50 622	75 085
Accommodation, cafes and restaurants	268	10 994	42 629
Transport and storage	342	20 265	49 694
Finance, property and bus. services	1 100	(a)36 633	69 303
Education	463	4 586	36 389
Health and community services	571	14 555	34 361
Cultural/recreational, personal and other services	383	9 214	142 797
Water supply; sewerage & drainage	19	3 955	1 706 645
Electricity and gas	42	9 733	1 307 834

(a) Excludes finance and insurance (IGP not relevant for these industries).

Source: ABS unpublished data, Labour Force; ABS 1999c.

1.19 IGP ($'000) PER ML WATER USED, Selected Industries—1996–97



(a) Includes sewerage and drainage services.

(b) Includes personal and other services.

(c) Excludes finance and insurance.

Other tables

The following tables (1.20 to 1.23) show net water consumption summarised by State and by industry/sector. Tables 1.24 to 1.39 are a summary of the supply and use tables presented in Chapter 3.

1.20 NET WATER CONSUMPTION(a), Excluding In-stream Use—1993–94

Sector	*NSW–ACT* ML	*Vic.* ML	*Qld* ML	*SA* ML	*WA* ML	*Tas.* ML	*NT* ML	*Aust.* ML
Livestock, pasture, grains and other agriculture	2 358 796	2 269 926	765 026	661 269	408 054	59 617	2 202	6 524 890
Vegetables	134 489	68 733	136 731	54 145	106 141	35 252	724	536 215
Sugar	247	—	1 315 724	—	60 963	—	—	1 376 934
Fruit	193 295	110 237	101 533	118 835	41 713	1 897	2 812	570 322
Grapevines	167 778	139 268	4 545	122 048	11 289	157	915	445 999
Cotton	1 102 940	—	252 140	—	—	—	—	1 355 079
Rice	1 349 391	—	—	—	—	—	—	1 349 391
Services to agriculture; hunting and trapping	314	236	171	21	934	53	24	1 754
Forestry and fishing(b)	2 266	6 576	2 105	511	3 757	3 355	275	18 845
Mining	59 778	37 241	171 922	9 774	262 986	32 793	17 000	591 494
Meat and dairy products	14 468	10 813	11 668	3 439	7 799	3 483	485	52 155
Other food products	14 928	14 003	13 684	3 817	8 221	8 398	275	63 325
Beverages, tobacco products	7 784	2 199	4 650	3 385	2 700	696	—	21 413
Textiles	6 579	9 159	1 928	1 900	3 526	1 316	98	24 505
Clothing and footwear	17 867	14 147	9 671	1 558	4 913	723	123	49 002
Wood and wood products	9 132	4 155	8 422	1 368	6 756	28 165	250	58 248
Paper, printing and publishing	15 559	51 323	5 657	687	2 548	51 260	224	127 256
Petroleum and coal products	1 596	3 560	4 053	2 129	2 646	—	—	13 985
Chemicals	15 165	4 727	7 646	2 566	13 771	1 112	84	45 071
Rubber and plastic products	1 776	1 953	1 486	493	1 383	338	53	7 483
Non-metallic mineral products	4 304	3 194	4 105	1 389	8 412	1 523	108	23 034
Basic metals and products	38 932	8 831	32 130	37 938	29 651	6 049	4 178	157 708
Fabricated metal products	12 592	5 970	11 300	2 055	9 574	1 960	644	44 096
Transport equipment	1 929	2 344	1 157	1 422	1 711	175	31	8 770
Other machinery and equipment	5 698	3 139	3 179	1 941	3 220	599	90	17 867
Miscellaneous manufacturing	5 280	3 527	6 014	992	5 191	952	231	22 185
Electricity and gas(c)	15 920	688 833	62 540	987	20 116	363	58	788 817
Water supply; sewerage and drainage services(d)(e)	503 508	1 157 670	271 934	52 735	50 661	13 797	14 353	2 064 659
Construction	7 597	45	540	128	4 865	348	26	13 550
Wholesale and retail trade	24 240	10 472	19 199	3 729	15 719	5 477	1 254	80 091
Accommodation, cafes and restaurants	11 360	3 633	8 214	1 191	10 817	1 832	324	37 371
Transport and storage	13 119	4 855	14 336	1 998	13 234	4 085	1 837	53 464
Finance, property and business services	33 962	5 812	12 417	1 959	9 060	2 145	569	65 924
Government administration	7 106	8 148	13 603	2 040	2 499	715	11 539	45 650
Education	10 025	7 103	10 135	2 313	4 393	1 875	1 385	37 228
Health and community services	12 290	5 160	7 887	2 124	4 715	1 987	519	34 682
Cultural, recreational and personal services	22 847	10 128	15 954	3 434	84 034	5 069	1 781	143 246
Household	576 060	359 252	375 620	125 000	208 095	32 844	26 865	1 703 736
Total	**6 780 917**	**5 036 372**	**3 689 023**	**1 231 320**	**1 436 068**	**310 408**	**91 335**	**18 575 443**

(a) Net water consumption = mains water use (use table) + self-extracted water use (use table) – mains water supply (supply table).

(b) Net water consumption for aquaculture = mains water use + self-extracted water use – mains water supply – regulated discharge.

(c) Net water consumption for hydro power = mains water use + self-extracted water use – regulated discharge + in-stream use.

(d) Includes losses due to environmental flows, seepages and evapotranspiration (this is not necessarily measured in all States and Territories) as well as water used by the water supply; sewerage and drainage services industry.

(e) Net water consumption for the water industry = mains water use (use table) + conversion losses (self-extracted water use – mains water supply).

Note: To avoid double counting different methods were used to calculate net water consumption for water suppliers and for in-stream users.

1.21 NET WATER CONSUMPTION(a), Excluding In-stream Use—1994–95

Sector	*NSW–ACT* ML	*Vic.* ML	*Qld* ML	*SA* ML	*WA* ML	*Tas.* ML	*NT* ML	*Aust.* ML
Livestock, pasture, grains and other agriculture	3 094 323	3 621 314	773 396	763 771	347 519	70 252	2 481	8 673 056
Vegetables	176 357	109 728	138 943	59 711	89 938	41 511	681	616 869
Sugar	325	—	1 337 008	—	51 657	—	—	1 388 989
Fruit	253 628	175 988	103 175	115 950	35 346	2 234	2 492	688 811
Grapevines	220 209	222 333	4 618	144 817	9 565	185	811	602 538
Cotton	951 453	—	327 561	—	—	—	—	1 279 015
Rice	1 436 105	—	—	—	—	—	—	1 436 105
Services to agriculture; hunting and trapping	284	231	164	26	913	48	25	1 691
Forestry and fishing(b)	2 322	6 581	2 067	618	3 931	3 265	320	19 104
Mining	59 580	36 741	172 295	11 269	268 580	31 993	20 000	600 458
Meat and dairy products	12 320	12 740	11 527	4 088	8 144	3 298	530	52 648
Other food products	13 501	15 037	13 876	4 886	6 907	8 053	298	62 559
Beverages, tobacco products	7 871	2 217	4 680	3 475	2 587	733	47	21 610
Textiles	6 361	9 080	2 080	1 981	3 869	1 548	89	25 008
Clothing and footwear	17 449	14 932	9 331	1 788	4 741	653	208	49 102
Wood and wood products	9 121	4 228	8 820	1 505	6 735	27 767	220	58 396
Paper, printing and publishing	16 588	50 276	5 924	677	2 262	47 777	146	123 651
Petroleum and coal products	762	3 320	4 140	2 138	2 730	135	112	13 337
Chemicals	14 207	4 278	7 443	2 501	13 426	1 044	44	42 944
Rubber and plastic products	1 730	1 908	1 507	570	1 356	332	80	7 483
Non-metallic mineral products	3 829	3 566	4 168	1 440	8 024	1 216	92	22 335
Basic metals and products	36 278	10 451	32 341	38 400	28 560	6 574	3 687	156 292
Fabricated metal products	11 751	6 525	11 302	2 233	9 660	1 854	681	44 006
Transport equipment	1 636	2 471	1 079	1 628	1 720	176	18	8 728
Other machinery and equipment	6 655	2 940	2 975	1 995	2 769	537	89	17 960
Miscellaneous manufacturing	5 043	3 613	5 781	1 173	5 521	1 089	195	22 415
Electricity and gas(c)	17 396	648 705	60 854	1 036	20 137	192	57	748 377
Water supply; sewerage and drainage services(d)(e)	540 642	1 095 874	286 804	37 640	24 830	22 483	14 316	2 022 589
Construction	7 479	49	619	97	4 864	313	27	13 447
Wholesale and retail trade	25 104	11 540	19 105	4 465	17 162	5 308	1 383	84 065
Accommodation, cafes and restaurants	12 785	4 089	9 052	1 394	11 519	1 879	412	41 130
Transport and storage	14 659	5 200	14 387	2 253	13 551	3 566	2 039	55 657
Finance, property and business services	35 589	6 771	13 554	2 296	10 265	2 057	682	71 214
Government administration	8 347	12 181	14 188	1 966	2 797	901	11 408	51 788
Education	9 453	6 711	10 072	2 600	4 850	1 838	1 464	36 989
Health and community services	12 397	4 786	8 029	2 588	4 740	1 758	513	34 812
Cultural, recreational and personal services	23 443	11 540	15 435	3 922	84 393	5 811	1 829	146 373
Household	563 445	385 295	445 314	132 000	211 912	33 885	28 124	1 799 976
Total	**7 630 428**	**6 513 241**	**3 883 615**	**1 358 894**	**1 327 480**	**332 268**	**95 600**	**21 141 525**

(a) Net water consumption = mains water use (use table) + self-extracted water use (use table) – mains water supply (supply table).

(b) Net water consumption for aquaculture = mains water use + self-extracted water use – mains water supply – regulated discharge.

(c) Net water consumption for hydro power = mains water use + self-extracted water use – regulated discharge + in-stream use.

(d) Includes losses due to environmental flows, seepages and evapotranspiration (this is not necessarily measured in all States and Territories) as well as water used by the water supply; sewerage and drainage services industry.

(e) Net water consumption for the water industry = mains water use (use table) + conversion losses (self-extracted water use – mains water supply).

Note: To avoid double counting different methods were used to calculate net water consumption for water suppliers and for in-stream users.

1.22 NET WATER CONSUMPTION(a), Excluding In-stream Use—1995–96

Sector	*NSW–ACT* ML	*Vic.* ML	*Qld* ML	*SA* ML	*WA* ML	*Tas.* ML	*NT* ML	*Aust.* ML
Livestock, pasture, grains and other agriculture	2 656 490	2 880 694	751 250	749 418	364 290	50 611	3 998	7 456 751
Vegetables	151 393	87 258	130 006	62 993	94 428	29 941	259	556 278
Sugar	279	—	1 251 014	—	54 236	—	—	1 305 529
Fruit	217 725	139 950	96 539	114 349	37 110	1 611	2 351	609 635
Grapevines	189 043	176 805	4 321	157 521	10 043	134	765	538 632
Cotton	1 055 973	—	347 097	—	—	—	—	1 403 070
Rice	1 437 369	—	—	—	—	—	—	1 437 369
Services to agriculture; hunting and trapping	237	263	99	10	838	32	12	1 491
Forestry and fishing(b)	2 056	6 304	1 586	391	3 238	2 254	308	16 136
Mining	50 757	36 484	175 898	6 608	267 611	33 169	20 000	590 527
Meat and dairy products	12 127	12 742	11 484	3 777	8 392	3 150	543	52 215
Other food products	14 473	14 164	15 172	3 511	6 840	7 916	304	62 382
Beverages, tobacco products	7 038	2 304	4 911	3 172	2 915	1 011	66	21 418
Textiles	6 639	9 201	1 864	1 733	3 461	1 523	43	24 464
Clothing and footwear	18 277	14 405	8 682	1 309	5 291	613	241	48 818
Wood and wood products	9 414	3 912	8 514	1 299	7 001	27 633	329	58 102
Paper, printing and publishing	17 641	53 360	6 354	957	3 126	49 776	142	131 355
Petroleum and coal products	888	3 175	4 012	2 099	2 907	—	142	13 222
Chemicals	14 474	4 014	7 285	2 278	13 315	814	94	42 274
Rubber and plastic products	1 837	1 886	1 526	425	1 421	286	69	7 449
Non-metallic mineral products	3 919	3 120	4 120	1 074	8 421	931	123	21 708
Basic metals and products	37 495	9 634	33 115	37 886	32 140	5 940	3 413	159 623
Fabricated metal products	12 918	5 933	11 049	1 578	10 337	1 843	879	44 535
Transport equipment	1 534	2 314	1 210	1 418	1 833	200	31	8 541
Other machinery and equipment	7 023	2 671	3 024	1 822	2 845	468	151	18 004
Miscellaneous manufacturing	5 656	3 306	5 681	876	5 408	906	215	22 049
Electricity and gas(c)	19 781	936 679	66 983	431	20 035	160	50	1 044 119
Water supply; sewerage and drainage services(d)(e)	514 207	1 074 681	292 789	65 041	37 914	12 671	16 096	2 013 399
Construction	6 847	35	571	80	4 809	232	24	12 598
Wholesale and retail trade	21 969	8 540	15 777	2 647	14 440	4 078	1 308	68 759
Accommodation, cafes and restaurants	12 020	3 397	8 444	957	10 797	1 505	403	37 523
Transport and storage	12 688	3 863	11 240	1 674	11 420	2 362	1 584	44 831
Finance, property and business services	32 891	5 504	12 027	1 548	9 281	1 633	688	63 572
Government administration	7 437	9 436	14 686	1 853	3 146	913	10 139	47 610
Education	9 073	5 643	9 147	1 967	4 670	1 479	1 510	33 488
Health and community services	11 018	4 394	7 648	2 045	4 517	1 668	563	31 852
Cultural, recreational and personal services	20 348	9 730	13 151	2 912	82 648	4 698	1 707	135 194
Household	535 609	360 742	411 510	120 000	201 481	30 921	30 442	1 690 705
Total	**7 136 561**	**5 896 543**	**3 749 787**	**1 357 659**	**1 352 605**	**283 083**	**98 989**	**19 875 227**

(a) Net water consumption = mains water use (use table) + self-extracted water use (use table) – mains water supply (supply table).

(b) Net water consumption for aquaculture = mains water use + self-extracted water use – mains water supply – regulated discharge.

(c) Net water consumption for hydro power = mains water use + self-extracted water use – regulated discharge + in-stream use.

(d) Includes losses due to environmental flows, seepages and evapotranspiration (this is not necessarily measured in all States and Territories) as well as water used by the water supply; sewerage and drainage services industry.

(e) Net water consumption for the water industry = mains water use (use table) + conversion losses (self-extracted water use – mains water supply).

Note: To avoid double counting different methods were used to calculate net water consumption for water suppliers and for in-stream users.

1.23 NET WATER CONSUMPTION(a), Excluding In-stream Use—1996–97

Sector	*NSW–ACT* ML	*Vic.* ML	*Qld* ML	*SA* ML	*WA* ML	*Tas.* ML	*NT* ML	*Aust.* ML
Livestock, pasture, grains and other agriculture	3 404 610	3 549 239	725 993	640 286	401 873	69 714	3 713	8 795 428
Vegetables	194 044	107 534	122 198	65 271	104 486	41 144	236	634 913
Sugar	357	—	1 175 880	—	60 013	—	—	1 236 249
Fruit	279 063	172 469	90 741	114 626	41 063	2 214	3 702	703 878
Grapevines	242 288	217 888	4 062	171 836	11 113	184	1 204	648 574
Cotton	1 417 452	—	423 172	—	—	—	—	1 840 624
Rice	1 643 306	—	—	—	—	—	—	1 643 306
Services to agriculture; hunting and trapping	340	286	176	52	940	54	15	1 863
Forestry and fishing(b)	2 301	6 415	1 716	444	3 344	2 440	291	16 951
Mining	48 790	35 452	149 872	7 254	275 678	33 172	20 000	570 217
Meat and dairy products	12 964	12 764	10 752	4 069	7 607	3 223	479	51 857
Other food products	14 381	15 426	14 228	3 013	8 266	8 331	74	63 719
Beverages, tobacco products	7 342	2 364	4 593	3 085	2 956	890	84	21 314
Textiles	7 234	9 831	1 857	1 718	2 779	1 269	49	24 736
Clothing and footwear	18 768	16 682	7 691	1 228	5 527	757	320	50 973
Wood and wood products	9 674	4 708	7 670	1 266	6 621	27 636	311	57 886
Paper, printing and publishing	18 148	53 328	5 445	665	1 760	44 064	115	123 526
Petroleum and coal products	1 129	3 137	3 997	1 958	2 931	187	58	13 398
Chemicals	14 397	4 679	7 727	2 378	13 775	945	127	44 029
Rubber and plastic products	1 843	2 129	1 405	425	1 431	270	53	7 555
Non-metallic mineral products	4 625	3 385	4 422	1 481	8 589	876	158	23 536
Basic metals and products	37 746	8 266	31 861	37 703	27 183	6 648	3 528	152 935
Fabricated metal products	13 194	6 937	9 923	1 491	9 718	1 814	813	43 890
Transport equipment	1 718	2 433	1 070	1 449	1 645	152	47	8 514
Other machinery and equipment	6 978	3 135	2 768	1 687	3 046	448	151	18 213
Miscellaneous manufacturing	6 018	3 899	4 969	810	4 999	777	186	21 657
Electricity and gas(c)	23 042	1 192 980	69 399	972	21 273	131	37	1 307 834
Water supply; sewerage and drainage services(d)(e)	552 750	769 647	278 793	47 996	28 786	14 188	14 486	1 706 645
Construction	7 162	46	1 067	70	4 850	268	28	13 491
Wholesale and retail trade	24 665	11 000	16 195	2 729	14 857	4 321	1 318	75 085
Accommodation, cafes and restaurants	13 756	4 430	9 073	1 169	11 722	1 927	552	42 629
Transport and storage	14 062	5 326	12 104	1 560	12 225	2 680	1 738	49 694
Finance, property and business services	35 043	7 448	12 639	1 767	9 817	1 926	663	69 303
Government administration	10 778	10 975	16 047	2 753	5 411	1 808	10 991	58 763
Education	10 341	6 919	9 630	1 978	4 424	1 559	1 538	36 389
Health and community services	12 198	5 370	7 740	2 280	4 521	1 755	497	34 361
Cultural, recreational and personal services	22 733	10 836	14 558	2 932	84 538	4 951	2 248	142 797
Household	580 423	419 203	418 677	131 000	214 346	31 776	33 574	1 828 998
Total	**8 715 663**	**6 686 567**	**3 680 109**	**1 261 399**	**1 424 110**	**314 497**	**103 385**	**22 185 731**

(a) Net water consumption = mains water use (use table) + self-extracted water use (use table) – mains water supply (supply table).

(b) Net water consumption for aquaculture = mains water use + self-extracted water use – mains water supply – regulated discharge.

(c) Net water consumption for hydro power = mains water use + self-extracted water use – regulated discharge + in-stream use.

