



# **Water Account**

## **Australia**

**2009–10**

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AUSTRALIAN BUREAU OF STATISTICS

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## INTRODUCTION

This publication presents information on the supply and use of water in the Australian economy in 2009–10 in both physical (i.e. ML) and monetary terms. The previous release of these data were for the 2008–09 reference year and numerous comparisons between 2008–09 and 2009–10 are made within this publication.

The focus of the *Water Account Australia* (WAA) is on the interactions between users within the economy and the environment. The economy is the system which abstracts water for consumption and production activities. The infrastructure to mobilise, store, treat, distribute and return water back to the environment forms part of the economy.

Water accounts can be prepared for any geographical boundary, whether it be administrative (e.g. National, States and Territories) or hydrological (e.g. river basins and water catchments).

The WAA uses the *System of Environmental-Economic Accounts for Water* (SEEA–Water) as the underlying conceptual framework. The SEEA–Water was adopted as an interim international statistical standard in 2007.

The SEEA–Water describes a series of tables and accounts covering the:

- physical supply and use of water
- monetary supply and use of water
- emission accounts (the pollution added to water)
- hybrid accounts (which combine physical and monetary supply and use with data from the national accounts)
- physical asset accounts
- water quality

## CLIMATE

Water supply and use in the Australian economy needs to be considered in the context of Australia's climate. Mean annual rainfall in Australia varies substantially across the continent and between regions. Large areas of Australia have a mean annual rainfall of 600–1500 mm, an amount comparable with most of Europe and North America.

However, a key feature of Australia's climate is not the amount of rainfall but the variability in rainfall from year-to-year and season-to-season. Annual rainfall variability is greater for Australia than any other continental region. Any assessment of water supply and use over time must take this variability into account, including comparisons between the Water Accounts for 2008–09 and 2009–10.

Australian annual mean rainfall was 503 mm in 2009–10, a 4% decrease from the 522 mm reported in 2008–09. Although annual mean rainfall was similar during the two reference periods, there were large differences in the geographical distribution of rainfall. Victoria received, on average, 682 mm in 2009–10 compared to 498 mm in 2008–09, an increase of 37%. Western Australia also recorded a dramatic change in rainfall, with rainfall decreasing by 26% from 381 mm in 2008–09 to 281 mm in 2009–10. Chapter 6 (Climate

CLIMATE *continued*

conditions) provides additional information on the climatic conditions in 2008–09 and 2009–10.

## CHANGES TO THIS ISSUE

This issue is the first of the annual WAA releases, as part of its commitment to the *System of Environmental-Economic Accounts* (SEEA) framework. Prior to this release, ABS water accounts were produced four-yearly for the 1996–97, 2000–01, 2004–05 and 2008–09 reference periods. The estimates in this publication are for the 2009–10 reference period.

Subsequent releases of the annual WAA will include estimates for the preceding year, which may include revisions reflecting improved source data and updated information. Details of any major revisions to published data will be described within the Explanatory Notes.

Environmental flows have not been separately identified within these 2009–10 estimates. ABS is currently investigating metering and presentation issues relating to environmental water and aims to publish these results in the next edition of WAA.

For the MINING and MANUFACTURING industries, the 2009–10 WAA presents *Australian and New Zealand Standard Industrial Classification* (ANZSIC) division level estimates at the State/Territory level (sub-division splits are presented only at the National level), due to the reduction in survey information feeding into this edition of the WAA. The next fully comprehensive WAA estimates are due in respect of the 2011–12 reference year.

## CHAPTER CONTENTS

This edition of the *Water Account Australia* consists of six chapters, an Appendix; Explanatory notes; Glossary and a set of data cubes. Each chapter begins with an introduction and contains commentary to highlight key data and assist with interpretation of tables, which are interspersed within the section commentary.

Chapter 2 (Physical water supply and use) presents commentary and summary graphs on the supply and use (or flow) of water in the Australian economy for 2009–10 only. The complete Physical supply and use tables for Australia and the States and Territories can be found in the data cubes. Volumes of water supplied, used and discharged are presented by industry in these tables. Water use is split by self-extracted, distributed, reuse and in-stream water.

Chapter 3 (Monetary water supply and use) combines monetary information based on the Australian National Accounts and water price information, with the physical water flow information presented within the Physical water supply and use section.

Chapters 4 (Water supply, sewerage and drainage) and 5 (Agriculture) are specific to these industries and take a more detailed look at the supply and use of water in the Australian economy and include a range of additional information.

An appendix featuring the Australian Government Water Accounting, describes the differing but complementary purposes of the water accounts produced by the Bureau of Meteorology and the Australian Bureau of Statistics.

Note that some of the tables within the chapters on *Monetary water supply and use* and *Water supply, sewerage and drainage* only include data for the 2009–10 reference year. However, the corresponding commentary sometimes compares movements in the

## CHAPTER CONTENTS

*continued*

estimates between 2008–09 and 2009–10. Where these comparisons are made without corresponding tabular data, the 2008–09 data referred to are those published in the 2008–09 WAA.

Additional data on household water use can be found in *Australia's Environment: People's Views and Practices, March 2007* (ABS cat. no. 4602.0) and *Australia's Environment: People's Views and Practices, March 2010* (ABS cat. no. 4602.0.55.003). This includes information on the number of households with rainwater tanks and water conservation practices among other topics.

As with the 2008–09 edition of the WAA, additional data will be progressively added to the ABS website. These data will include information on the Murray–Darling Basin and the presentation of water supply and use tables in accordance with SEEA–Water recommendations.

## TERMINOLOGY

Every endeavour has been made to ensure the terminology used in the 2009–10 WAA is consistent with definitions found in the 2008–09 WAA and those used by Commonwealth, State and Territory water authorities. ABS continues to use the term "*Distributed water*" to reflect the terminology of SEEA–Water (UN 2006). Distributed water includes potable water, non-potable water and raw water (see Glossary).

FORTHCOMING  
ENVIRONMENTAL  
ACCOUNTS RELEASES

Water supply and use estimates for the Murray–Darling Basin (2009–10 reference period) will be produced in the first half of 2012 and may include revisions to 2008–09 WAA estimates.

## INQUIRIES

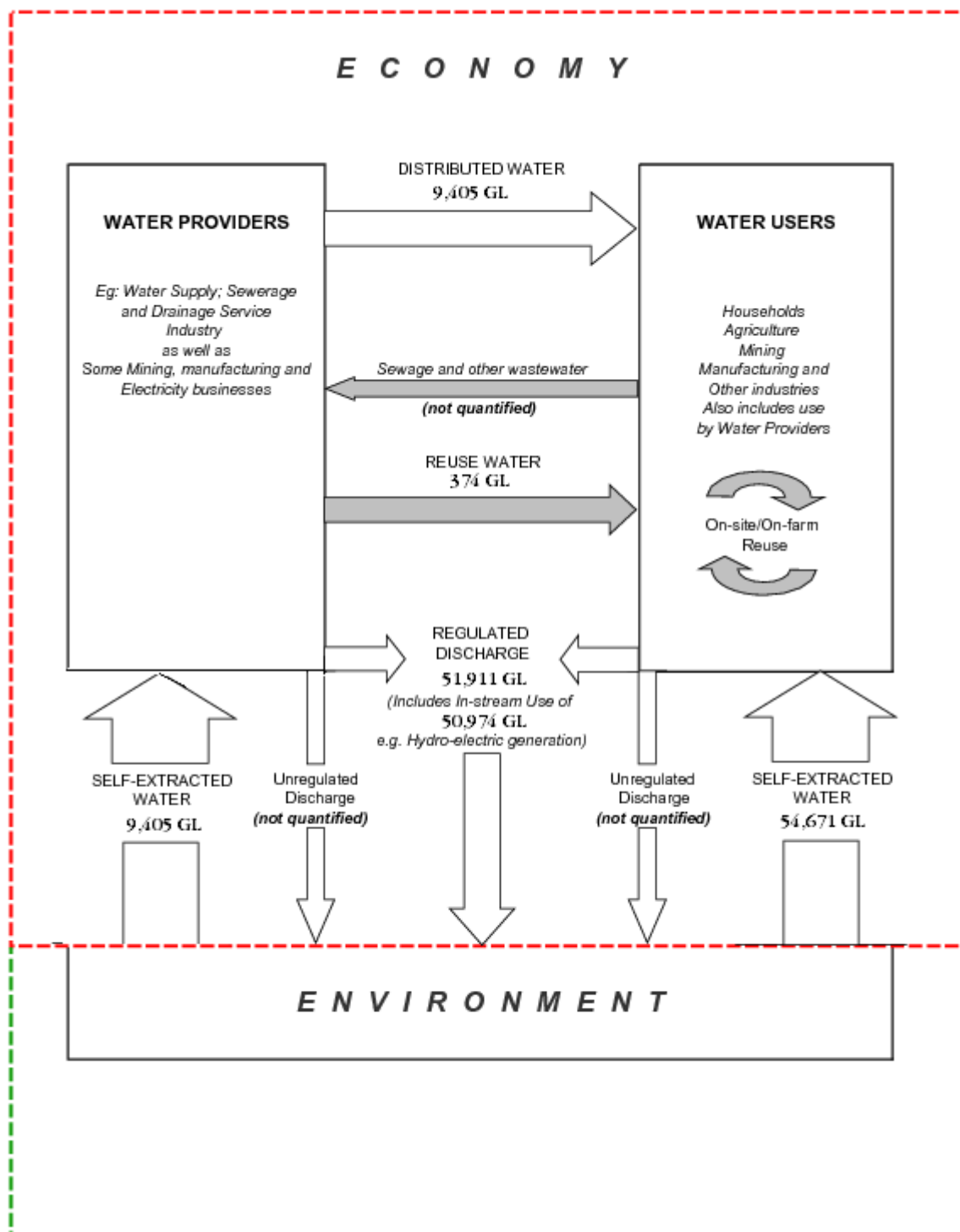
For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.

## MAIN FINDINGS

## Summary statistics

Figures 1.1 and table 1.2 summarise much of the data contained in the WAA.

### 1.1 WATER SUPPLY IN THE AUSTRALIAN ECONOMY—2009-10



**1.2** SUMMARY STATISTICS—2008–09 and 2009–10

	AUSTRALIA		STATE/TERRITORY—2009–10							
	2008–09	2009–10	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
Water consumption by industry (GL) (a)	12 333	11 609	3 762	2 572	2 725	971	1 038	393	130	20
Water consumption by households (GL)	1 768	1 868	565	327	364	126	348	72	38	28
Total water consumption (GL)	14 101	13 476	4 326	2 899	3 088	1 097	1 386	465	168	47
Gross State Product (\$m)	1 255 241	1 281 180	401 716	293 313	254 550	78 558	187 834	22 341	16 880	25 988
Population ('000)	21 953	22 327	7 233	5 546	4 514	1 645	2 294	508	230	359
Gross State Product/Total water consumption (\$ per GL)	89	95	93	101	82	72	136	48	100	551
Gross State Product/Industry water consumption (\$ per GL)	102	110	107	114	93	81	181	57	130	1 331
Water consumption (kL) per capita	642	604	598	523	684	667	604	916	732	131
Water consumption (kL) per household	81	84	78	59	81	77	152	143	167	77

(a) All industries i.e. Agriculture, Mining, Manufacturing, etc.

*Main findings*

- In 2009–10, Australian annual mean rainfall was 503 mm, 4% lower than the 522 mm recorded in 2008–09.
- During 2009–10, 64,076 GL of water was extracted from the environment and used within the Australian economy. This was a 7% increase on the 59,839 GL extracted during 2008–09. Water providers extracted 9,405 GL, which was a 3% decrease on the 9,673 GL extracted during 2008–09. Water-using industries (mainly the AGRICULTURE industry and hydro-electricity generation) extracted 54,959 GL, which was a 9% increase on the 50,166 GL directly extracted in 2008–09.
- Water consumption by all industries and households in Australia was 13,476 GL in 2009–10, a decrease of 4% from 2008–09 when it was 14,101 GL.
- The AGRICULTURE industry (businesses with agriculture as their main activity) consumed the largest volume of water with 6,987 GL, representing 52% of Australia's water consumption in 2009–10.
- Queensland showed the largest fall (8%) in water consumption from 3,351 GL in 2008–09 to 3,088 GL in 2009–10. This was mostly because of a 216 GL (or 10%) decrease in the consumption of water by the AGRICULTURE industry in this state.
- In 2009–10, there were 354 water providers in Australia, supplying 9,405 GL of distributed water. This compares to 401 providers and 9,673 GL in 2008–09.
- Water providers in the WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES industry (hereafter referred to as WATER SUPPLY industry) supplied 9,117 GL or 97% of distributed water in 2009–10.
- Surface water made up 8,727 GL or 96% of the distributed water supplied by the WATER SUPPLY industry in 2009–10.
- Reuse water made up 374 GL of total water supplied by water providers in 2009–10, compared to 348 GL in 2008–09. In both reference years it represented just under 4% of total water supplied by water providers.
- A 23% increase in the use of reuse water by the AGRICULTURE industry (up from 103 GL in 2008–09 to 126 GL in 2009–10) contributed to the 7% rise in the use of reuse water in Australia between 2008–09 and 2009–10.

*Main findings continued*

- Water consumption by households increased by 6% between 2008–09 (1,768 GL) and 2009–10 (1,868 GL).
- Households experienced a 42% increase from 2008–09 in the use of reuse water (from 2,193 ML to 3,106 ML), however the volumes involved were relatively low.
- Sales and service income from the WATER SUPPLY industry was \$12.5 billion, an 12% increase from 2008–09.
- The average price of distributed water supplied increased by 10% from \$0.73/kL in 2008–09 to \$0.80/kL in 2009–10.
- There was large variation in the average price paid for distributed water with households paying \$2.09/kL and AGRICULTURE \$0.09/kL.
- Gross value added for the WATER SUPPLY industry increased by 12% between 2008–09 and 2009–10, from \$6,408 million to \$7,191 million.
- The gross value of irrigated agricultural production was \$11.5 billion in 2009–10, a slight decrease from \$12.0 billion in 2008–09.
- The AGRICULTURE industry generated a total of \$4 million of gross value added (on average) for every GL of water consumed in 2009–10.
- The MINING industry recorded a total of \$196 million of gross value added per GL of water consumed, a 13% decrease from 2008–09.
- The MANUFACTURING industry generated a total of \$164 million of gross value added for every GL of water consumed, a 0.2% decrease from 2008–09.

*Water Supply*

The total volume of water supplied by the WATER SUPPLY industry in 2009–10 was 9,491 GL (see table 2.11 Water supply and use, Australia, chapter 2). Of the total supplied, 374 GL (3.8%) was reuse water and 1,803 GL was distribution losses (see table 4.10 Distribution losses, chapter 4). The actual total volume of water distributed to users (or net water supply) was 7,117 GL (see table 4.12 Net distributed water and reuse water supply, chapter 4).

Table 1.3 shows that \$5,830 million of revenue was generated from supplying 7,031 GL of urban and rural distributed water by the WATER SUPPLY industry in 2009–10. In 2008–09, revenue earned by the WATER SUPPLY industry was \$5,207 million for the supply of 6,864 GL of distributed water (including reuse water). Since 2008–09, revenue has increased by 12% while the volume of distributed water supplied increased by 2%. The MINING, MANUFACTURING and ELECTRICITY GENERATION industries supplied 288 GL of water to other businesses and households and the total revenue earned was less than half a million dollars.

## Water Supply continued

**1.3** MONETARY AND PHYSICAL DISTRIBUTED WATER SUPPLY(a), by industry—2009–10

	MONETARY UNITS .....	PHYSICAL UNITS .....
	Distributed water(b)	Supply to other economic units
	\$m	GL
Agriculture, forestry and fishing	-	-
Mining	—	21
Manufacturing	—	13
Electricity and gas supply	—	254
Water supply, sewerage and drainage	5 830	7 031
All other industries	-	-

— nil or rounded to zero (including null cells)

(a) Includes reuse water

(b) Urban and rural

**1.4** WATER CONSUMPTION, by State/Territory—2004–05, 2008–09 and 2009–10

	AUSTRALIA .....			STATE/TERRITORY 2009–10 .....							
	2004–05	2008–09	2009–10	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
	GL	GL	GL	GL	GL	GL	GL	GL	GL	GL	GL
Agriculture	12 191	6 996	6 987	2 127	1 553	1 928	720	324	286	49	1
Forestry and fishing	47	101	85	1	1	6	1	74	2	—	—
Mining	413	508	489	61	5	114	22	245	17	25	—
Manufacturing	589	677	658	141	138	186	76	62	37	18	—
Electricity and gas	271	328	297	68	113	90	1	24	—	1	—
Water supply(a)(b)	2 083	2 396	1 893	1 001	512	190	52	103	17	10	8
Other industries(c)	1 063	1 327	1 199	363	250	210	97	207	35	27	11
Household	2 108	1 768	1 868	565	327	364	126	348	72	38	28
<b>Total</b>	<b>18 767</b>	<b>14 101</b>	<b>13 476</b>	<b>4 326</b>	<b>2 899</b>	<b>3 088</b>	<b>1 097</b>	<b>1 386</b>	<b>465</b>	<b>168</b>	<b>47</b>

— nil or rounded to zero (including null cells)

(a) Includes sewerage and drainage services

(b) Includes water losses

(c) Includes aquaculture and services to agriculture

Note: This table presents an activity view for agriculture for 2004–05 and an industry view for 2008–09 and 2009–10

## Water Use

Table 1.5 shows physical use of distributed (both urban and rural) water and related expenditure in 2009–10. Households consumed 1,670 GL (24% of the total water consumption) and spent \$3,488 million (60% of total expenditure) on distributed water.

Water consumption by the AGRICULTURE, FORESTRY AND FISHING industry increased by 11% (from 3,518 GL to 3,905 GL) and the expenditure increased by 2% (from \$353 million to \$359 million). Total expenditure on distributed and reuse water for all industries decreased by 1% (from \$2,362 million to \$2,350 million) while physical water use (both distributed and reuse) decreased from 5,416 GL to 5,390 GL.

## Water Use continued

**1.5** MONETARY AND PHYSICAL DISTRIBUTED WATER USE, by industry and households—2009–10

	EXPENDITURE ON DISTRIBUTED AND REUSE WATER .....		PHYSICAL USE OF DISTRIBUTED AND REUSE WATER .....	
	\$m	Percent of total (%)	GL	Percent of total (%)
Total consumption by industries(a)				
Agriculture, forestry and fishing(b)	359	6	3 905	55
Mining	99	2	79	1
Manufacturing	364	6	362	5
Electricity, gas and waste services	104	2	214	3
Water supply, sewerage and drainage	-	-	19	—
All other service industries	1 423	24	812	12
<b>Total</b>	<b>2 350</b>	<b>40</b>	<b>5 390</b>	<b>76</b>
Final consumption by households(c)	3 488	60	1 670	24
Final consumption by Governments	-	-	-	-
<b>Total net use(d)</b>	<b>5 838</b>	<b>100</b>	<b>7 060</b>	<b>100</b>

— nil or rounded to zero (including null cells)

(a) Total consumption by industries = total intermediate consumption

(b) Includes Aquaculture

(c) Includes social benefits paid in kind by governments.

(d) Total net use = Total use less losses by Water Supply industry and environmental flows.

## Gross Value Added

Table 1.6 displays industry information for 2009–10 relating to gross value added, physical water consumption and the ratio of industry gross value added to industry water consumption. Physical water consumption in this table relates to consumption of all categories of water (self-extracted, distributed and reuse). The relationship between water consumption and value added of the industry varies from industry to industry, reflecting the differing degrees to which water forms an input into the production of goods and services by these industries. The percentage movements between 2008–09 and 2009–10 are based on chain volume measures of industry gross value added (see Explanatory Notes, paragraphs 44 and 54).

**1.6** INDUSTRY GROSS VALUE ADDED AND WATER CONSUMPTION—2009–10

	Industry gross value added (a)	Water consumption	Industry gross value added per GL of water consumed
	\$m	GL	\$m/GL
Agriculture, forestry and fishing	28 764	7 187	4
Mining	96 105	489	196
Manufacturing	107 707	658	164
Electricity, gas and waste services	18 837	297	64
Water supply, sewerage and drainage	7 191	1 893	4
All other industries	944 442	1 084	871
<b>Total</b>	<b>1 203 046</b>	<b>11 609</b>	<b>104</b>

(a) 2009–10 current prices

*Gross Value Added*  
*continued*

The AGRICULTURE, FORESTRY AND FISHING industry generated, on average, \$4 million in gross value added for every GL of water consumed in 2009–10. Industry gross value added decreased by 1% in chain volume terms while the water consumption increased by 0.4% from 2008–09. The MINING industry recorded \$196 million gross value added for every GL consumed. This was a 13% decrease from 2008–09, reflecting a 4% decrease in water consumption and a 6% increase in industry gross value added (chain volume terms) from 2008–09. The MANUFACTURING industry generated \$164 million gross value added per GL of water consumed. Water consumption in the MANUFACTURING industry fell by 3% while industry gross value added rose by 1% (chain volume terms).

## CHAPTER 2

## PHYSICAL WATER SUPPLY AND USE .....

### INTRODUCTION

This chapter presents information on the volume of water supplied and used by industry and households within the Australian economy in 2009–10. A breakdown of water consumption for the States and Territories is presented, as well as water consumption by main industry groups.

### MAIN FINDINGS

The main findings in relation to the physical supply and use of water are:

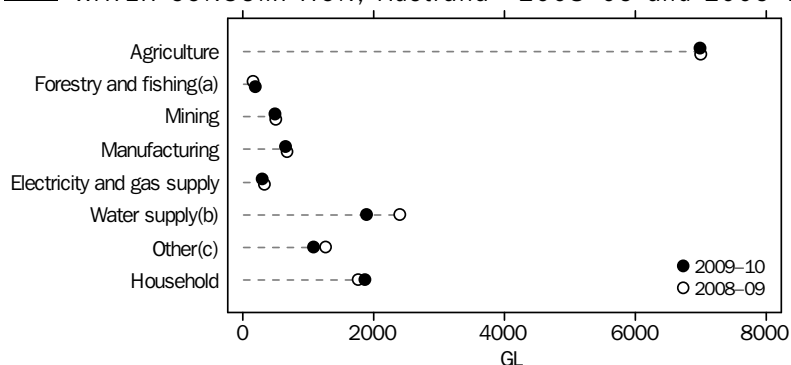
- Water consumption in Australia for 2009–10 was 13,476 GL compared to 14,101 GL in 2008–09, a decrease of 4%.
- The AGRICULTURE industry had the highest water consumption, accounting for 6,987 GL (or 52% of the National total), which was virtually unchanged from 6,996 GL in 2008–09.
- The WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES industry was (hereafter referred to as WATER SUPPLY industry) the next highest consumer of water, accounting for 1,893 GL, which was 14% of total water consumption.
- Households were also a significant end user of water, accounting for 1,868 GL, or 14% of total water consumption.
- The MANUFACTURING industry consumed 658 GL of water, which was 5% of total water consumption.

### WATER CONSUMPTION

#### *Industry and households*

Graph 2.1 shows water consumption, by households and industry, for Australia in 2008–09 and 2009–10.

**2.1** WATER CONSUMPTION, Australia—2008–09 and 2009–10



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

(b) Includes Sewerage and drainage services.

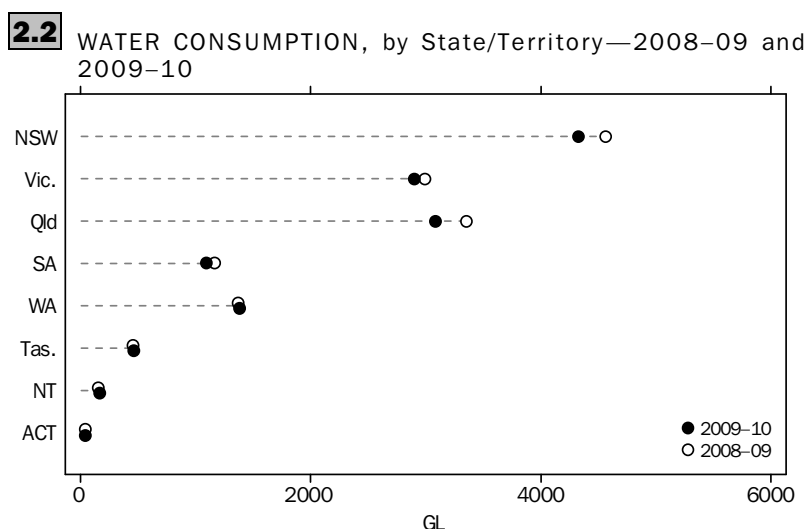
(c) Includes Waste collection, treatment and disposal services.

*Industry and households  
continued*

Water consumption in Australia for 2009–10 was 13,476 GL compared to 14,101 GL in 2008–09, a decrease of 4%. The AGRICULTURE industry had the highest water consumption in 2009–10, accounting for 6,987 GL (or 52% of the National total), which was virtually unchanged from 6,996 GL in 2008–09. The WATER SUPPLY industry was the next highest consumer of water in 2009–10, accounting for 1,893 GL, which was 14% of total water consumption. Water use by this industry was mostly attributable to losses in distribution and was down 21% from 2008–09, due to large decreases in losses reported in New South Wales and Queensland (see chapter 4, Water supply, sewerage and drainage). Households were also a significant consumer of water in 2009–10, accounting for 1,868 GL, or 14% of total water consumption. The MANUFACTURING industry consumed 658 GL of water in 2009–10, which accounted for 5% of total water consumption.

*States and Territories*

Graph 2.2 shows water consumption by the States and Territories. The share of water consumption is broadly aligned with state population and economic activities.



Graphs 2.3 to 2.10 display water consumption by industry for each State and Territory for 2008–09 and 2009–10. These graphs illustrate the different patterns of water consumption for the main industry groups.

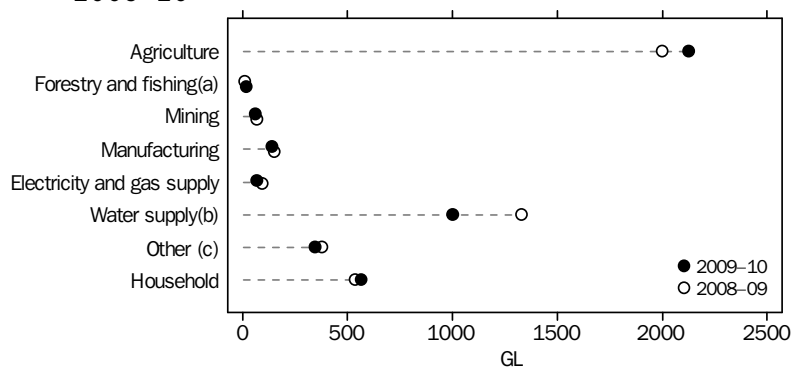
## States and Territories

*continued*

## NEW SOUTH WALES

In New South Wales, water consumption was 4,326 GL during 2009–10 compared to 4,562 GL in 2008–09, a decrease of 5%. In 2009–10, the highest consumer was the AGRICULTURE industry with 2,127 GL or 49% of the total water consumption in New South Wales (an increase in consumption of 6% from 2008–09). This was followed by the WATER SUPPLY industry which consumed 1,001 GL or 23% of water, the largest of all the States and Territories. However, the water consumption in this industry decreased by 328 GL (or 25%) from 2008–09, mainly due to large decreases in reported losses. Households were also a significant consumer of water with 565 GL (13%) of total water consumption in New South Wales.

**2.3** WATER CONSUMPTION, New South Wales—2008–09 and 2009–10



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

(b) Includes Sewerage and drainage services.

(c) Includes Waste Collection, treatment and disposal services.

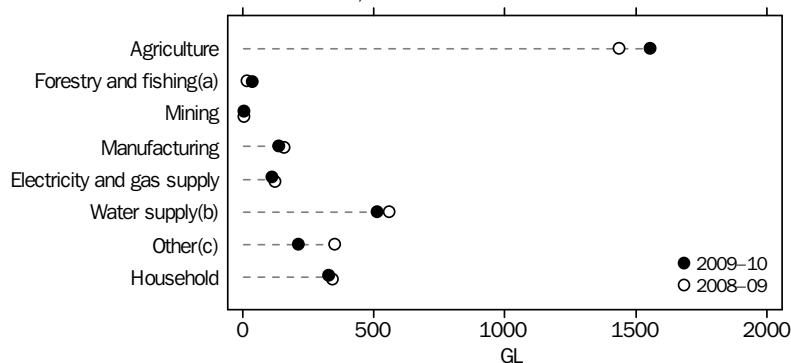
## VICTORIA

In Victoria, 2,899 GL of water was consumed in 2009–10 compared to 2,991 GL in 2008–09, a decrease of 3%. The AGRICULTURE industry was the highest consumer of water in Victoria in 2009–10, responsible for the consumption of 1,553 GL (or 54%) of the total water consumption - this was an 8% increase from 2008–09. The WATER SUPPLY industry was the next highest consumer of water, accounting for 512 GL (or 18%). Households were also a significant consumer of water with 327 GL or 11% of Victoria's total water consumption.

States and Territories  
continued

VICTORIA *continued*

## 2.4 WATER CONSUMPTION, Victoria—2008–09 and 2009–10



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

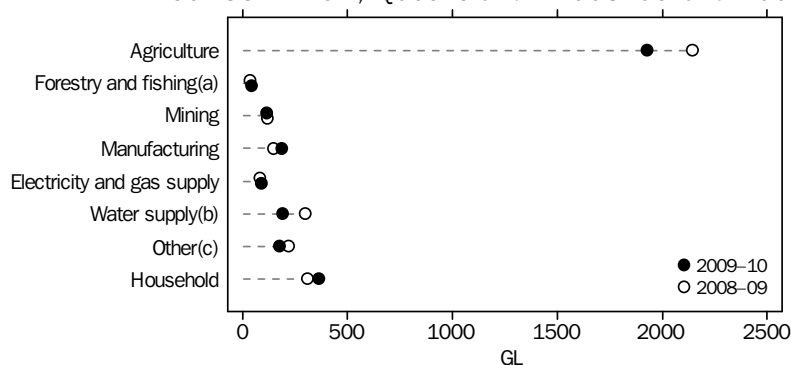
(b) Includes Sewerage and drainage services.

(c) Includes Waste Collection, treatment and disposal services.

## QUEENSLAND

In Queensland, 3,088 GL of water was consumed in 2009–10 compared to 3,351 GL in 2008–09, a decrease of 8%. The AGRICULTURE industry consumed the most water in Queensland in 2009–10, with 1,928 GL or 62% of the total water consumption. However, the decrease in AGRICULTURE water consumption in Queensland from 2008–09 to 2009–10 (216 GL or 10%) was the largest decrease for Agriculture in any State or Territory. The next largest consumers in Queensland were households, with 364 GL or 12%, followed by the WATER SUPPLY industry, with 190 GL or 6%. Consumption by the WATER SUPPLY industry decreased by 106 GL (or 36%) from 2008–09 due to a large decrease in reported losses.

## 2.5 WATER CONSUMPTION, Queensland—2008–09 and 2009–10



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

(b) Includes Sewerage and drainage services.

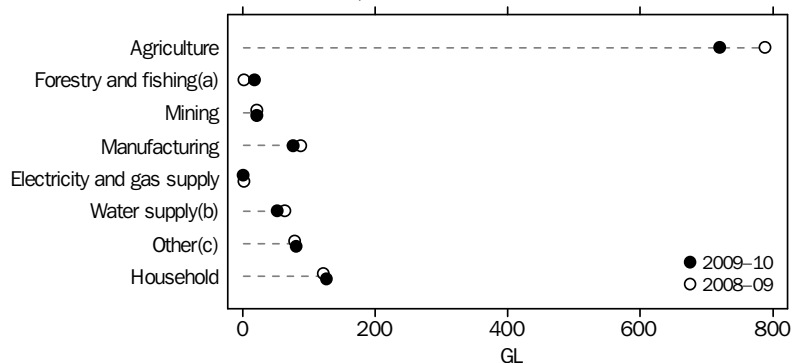
(c) Includes Waste Collection, treatment and disposal services.

## States and Territories

*continued*

## SOUTH AUSTRALIA

Water consumption in South Australia was 1,097 GL in 2009–10 compared to 1,168 GL in 2008–09, a decrease of 6%. The AGRICULTURE industry was the largest consumer of water in 2009–10, accounting for 720 GL or 66% of the total water consumption in South Australia. This proportion of water consumption by AGRICULTURE in South Australia was the largest of all the States and Territories, despite agricultural water consumption decreasing in this state by 68 GL (or 9%) from 2008–09. Households were also large consumers of water with 126 GL or 11% of South Australia's water consumption.

**2.6** WATER CONSUMPTION, South Australia—2008–09 and 2009–10

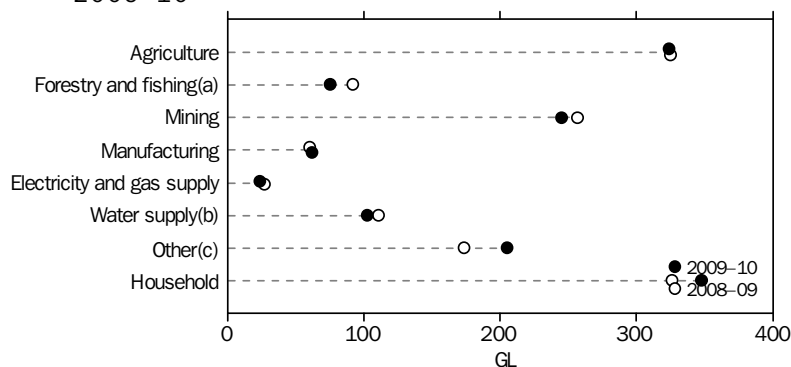
(a) Includes Services to agriculture; hunting and trapping.

(b) Includes Sewerage and drainage services.

(c) Includes Waste Collection, treatment and disposal services.

## WESTERN AUSTRALIA

In Western Australia, 1,386 GL of water was consumed in 2009–10 compared to 1,371 GL in 2008–09, an increase of just 1%. In 2009–10, households consumed the largest volume (348 GL or 25%) followed by the AGRICULTURE industry (324 GL or 23%). Consumption by the MINING industry was also significant (245 GL or 18%), due to a significant level of mining activity in Western Australia compared to other States and Territories.

**2.7** WATER CONSUMPTION, Western Australia—2008–09 and 2009–10

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

(b) Includes Sewerage and drainage services.

(c) Includes Waste Collection, treatment and disposal services.

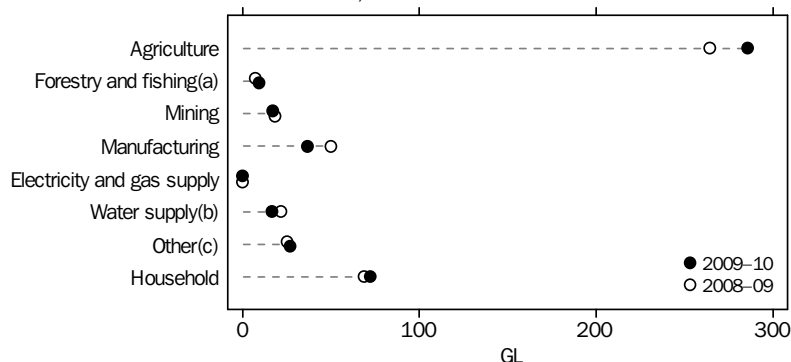
## States and Territories

*continued*

## TASMANIA

Water consumption was 465 GL in Tasmania in 2009–10 compared to 456 GL in 2008–09, an increase of 2%. In 2009–10, the AGRICULTURE industry was the largest consumer accounting for 286 GL or 61% of the total water consumption in the State. Households were also a major consumer of water in Tasmania, with 72 GL or 16%. The MANUFACTURING industry consumed 37 GL or 8%, a decrease of 13 GL (or 26%) from 2008–09.

**2.8** WATER CONSUMPTION, Tasmania—2008–09 and 2009–10



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

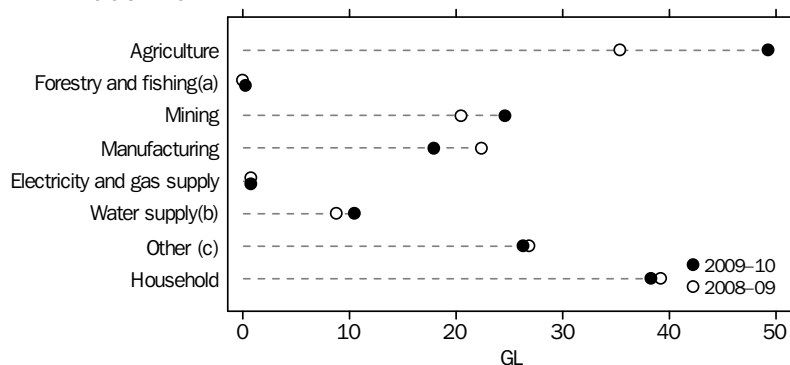
(b) Includes Sewerage and drainage services.

(c) Includes Waste Collection, treatment and disposal services.

## NORTHERN TERRITORY

In the Northern Territory, 168 GL of water was consumed in 2009–10 compared to 154 GL in 2008–09, an increase of 9%, the largest percentage increase of all the States and Territories. This increase was driven by climate conditions and water availability reflected in the AGRICULTURE industry, which increased its consumption from 2008–09 by 14 GL (or 39%), accounting for 49 GL (or 29%) in 2009–10. The next highest consumer of water was households, consuming 38 GL (or 23%), followed by the group of OTHER industries with 26 GL or 16%.

**2.9** WATER CONSUMPTION, Northern Territory—2008–09 and 2009–10



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

(b) Includes Sewerage and drainage services.

(c) Includes Waste collection, treatment and disposal services.

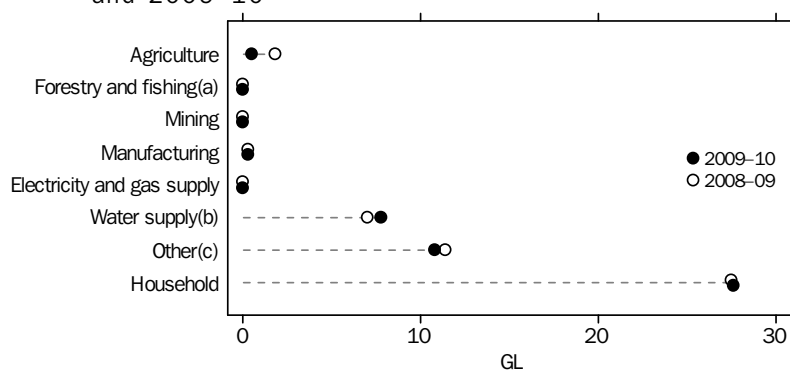
## States and Territories

*continued*

## AUSTRALIAN CAPITAL TERRITORY

In the Australian Capital Territory, 47 GL of water was consumed in 2009–10 compared to 48 GL in 2008–09, a decrease of 2%. In 2009–10, households accounted for 28 GL or 59% of total water consumption in the Territory. This was the largest proportion of total consumption by households of all the States and Territories, mainly due to the fact that the AGRICULTURE industry is relatively small in the Australian Capital Territory. The next highest consumer of water was OTHER industries, consuming 11 GL or 23%, followed by the WATER SUPPLY industry with 8 GL or 17%.