(d) Includes losses due to environmental flows, seepages and evapotranspiration (this is not necessarily measured in all States and Territories) as well as water used by the water supply; sewerage and drainage services industry.

(e) Net water consumption for the water industry = mains water use (use table) + conversion losses (self-extracted water use – mains water supply).

Note: To avoid double counting different methods were used to calculate net water consumption for water suppliers and for in-stream users.

1.24 SUPPLY TABLE, Australia—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	68 703 370	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	8 589
Mining	—	4 905	39 609	48 814
Manufacturing	—	—	3 430	78 642
Electricity and gas	—	12 869	6 138	47 560 344
Water supply(c)	—	11 507 477	82 438	1 781 715
Other	—	282	2 809	1 934
Household(d)	—	—	—	257
Total(e)	**68 703 370**	**11 525 533**	**134 424**	**49 480 296**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Regulated discharge by households was estimated for Tasmania only.

(e) Where figures have been rounded, discrepancies may occur within totals.

1.25 USE TABLE, Australia—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	49 480 296
Agriculture	7 156 488	8 346 485	38 118	—
Forestry and fishing(c)	13 164	14 240	3 068	—
Mining	544 746	30 376	41 811	—
Manufacturing	216 666	511 071	4 769	—
Electricity and gas	47 771 365	58 387	6 912	—
Water supply(d)	(e)12 864 431	349 691	4 339	—
Other	103 588	419 207	35 407	—
Household	32 923	1 796 076	—	—
Total(f)	**68 703 370**	**11 525 533**	**134 424**	**49 480 296**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses which includes releases for environmental flows) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

1.26 SUPPLY TABLE, New South Wales and Australian Capital Territory—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	11 055 337	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	—
Mining	—	—	6 238	150
Manufacturing	—	—	—	900
Electricity and gas	—	—	516	2 339 674
Water supply(c)	—	4 274 510	17 589	725 692
Other	—	—	—	—
Household	—	—	—	—
Total(d)	**11 055 337**	**4 274 510**	**24 342**	**3 066 415**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The ACT accounts for approximately 1% of the ACT and NSW totals.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Where figures have been rounded, discrepancies may occur within totals.

1.27 USE TABLE, New South Wales and Australian Capital Territory—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	3 066 415
Agriculture	3 832 931	3 348 190	8 305	—
Forestry and fishing(b)	329	2 313	113	—
Mining	42 488	6 302	8 440	—
Manufacturing	9 302	166 857	501	—
Electricity and gas	2 339 771	22 945	1 232	—
Water supply(c)	(e)4 821 076	6 184	—	—
Other	9 442	141 296	5 753	—
Household	—	580 423	—	—
	11 055 337	**4 274 510**	**24 342**	**3 066 415**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The ACT accounts for approximately 1% of the ACT and NSW totals.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

1.28 SUPPLY TABLE, Victoria—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	9 928 992	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	—
Mining	—	—	7 665	14 087
Manufacturing	—	—	525	—
Electricity and gas		—	3 876	4 292 348
Water supply(c)	—	4 816 461	20 444	439 501
Other	—	—	—	—
Household	—	—	—	—
Total(d)	**9 928 992**	**4 816 461**	**32 509**	**4 745 936**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Where figures have been rounded, discrepancies may occur within totals.

1.29 USE TABLE, Victoria—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	4 745 936
Agriculture	—	4 047 130	18 178	—
Forestry and fishing(c)	—	6 701	12	—
Mining	28 653	6 799	7 665	—
Manufacturing	—	153 102	525	—
Electricity and gas	4 421 145	14 260	3 876	—
Water supply(d)	(e)5 479 194	106 914	492	—
Other	—	62 351	1 763	—
Household	—	419 203	—	—
Total(f)	**9 928 992**	**4 816 461**	**32 509**	**4 745 936**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses which includes releases for environmental flows) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

1.30 SUPPLY TABLE, Queensland—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	4 364 473	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	—
Mining	—	4 905	11 907	9 085
Manufacturing	—	—	21	—
Electricity and gas	—	—	1 746	685 736
Water supply(c)	—	1 362 939	24 782	331 248
Other	—	—	1 089	1 934
Household	—	—	—	—
Total(d)	**4 364 473**	**1 367 844**	**39 545**	**1 028 003**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Where figures have been rounded, discrepancies may occur within totals.

1.31 USE TABLE, Queensland—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	1 028 003
Agriculture	2 056 527	485 518	9 629	—
Forestry and fishing(c)	—	1 892	—	—
Mining	142 057	12 719	11 907	—
Manufacturing	7 778	112 601	21	—
Electricity and gas	735 612	18 151	1 804	—
Water supply(d)	(e)1 406 161	235 571	2 424	—
Other	5 891	93 162	13 760	—
Household	10 446	408 230	—	—
Total(f)	**4 364 473**	**1 367 844**	**39 545**	**1 028 003**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

1.32 SUPPLY TABLE, South Australia—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	1 261 434	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	35
Mining	—	—	—	—
Manufacturing	—	—	1 407	30 000
Electricity and gas	—	—	—	—
Water supply(c)	—	336 931	6 968	112 246
Other	—	—	—	—
Household	—	—	—	—
Total(d)	**1 261 434**	**336 931**	**8 375**	**142 282**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Where figures have been rounded, discrepancies may occur within totals.

1.33 USE TABLE, South Australia—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	142 282
Agriculture	833 847	158 171	1 487	—
Forestry and fishing(c)	65	467	836	—
Mining	7 254	—	—	—
Manufacturing	35 061	29 364	1 407	—
Electricity and gas	—	972	—	—
Water supply(d)	(e)384 831	96	—	—
Other	377	16 862	4 645	—
Household	—	131 000	—	—
Total(f)	**1 261 434**	**336 931**	**8 375**	**142 282**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

1.34 SUPPLY TABLE, Western Australia—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	1 612 754	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	8 554
Mining	—	—	10 786	430
Manufacturing	—	—	604	—
Electricity and gas	—	—	—	180 090
Water supply(c)	—	572 302	10 926	100 962
Other	—	282	1 720	—
Household	—	—	—	—
Total(d)	**1 612 754**	**572 585**	**24 036**	**290 036**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Where figures have been rounded, discrepancies may occur within totals.

1.35 USE TABLE, Western Australia—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	290 036
Agriculture	335 736	282 811	47	—
Forestry and fishing(c)	12 727	112	2 108	—
Mining	271 126	4 553	10 786	—
Manufacturing	95 441	13 390	1 442	—
Electricity and gas	199 472	1 891	—	—
Water supply(d)	(e)601 012	75	1 424	—
Other	87 075	65 573	8 229	—
Household	10 166	204 179	—	—
Total(f)	**1 612 754**	**572 585**	**24 036**	**290 036**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

1.36 SUPPLY TABLE, Tasmania—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	40 376 994	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	—
Mining	—	—	100	25 063
Manufacturing	—	—	873	47 742
Electricity and gas	—	12 869	—	40 062 496
Water supply(c)	—	96 084	151	52 615
Other	—	—	—	—
Household	—	—	—	(d)257
Total(e)	**40 376 994**	**108 953**	**1 124**	**40 188 173**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) An estimate of regulated discharges by households has been made where no sewerage reticulation schemes exists.

(e) Where figures have been rounded, discrepancies may occur within totals.

1.37 USE TABLE, Tasmania—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	40 188 173
Agriculture	88 592	24 664	20	—
Forestry and fishing(c)	44	2 449	—	—
Mining	33 168	3	100	—
Manufacturing	69 085	29 202	873	—
Electricity and gas	40 075 365	131	—	—
Water supply(d)	(e)109 427	845	—	—
Other	803	20 392	131	—
Household(f)	510	31 266	—	—
Total(g)	**40 376 994**	**108 953**	**1 124**	**40 188 173**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Household self supply volumes are estimated for Tasmania.

(g) Where figures have been rounded, discrepancies may occur within totals.

1.38 SUPPLY TABLE, Northern Territory—1996–97(a)

Sector	*Self-extracted* ML	*Mains water* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	103 385	—	—	—
Agriculture	—	—	—	—
Forestry and fishing(b)	—	—	—	—
Mining	—	—	2 913	—
Manufacturing	—	—	—	—
Electricity and gas	—	—	—	—
Water supply(c)	—	48 249	1 579	19 452
Other	—	—	—	—
Household	—	—	—	—
Total(d)	**103 385**	**48 249**	**4 492**	**19 452**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Includes services to agriculture; hunting and trapping.

(c) Includes sewerage and drainage services.

(d) Where figures have been rounded, discrepancies may occur within totals.

1.39 USE TABLE, Northern Territory—1996–97(a)

Sector	*Self-extracted* ML	*Mains water(b)* ML	*Effluent reuse* ML	*Regulated discharge* ML
Environment	—	—	—	19 452
Agriculture	8 856	—	452	—
Forestry and fishing(c)	—	306	—	—
Mining	20 000	—	2 913	—
Manufacturing	—	6 554	—	—
Electricity and gas	—	37	—	—
Water supply(d)	(e)62 730	5	—	—
Other	—	19 572	1 127	—
Household	11 800	21 774	—	—
Total(f)	**103 385**	**48 249**	**4 492**	**19 452**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted total.

(c) Includes services to agriculture; hunting and trapping.

(d) Includes sewerage and drainage services.

(e) This amount (less losses) is distributed through the mains water for use by the various sectors. See supply table for minor suppliers of mains water.

(f) Where figures have been rounded, discrepancies may occur within totals.

CHAPTER 2 STOCK TABLES, VICTORIA

INTRODUCTION

This chapter presents surface water and groundwater stock tables for the state of Victoria. Quantitative data for both surface water and groundwater assets, and an annual water pathways analysis for Victoria are provided. Where appropriate, comparisons are made with historical data from *1985 Review of Australia's Water Resources and Water Use Volume 1* (AWRC 1987a). Updated data was not available on a broad scale across Australia, for this reason experimental tables were compiled for Victoria only (see Explanatory Notes, paragraphs 9 to 30). For future publications water quality assessments may be combined with quantitative data. However, at the time of publication, appropriate assessments were not available on a large spatial scale, and were not included.

SURFACE WATER ASSETS

Surface water assets for Victoria, disaggregated by river basin, are presented in table 2.1. Data presented are from the 1985 assessment (AWRC 1987b) and the current (1998) assessment compiled for this report. The total water resource is referred to as the mean annual runoff (MAR). Economic allocated water refers to the volume of water that is diverted from the MAR for economic activities on a sustained basis. Environmental allocated water refers to the amounts required for environmental flows to maintain prevailing environmental conditions. Environmental unallocated water refers to the difference between MAR and the sum of allocated volumes, and is essentially the volume of water not allocated to any specific purpose.

Based on the 1998 assessment, 5,927 GL of water was allocated to economic activities, comprising 30% of the total resource of 19,450 GL. These figures are similar to the 1985 assessments (table 2.1). Disaggregation of data by river basins reveals a majority (57%) of the water resources allocated for economic activity are from the Goulburn and Upper Murray River Basins.

For the Goulburn River Basin, 2,005 GL of water was allocated to economic activities, which comprised 60% of the total available resource or mean annual runoff (MAR) for this basin (table 2.1). In the Upper Murray River Basin an estimated 1,399 GL of water was available to be used for economic activities, which comprised 50% of the MAR for this basin (table 2.1).

The differences between the 1985 and the 1998 assessments are given in table 2.2. Changes to the economic allocated volumes were made for all river basins as a result of the reassessment of total water resources. Changes to the environmental allocated volumes (environmental flows) were made for some river basins because of new estimation techniques and methods (table 2.2).

In the Goulburn River Basin (river basin no. 405) an additional 225 GL was allocated to economic activities (table 2.2). An additional 80 GL was allocated to environmental flows, however, no provisions for environmental flows were included in the 1985 assessments. A reduction of 28 GL was made to unallocated environmental volumes. A net increase of 277 GL was made to the MAR, with these changes attributable to differences in both

SURFACE WATER ASSETS *continued*

hydrological forecasts and methodological changes. In the Upper Murray River Basin a reduction of 201 GL was made to the volume of available economic allocated water resources. The MAR has also changed for the Broken, Campaspe and Loddon river basins.

2.1 SURFACE WATER ASSETS, Victoria

		1985 ASSESSMENT				1998 ASSESSMENT			
		Economic allocated(a)	*Environmental allocated(b)*	*Environmental unallocated*	*Total assets (MAR)(c)*	*Economic allocated(a)*	*Environmental allocated(d)(e)*	*Environmental unallocated*	*Total assets (MAR)(c)*
River basin no.	*River basin name*	GL	GL	GL	GL	GL	GL	GL	GL
221	East Gippsland	1	—	379	380	1	—	379	380
222	Snowy	340	—	350	690	281	—	409	690
223	Tambo	5	—	320	325	8	—	317	325
224	Mitchell	18	—	982	1 000	21	—	979	1 000
225	Thomson	512	—	708	1 220	431	—	789	1 220
226	Latrobe	457	—	523	980	244	—	736	980
227	South Gippsland	18	—	682	700	23	—	677	700
228	Bunyip	49	—	296	345	24	—	321	345
229	Yarra	442	—	658	1 100	518	—	582	1 100
230	Maribyrnong	10	—	100	110	11	—	99	110
231	Werribee	47	—	48	95	30	—	65	95
232	Moorabool	41	—	74	115	48	—	67	115
233	Barwon	25	—	245	270	51	—	219	270
234	Corangamite	1	—	159	160	1	—	159	160
235	Otway	18	—	747	765	29	—	736	765
236	Hopkins	10	—	440	450	11	—	439	450
237	Portland	2	—	243	245	1	—	244	245
238	Glenelg	80	—	645	725	7	6	(e)712	725
239	Millicent Coast	—	—	4	4	0	—	4	4
401	Upper Murray	1 600	—	1 200	2 800	1 399	—	1 401	2 800
402	Kiewa	10	—	695	705	14	—	691	705
403	Ovens	100	—	1 520	1 620	91	—	1 529	1 620
404	Broken	100	—	225	325	153	—	140	(e)(f)293
405	Goulburn	1 780	—	1 260	3 040	2 005	80	(f)1 231	(e)(f)3 317
406	Campaspe	110	—	170	280	135	—	180	(e)(f)315
407	Loddon	100	—	151	251	161	28	(f)74	(e)(f)263
408	Avoca	5	—	80	85	4	—	81	85
414	Mallee	—	—	—	—	48	—	–48	—
415	Wimmera	110	—	263	373	178	11	(f)184	373
	Total	**5 991**	—	**13 167**	**19 158**	**5 927**	**125**	**13 398**	**19 450**

(a) Average annual volume allocated for economic activity.

(b) No environmental allocations were made in the 1985 assessment (AWRC 1987a).

(c) MAR — mean annual runoff.

(d) Environmental flows in Victoria are generally made as specified flow regimes, which cannot be readily converted to an annual volume. The volumes listed are specific volumetric allocations.

(e) Reasons for change from 1985 to 1998: hydrological forecasts altered, e.g. reassessment of resources.

(f) Reasons for change from 1985 to 1998: methodological changes, e.g. new estimation techniques and methods derived for measuring water.

Source: AWRC 1987a; DNRE, unpublished data, 1999.

SURFACE WATER ASSETS *continued*

2.2 SURFACE WATER ASSETS VOLUME CHANGES(a)(b), 1985–98—Victoria

		VOLUME CHANGES			
		Economic allocated(c)(d)	*Environmental allocated(e)*	*Environmental unallocated*	*Total assets (MAR)(f)*
River basin no.	*River basin name*	GL	GL	GL	GL
221	East Gippsland	0.4	—	–0.4	—
222	Snowy	–59.0	—	59.0	—
223	Tambo	2.6	—	–2.6	—
224	Mitchell	2.9	—	–2.9	—
225	Thomson	–80.9	—	80.9	—
226	Latrobe	–212.9	—	212.9	—
227	South Gippsland	4.6	—	–4.6	—
228	Bunyip	–25.0	—	25.0	—
229	Yarra	76.0	—	–76.0	—
230	Maribyrnong	0.6	—	–0.6	—
231	Werribee	–17.4	—	17.4	—
232	Moorabool	7.4	—	–7.4	—
233	Barwon	26.2	—	–26.2	—
234	Corangamite	–0.3	—	0.3	—
235	Otway	11.1	—	–11.1	—
236	Hopkins	0.6	—	–0.6	—
237	Portland	–0.8	—	0.8	—
238	Glenelg	–73.0	6.0	67.0	—
239	Millicent Coast	0.2	—	–0.2	—
401	Upper Murray	–201.0	—	201.0	—
402	Kiewa	3.7	—	–3.7	—
403	Ovens	–9.1	—	9.1	—
404	Broken	53.0	—	–85.0	–32.0
405	Goulburn	225.2	80.0	–28.2	277.0
406	Campaspe	24.9	—	10.1	35.0
407	Loddon	61.4	27.6	–77.0	12.0
408	Avoca	–1.1	—	1.1	—
414	Mallee	47.9	—	–47.9	—
415	Wimmera	67.8	11.0	–78.7	—
	Total	**–64**	**125**	**231**	**292**

(a) Reasons for change between 1985 and 1998: hydrological forecasts altered, e.g. reassessment of resources.

(b) Reasons for change between 1985 and 1998: methodological changes, e.g. new estimation techniques and methods derived for measuring water.

(c) Average annual volume allocated for economic activity.

(d) Economic allocated volume changes were made for all river basins from 1985 assessment to 1998 assessment.

(e) Environmental flows in Victoria are generally made as specified flow regimes, which cannot be readily converted to an annual volume. The volumes listed are specific volumetric allocations.

(f) MAR — mean annual runoff.

The 1985 assessment included figures comparing the mean annual runoff to the total sustainable divertible resource and the volume allocated for economic use. Comparisons between these data indicate the state of water resource development and use in the Victorian river basins (table 2.3). In the Snowy, Latrobe, Yarra, Werribee, Goulburn,

SURFACE WATER ASSETS *continued*

Campaspe and Wimmera River Basins the proportion of water resource development (i.e. the proportion of allocated economic volume to the total divertible resource) was between 74% and 96%. The potentially divertible resource figures do not take into account environmental flows, therefore, the resource development percentages may be larger than stated. Total divertible resource data were not available for the 1998 assessment, however, it is envisaged that these figures will be updated as part of the National Land and Water Resources Audit. For river basins within the Murray Darling Basin, the potentially divertible resource will effectively be the same as the allocation for economic purposes because of the 'cap' on water extractions.