**2.10** WATER CONSUMPTION, Australian Capital Territory—2008–09 and 2009–10



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

(b) Includes Sewerage and drainage services.

(c) Includes Waste collection, treatment and disposal services.

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## 2.11 WATER SUPPLY AND USE, Australia—2009–10

### SUPPLY

	Self-extracted(a)	Distributed(b)	Reuse(c)	Regulated discharge(d)
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	na
Aquaculture	—	—	—	370 709
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
<b>Mining</b>				
Coal mining	—	6 470	na	41 758
Oil and gas extraction	—	883	na	57 574
Metal ore mining	—	np	na	149 173
Non-metallic mineral mining and quarrying	—	96	na	6 478
Exploration and other mining support services	—	np	na	22 700
<b>Total</b>	—	21 099	na	277 683
<b>Manufacturing</b>				
Food, beverage and tobacco product	—	5 532	na	62 894
Textile, leather, clothing and footwear	—	—	na	1 387
Wood, pulp, paper and converted paper product	—	—	na	52 209
Printing (incl the reproduction of recorded media)	—	—	na	137
Petroleum, coal, basic chemical and chemical product	—	—	na	23 208
Polymer, rubber and non-metallic mineral product	—	—	na	4 703
Primary metal, metal and fabricated metal product	—	np	na	54 861
Transport equipment, machinery and equipment	—	1	na	70
Furniture and other	—	—	na	8
<b>Total</b>	—	13 108	na	199 478
<b>Electricity, gas, water and waste services</b>				
Electricity and gas supply(f)	—	253 691	na	49 470 540
Water supply, sewerage and drainage services(g)	—	9 117 444	373 987	1 593 494
Waste collection, treatment and disposal services	—	—	na	na
<b>Other industries</b>	—	—	na	na
<b>Household</b>	—	—	—	—
<b>Environment</b>	64 076 308	—	—	—
<b>Total</b>	<b>64 076 308</b>	<b>9 405 342</b>	<b>373 987</b>	<b>51 911 904</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users. Use data (i.e. distributed, reuse and in-stream) includes all 'volumetric' based and some 'rules-based' Environmental flows.

(g) Includes losses and water used by the WATER SUPPLY industry as well as all 'volumetric based' and some 'rules based' Environmental flows.

**2.11****WATER SUPPLY AND USE, Australia—2009–10** *continued*

## USE

	Self-extracted(a)	Distributed(b)	Reuse(c)	In-stream use(d)	Consumption(e)
	ML	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>					
Agriculture(f)					
Nursery and floriculture production	23 333	32 838	4 385	—	60 555
Mushroom and vegetable growing	283 952	139 746	15 361	—	439 059
Fruit and tree nut growing	327 075	777 709	11 098	—	1 115 883
Sheep, beef cattle and grain farming	1 339 271	1 255 805	53 553	—	2 648 630
Other crop growing	630 587	759 299	19 303	—	1 409 189
Dairy cattle farming	551 353	644 096	20 229	—	1 215 678
Poultry farming	np	9 703	np	—	16 644
Deer farming	np	350	np	—	574
Other livestock farming	51 984	26 966	2 172	—	81 122
<b>Total</b>	<b>3 214 660</b>	<b>3 646 514</b>	<b>126 160</b>	—	<b>6 987 334</b>
Aquaculture	371 654	959	27	370 709	1 931
Forestry and logging	2 208	74 181	3 033	—	79 422
Fishing, hunting and trapping	2 501	1 491	—	—	3 991
Agriculture, forestry and fishing support services	62 195	52 288	271	—	114 755
<b>Mining</b>					
Coal mining	92 643	21 011	926	32 323	75 787
Oil and gas extraction	78 762	1 126	—	45 461	33 545
Metal ore mining	387 210	np	8 120	125 550	299 499
Non-metallic mineral mining and quarrying	34 748	3 580	6	2 091	36 146
Exploration and other mining support services	65 110	np	5	21 223	44 336
<b>Total</b>	<b>658 474</b>	<b>69 530</b>	<b>9 057</b>	<b>226 648</b>	<b>489 313</b>
<b>Manufacturing</b>					
Food, beverage and tobacco product	154 975	144 328	7 046	49	300 767
Textile, leather, clothing and footwear	1 061	10 231	950	1	12 242
Wood, pulp, paper and converted paper product	np	39 420	np	—	80 951
Printing (incl the reproduction of recorded media)	6	4 337	3	—	4 346
Petroleum, coal, basic chemical and chemical product	30 741	49 244	np	5 569	77 462
Polymer, rubber and non-metallic mineral product	np	22 115	648	—	32 804
Primary metal, metal and fabricated metal product	83 369	52 588	12 896	—	139 408
Transport equipment, machinery and equipment	707	8 324	285	—	9 316
Furniture and other	29	984	4	—	1 016
<b>Total</b>	<b>323 270</b>	<b>331 571</b>	<b>29 990</b>	<b>13 411</b>	<b>658 312</b>
<b>Electricity, gas, water and waste services</b>					
Electricity and gas supply(g)	49 793 040	379 604	19 721	49 642 147	296 527
Water supply, sewerage and drainage services(h)	9 117 444	2 445 182	104 630	656 922	1 892 890
Waste collection, treatment and disposal services	6 760	2 841	1	—	9 603
<b>Other industries</b>	<b>326 762</b>	<b>734 006</b>	<b>77 990</b>	<b>64 063</b>	<b>1 074 695</b>
Household	197 340	1 667 175	3 106	—	1 867 621
Environment	—	na	na	—	—
<b>Total</b>	<b>64 076 308</b>	<b>9 405 342</b>	<b>373 987</b>	<b>50 973 900</b>	<b>13 476 395</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users. Use data (i.e. distributed, reuse and in-stream) includes all 'volumetric' based and some 'rules-based' Environmental flows.

(h) Includes losses and water used by the WATER SUPPLY industry as well as all 'volumetric based' and some 'rules based' Environmental flows.

**2.12****WATER SUPPLY AND USE, New South Wales—2009–10****SUPPLY**

	<i>Self-extracted (a)</i>	<i>Distributed (b)</i>	<i>Reuse (c)</i>	<i>Regulated discharge (d)</i>
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	na
Aquaculture	—	—	—	537
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	2 622	na	27 884
Manufacturing	—	1 781	na	38 541
Electricity, gas, water and waste services				
Electricity and gas supply(f)	—	50 602	na	8 077 257
Water supply, sewerage and drainage services(g)	—	3 391 427	126 701	606 192
Waste collection, treatment and disposal services	—	—	na	na
Other industries(h)	—	—	na	na
Household	—	—	—	—
Environment	12 617 577	—	—	—
<b>Total</b>	<b>12 617 577</b>	<b>3 446 431</b>	<b>126 701</b>	<b>8 750 411</b>

— nil or rounded to zero (including null cells)

na not available

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. Distributed water is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

**2.12****WATER SUPPLY AND USE, New South Wales—2009–10** *continued*

## USE

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>In-stream use(d)</i>	<i>Consumption(e)</i>
	ML	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>					
Agriculture(f)					
Nursery and floriculture production	4 106	12 286	343	—	16 735
Mushroom and vegetable growing	56 545	40 319	1 498	—	98 362
Fruit and tree nut growing	48 950	189 318	677	—	238 944
Sheep, beef cattle and grain farming	482 340	648 546	32 665	—	1 163 551
Other crop growing	166 847	221 015	13 172	—	401 034
Dairy cattle farming	83 619	88 697	5 070	—	177 386
Poultry farming	np	np	np	—	7 568
Deer farming	np	np	np	—	169
Other livestock farming	15 101	7 381	1 124	—	23 606
<b>Total</b>	<b>859 646</b>	<b>1 213 159</b>	<b>54 550</b>	—	<b>2 127 355</b>
Aquaculture	575	45	—	537	84
Forestry and logging	45	426	155	—	627
Fishing, hunting and trapping	240	51	—	—	292
Agriculture, forestry and fishing support services	10 926	6 447	11	—	17 385
Mining	67 665	9 967	5 956	19 926	61 040
Manufacturing	59 945	74 019	10 558	2 184	140 558
Electricity, gas, water and waste services					
Electricity and gas supply(g)	8 132 920	(h)99 412	(i)1 515	(j)8 115 046	68 199
Water supply, sewerage and drainage services(k)	3 391 427	(h)1 255 084	(i)26 126	(j)280 288	(l)1 000 922
Waste collection, treatment and disposal services	6 236	1 829	—	—	8 065
Other industries(m)	50 225	261 336	25 620	—	337 182
Household	37 726	524 655	2 210	—	564 591
Environment	—	na	na	—	—
<b>Total</b>	<b>12 617 577</b>	<b>3 446 431</b>	<b>126 701</b>	<b>8 417 981</b>	<b>4 326 298</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. Distributed water is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes all 'volumetric based' Environmental flows but excludes 'rules based'.

(i) Includes all reuse water supplied to the environment as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(j) Includes distributed and reuse water 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(k) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(l) Includes losses and water used by the WATER SUPPLY industry as well as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(m) For full list of Other industries, see Glossary.

**2.13****WATER SUPPLY AND USE, Victoria—2009–10****SUPPLY**

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>Regulated discharge(d)</i>
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	—
Aquaculture	—	—	—	260
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	76	na	25 000
Manufacturing	—	2 279	na	39 002
Electricity, gas, water and waste services				
Electricity and gas supply(f)	—	10	na	2 757 347
Water supply, sewerage and drainage services(g)	—	2 384 859	97 748	315 482
Waste collection, treatment and disposal services	—	—	na	na
Other industries(h)	—	—	na	na
Household	—	—	—	—
Environment	5 685 832	—	—	—
<b>Total</b>	<b>5 685 832</b>	<b>2 387 223</b>	<b>97 748</b>	<b>3 137 091</b>

— nil or rounded to zero (including null cells)

na not available

(a) Includes water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes "environmental flows". This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the Water supply, sewerage and drainage services industry.

(h) For full list of Other industries, see Glossary.

**2.13****WATER SUPPLY AND USE, Victoria—2009–10** *continued*

USE					
	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>In-stream use(d)</i>	<i>Consumption(e)</i>
	ML	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>					
<b>Agriculture(f)</b>					
Nursery and floriculture production	1 921	9 573	1 204	—	12 699
Mushroom and vegetable growing	28 682	47 846	3 621	—	80 150
Fruit and tree nut growing	10 732	367 378	595	—	378 705
Sheep, beef cattle and grain farming	95 333	211 982	16 660	—	323 975
Other crop growing	1 455	12 431	2	—	13 888
Dairy cattle farming	214 657	497 835	11 763	—	724 256
Poultry farming	np	2 843	np	—	4 567
Deer farming	np	68	np	—	102
Other livestock farming	2 887	11 208	113	—	14 207
<b>Total</b>	<b>357 370</b>	<b>1 161 164</b>	<b>34 015</b>	—	<b>1 552 549</b>
Aquaculture	280	617	—	260	637
Forestry and logging	270	175	—	—	445
Fishing, hunting and trapping	1	36	—	—	37
Agriculture, forestry and fishing support services	14 433	21 663	248	—	36 344
Mining	25 024	1 647	2 697	23 807	5 486
Manufacturing	46 859	89 474	4 986	1 185	137 855
<b>Electricity, gas, water and waste services</b>					
Electricity and gas supply(g)	2 801 846	(h)64 616	(i)3 743	(j)2 757 347	112 848
Water supply, sewerage and drainage services(k)	2 384 859	(h)580 834	(i)33 268	(j)101 989	(l)512 113
Waste collection, treatment and disposal services	52	329	1	—	382
Other industries(m)	50 961	143 785	18 206	—	212 953
Household	3 876	322 883	584	—	327 343
Environment	—	na	na	—	—
<b>Total</b>	<b>5 685 832</b>	<b>2 387 223</b>	<b>97 748</b>	<b>2 884 588</b>	<b>2 898 992</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes all 'volumetric based' Environmental flows but excludes 'rules based' Environmental flows.

(i) Includes all reuse water supplied to the environment as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(j) Includes distributed and reuse water 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(k) Includes losses and environmental water as well as water used by the Water supply, sewerage and drainage services industry.

(l) Includes losses and water used by the WATER SUPPLY industry as well as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(m) For full list of Other industries, see Glossary.

## 2.14 WATER SUPPLY AND USE, Queensland—2009–10

### SUPPLY

	Self-extracted (a)	Distributed (b)	Reuse (c)	Regulated discharge (d)
	ML	ML	ML	ML
Agriculture, forestry and fishing				
Agriculture (e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	—
Aquaculture	—	—	—	2 034
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	7 318	na	45 830
Manufacturing	—	5 167	na	46 730
Electricity, gas, water and waste services				
Electricity and gas supply (f)	—	68 087	na	1 144 582
Water supply, sewerage and drainage services (g)	—	1 990 663	61 273	349 613
Waste collection, treatment and disposal services	—	—	na	na
Other industries (h)	—	—	na	na
Household	—	—	—	—
Environment	4 404 492	—	—	—
<b>Total</b>	<b>4 404 492</b>	<b>2 071 235</b>	<b>61 273</b>	<b>1 588 789</b>

— nil or rounded to zero (including null cells)

na not available

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

**2.14****WATER SUPPLY AND USE, Queensland—2009–10** *continued***USE**

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>In-stream use(d)</i>	<i>Consumption(e)</i>
	ML	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>					
<b>Agriculture(f)</b>					
Nursery and floriculture production	6 388	9 522	386	—	16 296
Mushroom and vegetable growing	65 544	26 389	82	—	92 014
Fruit and tree nut growing	75 075	105 380	1 464	—	181 918
Sheep, beef cattle and grain farming	272 719	312 766	1 300	—	586 785
Other crop growing	441 668	513 444	6 129	—	961 241
Dairy cattle farming	35 652	28 454	83	—	64 189
Poultry farming	961	884	1	—	1 846
Deer farming	7	18	—	—	24
Other livestock farming	17 338	5 480	612	—	23 430
<b>Total</b>	<b>915 351</b>	<b>1 002 336</b>	<b>10 056</b>	<b>—</b>	<b>1 927 744</b>
Aquaculture	2 565	168	27	2 034	725
Forestry and logging	850	1 368	2 878	—	5 096
Fishing, hunting and trapping	20	553	—	—	573
Agriculture, forestry and fishing support services	12 358	22 545	3	—	34 906
<b>Mining</b>	<b>120 379</b>	<b>39 694</b>	<b>72</b>	<b>38 683</b>	<b>114 144</b>
<b>Manufacturing</b>	<b>62 821</b>	<b>125 246</b>	<b>7 815</b>	<b>4 447</b>	<b>186 268</b>
<b>Electricity, gas, water and waste services</b>					
Electricity and gas supply(g)	1 209 761	(h) 78 518	(i) 13 934	(j) 1 144 592	89 535
Water supply, sewerage and drainage services(k)	1 990 663	(h) 306 016	(i) 7 767	(j) 123 545	(l) 190 238
Waste collection, treatment and disposal services	5	216	—	—	221
<b>Other industries(m)</b>	<b>56 261</b>	<b>164 496</b>	<b>18 672</b>	<b>64 063</b>	<b>175 366</b>
<b>Household</b>	<b>33 457</b>	<b>330 078</b>	<b>50</b>	<b>—</b>	<b>363 586</b>
<b>Environment</b>	<b>—</b>	<b>na</b>	<b>na</b>	<b>—</b>	<b>—</b>
<b>Total</b>	<b>4 404 492</b>	<b>2 071 235</b>	<b>61 273</b>	<b>1 377 364</b>	<b>3 088 400</b>

— nil or rounded to zero (including null cells)

na not available

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes 'volumetric based' Environmental flows but excludes 'rules based' Environmental flows.

(i) Includes reuse water supplied to the environment as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(j) Includes distributed and reuse water 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(k) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(l) Includes losses and water used by the WATER SUPPLY industry as well as all 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(m) For full list of Other industries, see Glossary.

## 2.15 WATER SUPPLY AND USE, South Australia—2009–10 .....

### SUPPLY .....

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>Regulated discharge(d)</i>
	ML	ML	ML	ML
.....				
Agriculture, forestry and fishing				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	—
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	—
Aquaculture	—	—	—	2 998
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	905	na	4 258
Manufacturing	—	33	na	33 236
Electricity, gas, water and waste services				
Electricity and gas supply(f)	—	—	na	na
Water supply, sewerage and drainage services(g)	—	378 738	np	np
Waste collection, treatment and disposal services	—	—	na	na
Other industries(h)	—	—	na	na
Household	—	—	—	—
Environment	1 069 362	—	—	—
<b>Total</b>	<b>1 069 362</b>	<b>379 676</b>	<b>32 042</b>	<b>114 673</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

**2.15****WATER SUPPLY AND USE, South Australia—2009–10** *continued*

## USE

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>In-stream use(d)</i>	<i>Consumption(e)</i>
	ML	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>					
<b>Agriculture(f)</b>					
Nursery and floriculture production	1 782	770	415	—	2 967
Mushroom and vegetable growing	54 530	8 393	10 147	—	73 070
Fruit and tree nut growing	147 408	100 344	8 261	—	256 013
Sheep, beef cattle and grain farming	232 340	18 252	2 116	—	252 709
Other crop growing	9 053	800	—	—	9 853
Dairy cattle farming	110 402	4 630	54	—	115 086
Poultry farming	np	np	—	—	1 149
Deer farming	np	np	—	—	82
Other livestock farming	7 017	2 130	276	—	9 423
<b>Total</b>	<b>563 338</b>	<b>135 745</b>	<b>21 269</b>	<b>—</b>	<b>720 351</b>
Aquaculture	3 154	60	—	2 998	216
Forestry and logging	107	136	—	—	243
Fishing, hunting and trapping	948	89	—	—	1 037
Agriculture, forestry and fishing support services	16 378	260	—	—	16 637
Mining	23 267	746	15	1 175	21 949
Manufacturing	55 097	20 521	840	—	76 424
<b>Electricity, gas, water and waste services</b>					
Electricity and gas supply(g)	313	(h) 1 156	(i) —	(j) —	1 469
Water supply, sewerage and drainage services(k)	378 738	(h) 49 250	(i) 3 233	(j) 537	(l) 51 946
Waste collection, treatment and disposal services	468	258	—	—	726
Other industries(m)	20 613	52 685	6 444	—	79 741
Household	6 942	118 770	242	—	125 953
Environment	—	—	—	—	—
<b>Total</b>	<b>1 069 362</b>	<b>379 676</b>	<b>32 042</b>	<b>4 710</b>	<b>1 096 694</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes 'volumetric based' and some 'rules based' Environmental flows.

(i) Includes reuse water supplied to the environment as 'volumetric based' and some 'rules based' Environmental flows.

(j) Includes distributed and reuse water 'volumetric based' and some 'rules based' Environmental flows.

(k) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(l) Includes losses and water used by the WATER SUPPLY industry as well as all 'volumetric based' and some 'rules based' Environmental flows.

(m) For full list of Other industries, see Glossary.