2.3 SURFACE WATER ALLOCATIONS, Victoria—1985

River basin no.	*River basin name*	*Average potential annual divertible resource for economic activity(a)* GL	*Average annual volume allocated for economic use* GL	*MAR(b)* GL
221	East Gippsland	200	1	380
222	Snowy	460	340	690
223	Tambo	100	5	325
224	Mitchell	640	18	1 000
225	Thomson	805	512	1 220
226	Latrobe	525	457	980
227	South Gippsland	225	18	700
228	Bunyip	120	49	345
229	Yarra	575	442	1 100
230	Maribyrnong	30	10	110
231	Werribee	57	47	95
232	Moorabool	50	41	115
233	Barwon	85	25	270
234	Corangamite	25	1	160
235	Otway	200	18	765
236	Hopkins	130	10	450
237	Portland	55	2	245
238	Glenelg	205	80	725
239	Millicent Coast	1	—	4
401	Upper Murray(c)	2 800	1 600	2 800
402	Kiewa(c)	350	10	705
403	Ovens(c)	500	100	1 620
404	Broken(c)	180	100	293
405	Goulburn(c)	1 930	1 780	3 317
406	Campaspe(c)	115	110	315
407	Loddon(c)	100	100	263
408	Avoca(c)	30	5	85
414	Mallee	—	—	—
415	Wimmera(c)	120	110	373
	Total	**9 413**	**5 991**	**19 158**

(a) Excludes environmental flow provisions, so the potentially divertible figures will be much lower.

(b) MAR — mean annual runoff.

(c) For these basins north of the Great Dividing Range the potentially divertible resource will effectively be the same as the allocation for economic purposes because of the Murray Darling Basin 'cap' on water extractions.

Source: AWRC 1987a.

GROUNDWATER ASSETS

Groundwater asset data were available for the Victorian groundwater provinces for both the 1985 and 1998 assessments, and have been disaggregated into province level for the 1985 assessment and groundwater management areas for the 1998 assessment. The 1998 assessments are based on Permissible Annual Volume (PAV) which is equivalent to sustainable yield. The PAV assessments were prepared by Sinclair Knight Mertz and supplied by Department of Natural Resources and Environment. At this stage the groundwater management areas have not been assessed for the provinces as a whole, with groundwater resources for some areas (Unincorporated Areas) yet to be determined. The Unincorporated Areas comprise up to 90% of the areal coverage of the Provinces (Evans 2000), and comparisons with the 1985 data (AWRC 1987a) are therefore not possible. The Unincorporated Areas will be assessed in the near future as part of ongoing groundwater resources assessments in Victoria and the National Land and Water Resources Audit.

The groundwater assets are divided into four water quality (total dissolved solids) categories which indicate some potential use limitations of the resource (tables 2.4 and 2.5). Good quality water for human use typically has a salinity of less than 500 mg/L, with an upper limit of 1,500 mg/L, which is also the limit for crop irrigation (AWRC 1987a). Water for livestock is preferably in the lower ranges, but some salt tolerant livestock can tolerate water up to 15,000 mg/L. For coarse industrial processes, such as ore processing, the upper limit may be much higher. By comparison, seawater has a concentration of about 35,000 mg/L. Based on the 1985 assessment (AWRC 1987a), 49% of groundwater resources was classified as fresh, 35% marginal, 13% brackish and 3% saline (table 2.4).

2.4 GROUNDWATER ASSETS, Victoria—1985(a)

		SALINITY CATEGORY(b)				
		Fresh	*Marginal*	*Brackish*	*Saline*	*Total*
Province no.	*Province*	GL	GL	GL	GL	GL
7F	Lachlan (Vic.)	39.8	26.8	19.2	—	85.8
8S	Gippsland	286.8	37.9	—	—	324.7
9S	Western Port	3.9	17.7	—	—	21.6
10S	S Port Phillip	—	2.1	2.9	0.4	5.4
11S	11S Otway Highlands	0.5	—	—	—	0.5
12S	S Otway	110.0	175.3	12.4	—	297.7
14S	14S Murray (Vic.)	36.5	79.4	88.8	31.9	236.6
	Victoria Total	**477.5**	**339.2**	**123.3**	**32.3**	**972.3**

(a) The only data available from the 1985 assessment is at the Groundwater Province level. Figures for major and minor divertible resource were added to give the total groundwater resource for each province.

(b) Each salinity category (fresh, marginal, brackish and saline) include resources from both major and minor groundwater resources. Salinity Categories (total dissolved solids) Fresh: <500 mg/L, Marginal: 500–1,500 mg/L, Brackish: 1,500–5,000 mg/L, Saline: >5,000 mg/L .

Source: AWRC 1987a.

GROUNDWATER ASSETS *continued*

2.5 GROUNDWATER ASSETS, Victoria—1998(a)

		SALINITY CATEGORY(b)				
		Fresh	*Marginal*	*Brackish*	*Saline*	*Total*
Province	*Groundwater Management Area(c)*	GL	GL	GL	GL	GL
7F Lachlan (Vic)	Ascot	—	—	8.1	—	8.1
	Spring Hill	—	—	5.1	—	5.1
	Bungaree	—	—	4.4	—	4.4
	Tourello	—	n.a.	—	—	—
	Bullarook	—	n.a.	—	—	—
	Moolart Zone 1	—	6.7	—	—	6.7
	Moolart Zone 2	—	n.a.	—	—	—
	Glengower	—	—	0.5	—	0.5
	Merrimu	—	—	1.5	—	1.5
	Lancefield	3.8	—	—	—	3.8
	Kinglake	5.0	—	—	—	5.0
	Alexandra		11.0	—	—	11.0
	Leongatha	3.4	—	—	—	3.4
	Tarwin	3.3	—	—	—	3.3
	Unincorporated Areas(d)	n.a.	n.a.	n.a.	n.a.	n.a.
8S Gippsland	Moe	—	8.2	—	—	8.2
	Seacombe	—	1.0	—	—	1.0
	Sale	—	13.0	—	—	13.0
	Denison	—	12.0	—		12.0
	Wa De Lock Zones 1, 2 & 3	—	31.9	—	—	31.9
	Wy Yung Zones 1, 2 & 3	—	9.7	—	—	9.7
	Unincorporated Areas(d)	n.a.	n.a.	n.a.	n.a.	n.a.
9S Western Port	Koo Wee Rup/Dalmore	—	—	n.a	—	—
	Lang Lang	—	—	4.8	—	4.8
	Corinella	—	3.6	—	—	3.6
	Unincorporated Areas(d)	—	—	—	—	—
10S Port Phillip	Nepean Zones 1, 2 & 3	—	—	1.3	—	1.3
	Frankston	—	—	5.0	—	5.0
	Moorabbin	—	4.3	—	—	4.3
	Cut Paw Paw	—	—	4.8	—	4.8
	Deutgam	—	2.4	—	—	2.4
	Jan Juc	—	6.8	—	—	6.8
	Unincorporated Areas(d)	n.a.	n.a.	n.a.	n.a.	n.a.
11S Otway Highlands	Unincorporated	n.a.	n.a.	n.a.	n.a.	n.a.

(a) The 1998 Assessment is based on assessments made between 1995–1998 on the PAV (permissible annual volume). This is based on Victorian Government policy and is equivalent to sustainable yield.

(b) Each salinity category includes resources from both major and minor groundwater resources. Salinity category (total dissolved solids)—Fresh: <500 mg/L, Marginal: 500–1,500 mg/L, Brackish: 1,500–5,000 mg/L, Saline: >5,000 mg/L.

Source: DNRE, unpublished data, 1999.

(c) Groundwater management areas (GMA) cover a specific surface area and aquifer system within a groundwater province.

(d) Unincorporated Areas are those areas of a province not included in a GMA. Groundwater management committees are yet to determine sustainable yield for these areas.

Note: n.a. — not available. Refers to those areas where PAV have not been set or are currently under review.

2.5 GROUNDWATER ASSETS, VICTORIA—1998(a) *continued*

		SALINITY CATEGORY(b)				
		Fresh	*Marginal*	*Brackish*	*Saline*	*Total*
Province	*Groundwater Management Area(c)*	GL	GL	GL	GL	GL
12S Otway	Gerangamete	—	4.0	—	—	4.0
	Warrion	—	19.9	—	—	19.9
	Kawarren	—	n.a.	—	—	—
	Carlisle River	—	n.a.	—	—	—
	Colongulac	—	—	14.2	—	14.2
	Paaratte	—	—	4.6	—	4.6
	Glenormiston	—	5.0	—	—	5.0
	Nullawarra Zones 1 & 2	—	—	25.1	—	25.1
	Yangery	—	11.5	—	—	11.5
	Portland	—	2.6	—	—	2.6
	Condah	—	8.7	—	—	8.7
	Heywood	—	21.7	—	—	21.7
	Lake Mundi	—	48.0	—	—	48.0
	SA/Vic BZ 1B	—	71.0	—	—	71.0
	SA/Vic BZ 2B	—	25.0	—	—	25.0
	SA/Vic BZ 3B	—	—	16.5	—	16.5
	Unincorporated Areas(d)	n.a.	n.a.	n.a.	n.a.	n.a.
14S Murray (Vic)	Shepparton GSPA	—	—		—	—
	Benayeo	—	—	n.a.	—	—
	Lillimur	—	—	n.a.	—	—
	Bombedin	—	—	n.a.	—	—
	Walowa	—	—	n.a.	—	—
	SA/VIC BZ 4B	—	—	14.0	—	14.0
	SA/VIC BZ 5B	—	12.0	—	—	12.0
	SA/VIC BZ 6B	—	1.0	—	—	1.0
	SA/VIC BZ 7B	—	7.0	—	—	7.0
	SA/VIC BZ 8B	—	3.5	—	—	3.5
	SA/VIC BZ 9B	—	6.0	—	—	6.0
	SA/VIC BZ 10B	—	6.0	—	—	6.0
	SA/VIC BZ 11B	—	—	12.0	—	12.0
	Neuarpur Zone 1	—	—	—	—	—
	Neuarpur Zones 1 & 2	—	1.3	—	—	1.3
	Balrootan	—	1.0	—	—	1.0
	Murrayville	—	1.8	—	—	1.8
	Salisbury West	—	9.2	—	—	9.2
	Bridgewater	—	14.2	—	—	14.2
	Ellesmere	—	2.4	—	—	2.4
	Diggorra	—	—	5.4	—	5.4
	Echuca South	—	14.5	—	—	14.5
	Avenel	—	—	5.7	—	5.7
	Kialla Zones 1 & 2	—	4.8	—	—	4.8
	Katunga	—	12.5	—	—	12.5
	Goorambat	—	4.9	—	—	4.9
	Murmungee	16.7	—	—	—	16.7
	Barnawartha	—	2.4	—	—	2.4
	Mullindolingong Zones 1 & 2	7.0	—	—	—	7.0
	Unincorporated Areas(d)	n.a.	n.a.	n.a.	n.a.	n.a.
Total		**39.1**	**566.6**	**141.1**		**746.8**

(a) The 1998 Assessment is based on assessments made between 1995–1998 on the PAV (permissible annual volume). This is based on Victorian Government policy and is equivalent to sustainable yield.

(b) Each salinity category includes resources from both major and minor groundwater resources. Salinity Categories (total dissolved solids)—Fresh: <500 mg/L, Marginal: 500–1,500 mg/L, Brackish: 1,500–5,000 mg/L, Saline: >5,000 mg/L..

(c) Groundwater management areas (GMA) cover a specific surface area and aquifer system within a groundwater province.

(d) Unincorporated Areas are those areas of a province not included in a GMA. Groundwater management committees are yet to determine sustainable yield for these areas.

Note: n.a. — not available. Refers to those areas where PAV have not been set or are currently under review.

Source: DNRE, unpublished data, 1999.

GROUNDWATER ASSETS *continued*

Differences between the 1985 and 1998 data are attributable to: a greater knowledge of the groundwater resource associated with a strategic review of resources in 1997 (PAV project); a revised management plan to reduce allocations and an ongoing resource management review; and a revision of PAV associated with new management plans (DNRE 1999). Major differences between the two assessments include a shift from the 'fresh' to the 'marginal' water quality category, and the Unincorporated Areas have not been assessed for the 1998 data. However, groundwater assets typically do not change by the same magnitude as surface water resources on an annual basis.

ANNUAL WATER PATHWAYS ANALYSIS

Table 2.6 presents annual water pathways for Victoria, describing the inflows, changes in quantities of water resources and outflows. Data sources and methods for the compilation of the water pathways analysis are described in the Explanatory Notes, paragraphs 23 and 29. Ideally, it would be valuable to compile a water pathways analysis for Australia by river basin. However these data were not available at the time of publication.

Inflows (from precipitation) vary from year to year, however, outflows are given as the long term mean and are therefore constant throughout the years. The long term mean for evapotranspiration and basin outflow was used because no other data were available. Net anthropogenic changes are predominantly comprised of water consumption for economic activities.

The gross amount of water used for economic activities ranged from 7,878 GL to 9,929 GL, with between 41% to 54% of the used water returned back to the environment (direct to surface waters). Changes to the total amount of water available from anthropogenic activities ranged from 3,914 GL to 5,481 GL. Water use data are presented in more detail in the supply and use tables in Chapter 3.

2.6 WATER PATHWAYS, Victoria(a)

		1993–94	*1994–95*	*1995–96*	*1996–97*
		GL	GL	GL	GL
Inflows	Precipitation	174 730.0	133 684.0	152 561.0	134 269.0
	Total	*174 730.0*	*133 684.0*	*152 561.0*	*134 269.0*
Anthropogenic changes	Net economic changes	–3 914.0	–5 481.0	–4 577.0	–5 183.0
	Water used for economic purposes	8 501.0	9 377.0	7 878.0	9 929.0
	Return flow discharges	4 588.0	3 896.0	3 302.0	4 746.0
	Net water transfers	n.a.	n.a.	–0.2	—
	Into the measurement region	n.a.	n.a.	0.1	0.1
	From the measurement region	n.a.	n.a.	0.3	0.1
	Total	*–3 913.9*	*–5 481.0*	*–4 576.8*	*–5 183.0*
Net changes in storage	Changes in the storage in lakes and dams	–435.1	–3 172.6	1 426.3	1 015.0
	Net groundwater recharge	n.a.	n.a.	n.a.	n.a.
	Other volume changes n.e.c.	90 688.3	45 337.2	69 718.1	50 408.3
	Total	*90 253.3*	*42 164.6*	*71 144.3*	*51 423.3*
Outflows	Evapotranspiration	60 242.9	60 242.9	60 242.9	60 242.9
	Basin outflow (mean annual runoff)(b)	19 450.0	19 450.0	19 450.0	19 450.0
	Total	*79 692.9*	*79 692.9*	*79 692.9*	*79 692.9*

(a) Totals are based on estimates and exact figures should be treated with caution.

(b) A long term average is used to define basin outflow and this has not changed during the four-year reference period.

CHAPTER 3 SUPPLY AND USE TABLES

BACKGROUND

This chapter provides commentary on the supply and use tables for the 1993–94 to 1996–97 financial years for each State and Territory. These are based on physical quantities (megalitres) and reflect actual water usage based on a survey conducted by the ABS in 1998 and 1999. Detailed information on the survey and methods can be found in the Explanatory Notes at the end of the publication. The supply and use tables attempt to track the extraction of water from the 'environment' through to consumptive use, regulated discharges to the environment, and reuse. The supply table illustrates who is supplying water for use and the use table shows who is using water.

The tables have been compiled using input-output concepts and classifications. The industry classification which has been used is the Input-Output Broad Industry Group (IOBIG) classification. IOBIG to ANZSIC (Australian and New Zealand Standard Industrial Classification) classification concordance is presented in Appendix 2. This classification structure was used so that physical data on water could be matched with monetary/economic data available at the same level of detail. The water supply; sewerage and drainage services industry cannot be split into separate industries based on the classification system used. Where a distinction is necessary, reference has been made to either the water or sewerage sector.

These estimates should be treated as experimental and be viewed in light of the assumptions which have been made during the compilation process. Paragraphs 47 to 68 in the Explanatory Notes list the assumptions that have been made.

SUPPLY TABLES

The supply of water has been split into four categories: mains water; self-extracted water; effluent reuse; and regulated discharge. All water is assumed to be extracted from the environment (surface water or groundwater). A subset of this amount is supplied through the mains water system by water suppliers, for specific economic and other uses.

Mains water is the commodity of water which is measured within the economic input-output tables as an economic transaction for the exchange of water. Within the supply table the majority of mains water tends to be supplied by the water supply component of the water supply; sewerage and drainage industry. Water providers include suppliers of water for domestic, industrial, commercial, rural or bulk use. These may include water boards/authorities, local governments, irrigation boards and other water supply related authorities.

The regulated discharge component of the supply table shows who is discharging regulated water. The majority tends to be supplied by the electricity and gas industry as a by-product of their in-stream use of water for electricity generation. Sewerage operators and other industries which discharge effluent directly to the ocean, land or rivers, are also significant suppliers of water that is defined as regulated discharge.

SUPPLY TABLES *continued*

The effluent reuse column shows the volume of water supplied for subsequent reuse. The majority of reuse water is supplied by the sewerage component of the water supply; sewerage and drainage industry, as well as a range of industrial users.

USE TABLES

The use tables show who is using water, and are categorised by the same four categories in the supply tables. The self-extracted column shows the use, by industries, of water extracted directly from either surface water or groundwater sources. This includes water that is extracted by the water supply; sewerage and drainage industry for supply through mains infrastructure, and also their losses.

The mains water column shows the industries who use water that has been supplied through a water supply system. This is a subset of self-extracted water and excludes the direct losses that water providers have (distribution losses are included for water that is supplied from, for example, a bulk water supplier onto a retail water supplier).

Effluent reuse water shows the industries which use water that has been supplied for reuse. The regulated discharge column provides details on the total volume of water the environment receives as a discharge from a point source.

RESULTS

The supply and use tables for Australia for the years 1993–94 to 1996–97 are presented in tables 3.1 and 3.2.

The percentage of water supplied as mains water was fairly constant across the years (table 3.1). In 1993–94 and 1995–96 it was 15%, and during 1994–95 and 1996–97 it was 17%. The proportion is distorted by Tasmania where the proportion of mains water as a percentage of self-extracted water is only 0.3%. This is due to the large volume of water utilised for hydro-electricity generation. Excluding Tasmania, the national percentage of water supplied as mains water would have been around 40%. Nearly all of mains water was supplied by the water supply, sewerage and drainage services industry.

The water industry also supplied a majority of the effluent reuse, approximately 67% in 1993–94 to 1995–96, and 61% in 1996–97. The lower proportion in 1996–97 is because there was improved data on reuse from other sources, for example mining. In 1993–94 mining supplied 22% of water used for reuse and by 1996–97 it had risen to 29%. This increase is due to improved water use efficiency practices, improved technologies and the availability of better data.

The regulated discharge column in table 3.1 illustrates those industries which discharge regulated water back to the environment, excluding non-point or diffuse sources of discharge. In-stream users of water are a major contributor to discharge, with the hydro-electric component of the electricity and gas industry accounting for 96% of total discharge. In-stream discharges of water include water used and discharged for hydro-electricity and aquaculture. This amount was 46,278 GL in 1993–94, 44,500 GL in 1994–95, 45,816 GL in 1995–96 and 46,518 GL in 1996–97. Excluding discharge from the in-stream users, the majority of regulated water discharge originated from the water supply, sewerage and drainage services industry which accounted for 70% in both 1993–94 and 1994–95, 65% in 1995–96 and 60% in 1996–97. The second largest discharge of water by a non in-stream user was by the electricity and gas industry which,

RESULTS *continued*

with the exclusion of the hydro-electricity sector, contributed 24% in both 1993–94 and 1994–95, 30% in 1995–96 and 35% in 1996–97. Both the mining and paper, printing and publishing industries contributed about 2% annually.

Table 3.2 presents details on the gross use of water in Australia. The volume of water required for hydro-electricity generation represents the largest use of water (approximately 70% of total self-extracted water), however, most of the water is returned as a regulated discharge (see table 3.1).

The water supply, sewerage and drainage services industry is the significant user of self-extracted water, accounting for approximately 18%. Most of this is converted to mains water and used by the various economic sectors as shown in the mains water column of table 3.2. The difference between the volumes shown in the self-extracted column in table 3.2 and the mains water column in table 3.1 (i.e. the supply of mains water) are conversion losses which include losses such as evaporation, seepage, dam overflows and environmental flows.

Overall, the largest net consumer of water was the agriculture sector, totalling 12,159 GL in 1993–94, 14,685 GL in 1994–95, 13,307 GL in 1995–96 and 15,503 GL in 1996–97. About 46% was self-extracted surface water and groundwater, with the remainder being delivered by mains water suppliers. Mining was also a significant consumer of self-extracted water, with approximately 95% of total water use by this sector being self-extracted.

The livestock, pasture, grains and other agriculture sector was the largest consumer of mains water. Water used by this sector is influenced by climatic conditions, water availability and water requirements of agricultural commodities. This sector consists primarily of irrigated pastures and grains (excluding rice). In 1993–94 it used 38% of mains water, 45% in 1994–95, 41% in 1995–96 and 43% in 1996–97. Rice is the other agricultural commodity which uses a large proportion of mains water (about 14%). The household sector used 18% of mains water in 1993–94 and 16% in the other years. Mains water use by the water supply, sewerage and drainage services sector includes losses that occur when water is transferred from bulk water suppliers to retail water suppliers, as well as the actual water use by that industry for their operations.

Effluent reuse is dominated by three sectors: livestock, pasture, grains and other agriculture; cultural, recreational and personal services; and mining. Reuse in agriculture occurs mainly on irrigated pastures and contributed 32% of total effluent reuse. The cultural, recreational and personal services sector reused approximately 24% of the total treated effluent on parks, gardens and sport grounds. The mining industry used about 24% of reuse water in 1993–94 to 1995–96, and this increased to 31% in 1996–97. This increase may be due to either increased reporting and measuring of water reuse, and/or improvement in water use efficiencies within the industry.

New South Wales and Australian Capital Territory

Table 3.3 presents supply data for New South Wales and the Australian Capital Territory. The ACT accounts for approximately 1% of the total supply and use of water in the NSW–ACT totals. All mains water is supplied from the water supply, sewerage and drainage services industry and represents about 40% of total water supply for this State and Territory. This includes mains supply by irrigation suppliers such as Murray

New South Wales and Australian Capital Territory *continued*

Irrigation Limited and Murrumbidgee Irrigation Limited. Approximately one third of all reuse water is supplied by the mining industry and two thirds from the water supply, sewerage and drainage services industry. The regulated discharge column in table 3.3 is dominated by the hydro-electricity sector which accounted for approximately 80% of the total discharge.

Water usage for New South Wales and the Australian Capital Territory is presented in table 3.4. Excluding water extracted by the water supply, sewerage and drainage services industry for distribution through mains, the hydro-electricity generation component of the electricity and gas industry was the largest gross user of self-extracted water. The livestock, pasture, grains and other agriculture industry and the cotton industry are the largest net users (net consumption) of self-extracted water. Between 1993–94 and 1996–97 the consumption of self-extracted surface water and groundwater increased for each of the following industries: livestock pasture, grains and other agriculture; vegetables; sugar; fruit; grapevines; and cotton. Except for cotton, each of these industries experienced a decrease in water consumption in the 1995–96 financial year.

The rice industry was the largest user of mains water, averaging 37% of total mains water use. The livestock, pasture, grains and other agriculture industry used approximately 25% of mains water, and cotton 10%. The household sector was also a significant user of mains water, averaging 14% of the total.

The cultural, recreational and personal services; and the mining industries used the majority of the effluent reuse. There was a lack of reuse data for the agricultural sector in 1993–94.

Victoria

Table 3.5 provides details on the supply of water in Victoria. All mains water is supplied from the water supply, sewerage and drainage services industry. Mains water accounts for 38% of the total water supply in 1993–94 to around 50% in the other reference years. Since 1993 Victoria has undergone major structural reform of the water industry which included the amalgamation of numerous rural and urban water boards. These changes may have influenced the variation after 1993–94.

Approximately two thirds of effluent reuse is supplied by the water supply, sewerage and drainage services industry. The effluent reuse supplied by the mining industry increased from around 14% in 1993–94, 1994–95 and 1995–96, to 24% in 1996–97. On average 88% of the regulated discharge is from the electricity and gas industry, the majority of which is from hydro-electricity activities in Victoria.

Table 3.6 shows usage of water in Victoria. The major user of self-extracted water (excluding the water supply, sewerage and drainage services sector which provides most of this to mains) was the electricity and gas sector. Over 95% of water used by this sector is in-stream use for hydro-electricity generation. The largest user of mains water was the livestock, pasture, grains and other agriculture industry which used on average 73% of mains water. Households used approximately 9% of mains water. The fruit and grapevines industries were other large users of mains water and together accounted for around 8% of mains water use.

The largest users of effluent reuse included livestock, pasture, grains and other agriculture; mining; and electricity and gas industries. The volume of water reused

Victoria *continued*

increased by 21% between 1993–94 and 1996–97, most likely because of improved data availability.

Queensland

Table 3.7 provides details on the supply of water in Queensland. Approximately 31% of Queensland's water is supplied through mains, the majority of which is supplied by the water supply, sewerage and drainage services industry.

The supply of effluent reuse almost doubled from 1995–96 to 1996–97, due to the increasing supply of water for reuse being provided by the water supply, sewerage and drainage services; and the mining industries. Regulated discharge was dominated by the electricity and gas industry which contributed 66% on average. Most of this was from hydro-electric stations discharging water that had passed through the power generation turbines.

Table 3.8 presents details on the water usage in Queensland. Net water use of self-extracted water was greatest for the agricultural sector, with the largest consumers being the sugar industry (about 1,000 GL in each year); livestock, pasture, grains and other agriculture (600–700 GL); and the cotton industry (200–330 GL). Total water use by the cotton industry increased by nearly 70% between 1993–94 and 1996–97. Over 90% of self-extracted water use by the electricity and gas industry was used in the hydro-electricity sector. Hence, most of this amount was discharged back to the environment.

As well as being the largest net user of self-extracted water, the sugar industry is also one of the largest users of mains water for this State (approximately 20%). The water supply, sewerage and drainage services industry is a large user of mains water because it is involved in groundwater replenishment in some areas of the State. The other large consumer of mains water is the household sector averaging 30% of total mains use for Queensland. Other agricultural sectors presented in table 3.8 accounted for 15% of mains water use.

The use of effluent reuse was dominated by the livestock, pasture, grains and other agriculture industry (average usage 45%) and the cultural, recreational and personal services industry (average usage 29%). Water reuse increased in the mining industry with the introduction and increased use of water use efficiency practices.

South Australia

Table 3.9 presents details on the supply of water in South Australia. The water supply, sewerage and drainage services industry is the only supplier of mains water, and accounts for approximately 26% of total self-extracted water. It supplies about 85% of effluent reuse and 77% of the regulated discharge.

Water usage in South Australia is shown in table 3.10. The largest users of self-extracted water (excluding the water supply, sewerage and drainage services industry as a supplier of mains water) include the livestock, pasture, grains and other agriculture industry, followed by the grapevines and the fruit industries. The agriculture sector was also a predominant user of mains water (32% by the livestock, pasture, grains and other agriculture industry and 15% by vegetables, fruit and grapevines industries), although

South Australia *continued*

these amounts were small compared with self-extracted water use. Households accounted for approximately 38% of mains water usage.

The cultural, recreational and personal services industry accounted for approximately 56% of effluent reuse. Other significant effluent users included the livestock, pasture, grains and other agriculture industry (19%) and basic metals and products industry (15%).

Western Australia

The supply of water in Western Australia is shown in table 3.11. Approximately 35% of self-extracted water was supplied as mains water. About half of the effluent reuse water was supplied by the water supply, sewerage and drainage services industry, with mining as another large supplier (average 38%). Two thirds of the regulated discharge was supplied by the hydro-electricity sector of the electricity and gas industry.

Table 3.12 presents details on water usage in Western Australia. Excluding 'use' by the water supply, sewerage and drainage services industry, most of which was distributed through mains for consumption by other sectors, the largest users of self-extracted water included the mining and agriculture sectors (in particular the livestock, pasture, grains and other agriculture sector). The electricity and gas industry was also a large gross user of self-extracted water, with most of these amounts use for in-stream hydro-electricity generation.

The agriculture sector also dominated mains water usage (approximately 48%, most of which is the livestock, pasture, grains and other agriculture industry), with the household sector consuming approximately 36% of total mains water. An estimated 38% of effluent reuse water is used by the mining industry, and 29% by the parks and sporting grounds in the cultural, recreational and personal services industry.

Tasmania

Table 3.13 shows the supply of water in Tasmania. Mains water supply is only a fraction of the total self-extracted water (approximately 0.3%). This is due to a large proportion of self-extracted water is used and subsequently discharged by the hydro-electricity component of the electricity and gas industry. Excluding the hydro-electricity sector, the main suppliers of discharge include the water supply, sewerage and drainage services; paper, printing and publishing; and mining industries. The basic metals and products industry supplied most of the State's effluent reuse water—on average, just under 80% of total effluent reuse.

Water usage for Tasmania is shown in table 3.14. The vast majority (99%) of self-extracted water use was by the electricity and gas industry for hydro-electricity generation. The largest net water users of self-extracted surface water include agriculture (mainly livestock, pasture, grains and other agriculture industry; and vegetables); paper, printing and publishing; and mining.

Agriculture was also a major user of mains water (approximately 22%), although the quantities used were much smaller than self-extracted water by this sector. The household sector was a substantial user of mains water, using on average 29% of mains supplied water. The majority of effluent reuse was used by the basic metals and products industry.

Northern Territory

The supply of water in the Northern Territory is shown in table 3.15. Approximately half of the self-extracted water in the Northern Territory is supplied as mains water. Two thirds of the effluent reuse water is supplied and used by the mining industry (see also table 3.16). Excluding the non-consumptive use of the water supply, sewerage and drainage services industry (most of which is supplied to mains for subsequent use), the largest user of self-extracted water is the mining industry (17–20 GL). The household sector was a significant user of mains water, using about 45% of total mains supplied water.

3.1 SUPPLY TABLE, Australia(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	64 853 592	65 641 224	65 690 918	68 703 370	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	5 666	5 607	4 805	4 905
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	11 697	19 792	9 203	12 869
Water supply; sewerage and drainage services	—	—	—	—	9 468 621	11 280 147	10 098 479	11 507 477
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	426	294	286	282
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**64 853 592**	**65 641 224**	**65 690 918**	**68 703 370**	**9 486 410**	**11 305 840**	**10 112 773**	**11 525 533**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of self-extracted water.

3.1 SUPPLY TABLE, Australia(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	8 589	8 589	8 589	8 589
Mining(c)	20 324	20 489	24 359	39 609	48 623	47 382	53 974	48 814
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	58 475	52 968	51 674	47 742
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	3 118	3 542	3 352	2 824	31 204	31 230	31 150	30 900
Fabricated metal products	2	2	2	2	—	—	—	—
Transport equipment	604	604	604	604	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	4 242	4 907	6 309	6 138	46 874 845	45 062 581	46 637 271	47 560 344
Water supply; sewerage and drainage services	62 804	68 939	71 807	82 438	1 761 298	1 678 836	1 781 254	1 781 715
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	2 220	2 220	2 220	2 220	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	589	589	589	589	1 934	1 934	1 934	1 934
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household(d)	—	—	—	—	257	257	257	257
Total	**93 904**	**101 291**	**109 242**	**134 424**	**48 785 226**	**46 883 778**	**48 566 104**	**49 480 296**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

(d) Regulated discharge by households was estimated for Tasmania only.

3.2 USE TABLE, Australia(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	2 910 161	3 564 878	3 299 236	3 817 285	3 614 729	5 108 178	4 157 516	4 978 143
Vegetables	320 494	353 336	329 245	372 505	215 720	263 533	227 033	262 408
Sugar	1 095 087	1 112 582	1 003 346	946 529	281 848	276 408	302 183	289 721
Fruit	322 429	367 539	339 905	387 441	247 893	321 272	269 730	316 438
Grapevines	212 124	273 927	268 995	322 592	233 875	328 611	269 637	325 982
Cotton	858 657	874 279	965 224	1 310 137	496 423	404 736	437 845	530 487
Rice	—	—	—	—	1 349 391	1 436 105	1 437 369	1 643 306
Services to agriculture; hunting and trapping	914	901	830	966	840	790	661	897
Forestry and fishing	12 282	12 600	11 845	12 198	15 153	15 093	12 881	13 343
Mining	569 322	578 032	566 717	544 746	27 838	28 032	28 615	30 376
Meat and dairy products	8 041	8 148	7 406	6 930	44 114	44 500	44 809	44 927
Other food products	9 734	8 296	8 124	9 841	53 592	54 262	54 258	53 878
Beverages, tobacco products	3 148	3 265	3 266	3 775	18 265	18 345	18 152	17 539
Textiles	3 073	3 496	2 915	2 488	21 432	21 512	21 549	22 249
Clothing and footwear	4 255	4 298	4 477	5 069	44 746	44 804	44 341	45 904
Wood and wood products	31 117	31 413	31 242	31 404	27 130	26 984	26 861	26 482
Paper, printing and publishing	54 338	53 723	53 052	50 809	72 918	69 928	78 302	72 717
Petroleum and coal products	1 092	1 170	1 326	1 367	12 892	12 167	11 897	12 030
Chemicals	11 873	11 669	11 889	12 367	33 198	31 274	30 386	31 662
Rubber and plastic products	1 123	1 140	1 111	1 226	6 360	6 343	6 338	6 329
Non-metallic mineral products	8 280	8 237	7 879	8 438	14 754	14 098	13 828	15 098
Basic metals and products	63 030	62 521	64 860	62 173	94 678	93 770	94 763	90 761
Fabricated metal products	8 734	9 143	8 966	9 274	35 363	34 863	35 570	34 615
Transport equipment	1 602	1 655	1 662	1 598	7 167	7 073	6 879	6 916
Other machinery and equipment	4 049	5 069	4 947	5 116	13 817	12 890	13 057	13 096
Miscellaneous manufacturing	4 717	5 223	4 705	4 790	17 468	17 192	17 344	16 867
Electricity and gas	47 018 590	45 210 603	46 809 858	47 771 365	51 483	48 675	50 566	58 387
Water supply—production(c)(d)	11 183 591	12 936 311	11 743 052	12 864 431	—	—	—	—
Water supply—distribution(c)(e)	—	—	—	—	349 689	366 425	368 826	349 691
Construction	4 586	4 540	4 554	4 550	8 964	8 907	8 044	8 940
Wholesale and retail trade	678	705	663	641	79 414	83 360	68 096	74 444
Accommodation, cafes and restaurants	6 216	7 143	6 837	6 695	31 155	33 987	30 686	35 933
Transport and storage	3 002	2 903	2 858	2 817	50 888	53 048	42 259	47 160
Finance, property and business services	2 161	2 065	862	157	63 763	69 148	62 710	69 146
Government administration	7 089	8 386	7 178	8 252	38 561	43 402	40 432	50 512
Education	164	228	496	972	37 064	36 761	32 992	35 416
Health and community services	1 337	1 909	958	641	33 345	32 904	30 894	33 720
Cultural, recreational and personal services	79 430	79 641	78 905	78 862	63 815	66 732	56 289	63 935
Household	27 071	30 251	31 528	32 923	1 676 665	1 769 725	1 659 177	1 796 076
Total	**64 853 592**	**65 641 224**	**65 690 918**	**68 703 370**	**9 486 410**	**11 305 840**	**10 112 773**	**11 525 533**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted water total.

(c) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(d) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(e) Mains water use includes consumption by that sector and losses (see Explanatory Notes, paragraphs 45 and 51)

3.2 USE TABLE, Australia(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	48 785 226	46 883 778	48 566 104	49 480 296
Livestock, pasture, grains and other agriculture	29 066	36 100	38 021	38 118	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	40	50	40	—	—	—	—	—
Forestry and fishing	3 146	3 100	3 147	3 068	—	—	—	—
Mining(c)	22 674	22 888	26 289	41 811	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	4 258	4 776	4 633	4 163	—	—	—	—
Fabricated metal products	2	2	2	2	—	—	—	—
Transport equipment	604	604	604	604	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	4 242	5 108	6 766	6 912	—	—	—	—
Water supply; sewerage and drainage services	2 158	1 891	1 929	4 339	—	—	—	—
Construction	1	51	39	72	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	25	23	—	—	—	—
Transport and storage	2 220	2 220	2 220	2 220	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	373	397	408	402	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	25 120	24 104	25 119	32 690	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**93 904**	**101 291**	**109 242**	**134 424**	**48 785 226**	**46 883 778**	**48 566 104**	**49 480 296**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.3 SUPPLY TABLE, New South Wales and Australian Capital Territory(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	9 439 189	10 379 213	9 319 266	11 055 337	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	3 865 186	4 017 652	3 759 063	4 274 510
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**9 439 189**	**10 379 213**	**9 319 266**	**11 055 337**	**3 865 186**	**4 017 652**	**3 759 063**	**4 274 510**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The ACT accounts for approximately 1% of the NSW and ACT totals.

(b) Mains water is a subset of self-extracted water.