**2.16****WATER SUPPLY AND USE, Western Australia—2009–10****SUPPLY**

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>Regulated discharge(d)</i>
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	na
Aquaculture	—	—	—	9 441
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	7 894	na	140 760
Manufacturing	—	2 053	na	13 291
Electricity, gas, water and waste services				
Electricity and gas supply(f)	—	11	np	1 937 547
Water supply, sewerage and drainage services(g)	—	704 897	np	190 027
Waste collection, treatment and disposal services	—	—	na	na
Other industries(h)	—	—	na	na
Household	—	—	—	—
Environment	3 510 442	—	—	—
<b>Total</b>	<b>3 510 442</b>	<b>714 855</b>	<b>17 488</b>	<b>2 291 066</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

**2.16****WATER SUPPLY AND USE, Western Australia—2009–10** *continued*

	USE				
	Self-extracted(a)	Distributed(b)	Reuse(c)	In-stream use(d)	Consumption(e)
	ML	ML	ML	ML	ML
Agriculture, forestry and fishing					
Agriculture(f)					
Nursery and floriculture production	7 137	582	1 972	—	9 690
Mushroom and vegetable growing	44 433	14 166	—	—	58 600
Fruit and tree nut growing	27 276	14 590	99	—	41 965
Sheep, beef cattle and grain farming	92 789	52 935	39	—	145 763
Other crop growing	7 458	11 270	—	—	18 728
Dairy cattle farming	19 231	17 917	2 776	—	39 924
Poultry farming	np	np	—	—	1 110
Deer farming	np	np	—	—	193
Other livestock farming	7 172	591	46	—	7 809
<b>Total</b>	<b>206 613</b>	<b>112 237</b>	<b>4 932</b>	—	<b>323 782</b>
Aquaculture	9 488	1	—	9 441	48
Forestry and logging	877	71 983	—	—	72 861
Fishing, hunting and trapping	317	422	—	—	739
Agriculture, forestry and fishing support services	837	724	8	—	1 569
Mining	355 688	17 438	316	120 572	244 975
Manufacturing	51 718	12 500	5 586	5 595	62 156
Electricity, gas, water and waste services					
Electricity and gas supply(g)	1 958 656	(h) 1 931	(i) 530	(j) 1 937 470	23 636
Water supply, sewerage and drainage services(k)	704 897	(h) 169 095	(i) 2 736	(j) 69 125	(l) 102 706
Waste collection, treatment and disposal services	—	197	—	—	197
Other industries(m)	127 073	74 821	3 361	—	205 255
Household	94 277	253 507	20	—	347 804
Environment	—	—	—	—	—
<b>Total</b>	<b>3 510 442</b>	<b>714 855</b>	<b>17 488</b>	<b>2 142 203</b>	<b>1 385 727</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes 'volumetric based' and some 'rules based' Environmental flows.

(i) Includes reuse water supplied to the environment as 'volumetric based' and some 'rules based' Environmental flows.

(j) Includes distributed and reuse water 'volumetric based' and some 'rules based' Environmental flows.

(k) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(l) Includes losses and water used by the Water supply industry as well as all 'volumetric based' and some 'rules based' Environmental flows.

(m) For full list of Other industries, see Glossary.

**2.17****WATER SUPPLY AND USE, Tasmania—2009–10****SUPPLY**

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>Regulated discharge(d)</i>
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	na
Aquaculture	—	—	—	351 973
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	372	na	16 953
Manufacturing	—	—	na	26 720
Electricity, gas, water and waste services				
Electricity and gas supply(f)	—	134 981	na	35 553 731
Water supply, sewerage and drainage services(g)	—	160 173	6 483	36 360
Waste collection, treatment and disposal services	—	—	na	na
Other industries(h)	—	—	na	na
Household	—	—	—	—
Environment	36 559 747	—	—	—
<b>Total</b>	<b>36 559 747</b>	<b>295 526</b>	<b>6 483</b>	<b>35 985 737</b>

— nil or rounded to zero (including null cells)

na not available

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

**2.17****WATER SUPPLY AND USE, Tasmania—2009–10** *continued*

USE					
	Self-extracted(a)	Distributed(b)	Reuse(c)	In-stream use(d)	Consumption(e)
	ML	ML	ML	ML	ML
Agriculture, forestry and fishing					
Agriculture(f)					
Nursery and floriculture production	1 098	93	47	—	1 238
Mushroom and vegetable growing	32 452	2 624	13	—	35 089
Fruit and tree nut growing	7 726	632	3	—	8 361
Sheep, beef cattle and grain farming	128 091	10 868	765	—	139 724
Other crop growing	3 399	299	—	—	3 699
Dairy cattle farming	87 789	6 563	484	—	94 835
Poultry farming	np	np	—	—	400
Deer farming	np	np	—	—	3
Other livestock farming	2 238	173	—	—	2 411
<b>Total</b>	<b>263 164</b>	<b>21 286</b>	<b>1 311</b>	—	<b>285 761</b>
Aquaculture	352 109	62	—	351 973	199
Forestry and logging	58	90	—	—	148
Fishing, hunting and trapping	886	339	—	—	1 224
Agriculture, forestry and fishing support services	7 048	644	1	—	7 694
Mining	30 524	14	1	13 039	17 128
Manufacturing	27 656	8 969	176	—	36 801
Electricity, gas, water and waste services					
Electricity and gas supply(g)	35 688 712	(h) 133 970	(i) —	(j) 35 687 692	9
Water supply, sewerage and drainage services(k)	160 173	(h) 64 387	(i) 679	(j) 48 450	(l) 16 616
Waste collection, treatment and disposal services	—	3	—	—	3
Other industries(m)	15 796	6 964	4 315	—	27 075
Household	13 620	58 799	—	—	72 419
Environment	—	na	na	—	—
<b>Total</b>	<b>36 559 747</b>	<b>295 526</b>	<b>6 483</b>	<b>36 101 153</b>	<b>465 076</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes 'volumetric based' Environmental flows but excludes 'rules based'.

(i) Includes reuse water supplied to the environment as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(j) Includes distributed and reuse water 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(k) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(l) Includes losses and water used by the WATER SUPPLY industry as well as all 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(m) For full list of Other industries, see Glossary.

**2.18****WATER SUPPLY AND USE, Northern Territory—2009–10****SUPPLY**

	<i>Self-extracted(a)</i>	<i>Distributed(b)</i>	<i>Reuse(c)</i>	<i>Regulated discharge(d)</i>
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
<b>Total</b>	—	—	—	na
Aquaculture	—	—	—	3 467
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
Mining	—	1 913	na	16 999
Manufacturing	—	1 796	na	1 954
Electricity, gas, water and waste services				
Electricity and gas supply(f)	—	—	na	np
Water supply, sewerage and drainage services(g)	—	58 870	1 233	—
Waste collection, treatment and disposal services	—	—	na	na
Other industries(h)	—	—	na	na
Household	—	—	—	—
Environment	179 754	—	—	—
<b>Total</b>	<b>179 754</b>	<b>62 579</b>	<b>1 233</b>	<b>43 317</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

**2.18****WATER SUPPLY AND USE, Northern Territory—2009–10** *continued*

## USE

	Self-extracted(a)	Distributed(b)	Reuse(c)	In-stream use(d)	Consumption(e)
	ML	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>					
<b>Agriculture(f)</b>					
Nursery and floriculture production	np	np	—	—	864
Mushroom and vegetable growing	np	np	—	—	1 750
Fruit and tree nut growing	9 854	53	—	—	9 907
Sheep, beef cattle and grain farming	35 482	423	7	—	35 911
Other crop growing	np	na	—	—	623
Dairy cattle farming	—	—	—	—	—
Poultry farming	—	—	—	—	—
Deer farming	—	—	—	—	—
Other livestock farming	230	2	—	—	232
<b>Total</b>	<b>48 785</b>	<b>497</b>	<b>7</b>	<b>—</b>	<b>49 288</b>
Aquaculture	3 482	6	—	3 467	21
Forestry and logging	—	2	—	—	2
Fishing, hunting and trapping	88	1	—	—	89
Agriculture, forestry and fishing support services	206	2	—	—	208
Mining	35 924	20	—	9 447	24 585
Manufacturing	19 168	525	5	—	17 902
<b>Electricity, gas, water and waste services</b>					
Electricity and gas supply(g)	832	—	—	—	832
Water supply, sewerage and drainage services(h)	58 870	(i) 10 493	—	—	(j) 10 493
Waste collection, treatment and disposal services	—	8	—	—	8
Other industries(k)	4 957	20 149	1 221	—	26 328
Household	7 441	30 875	—	—	38 316
Environment	—	—	na	na	—
<b>Total</b>	<b>179 754</b>	<b>62 579</b>	<b>1 233</b>	<b>12 913</b>	<b>168 074</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(i) Includes 'volumetric based' Environmental flows but some 'rules based'.

(j) Includes losses and water consumed by the Water supply industry as well as all 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(k) For full list of Other industries, see Glossary.

**2.19****WATER SUPPLY AND USE, Australian Capital Territory—2009–10****SUPPLY**

	<i>Self-extracted (a)</i>	<i>Distributed (b)</i>	<i>Reuse (c)</i>	<i>Regulated discharge (d)</i>
	ML	ML	ML	ML
<b>Agriculture, forestry and fishing</b>				
Agriculture(e)				
Nursery and floriculture production	—	—	—	na
Mushroom and vegetable growing	—	—	—	na
Fruit and tree nut growing	—	—	—	na
Sheep, beef cattle and grain farming	—	—	—	na
Other crop growing	—	—	—	na
Dairy cattle farming	—	—	—	na
Poultry farming	—	—	—	na
Deer farming	—	—	—	na
Other livestock farming	—	—	—	na
Total	—	—	—	na
Aquaculture	—	—	—	—
Forestry and logging	—	—	—	—
Fishing, hunting and trapping	—	—	—	—
Agriculture, forestry and fishing support services	—	—	—	—
<b>Mining</b>	—	—	na	—
<b>Manufacturing</b>	—	—	na	3
<b>Electricity, gas, water and waste services</b>				
Electricity and gas supply(f)	—	—	na	—
Water supply, sewerage and drainage services(g)	—	47 817	31 019	817
Waste collection, treatment and disposal services	—	—	na	na
<b>Other industries(h)</b>	—	—	na	na
<b>Household</b>	—	—	—	—
<b>Environment</b>	49 102	—	—	—
<b>Total</b>	<b>49 102</b>	<b>47 817</b>	<b>31 019</b>	<b>820</b>

— nil or rounded to zero (including null cells)

na not available

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) Refers to water discharged after use where that discharge does not match the natural flow regime of the receiving body.

(e) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(f) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(g) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(h) For full list of Other industries, see Glossary.

## 2.19 WATER SUPPLY AND USE, Australian Capital Territory—2009–10 *continued* . . . .

USE					
	Self-extracted(a)	Distributed(b)	Reuse(c)	In-stream use(d)	Consumption(e)
	ML	ML	ML	ML	ML
Agriculture, forestry and fishing					
Agriculture(f)					
Nursery and floriculture production	np	np	19	—	66
Mushroom and vegetable growing	np	np	—	—	25
Fruit and tree nut growing	54	14	—	—	68
Sheep, beef cattle and grain farming	177	33	2	—	213
Other crop growing	np	np	—	—	123
Dairy cattle farming	np	np	—	—	3
Poultry farming	np	np	—	—	4
Deer farming	—	—	—	—	—
Other livestock farming	2	1	—	—	3
Total	393	91	21	—	504
Aquaculture	—	—	—	—	—
Forestry and logging	—	—	—	—	—
Fishing, hunting and trapping	—	—	—	—	—
Agriculture, forestry and fishing support services	9	3	—	—	12
Mining	2	4	—	—	6
Manufacturing	5	317	25	—	348
Electricity, gas, water and waste services					
Electricity and gas supply(g)	—	—	—	—	—
Water supply, sewerage and drainage services(h)	47 817	(i) 10 023	(j) 30 821	(k) 32 988	(l) 7 856
Waste collection, treatment and disposal services	—	1	—	—	1
Other industries(m)	875	9 769	152	—	10 797
Household	—	27 609	—	—	27 609
Environment	—	na	na	—	—
<b>Total</b>	<b>49 102</b>	<b>47 817</b>	<b>31 019</b>	<b>32 988</b>	<b>47 133</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Total volume of water extracted directly from the environment for use.

(b) Includes water supplied to a user usually through a non-natural network (piped/open channel or other carrier) where an economic transaction has occurred for the exchange of water regardless of method of delivery. Also includes Environmental flows. This is a subset of Self-extracted water.

(c) Refers to drainage, waste or stormwater that may have been treated to some extent before being used. It excludes 'on-site' recycling.

(d) This is generally a subset of Self-extracted water use, however in some cases distributed water is used in-stream.

(e) Water consumption = Self-extracted use + Distributed water use + Reuse water use - In-stream water use - Distributed water supplied to other users and the environment.

(f) Refers to the industry view of agriculture, rather than the activity view. See Explanatory notes for more information.

(g) The majority of water used by this industry is 'in-stream' and is often used again downstream by other water users.

(h) Includes losses and environmental water as well as water used by the WATER SUPPLY industry.

(i) Includes 'volumetric based' Environmental flows but some 'rules based'.

(j) Includes reuse water supplied to the environment as 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(k) Includes distributed and reuse water 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(l) Includes losses and water used consumed by the WATER SUPPLY industry as well as all 'volumetric based' Environmental flows. 'Rules based' Environmental flows excluded.

(m) For full list of Other industries, see Glossary.

## INTRODUCTION

This chapter presents the monetary supply and use tables for water and related services and other monetary information related to water supply. The Monetary water accounts presented by the Australian Bureau of Statistics follow the *System of Environmental-Economic Accounts for Water* (SEEA–Water) and the *Supply–Use framework* of the Australian National Accounts. This section covers the following:

- revenue earned by supply of distributed water and water related services in the economy by the WATER SUPPLY, SEWERAGE AND DRAINAGE industry (hereafter referred to as the WATER SUPPLY industry) and other industries;
- expenditure on water and sewerage services by industries, households and governments; and
- industry gross value added and water consumption by industry.

The scope of the section is limited to distributed water, reuse water and waste water, sewerage and drainage services. Distributed water and reuse water are defined in the Glossary. Distributed water is further subdivided as follows:

- urban distributed water
- rural distributed water
- bulk water (both urban and rural).

Note that for National and Environmental Accounting purposes we consider the WATER SUPPLY industry to provide the service of '*water delivery*' rather than being the seller of a product (water).

Many economic entities use self-extracted water for their own use, such as farms for irrigation or hydropower plants to generate electricity. Estimates for the monetary value of self-extracted water are not included in this section due to lack of reliable data.

## MAIN FINDINGS

The main findings of this section are:

- Revenue earned by the WATER SUPPLY industry from sales of distributed water (including reuse and bulk water sales) increased by 12% between 2008–09 and 2009–10, from \$6,173 million to \$6,938 million.
- Expenditure on total use of water in all sectors increased by 13% while physical water consumption increased by 1%.
- Consumption of distributed and reuse water by households rose by 5% from 1,594 GL to 1,670 GL while corresponding expenditure rose by 23% from \$2,826 million to \$3,488 million.
- The AGRICULTURE industry generated a total of \$4 million of gross value added (on average) for every GL of water consumed in 2009–10.
- The MINING industry recorded a total of \$196 million of gross value added per GL of water consumed, a 13% decrease from 2008–09.
- The MANUFACTURING industry generated a total of \$164 million of gross value added for every GL of water consumed, a 2% increase from 2008–09.

## REVENUE

*Supply of water and  
related services*

Table 3.1 presents revenue earned by the WATER SUPPLY industry from supplying water and related services in 2009–10. The highest revenue from sales of urban distributed water was reported in New South Wales, \$1,565 million. This is a 12% rise from the 2008–09 result of \$1,400 million and corresponds with a 2% decrease in the supply of distributed and reuse water across the state (see Physical water supply and use tables, chapter 2).

**3.1** REVENUE(a), Net water sales and services—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Distributed water(b)									
Urban	1 565	969	1 322	508	832	108	60	128	5 491
Rural	85	138	60	36	9	10	—	—	339
Bulk water									
Urban	265	384	428	—	—	—	—	—	1 077
Rural	15	10	5	—	2	—	—	—	31
Services	1 607	1 419	1 046	385	838	87	38	99	5 519
<b>Total revenue earned</b>	<b>3 536</b>	<b>2 920</b>	<b>2 860</b>	<b>929</b>	<b>1 681</b>	<b>205</b>	<b>98</b>	<b>227</b>	<b>12 457</b>

— nil or rounded to zero (including null cells)

(a) At basic prices.

(b) Includes reuse water.

Note: Totals may not equal sum of items due to rounding.

Queensland recorded the second highest revenue from urban distributed water sales (\$1,322 million) which was a 14% increase from 2008–09 revenue of \$1,159 million. The physical supply of distributed and reuse water dropped by 5% between 2008–09 and 2009–10. The higher revenue from urban distributed water sales in Queensland is attributed to increased tariffs and increased water use in the household sector associated with easing of water restrictions from level 4 to level 3.

Victoria had the third highest revenue from distributed water of \$969 million, an increase of 16% from \$832 million in 2008–09. The Victorian government continued with Stage 3 water restrictions in most of its metropolitan areas during 2009–10, impacting upon water demand. The 16% increase in revenue was mainly driven by higher tariffs imposed by a number of water providers.

The total revenue earned from sales of urban distributed water in Western Australia rose by 12% from \$745 million to \$832 million from 2008–09 to 2009–10.

New South Wales recorded the highest revenue from water related services (\$1,607 million), a 15% increase from 2008–09. Victoria earned the second highest revenue from providing water related services (\$1,419 million).

*Rural water supply*

There was considerable variation across the States and Territories in the distribution of revenue generated from rural distributed water supply. Victoria earned the highest revenue from sales of rural distributed water (\$138 million), followed by New South Wales (\$85 million) and Queensland (\$60 million).

Regional rainfall variability imposes constraints upon water availability which largely explains the variability in revenue from rural distributed water supply between 2008–09 and 2009–10. Revenue from rural distributed and reuse water decreased in South Australia by 53% to \$36 million and by 6% to \$9 million in Western Australia. Tasmania showed the largest percentage increase in revenue from rural distributed water (62%) from \$6 million to \$10 million.

Rural bulk water revenue in Victoria fell from \$55 million to \$10 million, an 81% decrease since 2008–09. This corresponds with a reduction in government funded drought assistance after drought conditions across the state eased.

Table 3.2 shows the revenue from sales of water and related services by all industries, at purchaser's prices (see Glossary), for 2009–10. The revenue for the delivery of water, wastewater and sewerage services, at the national level, was \$12,521 million, which includes imports, taxes and subsidies. Imports relate to expenditure on water and sewerage services consumed by Australian foreign missions and ships, etc. overseas. The taxes and subsidies are primarily on products. In addition to the WATER SUPPLY industry, the MINING, MANUFACTURING and ELECTRICITY GENERATION industries also contributed to the supply of urban distributed water. The revenue earned by those industries was less than half a million dollars.

### 3.2 REVENUE(a), Net water sales and services—by industry—2009–10

	DISTRIBUTED WATER(b)		BULK WATER		TOTAL WATER SUPPLIED	SERVICES(c)	TOTAL REVENUE EARNED
	Urban	Rural	Urban	Rural			
	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Agriculture, forestry and fishing	-	-	-	-	-	-	-
Mining	-	-	-	-	-	-	-
Manufacturing	-	-	-	-	-	-	-
Electricity, gas and waste	-	-	-	-	-	-	-
Water supply(d)	5 491	339	1 077	31	6 938	5 519	12 457
Other industries	-	-	-	-	-	-	-
Imports	-	-	-	-	-	-	20
Taxes	-	-	-	-	-	-	107
Subsidies	-	-	-	-	-	-	-64
Trade and transport margins	-	-	-	-	-	-	-
<b>Total supply</b>	-	-	-	-	-	-	<b>12 521</b>

(a) At purchaser's price.

(b) Includes reuse water.

(c) Wastewater, sewerage and drainage services.

(d) Includes sewerage and drainage services industry.

## EXPENDITURE

*Use of water and related services*

Table 3.3 shows the expenditure on water and related services by state, at basic prices for 2009–10. It also relates to the above table, by showing how much expenditure on water supply services originates from households (final consumption) and how much originates from industries (intermediate consumption), by State/Territory.

Expenditure on intermediate consumption of water by industries decreased by 1% from \$2,022 million to \$2,004 million. The largest decrease of 10% was reported in Queensland, followed by New South Wales with a decrease of 8%. Victoria, South Australia, Western Australia and the Australian Capital Territory all experienced moderate expenditure increases.

### 3.3 EXPENDITURE ON WATER AND SERVICES (a)—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Distributed water(b)									
Urban									
Intermediate consumption by industries	449	334	511	229	371	22	27	62	2 004
Final consumption by households	1 116	634	812	279	461	86	33	66	3 488
Rural(c)									
Intermediate consumption by industries	85	138	60	36	9	10	—	—	339
Bulk water(d)									
Intermediate consumption by industries	279	394	432	—	2	—	—	—	1 108
Services(c)									
Intermediate consumption by industries	348	480	309	122	439	7	15	31	1 751
Final consumption by households	1 259	939	737	263	400	81	22	68	3 769
<b>Total use</b>	<b>3 536</b>	<b>2 920</b>	<b>2 860</b>	<b>929</b>	<b>1 681</b>	<b>205</b>	<b>98</b>	<b>227</b>	<b>12 457</b>

— nil or rounded to zero (including null cells)

(a) At basic prices.

(b) Includes reuse water.

(c) Wastewater, sewerage and drainage services.

(d) Includes urban and rural.

Expenditure on water related services increased by 6% in Australia, mainly attributable to increased tariffs across the States and Territories. There was a large variation in the expenditure among jurisdictions reflecting differing consumption characteristics and differences in the type and range of service delivery charges across the country. All jurisdictions maintain a fixed charge for these services, however some states have an additional volumetric charge.

Table 3.4 shows the expenditure on water related services by industry in 2009–10. Total expenditure on water and related services at purchaser's prices increased by 12% from \$11,181 million in 2008–09 to \$12,521 million in 2009–10. Expenditure on urban distributed water by all industries decreased by 1%. The Agriculture, forestry and fishing industry reported an 8% increase in expenditure on urban distributed water. The ELECTRICITY GENERATION industry experienced the largest increase of 26% followed by households, with a 23% increase in aggregate expenditure on urban distributed water.

**3.4** EXPENDITURE(a), water related services—by industry—2009–10

	DISTRIBUTED WATER(b).....		BULK WATER(c).....	TOTAL WATER SUPPLIED.....	SERVICES (d).....	TOTAL USE.....
	Urban	Rural				
	\$m	\$m	\$m	\$m	\$m	\$m
Intermediate consumption						
Agriculture, forestry and fishing	51	309	—	359	2	362
Mining	99	—	—	99	11	110
Manufacturing	364	—	—	364	411	775
Electricity, gas, water and waste(e)	104	—	1 115	1 218	15	1 233
Electricity generation	71	—	—	71	3	74
Water supply, sewerage and drainage	—	—	1 115	1 115	—	1 115
Other industries	1 423	—	—	1 423	1 350	2 773
Total intermediate consumption	2 041	309	1 115	3 464	1 789	5 253
Final consumption						
Final consumption by households(f)	3 488	—	—	3 488	3 769	7 256
Final consumption by Government	—	—	—	—	—	—
Total final consumption	3 488	—	—	3 488	3 769	7 256
Exports	—	—	—	—	—	11
Total use	—	—	—	—	—	12 521

— nil or rounded to zero (including null cells)

(a) At purchaser's prices.

(b) Includes reuse water.

(c) Includes urban and rural.

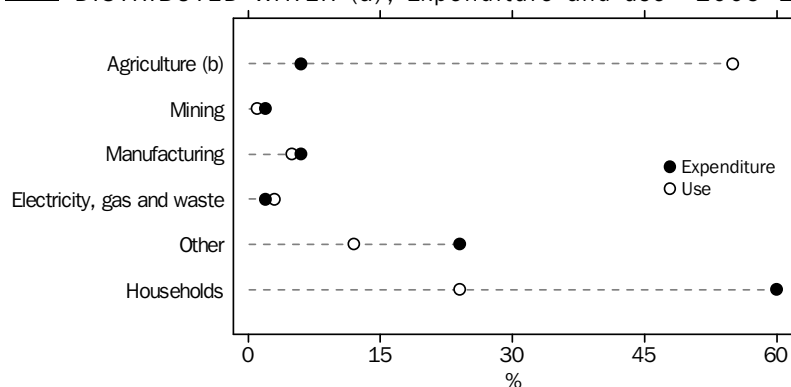
(d) Wastewater, sewerage and drainage services.

(e) Includes all industries in Electricity, gas, water and waste services not elsewhere classified.

(f) Includes social benefits paid in kind by Governments.

*Use of water and related services continued*

Graph 3.5 compares relative consumption of distributed water with relative expenditure on water. The AGRICULTURE, FORESTRY AND FISHING industry used 55% of total distributed water, while households accounted for 24%. Expenditure on distributed water by the AGRICULTURE, FORESTRY AND FISHING INDUSTRY was only 6% of the national total, compared to 60% for households. This difference in physical water use and corresponding expenditure is associated with different costs of storage, treatment and delivery of water used by urban and rural users. The AGRICULTURE, FORESTRY AND FISHING industry also undertakes expenditure on self sourced water, which is not included in this comparison.

**3.5** DISTRIBUTED WATER (a), Expenditure and use—2009–10

(a) Includes reuse water

(b) Includes Forestry and fishing

*Use of water and related services continued*

The physical use of distributed water increased for households (by 5%) and the AGRICULTURE, FORESTRY AND FISHING industry (11%) from 2008–09 to 2009–10. Corresponding expenditure on distributed water by households increased by 23% and by 2% in the AGRICULTURE, FORESTRY AND FISHING industry. Distributed water use in the MINING industry decreased by 48%, however expenditure on water decreased by 1%. This is attributable to the provision of low cost water to the MINING industry during floods in Queensland in January 2009. The group of 'OTHER industries' also experienced decreases in distributed water use by 21%, however expenditure decreased by 2%.

ABS has developed a new method for estimating household expenditure on distributed water resulting in revisions to the 2008–09 household expenditure estimates (see Explanatory Notes, paragraph 51). Table 3.6 displays the State and Territory breakdown of the expenditure on urban distributed water by households in 2009–10.

New South Wales households recorded the highest expenditure (\$1,116 million), which accounted for 32% of the national expenditure by households. New South Wales households also recorded the highest physical use of urban distributed water (527 GL or 32% of total water use by households). Although Victoria (323 GL) and Queensland (330 GL) displayed similar water usage, Queensland's expenditure was 28% higher than that of Victoria. Queensland households pay the highest unit price for urban distributed water (\$2.46 per kL). The highest annual average expenditure per household occurred in Western Australia (\$531 per household per annum).

**3.6** HOUSEHOLD EXPENDITURE, urban distributed water(a)—by State/Territory—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Total expenditure (\$m)	1 116	634	812	279	461	86	33	66	3 488
Expenditure per capita (\$ per capita)	154	114	180	170	201	169	146	185	156
Expenditure per household (\$ per hh)	431	301	514	436	531	503	498	477	427
Population at 30 June 2010	7 233	5 546	4 514	1 645	2 294	508	230	359	22 327
No. of households at 30 June 2010(b)	2 590	2 110	1 580	639	869	170	67	139	8 163
Total volume of water used (GL)	527	323	330	119	254	59	31	28	1 670
Expenditure per kL of water used (\$/kL)	2.12	1.96	2.46	2.34	1.82	1.46	1.08	2.40	2.09
Volume of water used per household (kL/hh)	203	153	209	186	292	346	459	199	205

(a) Includes reuse water.

(b) Connected properties only.

*Use of water and related services continued*

Table 3.7 displays the State and Territory breakdown of the expenditure on water related services by households in 2009–10. Household expenditure on water related services increased by 13% nationally, with the highest growth of 18% recorded in Victoria and the lowest growth of 5% in Western Australia. New South Wales households paid the most for water related services on a per household basis (\$556). Residents in the Australian Capital Territory paid the most for water related services on a per capita basis (\$189).

### 3.7 HOUSEHOLD EXPENDITURE, water related services—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Total expenditure on services (\$m)	1 259	939	737	263	400	81	22	68	3 769
Expenditure per capita (\$/capita)	174	169	163	160	174	159	98	189	169
Expenditure per household (\$/hh)	556	477	486	484	541	530	437	492	511
Population as at 30 June 2010 ('000)	7 233	5 546	4 514	1 645	2 294	508	230	359	22 327
No. of households as at 30 June 2010 ('000)(a)	2 264	1 970	1 515	543	739	152	51	138	7 372

(a) Estimated connected households

#### WATER EFFICIENCY

Assessments of water efficiency can be focused on the supply side (water supply distribution network) or on the use side (consumption by industry and households). Water productivity is one measure of water efficiency and can be expressed as the amount of output produced from one unit of water. Table 3.8 provides data on water consumption and industry gross value added for 2009–10, from which we can calculate water intensity by industry.

## WATER EFFICIENCY

*continued***3.8** INDUSTRY GROSS VALUE ADDED, by industry—2009–10

	Industry gross value added (a)	Water consumption	Industry gross value added per GL of water consumed
	\$m	GL	\$m/GL
Agriculture, forestry and fishing			
Agriculture	24 265	6 987	3
Aquaculture, forestry, fishing	4 499	200	22
Total	28 764	7 187	4
Mining			
Coal mining	22 576	76	298
Oil and gas extraction	26 340	34	785
Other mining(b)	38 880	336	116
Exploration and mining support services	8 309	44	187
Total	96 105	489	196
Manufacturing			
Food, beverages and tobacco	23 953	301	80
Textile, clothing and footwear	4 102	12	335
Wood and paper products	7 736	81	96
Printing, publishing and record media	4 088	4	941
Petroleum, coal, chemical and associated products	17 807	77	230
Non-metallic, mineral products	5 783	33	176
Metal products	21 310	139	153
Machinery and equipment	19 881	9	2 134
Other manufacturing (includes furniture)	3 047	1	2 998
Total	107 707	658	164
Electricity and gas	18 837	297	64
Water supply, sewerage and drainage	7 191	1 893	4
All other industries	944 442	1 084	871
<b>Total</b>	<b>1 203 046</b>	<b>11 609</b>	<b>104</b>

(a) At 2009–10 current prices.

(b) Includes services to mining.

The Agriculture industry generated, on average, \$3 million in gross value added for every GL of water consumed in 2009–10 (table 3.8). Industry gross value added decreased by 1% (in chain volume terms) while water consumption remained virtually unchanged from 2008–09. The use of chain volume terms to describe movements in financial estimates between years is explained in Explanatory Notes, paragraph 44.

The MINING industry recorded (on average) \$196 million in gross value added per GL of water consumed in 2009–10, showing a 6% increase (chain volume terms) from the previous year. Physical water consumption actually decreased by 4% during the 2009–10 period. The gross value added per GL of water consumed in the COAL MINING industry was \$298 million, an increase of 6% (in chain volume terms) despite a 23% decrease in physical water consumption. Other mining recorded \$116 million gross value added per GL of water consumed. In contrast to COAL MINING, this industry showed a 3% increase in water consumption with a corresponding 11% increase in industry gross value added (chain volume terms).

The MANUFACTURING industry recorded (on average) \$164 million in gross value added per GL of water consumed in 2009–10. This was an increase of 1% (chain volume terms) from the result in 2008–09 and corresponds with a 3% decrease in water consumption. The largest consumer of water within the MANUFACTURING industry was FOOD, BEVERAGES AND

## WATER EFFICIENCY

*continued*

TOBACCO manufacturing, recording \$80 million gross value added per GL of water used in 2009–10. This was an increase of 7% (chain volume terms) from the result in 2008–09 and corresponded to a 4% increase in water consumption. The WOOD AND PAPER PRODUCTS industry recorded \$96 million gross value added per GL of water used in 2009–10, an increase of 4% in chain volume Industry gross value added. Water consumption in this industry decreased by 16% over the same period.

The gross value added per GL of water consumed in the ELECTRICITY AND GAS SUPPLY industry was \$64 million in 2009–10. This was an increase of 4% (chain volume terms) from the result in 2008–09 with a corresponding 10% decrease in water consumption.

## CHAPTER 4

## WATER SUPPLY SEWERAGE AND DRAINAGE .....

### INTRODUCTION

This chapter presents information on the WATER SUPPLY, SEWERAGE AND DRAINAGE industry (hereafter referred to as WATER SUPPLY industry). The water supplied and used by this industry is divided into distributed and reuse water. Data are also presented on distribution losses, regulated discharges, bulk water supplied, number of water providers and the origins of distributed (i.e. surface water, groundwater) and reuse water (i.e. waste water, drainage water and storm water).

### MAIN FINDINGS

The main findings in this section are:

- Nearly all (9,117 GL or 97%) of the distributed water supplied in 2009–10 was supplied by the WATER SUPPLY industry. Of this, more than half (5,582 GL or 59%) was supplied by irrigation/rural water suppliers and more than a quarter (2,429 GL or 26%) by major urban water service providers.
- Surface water was by far the greatest source of water for the WATER SUPPLY industry, with 8,727 GL or 96% of total distributed water being derived from this source in 2009–10; groundwater provided 313 GL and desalination 77 GL.
- The state with the largest volume of distributed water sourced from groundwater was Western Australia (173 GL or 55%), followed by New South Wales (52 GL or 17%).
- The total volume of reuse water supplied was 374 GL; around 60% of this was in New South Wales (127 GL) and Victoria (98 GL).

### WATER SUPPLY INDUSTRY

In 2009–10, water providers in Australia supplied 9,405 GL of distributed water, a 3% decrease from 2008–09 (table 4.1). Of this, 9,117 GL (97%) was supplied by the WATER SUPPLY industry (table 4.2). Collectively, other industries such as MINING, MANUFACTURING, and ELECTRICITY AND GAS SUPPLY supplied 288 GL (or 3%) of all distributed water in 2009–10.

#### **4.1** WATER SUPPLY, by type of water—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Self-extracted(a)	12 617 577	5 685 832	4 404 492	1 069 362	3 510 442	36 559 747	179 754	49 102	64 076 308
Distributed	3 446 431	2 387 223	2 071 235	379 676	714 855	295 526	62 579	47 817	9 405 342
Reuse	126 701	97 748	61 273	32 042	17 488	6 483	1 233	31 019	373 987

(a) Total water self-extracted by all industries.

**4.2** DISTRIBUTED WATER SUPPLY, by industry—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Water supply industry(a)	3 391 427	2 384 859	1 990 663	378 738	704 897	160 173	58 870	47 817	9 117 444
Other industries(b)	55 004	2 364	80 572	938	9 958	135 353	3 709	—	287 898
<b>Total</b>	<b>3 446 431</b>	<b>2 387 223</b>	<b>2 071 235</b>	<b>379 676</b>	<b>714 855</b>	<b>295 526</b>	<b>62 579</b>	<b>47 817</b>	<b>9 405 342</b>

— nil or rounded to zero (including null cells)

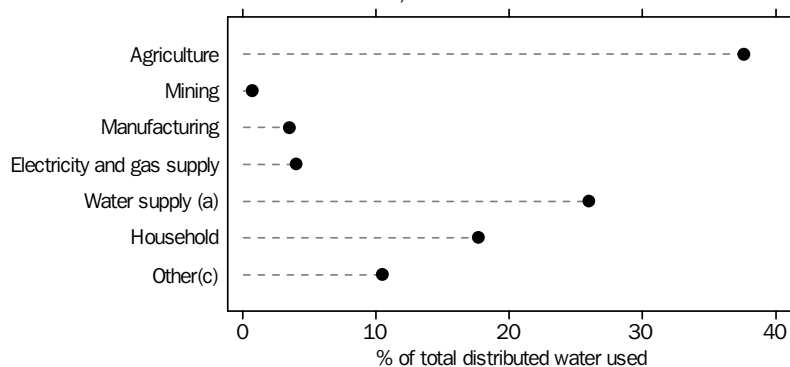
(a) Includes Sewerage and drainage services.

(b) Other industries include Mining, Manufacturing and Electricity and gas supply industries.

**WATER SUPPLY INDUSTRY***continued*

Of the total volume of water extracted from the environment in Australia in 2009–10, only 15% was distributed to users for consumptive purposes. The remainder was mostly in-stream use for hydro-electricity generation. The proportion of distributed water varied between States and Territories, from less than 1% in Tasmania (where a very high proportion of water extracted is for hydro-electricity) to 97% in the Australian Capital Territory.

In 2009–10, 3,646 GL, or 39% of the distributed water in Australia, was supplied to the Agriculture industry and over a quarter (2,445 GL or 26%) was consumed by the WATER SUPPLY industry as part of their operations (graph 4.3 and table 4.4). Households used 18% (1,667 GL) of the total water distributed while other industries (i.e. MINING, MANUFACTURING, etc.) used 8%.

**4.3** DISTRIBUTED WATER USE, Australia—2009–10

(a) Water supply, sewerage and drainage services industry.

(b) Environmental provisions made by Water supply and Other industries.

(c) Includes Forestry and fishing, Services and Administrative industries.

#### 4.4 USE OF DISTRIBUTED WATER(a), by industry—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Agriculture	1 213 159	1 161 164	1 002 336	135 745	112 237	21 286	497	91	3 646 514
Forestry and fishing(b)	523	828	2 089	285	72 406	491	9	—	76 631
Mining	9 967	1 647	39 695	746	17 438	14	20	4	69 530
Manufacturing	74 019	89 474	125 246	20 521	12 500	8 969	525	317	331 571
Electricity and gas supply	99 412	64 616	78 518	1 156	1 931	133 970	—	—	379 604
Water supply(c)(d)	1 255 084	580 834	306 016	49 250	169 095	64 387	10 493	10 023	2 445 182
Other industries(e)	269 613	165 777	187 256	53 203	75 742	7 611	20 160	9 773	789 136
Household	524 655	322 883	330 078	118 770	253 507	58 799	30 875	27 609	1 667 175
<b>Total</b>	<b>3 446 431</b>	<b>2 387 223</b>	<b>2 071 235</b>	<b>379 676</b>	<b>714 855</b>	<b>295 526</b>	<b>62 578</b>	<b>47 817</b>	<b>9 405 342</b>

— nil or rounded to zero (including null cells)

(a) Includes distributed water supplied by Major, Non-major urban, Minor urban, Irrigation and Other water providers.

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

(c) Includes Sewerage and drainage services.

(d) Includes water losses and water supplied to the environment.

(e) Includes mainly Services (e.g. Agriculture, Forestry and Fishing Support Services, Waste Collection, Treatment and Disposal Services) and Administrative industries.