3.3 SUPPLY TABLE, New South Wales and Australian Capital Territory(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	5 858	5 958	5 570	6 238	128	111	210	150
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	1 204	1 230	1 150	900
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	77	361	516	2 658 271	2 748 785	2 182 705	2 339 674
Water supply; sewerage and drainage services	11 020	14 444	17 518	17 589	708 836	681 684	721 807	725 692
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**16 878**	**20 478**	**23 449**	**24 342**	**3 368 439**	**3 431 811**	**2 905 872**	**3 066 415**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The ACT accounts for approximately 1% of the NSW and ACT totals.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.4 USE TABLE, New South Wales and Australian Capital Territory(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	1 400 856	1 978 878	1 748 076	2 356 370	957 940	1 115 445	908 415	1 048 240
Vegetables	79 877	112 792	99 631	134 313	54 612	63 566	51 761	59 731
Sugar	147	208	183	247	100	117	95	110
Fruit	114 804	162 211	143 285	193 162	78 491	91 417	74 440	85 901
Grapevines	99 648	140 838	124 410	167 707	68 129	79 371	64 634	74 581
Cotton	655 069	608 515	694 936	981 131	447 871	342 938	361 037	436 320
Rice	—	—	—	—	1 349 391	1 436 105	1 437 369	1 643 306
Services to agriculture; hunting and trapping	1	—	6	8	314	284	231	332
Forestry and fishing	137	194	252	321	2 129	2 128	1 804	1 981
Mining	53 510	53 347	45 090	42 488	6 268	6 233	5 667	6 302
Meat and dairy products	895	416	31	44	13 573	11 904	12 096	12 920
Other food products	18	19	21	22	14 910	13 482	14 452	14 359
Beverages, tobacco products	678	909	854	1 054	7 106	6 961	6 184	6 288
Textiles	—	—	—	—	6 579	6 361	6 639	7 234
Clothing and footwear	—	36	68	—	17 867	17 413	18 209	18 768
Wood and wood products	14	122	6	—	9 118	8 999	9 408	9 674
Paper, printing and publishing	2 287	4 892	2 764	6 430	13 272	11 696	14 876	11 719
Petroleum and coal products	—	—	—	—	1 596	762	888	1 129
Chemicals	—	—	254	—	15 165	14 207	14 220	14 397
Rubber and plastic products	—	—	—	—	1 776	1 730	1 837	1 843
Non-metallic mineral products	264	452	77	46	4 039	3 377	3 842	4 579
Basic metals and products	289	51	169	505	38 643	36 227	37 326	37 241
Fabricated metal products	—	—	—	—	12 592	11 751	12 918	13 194
Transport equipment	—	—	—	—	1 929	1 636	1 534	1 718
Other machinery and equipment	53	1 354	1 361	1 201	5 644	5 301	5 662	5 777
Miscellaneous manufacturing	—	—	—	—	5 280	5 043	5 656	6 018
Electricity and gas	2 658 580	2 749 778	2 182 846	2 339 771	15 612	16 403	19 640	22 945
Water supply—production(c)(d)	4 361 749	4 550 826	4 265 821	4 821 076	—	—	—	—
Water supply—distribution(c)(e)	—	—	—	—	6 945	7 468	7 450	6 184
Construction	42	44	39	17	7 555	7 435	6 808	7 145
Wholesale and retail trade	24	59	20	8	24 216	25 044	21 949	24 656
Accommodation, cafes and restaurants	1 339	2 290	1 973	1 829	10 021	10 496	10 047	11 927
Transport and storage	44	70	16	19	13 075	14 589	12 673	14 043
Finance, property and business services	2 104	2 009	807	101	31 858	33 580	32 084	34 942
Government administration	513	1 813	604	1 677	6 593	6 534	6 833	9 101
Education	159	221	466	947	9 866	9 233	8 607	9 394
Health and community services	1 337	1 909	958	641	10 953	10 488	10 060	11 556
Cultural, recreational and personal services	4 749	4 961	4 243	4 203	18 097	18 483	16 105	18 530
Household	—	—	—	—	576 060	563 445	535 609	580 423
Total	**9 439 188**	**10 379 213**	**9 319 266**	**11 055 337**	**3 865 186**	**4 017 652**	**3 759 063**	**4 274 510**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The ACT accounts for approximately 1% totals.

(b) Mains water is a subset of the self-extracted water total.

(c) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(d) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(e) Mains water use includes consumption by that sector and losses (see Explanatory Notes, paragraphs 45 and 51).

3.4 USE TABLE, New South Wales and Australian Capital Territory(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	3 368 439	3 431 811	2 905 872	3 066 415
Livestock, pasture, grains and other agriculture	960	6 945	8 587	8 305	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	195	118	199	113	—	—	—	—
Mining(c)	8 208	8 357	7 500	8 440	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	475	490	481	501	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	194	746	1 232	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	—	—	—	—
Construction	—	49	24	23	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	7 040	4 325	5 912	5 730	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**16 878**	**20 478**	**23 449**	**24 342**	**3 368 439**	**3 431 811**	**2 905 872**	**3 066 415**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The ACT accounts for approximately 1% of the NSW and ACT totals.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.5 SUPPLY TABLE, Victoria(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	8 501 367	9 376 915	7 878 138	9 928 992	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	3 270 579	4 857 146	3 973 890	4 816 461
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**8 501 367**	**9 376 915**	**7 878 138**	**9 928 992**	**3 270 579**	**4 857 146**	**3 973 890**	**4 816 461**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of self-extracted water. Private individuals have water rights that are allocated within the bulk entitlement rights specified for water authorities in Victoria. Water extraction and use by private individuals has been included within mains water usage.

3.5 SUPPLY TABLE, Victoria(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	3 559	3 503	4 314	7 665	21 901	20 677	20 372	14 087
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	664	1 064	1 032	523	—	—	—	—
Fabricated metal products	2	2	2	2	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	3 200	3 328	4 303	3 876	4 069 601	3 433 975	2 810 511	4 292 348
Water supply; sewerage and drainage services	19 401	19 359	19 543	20 444	496 017	441 255	470 658	439 501
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**26 826**	**27 256**	**29 194**	**32 509**	**4 587 519**	**3 895 908**	**3 301 541**	**4 745 936**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.6 USE TABLE, Victoria(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture(c)	—	—	—	—	2 269 926	3 621 314	2 880 694	3 549 239
Vegetables(c)	—	—	—	—	68 733	109 728	87 258	107 534
Sugar(c)	—	—	—	—	—	—	—	—
Fruit(c)	—	—	—	—	110 237	175 988	139 950	172 469
Grapevines(c)	—	—	—	—	139 268	222 333	176 805	217 888
Cotton(c)	—	—	—	—	—	—	—	—
Rice(c)	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	236	231	263	286
Forestry and fishing	—	—	—	—	6 576	6 581	6 304	6 415
Mining	33 706	32 190	31 089	28 653	3 535	4 551	5 395	6 799
Meat and dairy products	—	—	—	—	10 813	12 740	12 742	12 764
Other food products	—	—	—	—	14 003	15 037	14 164	15 426
Beverages, tobacco products	—	—	—	—	2 199	2 217	2 304	2 364
Textiles	—	—	—	—	9 159	9 080	9 201	9 831
Clothing and footwear	—	—	—	—	14 147	14 932	14 405	16 682
Wood and wood products	—	—	—	—	4 155	4 228	3 912	4 708
Paper, printing and publishing	—	—	—	—	51 323	50 276	53 360	53 328
Petroleum and coal products	—	—	—	—	3 560	3 320	3 175	3 137
Chemicals	—	—	—	—	4 727	4 278	4 014	4 679
Rubber and plastic products	—	—	—	—	1 953	1 908	1 886	2 129
Non-metallic mineral products	—	—	—	—	3 194	3 566	3 120	3 385
Basic metals and products	—	—	—	—	8 831	10 451	9 634	8 266
Fabricated metal products	—	—	—	—	5 970	6 525	5 933	6 937
Transport equipment	—	—	—	—	2 344	2 471	2 314	2 433
Other machinery and equipment	—	—	—	—	3 139	2 940	2 671	3 135
Miscellaneous manufacturing	—	—	—	—	3 527	3 613	3 306	3 899
Electricity and gas	4 137 791	3 498 528	2 904 901	4 421 145	16 037	13 851	13 373	14 260
Water supply—production(d)(e)	4 329 870	5 846 197	4 942 149	5 479 194	—	—	—	—
Water supply—distribution(d)(f)	—	—	—	—	98 378	106 822	106 422	106 914
Construction	—	—	—	—	45	49	35	46
Wholesale and retail trade	—	—	—	—	10 472	11 540	8 540	11 000
Accommodation, cafes and restaurants	—	—	—	—	3 633	4 089	3 397	4 430
Transport and storage	—	—	—	—	4 855	5 200	3 863	5 326
Finance, property and business services	—	—	—	—	5 812	6 771	5 504	7 448
Government administration	—	—	—	—	8 148	12 181	9 436	10 975
Education	—	—	—	—	7 103	6 711	5 643	6 919
Health and community services	—	—	—	—	5 160	4 786	4 394	5 370
Cultural, recreational and personal services	—	—	—	—	10 128	11 540	9 730	10 836
Household	—	—	—	—	359 252	385 295	360 742	419 203
Total	**8 501 367**	**9 376 915**	**7 878 138**	**9 928 992**	**3 270 579**	**4 857 146**	**3 973 890**	**4 816 461**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted water total. Private individuals have water rights that are allocated within the bulk entitlement rights specified for water authorities in Victoria. Water extraction and use by private individuals has been included within mains water usage.

(c) Agricultural self-extracted use is licensed by water authorities in Victoria and has been categorised under mains water use. According to Poulton (2000) self extraction in the Goulburn–Murray Water's area during 1997–98 was 324,000 ML.

(d) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(e) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(f) Mains water use includes consumption by that sector and losses including environmental flows (see Explanatory Notes, paragraphs 45 and 51).

3.6 USE TABLE, Victoria(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	4 587 519	3 895 908	3 301 541	4 745 936
Livestock, pasture, grains and other agriculture	17 254	17 309	17 626	18 178	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	40	50	40	—	—	—	—	—
Forestry and fishing	28	49	9	12	—	—	—	—
Mining(c)	3 559	3 503	4 314	7 665	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	664	1 064	1 032	523	—	—	—	—
Fabricated metal products	2	2	2	2	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	3 200	3 328	4 303	3 876	—	—	—	—
Water supply; sewerage and drainage services	734	468	388	492	—	—	—	—
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	25	23	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	1 344	1 483	1 456	1 740	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**26 826**	**27 256**	**29 194**	**32 509**	**4 587 519**	**3 895 908**	**3 301 541**	**4 745 936**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.7 SUPPLY TABLE, Queensland(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	4 307 713	4 389 460	4 396 450	4 364 473	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	5 666	5 607	4 805	4 905
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	1 280 601	1 368 440	1 379 576	1 362 939
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**4 307 713**	**4 389 460**	**4 396 450**	**4 364 473**	**1 286 267**	**1 374 047**	**1 384 381**	**1 367 844**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of self-extracted water.

3.7 SUPPLY TABLE, Queensland(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	1 200	486	3 857	11 907	1 385	1 385	7 985	9 085
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	21	21	21	21	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	1 042	1 502	1 645	1 746	619 370	507 015	647 917	685 736
Water supply; sewerage and drainage services	12 973	14 044	14 208	24 782	295 523	297 374	323 325	331 248
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	500	500	500	500	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	589	589	589	589	1 934	1 934	1 934	1 934
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**16 325**	**17 142**	**20 820**	**39 545**	**918 212**	**807 709**	**981 162**	**1 028 003**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.8 USE TABLE, Queensland(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	685 987	694 673	665 122	644 591	79 039	78 723	86 128	81 402
Vegetables	110 402	112 730	101 237	95 006	26 329	26 213	28 769	27 192
Sugar	1 062 368	1 084 767	974 179	914 217	253 355	252 241	276 835	261 662
Fruit	81 982	83 710	75 176	70 549	19 551	19 465	21 363	20 192
Grapevines	3 670	3 747	3 365	3 158	875	871	956	904
Cotton	203 588	265 763	270 288	329 006	48 552	61 798	76 808	94 166
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	171	164	99	176
Forestry and fishing	—	—	—	—	2 105	2 067	1 586	1 716
Mining	163 912	165 059	167 340	142 057	13 676	12 843	13 362	12 719
Meat and dairy products	1 266	1 206	851	558	10 402	10 321	10 633	10 194
Other food products	1 852	1 441	1 908	1 897	11 832	12 436	13 264	12 331
Beverages, tobacco products	—	—	—	—	4 650	4 680	4 911	4 593
Textiles	—	—	—	—	1 928	2 080	1 864	1 857
Clothing and footwear	—	—	—	—	9 671	9 331	8 682	7 691
Wood and wood products	—	—	—	—	8 422	8 820	8 514	7 670
Paper, printing and publishing	—	—	—	—	5 657	5 924	6 354	5 445
Petroleum and coal products	—	—	—	—	4 053	4 140	4 012	3 997
Chemicals	—	—	281	323	7 646	7 443	7 004	7 404
Rubber and plastic products	—	—	—	—	1 486	1 507	1 526	1 405
Non-metallic mineral products	—	—	—	—	4 105	4 168	4 120	4 422
Basic metals and products	5 000	5 000	5 000	5 000	27 130	27 341	28 115	26 861
Fabricated metal products	—	—	—	—	11 300	11 302	11 049	9 923
Transport equipment	—	—	—	—	1 157	1 079	1 210	1 070
Other machinery and equipment	—	—	—	—	3 179	2 975	3 024	2 768
Miscellaneous manufacturing	—	—	—	—	6 014	5 781	5 681	4 969
Electricity and gas	663 448	550 228	697 298	735 612	17 782	16 471	16 348	18 151
Water supply—production(c)(d)	1 309 213	1 404 127	1 418 288	1 406 161	—	—	—	—
Water supply—distribution(c)(e)	—	—	—	—	243 322	251 117	254 077	235 571
Construction	—	—	—	38	540	619	571	1 029
Wholesale and retail trade	—	—	—	—	19 199	19 105	15 777	16 195
Accommodation, cafes and restaurants	—	—	—	—	8 214	9 052	8 444	9 073
Transport and storage	—	—	—	—	14 336	14 387	11 240	12 104
Finance, property and business services	—	—	—	—	12 417	13 554	12 027	12 639
Government administration	5 827	5 827	5 827	5 827	7 775	8 360	8 859	10 220
Education	5	7	30	25	10 130	10 065	9 117	9 605
Health and community services	—	—	—	—	7 887	8 029	7 648	7 740
Cultural, recreational and personal services	—	—	7	1	15 954	15 435	13 144	14 557
Household	9 195	11 175	10 252	10 446	366 426	434 140	401 259	408 230
Total	**4 307 713**	**4 389 460**	**4 396 450**	**4 364 473**	**1 286 267**	**1 374 047**	**1 384 381**	**1 367 844**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted water total.

(c) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(d) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(e) Mains water use includes consumption by that sector and losses (see Explanatory Notes, paragraphs 45 and 51).

3.8 USE TABLE, Queensland *continued*(a)

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	918 212	807 709	981 162	1 028 003
Livestock, pasture, grains and other agriculture	8 827	9 439	9 631	9 629	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	1 200	486	3 857	11 907	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	21	21	21	21	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	1 042	1 586	1 717	1 804	—	—	—	—
Water supply; sewerage and drainage services	—	—	118	2 424	—	—	—	—
Construction	1	2	15	49	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	500	500	500	500	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	15	39	50	44	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	4 719	5 069	4 910	13 167	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**16 325**	**17 142**	**20 820**	**39 545**	**918 212**	**807 709**	**981 162**	**1 028 003**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.9 SUPPLY TABLE, South Australia(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	1 231 355	1 358 930	1 357 694	1 261 434	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	336 931	351 931	321 931	336 931
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**1 231 355**	**1 358 930**	**1 357 694**	**1 261 434**	**336 931**	**351 931**	**321 931**	**336 931**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The State Water Plan 2000 presently being developed in South Australia will provide updated information on water resources and consumption.

(b) Mains water is a subset of self-extracted water.

3.9 SUPPLY TABLE, South Australia(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	35	35	35	35
Mining(c)	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	1 407	1 407	1 407	1 407	30 000	30 000	30 000	30 000
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	7 174	8 708	8 253	6 968	107 981	95 645	98 970	112 246
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**8 581**	**10 115**	**9 660**	**8 375**	**138 016**	**125 680**	**129 005**	**142 282**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.10 USE TABLE, South Australia(a)

	SELF-EXTRACTED(b)				MAINS WATER(c)(d)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture(e)	551 174	650 213	642 145	538 188	110 095	113 558	107 273	102 098
Vegetables(e)	45 134	50 837	53 980	54 865	9 011	8 874	9 013	10 406
Sugar(e)	—	—	—	—	—	—	—	—
Fruit(e)	99 058	98 717	97 988	96 352	19 777	17 233	16 361	18 274
Grapevines(e)	101 736	123 294	134 983	144 442	20 312	21 523	22 538	27 394
Cotton(e)	—	—	—	—	—	—	—	—
Rice(e)	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping(e)	—	—	—	29	21	26	10	22
Forestry and fishing	35	35	35	35	511	618	391	444
Mining	9 774	11 269	6 608	7 254	—	—	—	—
Meat and dairy products	230	401	506	659	3 210	3 687	3 271	3 410
Other food products	588	559	376	277	3 229	4 326	3 135	2 736
Beverages, tobacco products	983	940	770	939	2 403	2 535	2 402	2 145
Textiles	—	—	—	—	1 900	1 981	1 733	1 718
Clothing and footwear	—	—	—	—	1 558	1 788	1 309	1 228
Wood and wood products	12	11	147	166	1 356	1 494	1 152	1 100
Paper, printing and publishing	—	—	—	—	687	677	957	665
Petroleum and coal products	—	—	—	—	n.p.	n.p.	n.p.	n.p.
Chemicals	4	4	3	4	2 562	2 497	2 275	2 374
Rubber and plastic products	—	—	—	—	493	570	425	425
Non-metallic mineral products	119	152	5	187	1 270	1 288	1 069	1 294
Basic metals and products	31 247	31 410	31 671	31 731	6 691	6 990	6 215	5 972
Fabricated metal products	100	75	36	35	1 955	2 158	1 542	1 456
Transport equipment	—	—	—	—	1 422	1 628	1 418	1 449
Other machinery and equipment	1 132	1 161	1 169	1 064	809	834	653	623
Miscellaneous manufacturing	—	—	—	—	n.p.	n.p.	n.p.	n.p.
Electricity and gas	—	—	—	—	987	1 036	431	972
Water supply—production(f)(g)	389 531	389 431	386 831	384 831	—	—	—	—
Water supply—distribution(f)(h)	—	—	—	—	135	140	141	96
Construction	57	8	28	8	72	89	52	61
Wholesale and retail trade	86	78	75	65	3 643	4 387	2 571	2 664
Accommodation, cafes and restaurants	107	84	94	97	1 083	1 310	863	1 072
Transport and storage	55	61	78	38	1 943	2 192	1 595	1 521
Finance, property and business services	6	6	4	5	1 953	2 289	1 544	1 762
Government administration	12	10	11	11	2 027	1 956	1 842	2 742
Education	0	0	0	0	2 313	2 600	1 967	1 978
Health and community services	0	0	0	0	2 124	2 588	2 045	2 280
Cultural, recreational and personal services	175	174	149	151	3 259	3 748	2 763	2 781
Household	—	—	—	—	125 000	132 000	120 000	131 000
Total	**1 231 355**	**1 358 929**	**1 357 694**	**1 261 434**	**336 931**	**351 931**	**321 931**	**336 931**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution. The State Water Plan 2000 presently being developed in South Australia will provide updated information on water resources and consumption.

(b) Includes estimates of licensed usage within Proclaimed Regions of South Australia.

(c) Mains water is a subset of the self-extracted water total.

(d) Includes data collected from a range of sources including SA Water, irrigation trusts, mining companies and ABS estimates of manufacturing water use.

(e) Distribution losses for agriculture are not included. Usage is based on on-farm usage.

(f) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(g) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(h) Mains water use includes consumption by that sector and losses (see Explanatory Notes, paragraphs 45 and 51).

3.10 USE TABLE, South Australia(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	138 016	125 680	129 005	142 282
Livestock, pasture, grains and other agriculture	1 555	2 067	1 915	1 487	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	836	836	836	836	—	—	—	—
Mining(c)	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	1 407	1 407	1 407	1 407	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	—	—	—	—
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	4 783	5 805	5 502	4 645	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**8 581**	**10 115**	**9 660**	**8 375**	**138 016**	**125 680**	**129 005**	**142 282**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.11 SUPPLY TABLE, Western Australia(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	1 624 622	1 516 034	1 541 159	1 612 754	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	569 693	531 768	530 706	572 302
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	426	294	286	282
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**1 624 622**	**1 516 034**	**1 541 159**	**1 612 754**	**570 119**	**532 062**	**530 993**	**572 585**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of self-extracted water.

3.11 SUPPLY TABLE, Western Australia(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	8 554	8 554	8 554	8 554
Mining(c)	6 694	7 529	7 605	10 786	430	430	430	430
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	604	604	604	604	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	180 000	180 000	180 000	180 090
Water supply; sewerage and drainage services	10 674	10 787	10 868	10 926	86 312	92 455	96 926	100 962
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	1 720	1 720	1 720	1 720	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**19 692**	**20 640**	**20 797**	**24 036**	**275 296**	**281 439**	**285 910**	**290 036**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.12 USE TABLE, Western Australia(a)

	SELF-EXTRACTED(b)				MAINS WATER(c)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture(d)	223 267	190 975	199 923	219 968	184 787	156 544	164 366	181 905
Vegetables(d)	56 709	48 066	50 461	55 826	49 432	41 872	43 967	48 660
Sugar(d)	32 571	27 607	28 983	32 064	28 392	24 050	25 253	27 948
Fruit(d)	22 287	18 890	19 831	21 940	19 427	16 456	17 279	19 123
Grapevines(d)	6 031	5 112	5 367	5 937	5 257	4 453	4 676	5 175
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	914	901	824	929	20	13	14	12
Forestry and fishing	12 066	12 327	11 514	11 798	245	158	278	100
Mining	258 631	264 179	263 424	271 126	4 355	4 401	4 187	4 553
Meat and dairy products	5 194	5 669	5 561	5 213	2 605	2 475	2 831	2 394
Other food products	7 239	6 241	5 783	7 609	983	666	1 058	658
Beverages, tobacco products	1 464	1 392	1 618	1 758	1 236	1 195	1 297	1 198
Textiles	3 073	3 496	2 915	2 488	453	374	546	291
Clothing and footwear	4 255	4 262	4 409	5 069	657	479	882	458
Wood and wood products	6 019	6 207	6 016	6 166	737	529	985	455
Paper, printing and publishing	1 965	1 768	2 393	1 309	583	494	733	451
Petroleum and coal products	1 092	1 170	1 326	1 367	n.p.	n.p.	n.p.	n.p.
Chemicals	11 698	11 495	11 180	11 870	2 073	1 931	2 135	1 905
Rubber and plastic products	1 123	1 140	1 111	1 226	261	216	310	205
Non-metallic mineral products	7 642	7 378	7 543	7 950	770	645	878	638
Basic metals and products	26 495	26 061	28 020	24 938	3 157	2 499	4 119	2 245
Fabricated metal products	8 634	9 067	8 930	9 240	940	593	1 407	478
Transport equipment	1 602	1 655	1 662	1 598	109	65	171	47
Other machinery and equipment	2 864	2 554	2 417	2 852	356	216	428	194
Miscellaneous manufacturing	4 717	5 223	4 705	4 790	n.p.	n.p.	n.p.	n.p.
Electricity and gas	199 472	199 472	199 472	199 472	644	666	563	1 891
Water supply—production(e)(f)	620 215	556 476	568 527	601 012	—	—	—	—
Water supply—distribution(e)(g)	—	—	—	—	139	122	94	75
Construction	4 479	4 479	4 479	4 479	386	385	330	371
Wholesale and retail trade	567	567	567	567	15 152	16 594	13 873	14 290
Accommodation, cafes and restaurants	4 719	4 719	4 719	4 719	6 098	6 800	6 078	7 003
Transport and storage	2 902	2 770	2 763	2 759	10 758	11 075	8 944	9 748
Finance, property and business services	51	51	51	51	9 009	10 214	9 231	9 767
Government administration	736	736	736	736	1 763	2 061	2 410	4 675
Education	—	—	—	—	4 393	4 850	4 670	4 424
Health and community services	—	—	—	—	4 715	4 740	4 517	4 521
Cultural, recreational and personal services	73 764	73 764	73 764	73 764	10 270	10 629	8 884	10 774
Household(h)	10 166	10 166	10 166	10 166	197 928	201 746	191 314	204 179
Total	**1 624 622**	**1 516 034**	**1 541 159**	**1 612 754**	**570 119**	**532 062**	**530 993**	**572 585**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) WRC is currently revising estimates of self extraction and actual use by Mining is probably less than reported (see Explanatory Notes, paragraph 65).

(c) Mains water is a subset of the self-extracted water total.

(d) It is estimated that 30% of water applied to crops is recharged to groundwater (King 1999).

(e) Includes sewerage and drainage services. Production sector extracts water directly from the environment. Distribution sector distributes mains water.

(f) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(g) Mains water use includes consumption by that sector and losses (see Explanatory Notes, paragraphs 45 and 51).

(h) Excludes estimates of approximately 100,000 unlicensed bores in Perth (for household use). Assuming each bore uses 1,000 kL annually, up to a further 100 GL of water is self-extracted by households (Thomas 2000).

3.12 USE TABLE, Western Australia(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	275 296	281 439	285 910	290 036
Livestock, pasture, grains and other agriculture	47	47	47	47	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	2 087	2 097	2 103	2 108	—	—	—	—
Mining(c)	6 694	7 529	7 605	10 786	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	664	744	800	838	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	604	604	604	604	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	1 424	1 424	1 424	1 424	—	—	—	—
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	1 720	1 720	1 720	1 720	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	358	358	358	358	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	6 094	6 118	6 137	6 151	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**19 692**	**20 640**	**20 797**	**24 036**	**275 296**	**281 439**	**285 910**	**290 036**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.13 SUPPLY TABLE, Tasmania(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	39 658 011	38 525 073	41 099 221	40 376 994	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	11 697	19 792	9 203	12 869
Water supply; sewerage and drainage services	—	—	—	—	99 495	106 784	88 385	96 084
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**39 658 011**	**38 525 073**	**41 099 221**	**40 376 994**	**111 191**	**126 577**	**97 588**	**108 953**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of self-extracted water.

3.13 SUPPLY TABLE, Tasmania(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	100	100	100	100	24 779	24 779	24 977	25 063
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	58 475	52 968	51 674	47 742
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	1 026	1 050	892	873	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	39 347 603	38 192 805	40 816 139	40 062 496
Water supply; sewerage and drainage services	176	181	162	151	49 797	50 754	52 138	52 615
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household(d)	—	—	—	—	257	257	257	257
Total	**1 302**	**1 331**	**1 154**	**1 124**	**39 480 911**	**38 321 563**	**40 945 185**	**40 188 173**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

(d) An estimate of regulated discharges by households has been made where no sewerage reticulation system exists.

3.14 USE TABLE, Tasmania(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	46 675	47 658	39 971	54 454	12 942	22 594	10 640	15 260
Vegetables	27 648	28 231	23 676	32 258	7 604	13 280	6 265	8 886
Sugar	—	—	—	—	—	—	—	—
Fruit	1 488	1 519	1 274	1 736	409	715	337	478
Grapevines	123	126	106	144	34	59	28	40
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	53	48	32	54
Forestry and fishing	44	44	44	44	3 311	3 221	2 210	2 396
Mining	32 789	31 989	33 166	33 168	4	4	3	3
Meat and dairy products	456	456	456	456	3 027	2 842	2 694	2 766
Other food products	37	37	37	37	8 361	8 016	7 879	8 294
Beverages, tobacco products	23	23	23	23	672	709	988	866
Textiles	—	—	—	—	1 316	1 548	1 523	1 269
Clothing and footwear	—	—	—	—	723	653	613	757
Wood and wood products	25 073	25 073	25 073	25 073	3 092	2 694	2 561	2 563
Paper, printing and publishing	50 086	47 063	47 895	43 071	1 174	714	1 880	993
Petroleum and coal products	—	—	—	—	—	135	—	187
Chemicals	170	170	170	170	942	874	644	775
Rubber and plastic products	—	—	—	—	338	332	286	270
Non-metallic mineral products	255	255	255	255	1 268	961	677	622
Basic metals and products	—	—	—	—	6 049	6 574	5 940	6 648
Fabricated metal products	—	—	—	—	1 960	1 854	1 843	1 814
Transport equipment	—	—	—	—	175	176	200	152
Other machinery and equipment	—	—	—	—	599	537	468	448
Miscellaneous manufacturing	—	—	—	—	952	1 089	906	777
Electricity and gas	39 359 300	38 212 598	40 825 342	40 075 365	363	192	160	131
Water supply—production(c)(d)	112 532	128 518	100 421	109 427	—	—	—	—
Water supply—distribution(c)(e)	—	—	—	—	760	749	635	845
Construction	8	8	8	8	340	305	224	259
Wholesale and retail trade	—	—	—	—	5 477	5 308	4 078	4 321
Accommodation, cafes and restaurants	51	51	51	51	1 782	1 829	1 454	1 877
Transport and storage	1	1	1	1	4 084	3 565	2 360	2 679
Finance, property and business services	—	—	—	—	2 145	2 057	1 633	1 926
Government administration	—	—	—	—	715	901	913	1 808
Education	—	—	—	—	1 875	1 838	1 479	1 559
Health and community services	—	—	—	—	1 987	1 758	1 668	1 755
Cultural, recreational and personal services	743	743	743	743	4 327	5 069	3 955	4 209
Household(f)	510	510	510	510	32 334	33 375	30 411	31 266
Total	**39 658 011**	**38 525 073**	**41 099 221**	**40 376 994**	**111 191**	**126 577**	**97 588**	**108 953**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted water total.

(c) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(d) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(e) Mains water use includes consumption by that sector and losses (see Explanatory notes, paragraphs 45 and 51)

(f) Household self supplied volumes are estimated.

3.14 USE TABLE, Tasmania(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	39 480 911	38 321 563	40 945 185	40 188 173
Livestock, pasture, grains and other agriculture	18	20	37	20	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	100	100	100	100	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	1 026	1 050	892	873	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	—	—	—	—
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	158	161	125	131	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**1 302**	**1 331**	**1 154**	**1 124**	**39 480 911**	**38 321 563**	**40 945 185**	**40 188 173**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.15 SUPPLY TABLE, Northern Territory(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	91 335	95 600	98 989	103 385	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	46 137	46 426	44 928	48 249
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**91 335**	**95 600**	**98 989**	**103 385**	**46 137**	**46 426**	**44 928**	**48 249**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of self-extracted water.

3.15 SUPPLY TABLE, Northern Territory(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	—	—	—	—	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	2 913	2 913	2 913	2 913	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	1 386	1 416	1 255	1 579	16 832	19 669	17 429	19 452
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	—	—	—	—	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**4 299**	**4 329**	**4 168**	**4 492**	**16 832**	**19 669**	**17 429**	**19 452**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

3.16 USE TABLE, Northern Territory(a)

	SELF-EXTRACTED				MAINS WATER(b)			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	—	—	—	—
Livestock, pasture, grains and other agriculture	2 202	2 481	3 998	3 713	—	—	—	—
Vegetables	724	681	259	236	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	2 812	2 492	2 351	3 702	—	—	—	—
Grapevines	915	811	765	1 204	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	24	25	12	15
Forestry and fishing	—	—	—	—	275	320	308	291
Mining	17 000	20 000	20 000	20 000	—	—	—	—
Meat and dairy products	—	—	—	—	485	530	543	479
Other food products	—	—	—	—	275	298	304	74
Beverages, tobacco products	—	—	—	—	—	47	66	84
Textiles	—	—	—	—	98	89	43	49
Clothing and footwear	—	—	—	—	123	208	241	320
Wood and wood products	—	—	—	—	250	220	329	311
Paper, printing and publishing	—	—	—	—	224	146	142	115
Petroleum and coal products	—	—	—	—	—	112	142	58
Chemicals	—	—	—	—	84	44	94	127
Rubber and plastic products	—	—	—	—	53	80	69	53
Non-metallic mineral products	—	—	—	—	108	92	123	158
Basic metals and products	—	—	—	—	4 178	3 687	3 413	3 528
Fabricated metal products	—	—	—	—	644	681	879	813
Transport equipment	—	—	—	—	31	18	31	47
Other machinery and equipment	—	—	—	—	90	89	151	151
Miscellaneous manufacturing	—	—	—	—	231	195	215	186
Electricity and gas	—	—	—	—	58	57	50	37
Water supply—production(c)(d)	60 482	60 735	61 016	62 730	—	—	—	—
Water supply—distribution(c)(e)	—	—	—	—	8	7	8	5
Construction	—	—	—	—	26	27	24	28
Wholesale and retail trade	—	—	—	—	1 254	1 383	1 308	1 318
Accommodation, cafes and restaurants	—	—	—	—	324	412	403	552
Transport and storage	—	—	—	—	1 837	2 039	1 584	1 738
Finance, property and business services	—	—	—	—	569	682	688	663
Government administration	—	—	—	—	11 539	11 408	10 139	10 991
Education	—	—	—	—	1 385	1 464	1 510	1 538
Health and community services	—	—	—	—	519	513	563	497
Cultural, recreational and personal services	—	—	—	—	1 781	1 829	1 707	2 248
Household	7 200	8 400	10 600	11 800	19 665	19 724	19 842	21 774
Total	**91 335**	**95 600**	**98 989**	**103 385**	**46 137**	**46 426**	**44 928**	**48 249**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Mains water is a subset of the self-extracted water total.

(c) Includes sewerage and drainage services. The production sector extracts water directly from the environment. The distribution sector distributes mains water.

(d) The difference between self-extracted water from the water supply sector (use table) and mains water supplied by the same industry (supply table) are attributed to losses and can include streamflow surplus to requirements (see Explanatory Notes, paragraph 51).

(e) Mains water use includes consumption by that sector and losses (see Explanatory Notes, paragraphs 45 and 51).

3.16 USE TABLE, Northern Territory(a) *continued*

	EFFLUENT REUSE(b)				REGULATED DISCHARGE			
	1993–94	*1994–95*	*1995–96*	*1996–97*	*1993–94*	*1994–95*	*1995–96*	*1996–97*
Sector	ML	ML	ML	ML	ML	ML	ML	ML
Environment	—	—	—	—	16 832	19 669	17 429	19 452
Livestock, pasture, grains and other agriculture	404	273	177	452	—	—	—	—
Vegetables	—	—	—	—	—	—	—	—
Sugar	—	—	—	—	—	—	—	—
Fruit	—	—	—	—	—	—	—	—
Grapevines	—	—	—	—	—	—	—	—
Cotton	—	—	—	—	—	—	—	—
Rice	—	—	—	—	—	—	—	—
Services to agriculture; hunting and trapping	—	—	—	—	—	—	—	—
Forestry and fishing	—	—	—	—	—	—	—	—
Mining(c)	2 913	2 913	2 913	2 913	—	—	—	—
Meat and dairy products	—	—	—	—	—	—	—	—
Other food products	—	—	—	—	—	—	—	—
Beverages, tobacco products	—	—	—	—	—	—	—	—
Textiles	—	—	—	—	—	—	—	—
Clothing and footwear	—	—	—	—	—	—	—	—
Wood and wood products	—	—	—	—	—	—	—	—
Paper, printing and publishing	—	—	—	—	—	—	—	—
Petroleum and coal products	—	—	—	—	—	—	—	—
Chemicals	—	—	—	—	—	—	—	—
Rubber and plastic products	—	—	—	—	—	—	—	—
Non-metallic mineral products	—	—	—	—	—	—	—	—
Basic metals and products	—	—	—	—	—	—	—	—
Fabricated metal products	—	—	—	—	—	—	—	—
Transport equipment	—	—	—	—	—	—	—	—
Other machinery and equipment	—	—	—	—	—	—	—	—
Miscellaneous manufacturing	—	—	—	—	—	—	—	—
Electricity and gas	—	—	—	—	—	—	—	—
Water supply; sewerage and drainage services	—	—	—	—	—	—	—	—
Construction	—	—	—	—	—	—	—	—
Wholesale and retail trade	—	—	—	—	—	—	—	—
Accommodation, cafes and restaurants	—	—	—	—	—	—	—	—
Transport and storage	—	—	—	—	—	—	—	—
Finance, property and business services	—	—	—	—	—	—	—	—
Government administration	—	—	—	—	—	—	—	—
Education	—	—	—	—	—	—	—	—
Health and community services	—	—	—	—	—	—	—	—
Cultural, recreational and personal services	982	1 143	1 078	1 127	—	—	—	—
Household	—	—	—	—	—	—	—	—
Total	**4 299**	**4 329**	**4 168**	**4 492**	**16 832**	**19 669**	**17 429**	**19 452**

(a) Totals are based on estimates and assumptions described in the Explanatory Notes and exact figures should be treated with caution.

(b) Little information is available on those industries (usually in the manufacturing sector) who reuse water themselves. See Explanatory Notes, paragraph 66.

(c) Some mining companies were unable to verify reuse data from some of their mine sites. See Explanatory Notes, paragraph 67.

EXPLANATORY NOTES

INTRODUCTION

1 The Water Account is one of the physical accounts being developed by ABS as part of an environmental accounting system. It consists of supply and use tables (collectively referred to as flow tables) and water asset tables, based primarily on water quantity data.

2 The aim of the Water Account project was to provide a mechanism to tie together data from different sources into one consolidated information set. It would then be possible to link physical data to economic data sets such as Australia's National Accounts and other natural resource data sets.

3 Environmental accounts can facilitate an integrated approach to a range of issues that include:

- a broader assessment of the consequences of economic growth;
- the contribution of sectors to particular environmental problems; and
- sectoral implications of environmental policy measures (for example, regulation, charges and incentives).

4 The advantage of an environmental account is that by linking together physical data and monetary data in a consistent framework it is possible to undertake scenario modelling. Issues that could be modelled include assessing the efficiencies in different sectors of the economy and the environment, and resource implications of structural change.

5 In compiling the Water Account, the ABS accessed readily available water resources data from various government and non-government organisations. This data was aggregated into a number of tables. The aim of this project was not to duplicate existing data collection activities but to tie together regional and state water resource data into a single system showing the economy wide impact of water resource management and usage across Australia.