#### ORIGIN OF DISTRIBUTED WATER

The origin of distributed water supplied by the WATER SUPPLY industry is presented in table 4.5. Surface water (e.g. river systems, dams) constitutes the majority of all water extracted from the environment by the WATER SUPPLY industry. This amounted to 8,727 GL (96%) in 2009–10 with groundwater accounting for 313 GL and desalination making up the remainder (77 GL).

More than half (55% or 173 GL) of groundwater consumption occurred in Western Australia followed by New South Wales (17% or 52 GL). In the Northern Territory, groundwater consumption was about 39% of the total water consumed.

#### 4.5 ORIGIN OF DISTRIBUTED WATER(a)—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Surface water	3 339 430	2 352 065	1 950 031	363 122	498 491	159 958	35 878	47 817	8 726 840
Groundwater	51 997	32 794	16 398	15 545	173 366	215	22 992	—	313 307
Desalinated water	—	—	24 234	71	33 040	—	—	—	77 297
<b>Total</b>	<b>3 391 427</b>	<b>2 384 859</b>	<b>1 990 663</b>	<b>378 738</b>	<b>704 897</b>	<b>160 173</b>	<b>58 870</b>	<b>47 817</b>	<b>9 117 444</b>

— nil or rounded to zero (including null cells)

(a) Water supply, sewerage and drainage industry only, excludes water provided by other industries.

The percentage of distributed water obtained via desalination is relatively low in Australia (less than one percent). About 43% of the total desalinated water in Australia was produced in Western Australia (33 GL), with smaller volumes produced in Queensland (24 GL), New South Wales (20 GL) and South Australia (71 ML).

A new desalination plant in New South Wales became operational in January 2010 but the data for this plant were not included in the 2009–10 *Water Account Australia* estimates - the data from this plant will be included in the 2010–11 *Water Account Australia*.

## REUSE WATER

Reuse or recycled water is an important option for securing water supply into the future. There is increasing investment in infrastructure related to the supply of reuse water, and as such there is considerable interest in the volumes of reuse water supplied and used. Reuse or recycled water is provided for purposes including: agricultural irrigation; 'third pipe' (see Glossary) systems in new urban developments; watering of community sports grounds and parks; and supply to industry. In addition, water management authorities are interested in whether reuse water is reducing the demand for distributed water or self-extracted water.

In 2009–10, the total volume of reuse water supplied was 374 GL, more than a third (34% or 127 GL) was supplied in New South Wales and more than a quarter (26% or 98 GL) in Victoria (table 4.6).

The AGRICULTURE industry remained the largest user of reuse water across all industries in Australia (34% of total reuse water or 126 GL) followed by the WATER SUPPLY industry (28% or 105 GL) and by OTHER industries (21% or 78 GL). OTHER industries includes industries relating to the operation and maintenance of parks, gardens and sporting fields (see the Glossary for a complete list of OTHER industries).

**4.6** USE OF REUSE WATER(a), by industry—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Agriculture	62 031	34 015	10 056	24 762	4 932	2 161	7	21	137 984
Forestry and fishing	155	—	2 905	—	—	—	—	—	3 060
Mining	6 773	2 697	79	15	316	1	—	—	9 881
Manufacturing	12 006	4 986	8 543	840	5 586	176	5	25	32 167
Electricity and gas supply	1 722	3 743	15 233	—	530	—	—	—	21 229
Water supply(b)	26 126	41 846	7 767	3 233	2 736	1 530	—	30 821	114 059
Other industries(c)	15 677	9 877	16 639	2 951	3 368	2 615	1 221	152	52 501
Household	2 210	584	50	242	20	—	—	—	3 106
<b>Total</b>	<b>126 701</b>	<b>97 748</b>	<b>61 273</b>	<b>32 042</b>	<b>17 488</b>	<b>6 483</b>	<b>1 233</b>	<b>31 019</b>	<b>373 987</b>

— nil or rounded to zero (including null cells)

(b) Includes Sewerage and drainage services.

(a) Includes reuse supplied by Major, Non-major urban, Minor urban, Irrigation and Other water providers.

(c) Includes mainly Services and Administrative industries.

## Origin of reuse water

Table 4.7 presents reuse water supply (see Explanatory Notes, paragraph 17) by type of water supplier in 2009–10. Of the total 412 GL of reuse water collected, 87% (357 GL) came from wastewater with the remainder coming from drainage and stormwater. It is likely that drainage water from irrigation/rural water providers makes a significant contribution to reuse water supply, but this is mostly unmeasured. In some cases, distributed water can also be mixed with reuse water. Of the States and Territories, reuse water supply from wastewater was highest in Victoria (117 GL or 33%), followed by Queensland (79 GL or 22%).

# **4.7** WASTEWATER, STORMWATER AND DRAINAGE WATER COLLECTED (a)—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
<b>Wastewater</b>									
Major urban	40 417	85 618	42 228	25 447	16 850	6 483	1 233	30 922	249 198
Non-major urban	22 442	18 766	14 917	—	—	—	—	—	56 125
Minor urban	11 117	—	21 390	239	547	—	—	—	33 293
Irrigation/rural	—	12 515	762	5 492	—	—	—	—	18 769
<b>Total</b>	<b>73 976</b>	<b>116 899</b>	<b>79 297</b>	<b>31 178</b>	<b>17 397</b>	<b>6 483</b>	<b>1 233</b>	<b>30 922</b>	<b>357 385</b>
<b>Stormwater</b>									
Major urban	na	na	na	na	na	na	na	97	97
Non-major urban	na	na	na	na	na	na	na	na	na
Minor urban	160	na	na	1 653	91	na	na	na	1 904
Irrigation/rural	na	na	na	na	na	na	na	na	na
<b>Total</b>	<b>160</b>	<b>na</b>	<b>na</b>	<b>1 653</b>	<b>91</b>	<b>na</b>	<b>na</b>	<b>97</b>	<b>2 001</b>
<b>Drainage water</b>									
Major urban	na	na	na	na	na	na	na	na	na
Non-major urban	na	na	na	na	na	na	na	na	na
Minor urban	na	na	na	na	na	na	na	na	na
Irrigation/rural	52 570	na	na	na	na	na	na	na	52 570
<b>Total</b>	<b>52 570</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>52 570</b>
<b>Total</b>									
Major urban	40 417	85 618	42 228	25 447	16 850	6 483	1 233	31 019	249 295
Non-major urban	22 442	18 766	14 917	—	—	—	—	—	56 125
Minor urban	11 277	—	21 390	1 892	638	—	—	—	35 197
Irrigation/rural	52 570	12 515	762	5 492	—	—	—	—	71 339
<b>Total</b>	<b>126 706</b>	<b>116 899</b>	<b>79 297</b>	<b>32 831</b>	<b>17 488</b>	<b>6 483</b>	<b>1 233</b>	<b>31 019</b>	<b>411 956</b>

— nil or rounded to zero (including null cells)

na not available

(a) Reuse water may be either supplied to customers or used by the Water supply industry.

## *Origin of reuse water continued*

Table 4.8 describes the supply of distributed water and reuse water by water providers. 59% of the distributed water in Australia was supplied by irrigation/rural water providers, more than a quarter by major urban water providers (26%). In New South Wales, 70% of all distributed water in the state was supplied by irrigation/rural water providers. In contrast, 61% of reuse water in Australia was supplied by major urban water providers and only 19% by irrigation/rural water providers.

**4.8** TOTAL DISTRIBUTED AND REUSE WATER SUPPLY(a)(b), by provider type—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
<b>Distributed water</b>									
Major urban	736 275	558 459	272 140	221 124	443 845	90 611	58 870	47 817	2 429 141
Non-major urban	151 639	456 569	112 570	—	10 310	—	—	—	731 088
Minor urban	102 562	—	268 231	3 503	1 246	—	—	—	375 542
Irrigation/rural	2 400 951	1 369 831	1 337 722	154 111	249 496	69 562	—	—	5 581 673
Other(c)	55 004	2 364	80 572	938	9 958	135 353	3 709	—	287 898
<b>Total</b>	<b>3 446 431</b>	<b>2 387 223</b>	<b>2 071 235</b>	<b>379 676</b>	<b>714 855</b>	<b>295 526</b>	<b>62 579</b>	<b>47 817</b>	<b>9 405 342</b>
<b>Reuse water</b>									
Major urban	40 417	66 467	39 562	24 880	16 850	6 483	1 233	31 019	226 911
Non-major urban	22 441	18 766	14 917	—	—	—	—	—	56 124
Minor urban	11 273	—	6 032	1 670	638	—	—	—	19 613
Irrigation/rural	52 570	12 515	762	5 492	—	—	—	—	71 339
Other(c)	—	—	—	—	—	—	—	—	—
<b>Total</b>	<b>126 701</b>	<b>97 748</b>	<b>61 273</b>	<b>32 042</b>	<b>17 488</b>	<b>6 483</b>	<b>1 233</b>	<b>31 019</b>	<b>373 987</b>
<b>Total</b>									
Major urban	776 692	624 926	311 702	246 004	460 695	97 094	60 103	78 836	2 656 052
Non-major urban	174 080	475 335	127 487	—	10 310	—	—	—	787 212
Minor urban	113 835	—	274 263	5 173	1 884	—	—	—	395 155
Irrigation/rural	2 453 521	1 382 346	1 338 484	159 603	249 496	69 562	—	—	5 653 012
Other(c)	55 004	2 364	80 572	938	9 958	135 353	3 709	—	287 898
<b>Total</b>	<b>3 573 132</b>	<b>2 484 971</b>	<b>2 132 508</b>	<b>411 718</b>	<b>732 343</b>	<b>302 009</b>	<b>63 812</b>	<b>78 836</b>	<b>9 779 329</b>

— nil or rounded to zero (including null cells)

(a) Data represents gross water supply including water supplied to other water providers and customers, losses, own use by water providers, and environmental provisions.

(b) Water supplied from one water provider to another is recorded against the original water provider.

(c) Includes water supplied by other industries including Mining, Manufacturing and Electricity and gas supply industries.

**BULK WATER**

Bulk water is water supplied from one water provider to another and can include either potable, reuse, or raw water. These bulk supplies are typically 'wholesale supply' arrangements between water providers, with the recipient then distributing to final customers according to a '*retail supply*' arrangement.

In 2009–10, 3,093 GL of bulk distributed water was supplied by water providers. Bulk water distribution was largest in New South Wales, accounting for half of the Australian total (table 4.9).

The supply of bulk reuse water is relatively small, but is a developing activity in Australia. In 2009–10, a total of 38 GL of reuse water was supplied for use to different water providers. Victoria accounted for half (50%) of total bulk reuse water supplied in Australia, with Queensland (47%) accounting for most of the remainder.

**4.9** BULK WATER SUPPLIED(a), Distributed water and reuse water—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Distributed	1 544 077	462 704	839 788	503	241 680	96	—	3 716	3 092 564
Reuse	5	19 151	18 024	787	—	—	—	—	37 967
<b>Total</b>	<b>1 544 082</b>	<b>481 855</b>	<b>857 812</b>	<b>1 290</b>	<b>241 680</b>	<b>96</b>	<b>—</b>	<b>3 716</b>	<b>3 130 531</b>

— nil or rounded to zero (including null cells)

(a) Water supplied from one water provider to another.

## WATER LOSSES

"Water losses" refer to water that enters the water distribution system of a water provider but does not reach the end users. Water losses can be attributed to seepage, leakage, evaporation (excluding evaporation from water storages), meter inaccuracies and theft. Note that this definition is similar to the definition for "unaccounted water" in the *National Performance Report 2009–10: Rural Service Providers* (National Water Commission, April 2011).

In the *Water Account Australia*, losses are assigned to the WATER SUPPLY industry, following the framework outlined in the *System of Environmental-Economic Accounts for Water* (SEEA–Water). This enables a consistent treatment of losses and does not affect industry (e.g. AGRICULTURE, MINING, MANUFACTURING) water consumption intensity measures.

Water losses are difficult to measure and consequently the estimation of losses by water suppliers is problematic. Industry guidelines have been established for estimating losses and it is hoped that over time estimation of losses will improve.

In 2009–10, the total volume of water losses (or unaccounted water) in Australia was 1,803 GL (table 4.10 and graph 4.11), which is about 20% of the gross water supplied (which includes bulk transfers to other water providers, see Glossary).

Of the States and Territories, New South Wales reported the highest percentage of losses as a proportion of gross water supplied (29%), followed by Victoria (20%) and Western Australia (14%).

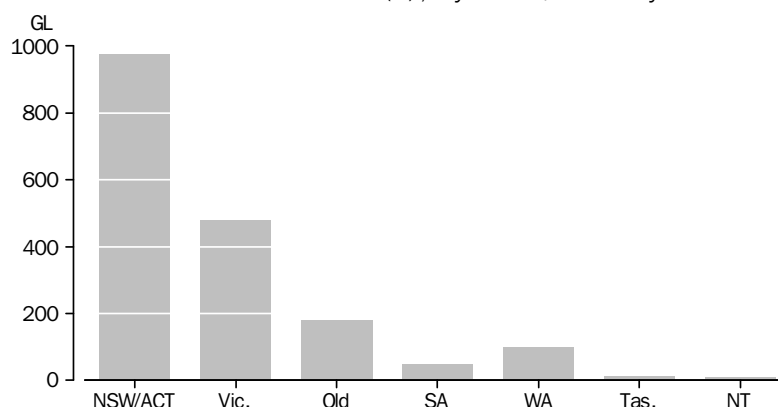
#### 4.10 DISTRIBUTION LOSSES—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
<b>Volume of losses</b>									
Urban water providers (ML)	126 275	81 107	73 280	34 992	38 318	7 908	9 787	3 778	375 445
Irrigation/rural water providers (ML)	846 586	398 251	106 050	12 917	59 377	4 410	—	—	1 427 591
<b>Total (ML)</b>	<b>972 861</b>	<b>479 358</b>	<b>179 330</b>	<b>47 909</b>	<b>97 695</b>	<b>12 318</b>	<b>9 787</b>	<b>3 778</b>	<b>1 803 036</b>
<b>Losses as proportion of distributed supply<sup>(a)</sup></b>									
Urban water providers (%)	13	8	11	16	8	9	11	7	11
Irrigation/rural water providers (%)	35	29	8	8	24	6	—	—	26
<b>Total (%)</b>	<b>29</b>	<b>20</b>	<b>9</b>	<b>13</b>	<b>14</b>	<b>8</b>	<b>11</b>	<b>7</b>	<b>20</b>

— nil or rounded to zero (including null cells)

(a) Calculated against gross water supply including water supplied to other water providers and customers, losses, own use by water providers, and environmental provisions.

## WATER LOSSES

*continued***4.11** DISTRIBUTION LOSSES (a), by State/Territory—2009–10

(a) Water supply, sewerage and drainage services industry only.

## NET WATER SUPPLY

Net water supply is the quantity of water actually supplied to users in the economy and equates to total distributed water less bulk water, losses, environmental flows and own use by the WATER SUPPLY industry. Table 4.12 presents the total net water supply by States and Territories in 2009–10, both for distributed water and reuse water. Net distributed water supply was 6,870 GL while net distributed reuse water was 247 GL.

**4.12** NET DISTRIBUTED AND REUSE WATER SUPPLY(a), by type of water provider—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
<b>Distributed water</b>									
Major urban	548 845	442 610	301 430	185 465	335 882	79 084	48 377	37 794	1 979 487
Non-major urban	130 988	428 289	96 183	—	9 574	—	—	—	665 034
Minor urban	87 965	—	153 854	2 838	227	—	—	—	244 884
Irrigation/rural	1 368 545	933 126	1 231 572	141 185	190 119	16 702	—	—	3 881 249
Other(b)	4 704	2 364	76 564	938	9 958	1 392	3 709	—	99 629
<b>Total</b>	<b>2 141 047</b>	<b>1 806 389</b>	<b>1 859 603</b>	<b>330 426</b>	<b>545 760</b>	<b>97 178</b>	<b>52 086</b>	<b>37 794</b>	<b>6 870 283</b>
<b>Reuse water</b>									
Major urban	21 511	18 246	32 034	22 591	14 700	3 871	1 233	198	114 384
Non-major urban	18 051	13 219	14 859	—	—	—	—	—	46 129
Minor urban	8 443	—	5 851	726	52	—	—	—	15 072
Irrigation/rural	52 570	12 515	762	5 492	—	—	—	—	71 339
Other(b)	—	—	—	—	—	—	—	—	—
<b>Total</b>	<b>100 575</b>	<b>43 980</b>	<b>53 506</b>	<b>28 809</b>	<b>14 752</b>	<b>3 871</b>	<b>1 233</b>	<b>198</b>	<b>246 924</b>
<b>Total</b>									
Major urban	570 356	460 856	333 464	208 056	350 582	82 955	49 610	37 992	2 093 871
Non-major urban	149 039	441 508	111 042	—	9 574	—	—	—	711 163
Minor urban	96 408	—	159 705	3 564	279	—	—	—	259 956
Irrigation/rural	1 421 115	945 641	1 232 334	146 677	190 119	16 702	—	—	3 952 588
Other(b)	4 704	2 364	76 564	938	9 958	1 392	3 709	—	99 629
<b>Total</b>	<b>2 241 622</b>	<b>1 850 369</b>	<b>1 913 109</b>	<b>359 235</b>	<b>560 512</b>	<b>101 049</b>	<b>53 319</b>	<b>37 992</b>	<b>7 117 207</b>

— nil or rounded to zero (including null cells)

(a) Net water supply includes all water supplied to customers, but excludes transfers of water between water providers, losses, own use by water providers, and environmental provisions.

(b) Includes water supplied by other industries including Mining, Manufacturing and Electricity and gas supply industries.

## WATER DISCHARGES

In Australia, the total volume of regulated discharge (see Explanatory Notes paragraphs 18 and 19) to the environment in 2009–10 was 51,912 GL. The ELECTRICITY AND GAS SUPPLY industry discharged about 95% of this total or 49,470 GL due mainly to the large amount of water used in hydro-electric power generation. The WATER SUPPLY industry accounted for nearly 3% (1,593 GL) of the total water discharges. Of these discharges, 38% (606 GL) occurred in New South Wales, 22% (350 GL) were in Queensland and 20% (315 GL) were in Victoria.

Table 4.13 and graph 4.14 show water discharges made by the WATER SUPPLY industry to various water bodies. Of the total 1,593 GL of water discharged by the industry in 2009–10, about 68% was discharged to the sea, 30% to inland surface water and 1% to groundwater.

**4.13** REGULATED DISCHARGE(a)(b), by discharge point—2009–10

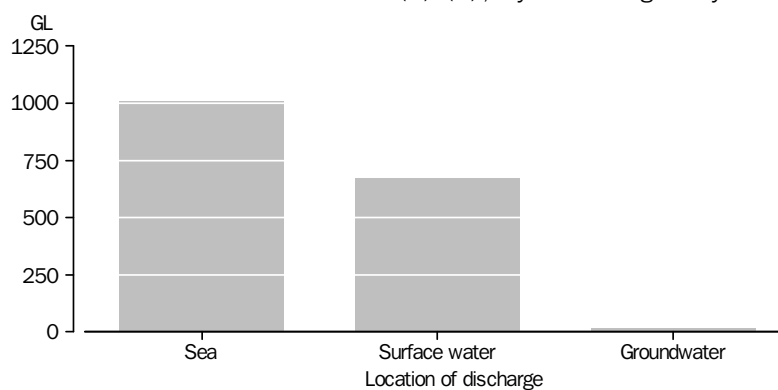
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Surface water	144 926	56 158	202 611	1 084	60 038	15 883	1 380	817	482 897
Groundwater	13 074	—	3 082	2 181	1 579	—	1 450	—	21 366
Sea water	448 192	259 324	143 920	70 840	128 410	20 477	18 068	—	1 089 231
<b>Total</b>	<b>606 192</b>	<b>315 482</b>	<b>349 613</b>	<b>74 105</b>	<b>190 027</b>	<b>36 360</b>	<b>20 898</b>	<b>817</b>	<b>1 593 494</b>

— nil or rounded to zero (including null cells)

(b) Water supply industry only.

(a) Includes waste and drainage water discharged.

**4.14** REGULATED DISCHARGE(a) (b), by receiving body—2009–10



(a) Includes waste and drainage water discharged.

(b) Water supply industry only.

## INTRODUCTION

This chapter examines the consumption of water by the AGRICULTURE industry. Water used in agriculture includes water applied through the irrigation of crops and pastures, or fed to livestock. Water can be directly extracted from the environment by farmers (e.g. from bores, on-farm dams, rivers) or supplied by water providers (e.g. irrigation authorities). The consumption of direct rainfall water is not included in this section. Since AGRICULTURE does not use water in-stream, or supply water to other users, total water use is equal to water consumption.

Users often find additional value in analysing water use information related to agricultural activities/commodities - these data are provided in the Appendix. Editions of the *Water Account Australia* (WAA) prior to 2008–09 presented an activity view of agriculture and are directly comparable to the data in the Appendix.

To calculate the amount of water consumed by the AGRICULTURE industry, the ABS has used data on:

- water supplied to agriculture from the ABS Water Supply and Sewerage Services Survey 2009–10;
- water consumption, irrigated area and livestock numbers from the ABS 2009–10 Agricultural Resource Management Survey (ARMS);
- additional information available from State and Territory agricultural departments and research institutions.
- Additional detail on the methodology is found in the Explanatory Notes.

## MAIN FINDINGS

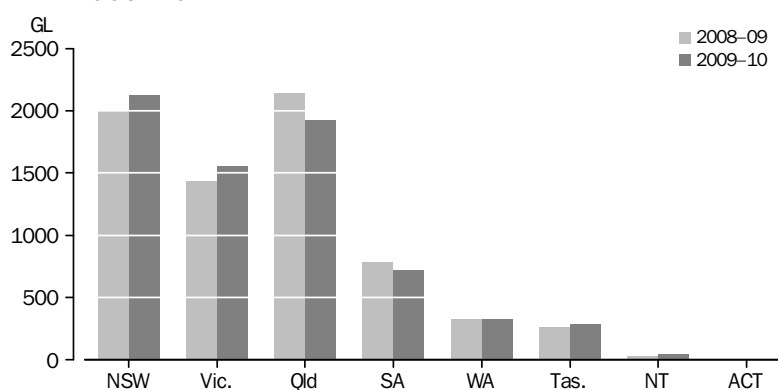
The main findings of this chapter are:

- Water consumption by businesses with agriculture as their main activity (i.e. the AGRICULTURE industry) was 6,987 GL in 2009–10, representing 95% of total agricultural water consumption (7,359 GL). This is virtually unchanged from 6,996 GL in 2008–09.
- The AGRICULTURE industry accounted for 52% of total Australian water consumption in 2009–10.
- SHEEP, BEEF CATTLE AND GRAIN FARMING (2,649 GL or 38%) had the highest water consumption of the ANZSIC groups within the AGRICULTURE industry in 2009–10, followed by OTHER CROP GROWING (1,409 GL or 20%), DAIRY CATTLE FARMING (1,216 GL or 17%) and FRUIT AND TREE NUT GROWING (1,116 GL or 16%).
- Self-extracted water consumption by the AGRICULTURE industry in 2009–10 was 3,215 GL, distributed water consumption (e.g. supplied by irrigation authorities) was 3,646 GL, and reuse water consumption was 126 GL.

### Water Consumption

Water consumption by the AGRICULTURE industry was 6,987 GL in 2009–10 (table 5.2), accounting for 52% of total water consumption in Australia during that period. Water consumption varied between crops and between States and Territories. New South Wales had the highest water consumption for the AGRICULTURE industry in 2009–10, with 2,127 GL or 30% of total agricultural water consumption (graph 5.1), followed by Queensland (1,928 GL or 28%) and Victoria (1,553 GL or 22%).

**5.1** WATER CONSUMPTION, Agriculture industry—2008–09 and 2009–10



(a) Excludes water consumption by businesses conducting agricultural activities where agriculture is not the business' main activity. See Explanatory Note 20 for more details.

In 2009–10, the SHEEP, BEEF CATTLE AND GRAIN FARMING industry group had the highest water consumption within the AGRICULTURE industry, with 2,649 GL (or 38%). This was followed by OTHER CROP GROWING (1,409 GL or 20%), DAIRY CATTLE FARMING (1,216 GL or 17%) and FRUIT AND TREE NUT GROWING (1,116 GL or 16%) (table 5.2).

The largest decrease in water consumption between 2008–09 and 2009–10 within these industry groups was for Other crop growing (a 26% decrease, from 1,901 GL to 1,409 GL), while the largest increase in consumption was for SHEEP, BEEF CATTLE AND GRAIN FARMING (a 22% increase, from 2,177 GL to 2,649 GL).

## 5.2 WATER CONSUMPTION, Agriculture industry—by State/Territory—2008–09 and 2009–10

	AUSTRALIA		STATE/TERRITORY 2009–10							
	2008–09	2009–10	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML
Nursery and floriculture production	58 490	60 555	16 735	12 699	16 296	2 967	9 690	1 238	864	66
Mushroom and vegetable growing	431 782	439 059	98 362	80 150	92 014	73 070	58 600	35 089	1 750	25
Fruit and tree nut growing	1 047 610	1 115 883	238 944	378 705	181 918	256 013	41 965	8 361	9 907	68
Sheep, beef cattle and grain farming	2 176 863	2 648 630	1 163 551	323 975	586 785	252 709	145 763	139 724	35 911	213
Other crop growing	1 900 863	1 409 189	401 034	13 888	961 241	9 853	18 728	3 699	623	123
Dairy cattle farming	1 262 879	1 215 678	177 386	724 256	64 189	115 086	39 924	94 835	—	3
Poultry farming	23 940	16 644	7 568	4 567	1 846	1 149	1 110	400	—	4
Deer farming	630	574	169	102	24	82	193	3	—	—
Other livestock farming	92 724	81 122	23 606	14 207	23 430	9 423	7 809	2 411	232	3
<b>Total</b>	<b>6 995 781</b>	<b>6 987 334</b>	<b>2 127 355</b>	<b>1 552 549</b>	<b>1 927 744</b>	<b>720 351</b>	<b>323 782</b>	<b>285 761</b>	<b>49 288</b>	<b>504</b>

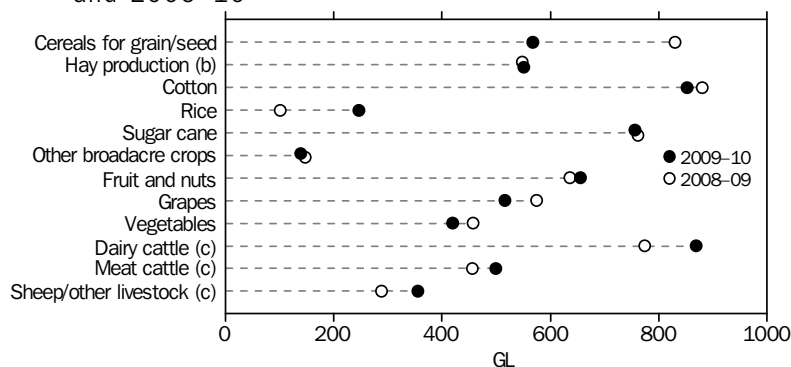
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### Water Source

The majority of the water consumed by the AGRICULTURE industry in 2009–10 was distributed water (3,647 GL or 52%) and self-extracted water (3,215 GL or 46%), with reuse water (126 GL or 2%) accounting for the remainder.

The highest self-extracted water consumption within the AGRICULTURE industry in 2009–10 was by SHEEP, BEEF CATTLE AND GRAIN FARMING (1,339 GL) and in OTHER CROP GROWING (631 GL) (graph 5.3 and table 5.4). The industry groups that consumed more distributed water than self-extracted water included NURSERY AND FLORICULTURE PRODUCTION, FRUIT AND TREE NUT GROWING, OTHER CROP GROWING, DAIRY CATTLE FARMING and DEER FARMING.

## 5.3 WATER CONSUMPTION, Agriculture, by activity (a)—2008–09 and 2009–10



(a) See table A1.3 (Water Consumption, Agriculture, by activity) for complete list of activities.  
 (b) Includes pasture for silage  
 (c) Irrigated land used for grazing

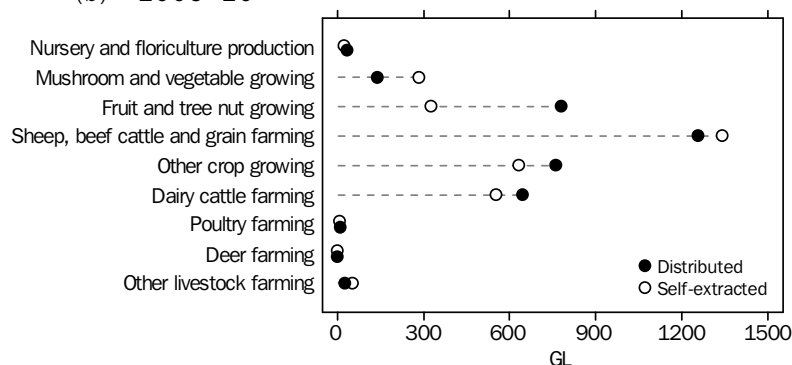
Water Source *continued***5.4** WATER CONSUMPTION, Agriculture industry(a)—by water type—2009–10

	Self-extracted	Distributed	Reuse	Total
	ML	ML	ML	ML
Nursery and floriculture production	23 333	32 838	4 385	60 555
Mushroom and vegetable growing	283 952	139 746	15 361	439 059
Fruit and tree nut growing	327 075	777 709	11 098	1 115 883
Sheep, beef cattle and grain farming	1 339 271	1 255 805	53 553	2 648 630
Other crop growing	630 587	759 299	19 303	1 409 189
Dairy cattle farming	551 353	644 096	20 229	1 215 678
Poultry farming	np	9 703	np	16 644
Deer farming	np	350	np	574
Other livestock farming	51 984	26 966	2 172	81 122
<b>Total</b>	<b>3 214 660</b>	<b>3 646 514</b>	<b>126 160</b>	<b>6 987 334</b>

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Excludes water consumption by businesses conducting agricultural activities where agriculture is not the business' main activity. See Explanatory Note 27 for more details.

Distributed water consumption (3,647 GL) was slightly higher than self-extracted water consumption (3,215 GL) for the AGRICULTURE industry in Australia in 2009–10. New South Wales had the highest distributed consumption (1,213 GL) of any state, followed by Victoria (1,161 GL) and Queensland (1,002 GL) (graph 5.5).

**5.5** WATER CONSUMPTION, Agriculture industry (a), by water type (b)—2009–10

(a) Excludes water consumption by businesses conducting agricultural activities where agriculture is not the business' main activity. See Explanatory Note 20 for more details.

(b) Excludes reuse water.

## 5.6 WATER CONSUMPTION(a), Agriculture industry—by State/Territory and water type—2008–09 and 2009–10

	AUSTRALIA		STATE/TERRITORY 2009–10							
	2008–09	2009–10	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML
Self-extracted	3 625 895	3 214 660	859 646	357 370	915 351	563 338	206 613	263 164	48 785	393
Distributed	3 267 240	3 646 514	1 213 159	1 161 164	1 002 336	135 745	112 237	21 286	497	91
Reuse	102 645	126 160	54 550	34 015	10 056	21 269	4 932	1 311	7	21
<b>Total</b>	<b>6 995 781</b>	<b>6 987 334</b>	<b>2 127 355</b>	<b>1 552 549</b>	<b>1 927 744</b>	<b>720 351</b>	<b>323 782</b>	<b>285 761</b>	<b>49 288</b>	<b>504</b>

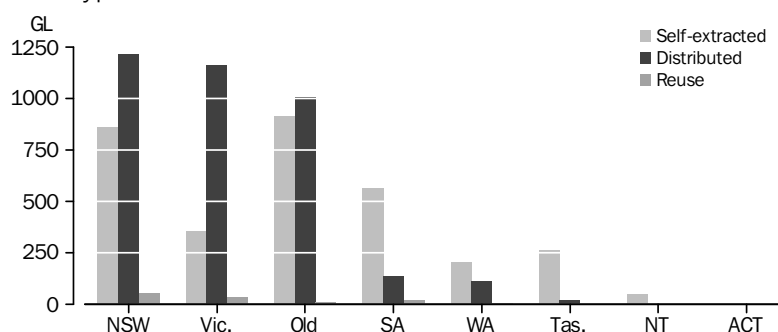
(a) Excludes water consumption by businesses conducting agricultural activities where agriculture is not the business' main activity. See Explanatory Note 27 for more details.

### Reuse Water

Reuse water consumption by the AGRICULTURE industry in 2009–10 was 126 GL or 1.8% of total water consumption by the industry (table 5.6). This was an increase of 23% from the amount of reuse water consumed by the industry in 2008–09. This increase was driven by increases in New South Wales (from 33 GL to 55 GL, or 67%) and Victoria (from 29 GL to 34 GL or 17%). These two states consumed more reuse water than any other state in 2009–10. The Australian Capital Territory (4%) and South Australia (3%) had the highest reuse consumption as a proportion of their respective total water consumption. Note that consumption of reuse water by the AGRICULTURE industry includes water from regional reuse schemes, but does not include on-farm reuse or recycling.

The highest consumption of reuse water within the AGRICULTURE industry in 2009–10 was by SHEEP, BEEF CATTLE AND GRAIN FARMING (54 GL), DAIRY CATTLE FARMING (20 GL), OTHER CROP GROWING (19 GL) and MUSHROOM AND VEGETABLE GROWING (15 GL) (see graph below). The largest increase in the consumption of reuse water within these industry groups from 2008–09 to 2009–10 was in the SHEEP, BEEF CATTLE AND GRAIN FARMING group (from 24 GL to 54 GL).

## 5.7 WATER CONSUMPTION, Agriculture industry (a), by water type—2009–10



(a) Excludes water consumption by businesses conducting agriculture activities where agriculture is not the business' main activity. See Explanatory Note 20 for more details.

Notes: ACT and NT figures too low to appear on graph. See Table Water consumption, Agriculture industry by water type 2009–10.

*Origin of Water*

The majority of water consumption by the AGRICULTURE industry in 2009–10 originated from surface water (65%), while groundwater accounted for 33% (table 5.8). The States and Territories with the largest percentage of water consumption extracted from groundwater sources were Northern Territory (65%), South Australia (60%) and Western Australia (44%). Surface water accounted for a large percentage of agricultural water consumption in Tasmania (89%), Victoria (74%), the Australian Capital Territory (72%) and Queensland (72%).

**5.8** ORIGIN OF AGRICULTURAL WATER—2009–10

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Austr.
Surface water (%)	62.1	74.5	71.7	37.1	54.9	89.3	34.8	71.7	65.5
Groundwater (%)	35.3	23.3	27.7	59.9	43.6	10.2	65.2	24.2	32.7
Reuse (%)	2.6	2.2	0.5	3.0	1.5	0.5	—	4.1	1.8
Total all sources(a) (ML)	2 127 355	1 552 549	1 927 744	720 351	323 782	285 761	49 288	504	6 987 334

(a) Excludes water use by businesses conducting agricultural activities where agriculture is not the business' main activity. See Explanatory Note 27 for more details.

Note: — nil or rounded to zero (including null cells)

## CHAPTER 6

## CLIMATE CONDITIONS

### INTRODUCTION

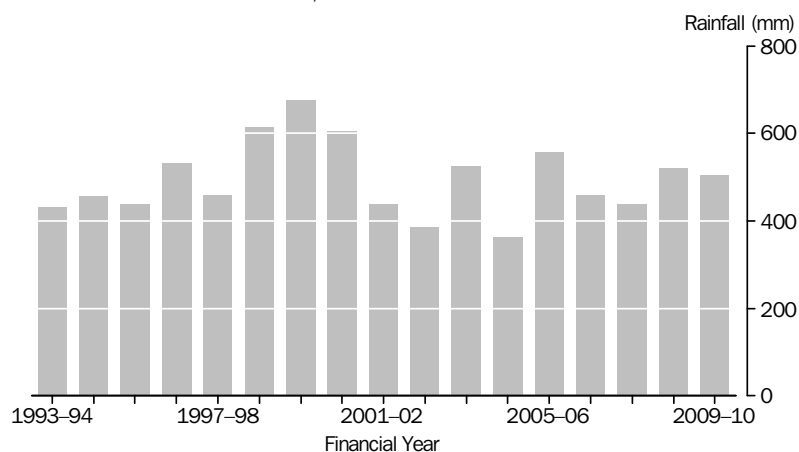
The supply and use of water in Australia needs to be assessed in the context of climate. In particular, the amount of rainfall in the year preceding the *Water Account Australia* (WAA) and during the reference period is important, as this plays a large part in determining the amount of water available in the environment as surface and groundwater as well as in dams and other water storages.