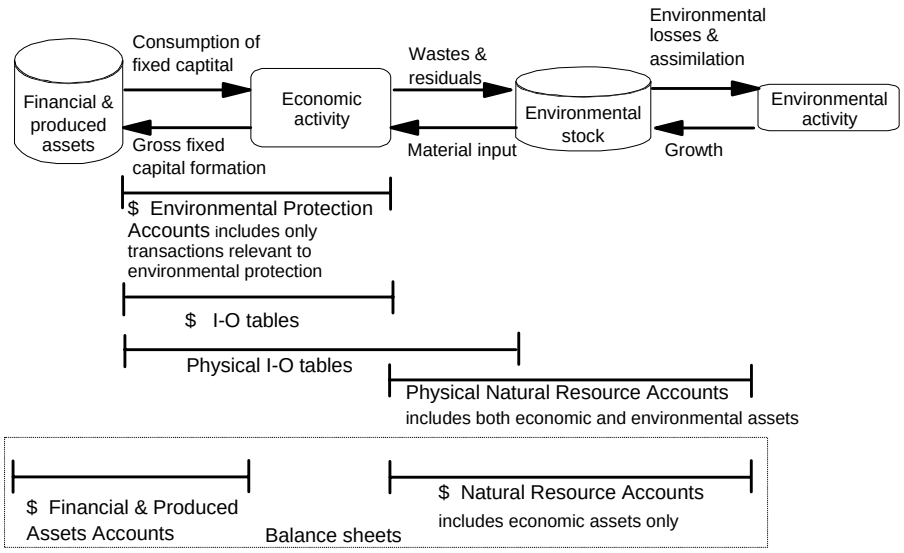
ENVIRONMENTAL ACCOUNTING FRAMEWORK

6 In order to integrate environmental and economic data the Water Account has been developed following the guidelines in *Integrated Environmental and Economic Accounting* (UN 1993a) abbreviated as SEEA, which is a complement to the *System of National Accounts 1993* (UN 1993b). Environmental accounts extend the boundaries of the System of National Accounts (SNA) framework to include environmental resources, which occur outside the production and asset boundaries typically measured in such an analysis. In the following diagram the relationship between environmental accounts and national accounts is illustrated.

7 Chapter 2 shows some experimental measures of water assets which are an example of extending the SNA definition of the production and asset boundaries. Typically these environmental assets provide important goods and/or services to the economy, e.g. timber, or waste assimilation. The environmental asset accounts include the level of resources available and changes within a given time period due to both human and natural causes.

ENVIRONMENTAL ACCOUNTING FRAMEWORK *continued*

RELATIONSHIP BETWEEN ENVIRONMENTAL ACCOUNTS AND NATIONAL ACCOUNTS



8 Supply and use tables provide the framework to link core components of the National Accounts to physical information. These tables are a component of physical input-output (I-O) tables and allow the comparison of physical and monetary information through the economy and environment (ABS 1997). Physical data are presented in supply and use tables in Chapter 3, some linkages to economic data are found in Chapter 1.

STOCK TABLES, VICTORIA — CHAPTER 2

Scope

9 Chapter 2 includes stock tables on stocks of resources. These have been developed to characterise Victoria's surface and groundwater resources. The resource tables include asset tables which show long term availability of water resources and an annual water pathways analysis showing the annual inputs, consumption and output of water during the financial years 1993–94 to 1996–97.

10 Water resource and usage data were intended to be collected on a river basin and groundwater province level but information is not readily available at that level in all States. The level of data resolution is dependent on who controls water usage in each State and Territory.

Coverage

11 Information about water resources by river basin and groundwater province level was not readily available or up-to-date, and was not collected at that level of spatial disaggregation. Victoria was the only state to provide data for Chapter 2. In the future, however, more information on water resources for other States may be available because it is presently being updated as part of the NLWRA.

12 Coverage for both the surface water asset and groundwater asset tables is limited by quantity of data and how current the data are. Information about water use on a river basin level was not available for Victoria and the annual water pathways analysis can only be presented for Victoria and not for individual river basins.

Coverage *continued*

13 Water Asset Tables were developed based on volumetric components and water quality data was not included. Point measurements of water quality cannot be easily aggregated to a drainage division or nation wide level because this would not be representative of regional water quality. Variations in water quality can occur for a number of reasons, these include: season, flow, time of day, variation in measurement techniques, sampling strategy and location. Groundwater quality data on salinity was available but no information was collected on surface water quality.

Data sources

14 Due to the fact that data were difficult to obtain, combined with the experimental nature of the asset tables, it was decided to produce stock tables for only one state. Victoria was the only state which provided comprehensive data. For both the groundwater and the surface water asset tables, data were sourced from the Victorian Department of Natural Resources and Environment (DNRE) and from historical data in the *1985 Review of Australia's Water Resources and Water Use Volume 1* (AWRC 1987a).

15 For the annual water pathways analysis, data were sourced from DNRE; precipitation and evapotranspiration data from the Bureau of Meteorology (BoM); interstate water transfer data from the Murray Darling Basin Commission (MDBC); and water use data obtained from water authorities in Victoria.

16 The data presented in Chapter 2 were the best available at the time of publishing. For the next issue of this publication, the data will be more comprehensive as the NLWRA is currently underway and all States and Territories are providing data on water resources and water availability.

Data collection methods

17 Base information was gathered from the sources mentioned above and integrated into the relevant asset tables and the annual water pathways analysis. Water consumption, and discharge information as well as water storage levels were collected from water authorities in Victoria, this information was also used for the supply and use tables in Chapter 3. BoM provided digitised average annual evapotranspiration and annual precipitation (1993–94 to 1996–97) data which were analysed using mapping software to determine the areal extent of rainfall and evapotranspiration in Victoria.

Methods of analysis

18 As previously mentioned the framework for the Water Account is based on physical the resource accounting concepts in *System for Integrating Environmental and Economic Accounts—SEEA* (UN 1993a), and is combined with spatial and physical parameters which considered the variability of Australian water resources. The SEEA framework includes the measurement of opening and closing stocks and the impact of volume changes of environmental assets.

19 It is difficult to present a typical asset table for water because it is a resource that is being constantly renewed. In Australia water systems have a long response time and due to the high degree of variability it is not possible to measure stocks of water on an annual basis. The tables presented in Chapter 2 are an alternative to the conventional asset tables framework presented in SEEA.

Methods of analysis *continued*

20 The tables compiled for Victoria include an annual water pathways analysis and long term measures of water assets. The rationale behind this is that the annual water pathways analysis will provide a guide to water conditions in specific time periods (in this instance financial years 1993–94 to 1996–97) and the asset tables will provide details on water assets and changes in availability.

21 The asset tables aim to demonstrate the resource available at different points in time. Due to the variable nature of Australia's water resources, the SEEA framework was modified to redefine 'opening' and 'closing' stocks as measurements taken at different points in time, instead of 'opening' and 'closing' stocks based on changes over a one year period. A long term measure which identified long term average availability of water was used.

22 An Asset Table shows the long term availability of water resources in a particular river basin or groundwater province. This assessment has been made at particular points in time so a time series of Asset Tables can, in theory, be compared to demonstrate the changes in resources through time. By comparing data from *1985 Review of Australia's Water Resources and Water Volume 1* (AWRC 1987a) with later estimates (where available) the difference in the long term availability of resources can be seen. The differences are referred to as volume changes. Some volume changes are due to changes in assessment methodology over time and changes in available data.

23 An annual water pathways analysis was developed for Victoria. It was based on the annual inputs, consumption and output of water during 1993–94 to 1996–97 financial years. The net anthropogenic changes parameter considers the volume of water diverted for economic use from surface and groundwater resources and subsequent return flows. Changes in the storage of lakes and dams measures the amount of storage at the start and end of the accounting period in order to determine the difference in the amount in storage. Data were obtained from water authorities for 115 storages in Victoria. The data on water used for economic purposes and regulated discharges were taken from the supply and use tables that were derived for Victoria in Chapter 3.

Assumptions

24 A surface water asset table includes measures of the volume of water allocated for economic and environmental use and the volume of unallocated resources. A limitation of this approach for surface water allocated for environmental purposes is that many allocations for river basins are not derived on a megalitres per year basis but on passing flows at particular times during the year. Passing flow allocations for environmental purposes will not be identified by this approach. The glossary at the end of this publication defines some of the relevant asset table terminology.

25 The groundwater asset table cannot be presented in the ideal format because there is no comparison between AWRC (1987a) data and the data collected in 1998. The 1998 data were collected for groundwater management areas (GMA), subsets of groundwater provinces, which were not directly comparable because estimates for GMA cannot be totalled to equal the estimate for the groundwater province available from AWRC (1987a).

Assumptions *continued*

26 Groundwater resources from AWRC (1987a) were defined as Total Divertible Resource (TDR). It was defined as the average annual volume of water, using current technology, that could be removed from developed or potential groundwater sources on a sustained basis without causing adverse effects or long-term depletion of storages. Water quality of the TDR for groundwater is illustrated in terms of salinity. In some cases nitrogen and fluoride are also locally significant water quality factors but these have not been included.

27 Groundwater assets are difficult to define and the volume of water stored in groundwater systems is not well known. According to Evans (1998) 'sustainable yield' is a better measure of available groundwater resources than the volume in storage because the volume in storage is an estimate and the total volume of water is not necessarily available. There is a move to redefine groundwater resources to 'sustainable yield'. Evans *et al.* (1998) defines sustainable yield for the Australian aquifers as the level of extraction, measured over a specified planning timeframe, that should not be exceeded to protect the higher value uses associated with the aquifer. Evans *et al.* (1998) defined uses as agriculture, ecosystems, infrastructure, industry or other activities which are to some extent dependent on groundwater, and which the community reasonably expects will be maintained or developed for a defined period. Most managed aquifers in Australia are done so according to the assumption that average annual recharge is an acceptable approximation for sustainable yield (Evans *et al.* 1998). This assumption is invalid in a number of cases.

28 Future assessments at either a GMA or province level would allow a groundwater asset table to be produced which would show the volume changes between the two reference periods. Note that future assessments may vary due to revisions of the sustainable yield definition. Currently there is substantial discussion to define sustainable yield as a result of the COAG Water Reform agenda. For groundwater asset tables to be developed a consistent definition of groundwater resources and spatial measurement areas is required.

29 Ideally the annual water pathways analysis includes the economic use of water that occurs in-stream for activities such as hydro-electricity generation, recreation and aquaculture. The volume of water required for most in-stream uses cannot be accounted for, with the exception of hydro-electricity generation. Inter-basin transfers of water are also measured within net anthropogenic changes, and are included where such transfers originate or are destined for a region outside the measurement area. For Victoria this included water transfers to and from New South Wales.

Data quality and reliability

30 The data presented in Chapter 2 were the most detailed and best available at the time of collation. The climate data used in table 2.5 was obtained from BoM and each cell on the GIS map represented a certain area of coverage. Precipitation data was based on a 25 kilometre-square grid and the evapotranspiration data had a 10 kilometre-square grid (deHoedt 1998).

SUPPLY AND USE TABLES — CHAPTER 3

Scope

31 Chapter 3 aggregates all available quantitative data (megalitres) in terms of the supply and use of water within the Australian economy for the financial years 1993–94 through to 1996–97. Supply and use tables illustrate the economic use of water and include self-extracted, mains, and regulated discharge water and effluent reuse.

Coverage

32 Excellent coverage for the supply table was obtained. For the use table coverage included the majority of users, with an estimation of minor users undertaken.

33 Coverage for both tables includes the following:

- individuals and companies that extract water from surface water and groundwater sources for their own use (e.g. domestic, industrial, commercial or rural use);
- water providers who extract water from surface water and groundwater sources, and supply it on to customers for use (e.g. domestic, industrial, commercial, rural or bulk use). The majority are categorised in the water sector of the water supply; sewerage and drainage services industry;
- sewerage treatment plant operators who treat water and release it from the sewage treatment plants back into the environment (land, river or ocean disposal). These operators may also provide a water reuse service which enables some of their treated water to be made available for reuse by some of their customers;
- other large organisations who treat water and make it available for subsequent reuse;
- other large organisations who discharge water directly to the environment (e.g. power stations, mines); and
- major in-stream water users, for example aquaculture and hydro-electricity generation, where this information was available.

34 Issues that are not covered by the supply and use tables include: the reuse of water on-farm; non-point/diffuse discharges; and the impact of stormwater infiltration into the sewerage reticulation system.

Data sources

35 Data have been sourced from a range of State, Territory and Local Government agencies, water authorities and private enterprise organisation. For New South Wales, data were obtained from urban water boards, non metropolitan local government authorities, and the Environment Protection Agency, Department of Land and Water Conservation and NSW Agriculture. In Victoria, data were sourced from water authorities, and the Department of Natural Resources and Environment. Urban and rural water boards, local government authorities, and the Department of Natural Resources provided data for Queensland.

Data sources *continued*

36 For South Australia, data were obtained from SA Water and the Department of Environment, Heritage, and Aboriginal Affairs. In Western Australia, data were provided by the Water Corporation, Water and Rivers Commission, Office of Water Regulation and other minor water service providers. In Tasmania, the Department of Primary Industries, Environment and Water, local government authorities, regional Water Boards, and the Hydro-Electric Corporation provided the data. The Power and Water Authority and the Department of Lands, Planning and Environment provided data for the Northern Territory. For the Australian Capital Territory, data were sourced from ACTEW and Environment ACT.

37 Where appropriate, high water using industries in some States were requested to provide data, this included the electricity and gas; mining; paper, printing and publishing; and wood and wood products industries.

Data collection methods

38 Supply and use tables integrate ad hoc administrative data from a range of sources. The majority of the water supply and use data collected by the ABS tends to be decentralised in most States and Territories because a majority of the distribution is controlled by either local government or privatised water authorities. The data that were collected have been collated to a uniform standard and aggregated to a State and Territory level.

39 Data respondents were asked standard questions from which water supply and use were determined. The type of information collected included volumetric data on the following:

- water intake (source and volume);
- distribution of supply to various users (volume and type of use and details of major water consumers);
- average annual domestic usage;
- losses from the supply system;
- treated and untreated effluent discharges (volume and location);
- volume of treated effluent transferred to other users for reuse (volume and type of use); and
- other related information including details of the storage levels, water transfers, infiltration and consumption charges (however comprehensive data were not provided on these topics).

40 Estimates of self-extracted water were determined for private organisations or individuals not covered by a regulatory water authority. It is recognised that estimates of self-extraction are likely to be less accurate than data on diverted water supplies. Data (volume and type of use) was requested from relevant State government authorities which hold details of licences, and estimations of self extraction of water were obtained from relevant individuals and organisations.

41 Water suppliers and users were defined and classified to the Australian and New Zealand Standard Industry Classification (ANZSIC).

Methods of analysis

42 The supply and use tables are components of the input-output (I-O) framework. This framework is used widely by the ABS for economic analysis and is based on SNA93 (UN 1993b). The input-output framework describes the movement of water from the environment as input into economic activity, as well as the return flow from production and consumption activities back into the environment.

43 A more detailed explanation of the method of analysis used will be available in a publication to be released by the ABS later in 2000 titled *Concepts, sources and methods for Australia's water, energy and mineral accounts*.

44 Industry data were aggregated according to the ABS Input-Output Industry Group Classification (IOIG). The ANZSIC classifications were aligned to the IOIG classifications (see appendix 2).

45 The commodity water was split into the IOCC (Input-Output Commodity Classification) for Water (IOCC 37000010), and self-extracted water (from surface and groundwater sources). The IOCC 37000010 is referred to as mains water in the tables presented in this publication. To avoid double counting a distinction was made between self-extracted water and the volume of water transferred into mains water (e.g. a bulk water authority extracts water, and supplies it to another water authority as mains water). The tables in Chapter 3 also describe effluent reuse and regulated discharge (from point sources) volumes.

46 To ensure consistency and coverage of all water used and supplied across Australia, a range of estimation techniques were used to fill in the gaps for missing data. In the absence of detailed water use data for some sectors of the economy case studies were derived. Water usage coefficients for particular sectors of the economy were developed based on employment or production statistics. Assumptions were made in deriving the water usage coefficients, these are detailed in the following discussion.

Assumptions

47 A range of assumptions were made in analysing and collating data from a diverse range of sources. Water supply data was fairly straightforward. Details of water consumption was unknown for some sectors. Water usage was known for about 6,300 businesses, the majority being major industrial and commercial water consumers.

48 State data were utilised to estimate missing data within the same state, for example a megalitre per person rate was derived from existing data and applied to the population for which water consumption was unknown within that particular state.

49 Data were assumed to be more reliable for the 1996–97 year because water providers are tending to improve their collection and collation of detailed water consumption figures. In some instances more detailed data were provided for 1996–97 compared with the earlier years.

Assumptions *continued*

50 Water use by industry sectors was derived using case studies based on data collected by the ABS including the following:

- For the electricity and gas industry water usage by their employees was estimated and combined with data collected directly from this industry group covering their water usage in generating power.
- The service sector was based on a megalitre per employed person.
- For zoos, parks and gardens coefficients based on megalitres per hectare were derived based on data collected in an ABS Service Industries Survey.
- Case studies for the manufacturing sector were developed based on a megalitre per unit of turnover, and for sectors which had insufficient water data to match with manufacturing turnover data then a case study of megalitres per employed persons was developed.
- It was assumed that the industry structure varied between States, and profiles of industry structures were combined with known water usage to derive water consumption for those businesses for which no data had been provided.
- Megalitre per unit of production rates were derived for all mineral commodities based on data collected for the Water Account and ABS Mining Census data. The production rates were applied to the remaining production of particular commodities for which no data were available.
- It was assumed that the supply of water for agriculture was well known, but the splits into usage by different crops was not well understood. Agricultural water use was determined from available data and where insufficient detail on what crops water was applied to, estimates based on the 1996–97 Agricultural Census data were used to estimate crop water usage.

51 Net water use by the water supply; sewerage and drainage services industry includes water consumed by that sector and losses (difference between intake and distribution as mains water). This can be due to a mixture of commitments to environmental flows, changes in storages, hydro-power releases, spills from reservoirs and natural inflows past diversion weirs, transmission losses within the distribution system up to points of final water provider distribution. Losses may include water releases for environmental flows, where these have been implemented. Some water authorities in Victoria were able to provide more comprehensive data on releases for environmental flows than was available in other States and Territories.

52 It was assumed that the rate of stormwater runoff into the sewerage reticulation system was too variable across Australia to estimate its impact, so this has not been quantified within the tables presented in Chapter 3.

53 The usage of water by the aquaculture industry was assumed to occur in-stream.

54 Mine de-watering was assumed to be self-extraction by the mining industry in all States. The water is usually utilised on-site or subsequently discharged. Not all mining companies that were surveyed were able to provide information on the volume of water discharged from mines.

55 Some major manufacturers rely on large quanities of salt water in their operations. This amount was not included in the supply and use tables.

Assumptions *continued*

56 Where it was known that no reticulated supply existed household usage was estimated and assumed to be supplied through self-extraction (rainwater tanks, river pumping etc.).

57 It was assumed that comprehensive information on the volume of water supplied for effluent reuse was obtained from the water; sewerage and drainage services industry. Reuse, however, may occur on a more extensive basis within the manufacturing sector than has been quantified in the Water Account. Constant recirculation of water was not included.

58 Accurate groundwater usage information was not available for New South Wales; metering, collection and collation activities of groundwater use is inconsistently carried out statewide (Ross 1999). There is groundwater extraction of up to at least one million megalitres, but only 605,000 megalitres based on DLWC (1997) could be allocated to a usage.

59 In New South Wales, licensed water users on unregulated rivers are not required to send DLWC a return of how much water they have used. It is likely that the volume extracted from unregulated rivers is an underestimate of what was used. Estimates of unregulated water usage were only available for 1993–94 and 1994–95 and are based on DLWC diversion and crop return card information. No data were available for 1995–96 or 1996–97 hence the estimate for 1994–95 was used for those years. Metering has now commenced on the Barwon, Darling and Macquarie Rivers and it is expected that the estimate of water usage in unregulated rivers will increase (Gillespie 1999). For some rivers in Northern New South Wales data on licensed users was based on a year October to September instead of the financial year July to June.

60 Some Victorian water authorities could not provide detailed data for the 1993–94 and 1994–95 years because of the restructuring of the water industry which occurred. In this instance data in later years was used as a basis for estimating the volume of water consumed. In Victoria the water rights for private individuals are allocated within a water authorities bulk entitlement right and has therefore been included within mains water usage by water authorities.

61 The estimate of unregulated water use in Queensland was taken from a Department of Natural Resources estimate for 1994–95. The same figure was used in the other reference years with no climatic variation applied to the estimate. No better estimation technique for unregulated water in Queensland was available.

62 Self-extracted usage of water in South Australia includes licensed usage within Proclaimed Regions and data from a few companies, irrigation trusts and water boards who may operate outside these regions.

63 In South Australia only estimates of licensed water usage within proclaimed regions were available. Other licensed water users for which data was known include water suppliers, irrigation trust and some mining companies (some exist outside proclaimed regions). Licensed use by agriculture was estimated from Thomson (1997), these were based on crop areas derived in 1992–93. The rate of agricultural water usage was considered fairly stable over the reference period (Thomson 1999). Estimates of licensed usage by other industrial, commerical or household sectors outside the proclaimed regions were not included.

Assumptions *continued*

64 In Western Australia licensing data equates to usage and are updated every five years. It has been assumed licences in other States equate to usage unless otherwise stated by the data suppliers.

65 The Water and Rivers Commission (WRC) is currently updating licensed and unlicensed usage of water in Western Australia, and by mid 2000 this information will be available from either the NLWRA or WRC. According to Kumberi (2000), estimates of water usage presently exclude unlicensed usage and are likely to overestimate the actual usage by the mining sector.

66 No data were collected directly from manufacturing enterprises on their water reuse activities, with the exception of some mineral processing and paper manufacturers. It is likely that on-site water reuse by some manufacturers could be significant and this has not been covered.

67 Some mining companies were unable to verify their reuse data and their definitions of what constitutes reuse may vary between locations. The collection and continuity of effluent reuse information from the mining industry will improve in the future. Only data from the major mining companies were requested to provide details of effluent reuse for this project. The figures may be greater than what has been recorded.

68 Where data were imputed, the impact of climatic and other water demand issues could not be easily interpreted. The data, therefore, represents actual data and not a trend in the data based on climatic variations.

Data quality and reliability

69 Data sources for the Water Account originate from a range of sources with a variable degree of consistency and reliability (see Assumptions, paragraphs 47 to 68). Data suppliers were requested to provide an indication of the reliability of the data provided, although comprehensive data was not obtained from all respondents. The following table shows the reliability of data for responses received from Victoria, Tasmania and Queensland. Generally the quality of the data varied greatly but it is the best data available in Australia.

DATA RELIABILITY, Victoria, Queensland and Tasmania

		Responses(a)
Category	Description	%
A	Based mainly on reliable recorded and surveyed data	22
B	Based on approximate hydrologic analysis and limited surveys	8
C	Based largely on reconnaissance data	3
D	Derived without investigation	8
A–D	Reliability varies for different components of the data supplied by respondents	26
No responses	No indication of data reliability received	33

(a) Based on approximately 200 responses from Victoria, Tasmania and Queensland.

FUTURE ISSUES AND ADDITIONAL INFORMATION

70 More detailed information on the methods used to derive the tables will be presented in *Concepts, Sources and Methods for Australia's Water, Energy and Mineral Accounts* (Catalogue No. 4612.0, expected release December 2000).

RELATED PUBLICATIONS

71 For background information on the water resources sector, as well as detailed expenditure and other socio-economic information, please refer to the following ABS publications:

Agriculture, Australia (Cat. no. 7113.0)

Australian National Accounts: National Income, Expenditure and Product (Cat. no. 5204.0)

Australian National Accounts: Input-Ouput Tables (Cat. no. 5209.0)

Australian National Accounts: Input-Output Tables (Commodity Details) (Cat. no. 5215.0)

Australian National Accounts: National Balance Sheet (Cat. no. 5241.0)

Electricity, Gas, Water and Sewerage Industries (Cat. no. 8208.0)

Environment Protection Expenditure (Cat. no. 4603.0)

Labour Force, Australia (Cat. no. 6203.0)

Manufacturing Production, Australia (Cat. no. 8301.0)

Mining Industry, Australia (Cat. no. 8402.0)

APPENDIX 1 CLIMATE CONDITIONS

GENERAL CLIMATE CONDITIONS

Australia is considered one of the driest continents. In comparison to other continents precipitation is lower and the percentage of rainfall which is yielded as streamflow once evapotranspiration is accounted for is low (Pigram 1986). The spatial and temporal variability of climatic conditions in Australia is characterised with a high degree of unreliability and unpredictability. The El Niño Southern Oscillation effect causes cyclic fluctuations on Australia's climate ranging from 2 to 7 years in length. The Southern Oscillation Index (SOI) is calculated from the difference in air pressure between Tahiti and Darwin. Negative SOI values indicate El Niño episodes when major shifts in the weather patterns across the Pacific occurs, resulting in an increased probability of drier conditions in Australia, particularly eastern Australia (BoM 1998).

Climatic conditions play a significant role on water resources in Australia. Australia has a range of climatic zones with major seasonal rainfall patterns which have contributed to the nature of surface water resources in Australia. The major patterns are as follows:

- marked wet summer, dry winter in Northern Australia;
- wet summer, relatively dry winter in south-east Queensland and north-east New South Wales;
- uniform rainfall in south-east Australia (much of NSW, eastern Victoria, southern Tasmania);
- marked wet winters and dry summers occur in south-west Western Australia, and the remaining parts of southern Australia that are directly influenced by westerly circulation; and
- arid areas on the north-west coast of Western Australia to the south coast at the Great Australian Bight (BoM 1989).

During 1993–94 to 1996–97 the prevailing climatic conditions influenced water consumption patterns. Precipitation influences water levels stored in dams and water used for economic activities, especially in agriculture. The Bureau of Meteorology (1994, 1995, 1996 and 1997) have described the weather conditions across Australia for the reference years which is summarised below.

1993–1994

By winter 1993 the effect of the El Niño episode (commencing in autumn 1991) was declining with a number of significant heavy rain events in south-east Australia during winter and spring. Rain was widespread during July 1993 in eastern Australia. Record rainfall in south-east Australia occurred during September and October, resulting in major flooding. The maximum temperatures during spring 1993 were above average for most of Australia. Rainfall during December 1993 provided temporary relief to dry areas in southern Queensland and north-east New South Wales. During late December heavy rain fell in eastern Tasmania and southern Victoria. But by early January there were bushfires along the eastern seaboard as a result of hot and dry westerly winds.

There was some alleviation of the rainfall deficiencies in south-east and central Queensland with heavy rainfall during February and early March. In early March flooding occurred in northern inland Queensland. After mid-March dry conditions prevailed and by June a significant rainfall deficit prevailed over much of southern Australia.

1994–1995

An El Niño event intensified during winter and spring 1994, peaking in early summer 1994–95. By the end of 1994 the eastern mainland, south-west Western Australia and north-east Tasmania had rainfall deficiencies. A slight easing of the drought conditions occurred during November in south-west Queensland and northern New South Wales.

The wet season across northern Western Australia and north-east Northern Territory were within the wettest 10% on record. In comparison some areas in Victoria and inland New South Wales had the driest March on record. During autumn the drought eased with rain in April in south and west Victoria and in May in New South Wales and northern Victoria. The rain in the latter half of the financial year resulted in the end of the 1994–95 El Niño event, although severe drought conditions continued in parts of eastern Queensland and New South Wales.

1995–1996

By winter 1995 the El Niño condition had ended and wet conditions provided relief to the rainfall deprived areas of south-east Australia (as measured from the onset of dry conditions since May 1994), and south-western Australia. From February to late April 1996 dry conditions prevailed over much of eastern Australia. In late April and early May south-east Queensland received major rain events but drought conditions prevailed in the north and west of the State.

Above average rainfall and some flooding occurred in parts of southern Victoria and Tasmania during October to November 1995, February and April 1996. The summer of 1995–96 was one of the coolest on record for south-eastern Australia. With the exception of Queensland and New South Wales in early May which received heavy rains, the continent experienced a dry period, especially in southern and western Australia. Record low rainfall was recorded in parts of South Australia and western Victoria.

1996–1997

During 1996 there was a transition from the weak large-scale climate controls to a strong El Niño condition after March 1997. This resulted in a drying over a large part of southern and eastern Australia. From July until September 1996 Victoria had unusually cold and wet weather. The remainder of the southern half of Australia was also wet for three months. Significant areas in south-west Queensland, western and central New South Wales, South Australia, western Victoria, and southern Western Australia had rainfall totals within the highest 10% on record.

During the summer of 1996–97, there was a very active monsoonal season in the tropical zones in Western Australia and the Northern Territory. However, this finished abruptly and early, as El Niño developed rapidly in autumn 1997. From October 1996 very dry conditions prevailed over most of Victoria, the grain belts of South Australia and north-east Tasmania. Areas of southern Victoria through to south-east South Australia had the driest October to June period on record.

May 1997 brought rain to southern Australia and average to above average rain to parts of Queensland. There was some relief to farmers from the dry and hot conditions over southern Australia in early 1997. In parts of southern Victoria and south-east South Australia the driest October to June period on record was reported.

A2.1 INPUT-OUTPUT BROAD INDUSTRY GROUP (IOBIG) CONCORDANCE WITH ANZSIC CLASSIFICATIONS

IOBIG	ANZSIC			
Group	*Division*	*Subdivision*	*Group*	*Class*
Livestock, pasture, grains and other agriculture	A	01	011	0111, 0112
Livestock, pasture, grains and other agriculture	A	01	012	All except rice component of Class 0121
Livestock, pasture, grains and other agriculture	A	01	013, 014, 015	All
Livestock, pasture, grains and other agriculture	A	01	012	0169
Vegetables	A	01	011	0113
Sugar	A	01	016	0161
Fruit	A	01	011	0115, 0116, 0117, 0119
Grapevines	A	01	011	0114
Cotton	A	01	016	0162
Rice	A	01	012	Rice component only of Class 0121
Services to agriculture; hunting and trapping	A	02	022	0219, 0220
Forestry and fishing	A	03, 04	030 to 042	0301 to 0420
Mining	B	11 to 15	110 to 152	1101 to 1520
Meat and dairy products	C	21	211, 212	2111 to 2129
Other food products	C	21	213 to 217	2310 to 2179
Beverages, tobacco products	C	21	218, 219	2181 to 2190
Textiles	C	22	221 to 223	2211 to 2239
Clothing and footwear	C	22	224 to 226	2241 to 2262
Wood and wood products	C	23	231, 232	2311 to 2329
Paper, printing and publishing	C	23	233, 241, 242, 243	2331 to 2430
Petroleum and coal products	C	25	251, 252	2510 to 2520
Chemicals	C	25	253, 254	2531 to 2549
Rubber and plastic products	C	25	255, 256	2551 to 2566
Non-metallic mineral products	C	26	261 to 264	2610 to 2640
Basic metals and products	C	27	271 to 273	2711 to 2733
Fabricated metal products	C	27	274 to 276	2741 to 2769
Transport equipment	C	28	281, 282	2811 to 2829
Other machinery and equipment	C	28	283, 284, 285, 286	2831 to 2869
Miscellaneous manufacturing	C	29	291 to 294	2911 to 2949
Electricity and gas	D	36	361	3610, 3620
Water supply; sewerage and drainage services	D	37	370	3701, 3702
Construction	E	41, 42	411 to 425	4111 to 4259
Wholesale and retail trade	F, G	45 to 53	451 to 532	4511 to 5329
Accommodation, cafes and restaurants	H	57	571 to 574	5710 to 5740
Transport and storage	I	61 to 67	611 to 670	6110 to 6709
Finance, property and business services	J, K, L	71 to 78	711 to 786	7111 to 7869
Government administration	M	81	811 to 820	8111 to 8200
Education	N	84	841 to 840	8410 to 8440
Health and community services	O	86, 87	861 to 872	8611 to 8729
Cultural, recreational and personal services	P	91 to 96	911 to 963	9111 to 9634
Household (if data available)	P	97	970	9700

GLOSSARY

Aquifer A geological formation which is capable of holding water and through which water can percolate. Aquifers are capable of yielding quantities of groundwater for economic activities.

Diversion Volume of water diverted from a stream or aquifer on a sustained basis to supply water for rural, urban and industrial usage. Includes diversions undertaken by a water authority, private company or a group of individuals authorised to act as a water supply authority.

Economic activity An activity or process involving or resulting in a financial transaction.

Effluent reuse Use of wastewater that may have been treated to some extent, and then used again without first being discharged to the existing surface waters.

Environmental account An information system and framework that links the economic activities and uses of a resource to changes in the natural resource base, thus linking resource use with the System of National Accounts.

Evapotranspiration Loss of water from evaporation and by plant transpiration.

Flow accounts General term used in environmental accounting for a framework which presents information on the physical flows of resources throughout the economy. Flow accounts published for water include supply and use tables.

Gigalitre 1 thousand million litres.

Gross value Refers to the gross value of commodities produced. It is the value placed on recorded production at the wholesale prices realised in the market place.

Groundwater assets Average volume of water extracted from the groundwater system each year on a sustainable basis. In ARWC (1987a) it is measured as Total Divertible Resource (TDR) and in the future it will be measured as sustainable yield.

Groundwater province Areas where there is a broad uniformity of hydrogeological and geological conditions with reasonably uniform water bearing characteristics. The provinces are split into zones of predominantly sedimentary or fractured rocks.

GMA Groundwater management areas (GMA) are zones within groundwater provinces that are either independent or mutually dependant aquifer systems, the zones are geographically independent and are locations where management may be needed to control groundwater extraction.

Groundwater recharge Annual volume of replenishment of the water stored in aquifers through natural means (e.g. rainfall and infiltration) or by artificial methods.

Industry gross product (IGP) A measure of the unduplicated gross product of a business defined as gross output minus intermediate inputs. For periods prior to 1997–98, IGP was the official measure of the contribution of industries to gross domestic product.

Input-output A compilation method which provides a description of the inter-industry flows of goods and services within the economy, and the structure and inter-relationship of industries.

In-stream water use The use of water within a river or stream. Can include recreation, tourism, scientific and cultural uses, ecosystem maintenance, hydro-electricity and commercial activities, and dilution of waste. The volume of water required for most in-stream uses cannot be quantified, with the exception of hydro-electricity generation.

Kilolitre 1 thousand litres.

Mains water Mains water is IOCC (Input-Output Commodity Code) 37000010 for water. This is the commodity of water which is measured within the economic input-output tables as an economic transaction for the exchange of water. The majority of mains water tends to be supplied by the water supply component of IOIG (input output industry group) 3701 Water supply; sewerage and drainage. The water supply component consists of units mainly engaged in storage, purification or distribution of water by pipeline or carrier. It also includes the operation of irrigation systems that supply water to a farm and the supply of steam and hot water.

Mean Annual Runoff (MAR) The definition of mean annual runoff (MAR) is dependant on the runoff regime for each river basin. However, generally it is the maximum average annual flow observed in the river basin (AWRC 1987a).

Megalitre 1 million litres. Approximately equal to the volume of water contained by an olympic swimming pool (i.e. 20m x 50m x 1m).

National accounts Systematic summary of national economic activity (income and expenditure). At a detailed level it shows a statistical picture of the structure of the economy.

Net water consumption Net water consumption is equal to mains water use plus self-extracted water use minus mains water supply. Calculations for in-stream water use and the water industry differ (See notes associated with Tables 1.20 to 1.23).

Non-point source discharge Water discharged to the environment that is spread out over a wide area, e.g. agriculture discharges are where water is not discharged from a single point.

Point source discharge A stationary source of water discharged to existing surface waters, e.g. sewerage outfall point.

Permissable Annual Volume (PAV) Refers to the total divertable resource or sustainable yield that can be applied to groundwater resources without causing adverse effects or long term depletion of storages.

Proclaimed region A surface or groundwater resource/region in South Australia proclaimed under the *Water Resources Act 1976*, to control water extractions.

Regulated discharge Water discharged after use where that discharge does not match the natural flow regime of the receiving water body. Practically all waters extracted and subsequently discharged are considered regulated.

Regulated river A river declared under Section 22 of the New South Wales Water Act that has its flow or supply of water augmented by a dam.

Return flow Volume of water returned (after use for economic purposes) to a stream or water body, that is available for subsequent withdrawal.

River basin The area drained by a stream and its tributaries where surface runoff collects. In an area of uncoordinated drainage, drainage patterns define a basin.

Runoff The amount of rainfall which actually reaches a storage or stream.

SEEA SEEA is the System for Integrated Economic and Environmental Accounting. It is a framework used to develop environmental accounts by integrating environmental information into an accounting framework. The SEEA publication provides the conceptual basis for developing a framework to describe the inter-relationship between the natural environment and the economy (UN 1993a).

Self-extracted water Water extracted directly from the environment for use.

Stock tables Stock tables for water depict the annual average surface and groundwater assets available in Australia for economic and environmental use. These are based on long term averages of the resources available. Measurements of water assets are made at two points in time which represent opening and closing stocks. If possible this should include a component breakdown into allocated resources (for economic and environmental use) and unallocated resources. The definitions used may vary due to State practices and can include the potential sustainable yields/bulk entitlements/allocations.

System of National Accounts (SNA) The System of National Accounts (SNA) is an international framework which can be used to develop a comprehensive, consistent and flexible set of macroeconomic accounts (UN 1993b).

Surface water allocations The amount of water declared by the governing body to be available to a water user. In NSW refers to amount of water available to a water user from a regulated river.

Surface water assets Average volume of water that could be diverted from a basin each year on a sustained basis.

Sustainable yield for groundwater For Australian aquifers it is defined as the level of extraction, measured over a specific planning timeframe, that should not be exceeded to protect the higher value uses associated with the aquifer. See **Groundwater assets** definition.

Total Divertible Resource (TDR) Defined as the average annual volume of water, using current technology that can be removed from developed or potential groundwater sources on a sustained basis without causing adverse effects or long term depletion of storages. See **Groundwater assets** definition.

Unregulated river A river whose flow and water supply is not augmented by dams, and is not declared under Section 22 of the New South Wales Water Act.

Water transfers Includes inter-basin transfers, artificial groundwater recharge, extraction and transfers for environmental reasons.

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