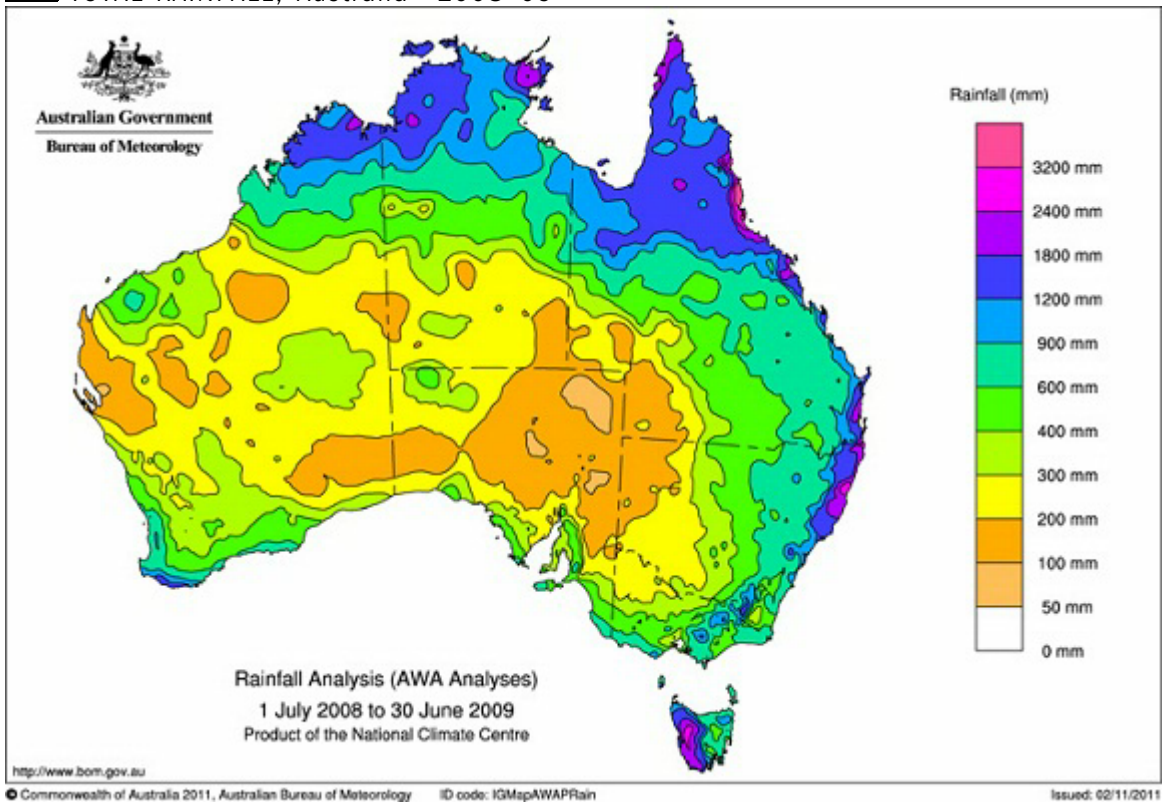
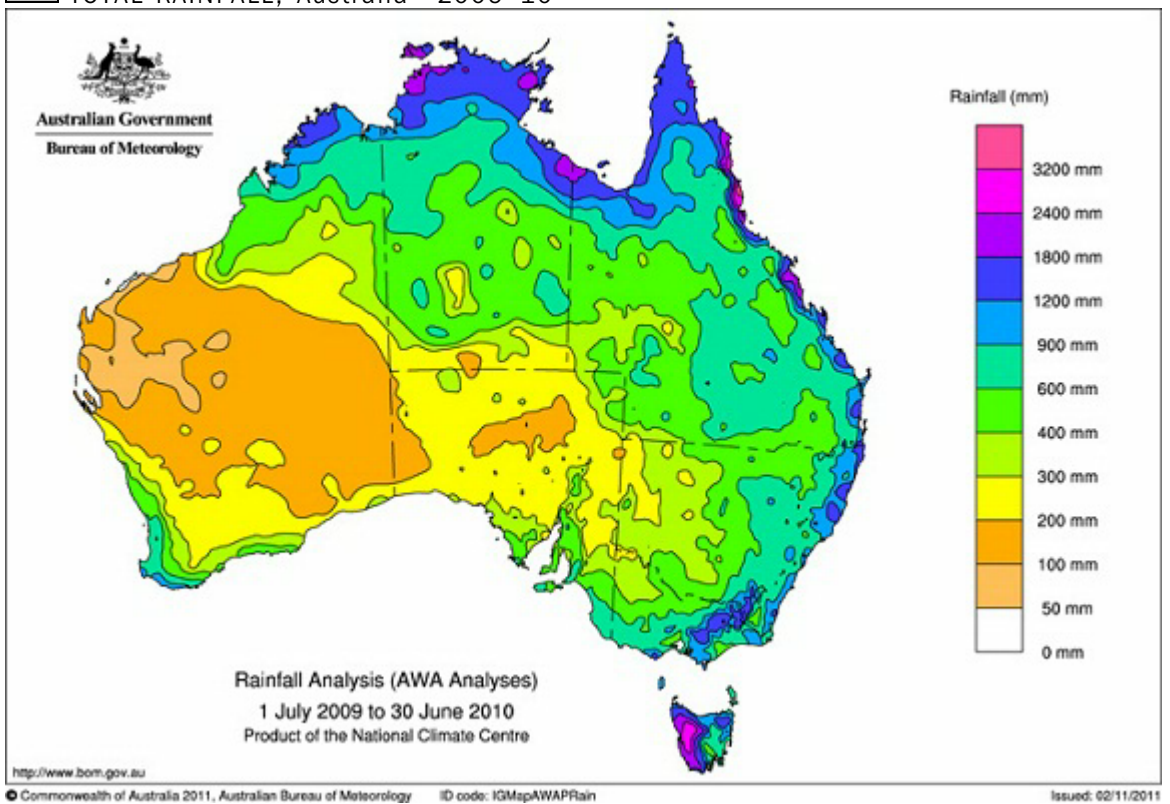
### COMPARISON: 2008–09 AND 2009–10

Australian annual mean rainfall (an area weighted annual average of the total precipitation across Australia) in 2009–10 was 503 mm, a 4% decrease from the 522 mm reported in 2008–09 (graph 6.1).

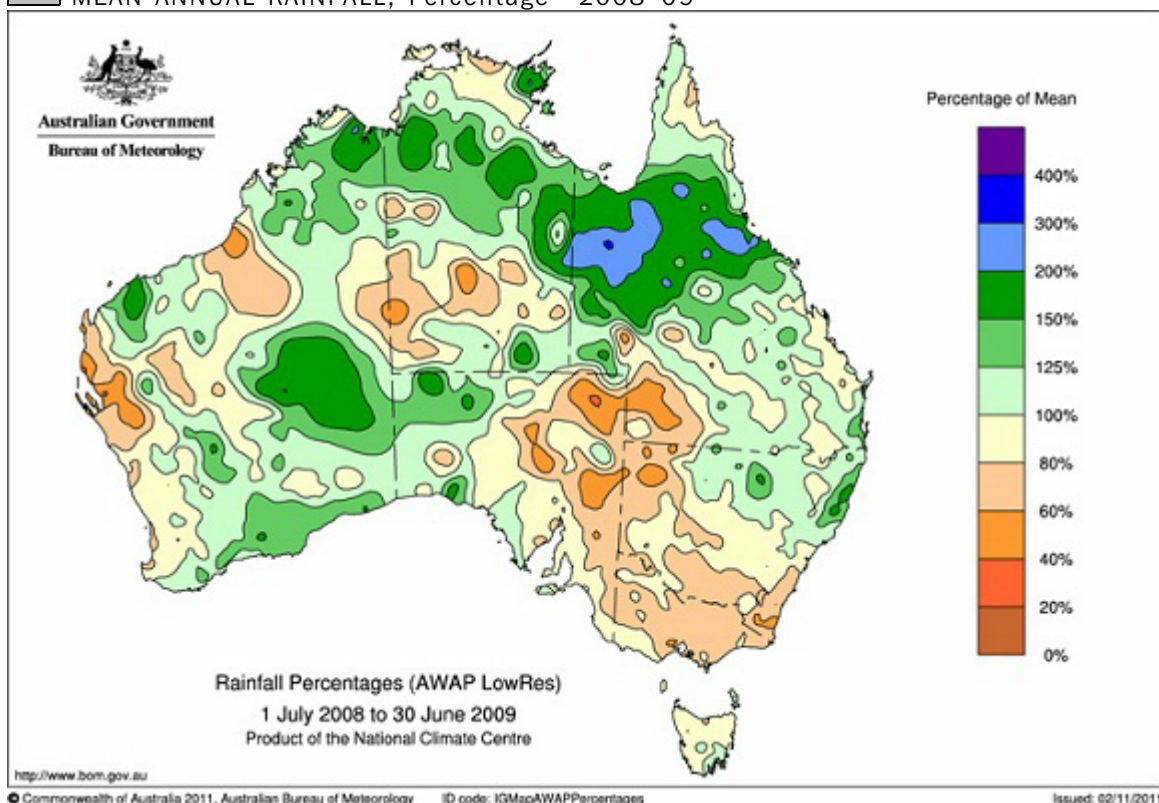
Maps 6.2 to 6.7 show that while the national rainfall levels were similar, there were large differences in the geographical distribution of rainfall during the reference periods. From 2008–09 to 2009–10, rainfall in Victoria increased by 37%, from 498 mm to 682 mm. Western Australia also recorded a dramatic change in rainfall, with rainfall decreasing by 26% from 2008–09 (381 mm) to 2009–10 (281 mm).

**6.1** ANNUAL RAINFALL, Australia: 1993–94 to 2009–10

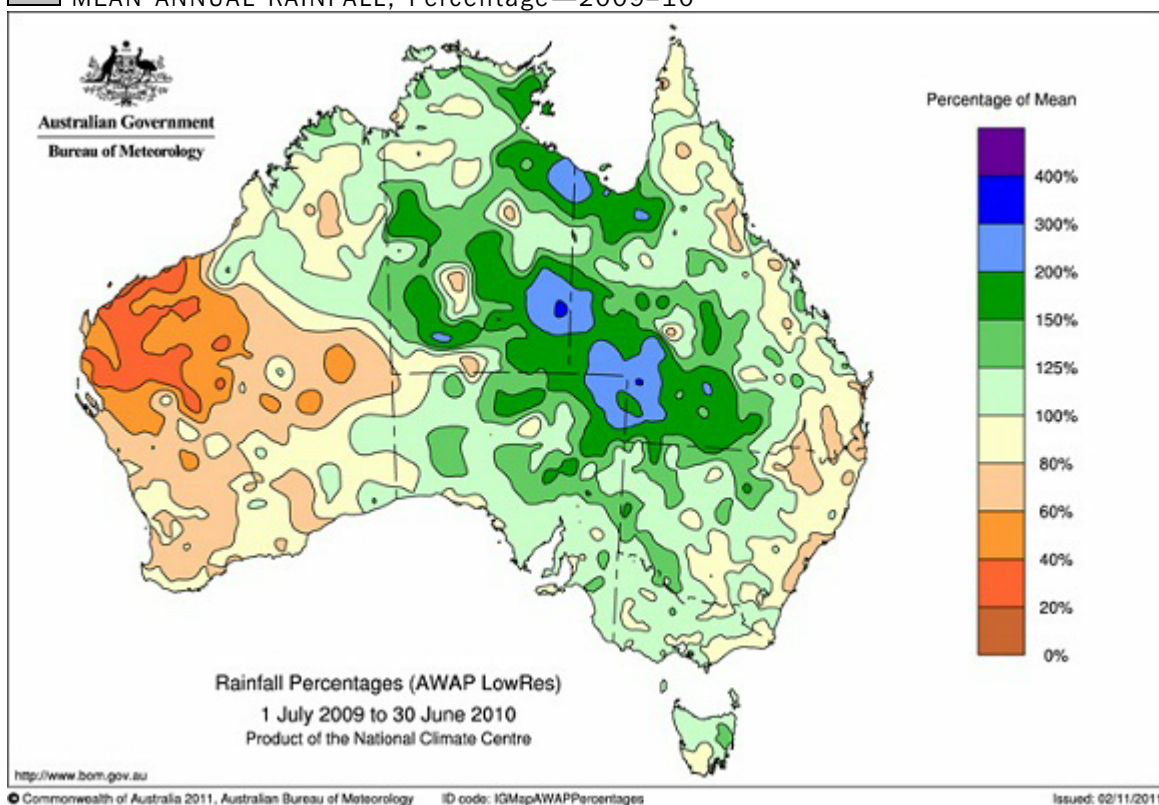


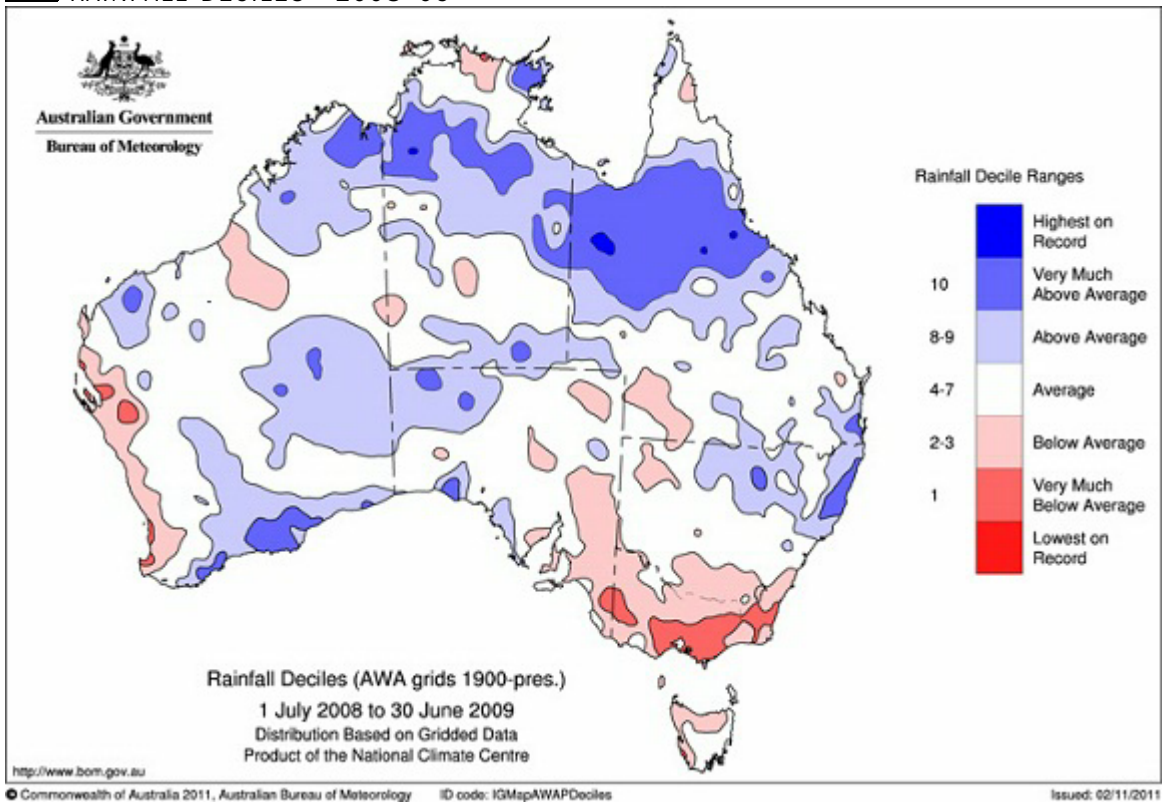
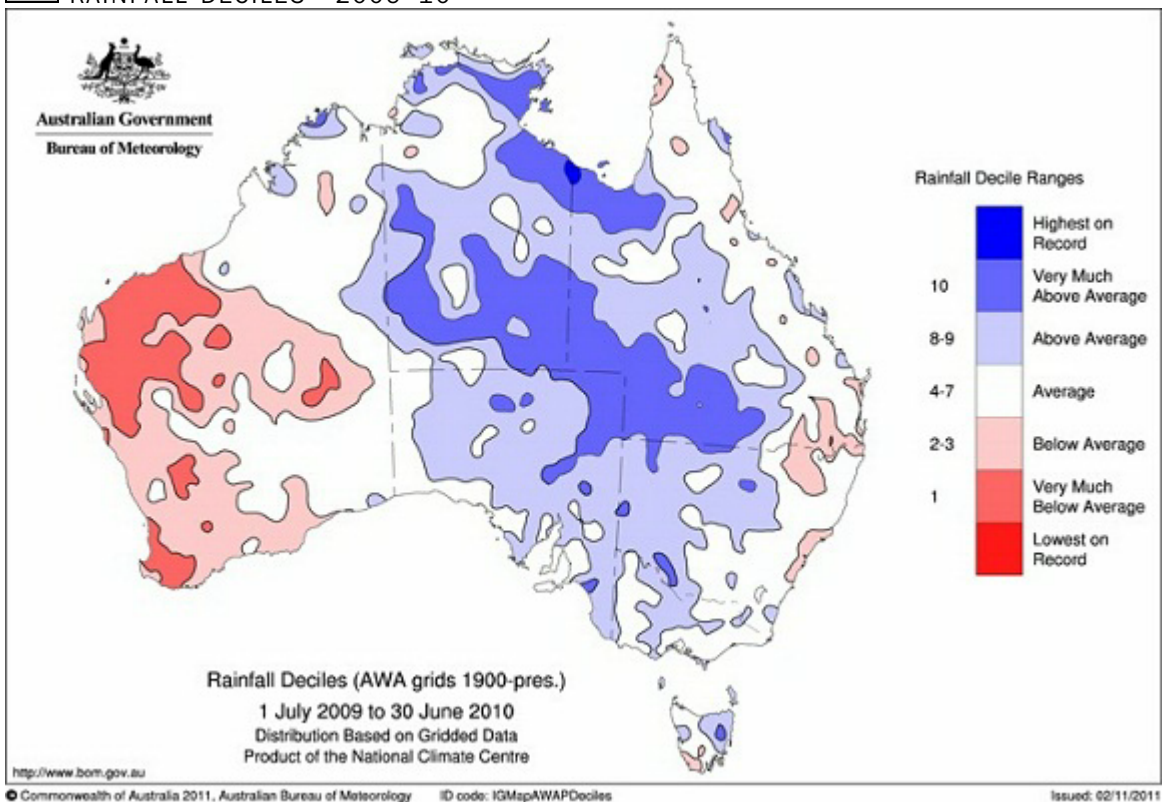
**6.2** TOTAL RAINFALL, Australia—2008–09**6.3** TOTAL RAINFALL, Australia—2009–10

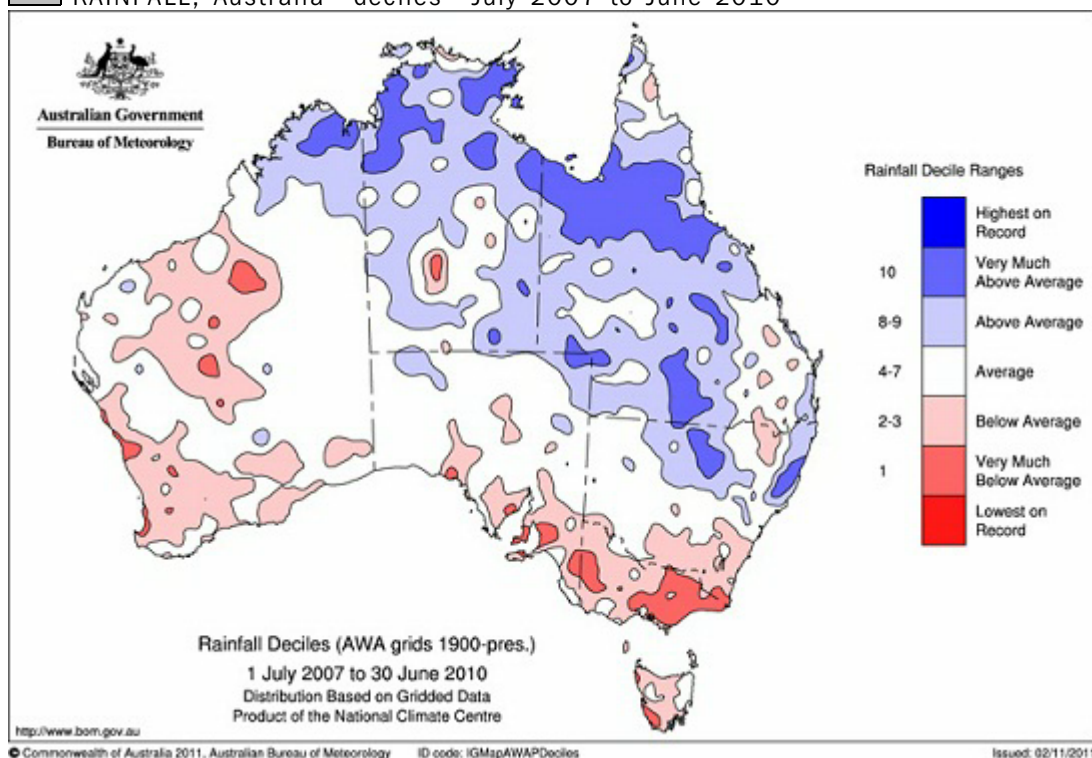
# 6.4 MEAN ANNUAL RAINFALL, Percentage—2008–09



# 6.5 MEAN ANNUAL RAINFALL, Percentage—2009–10



**6.6** RAINFALL DECILES—2008–09**6.7** RAINFALL DECILES—2009–10

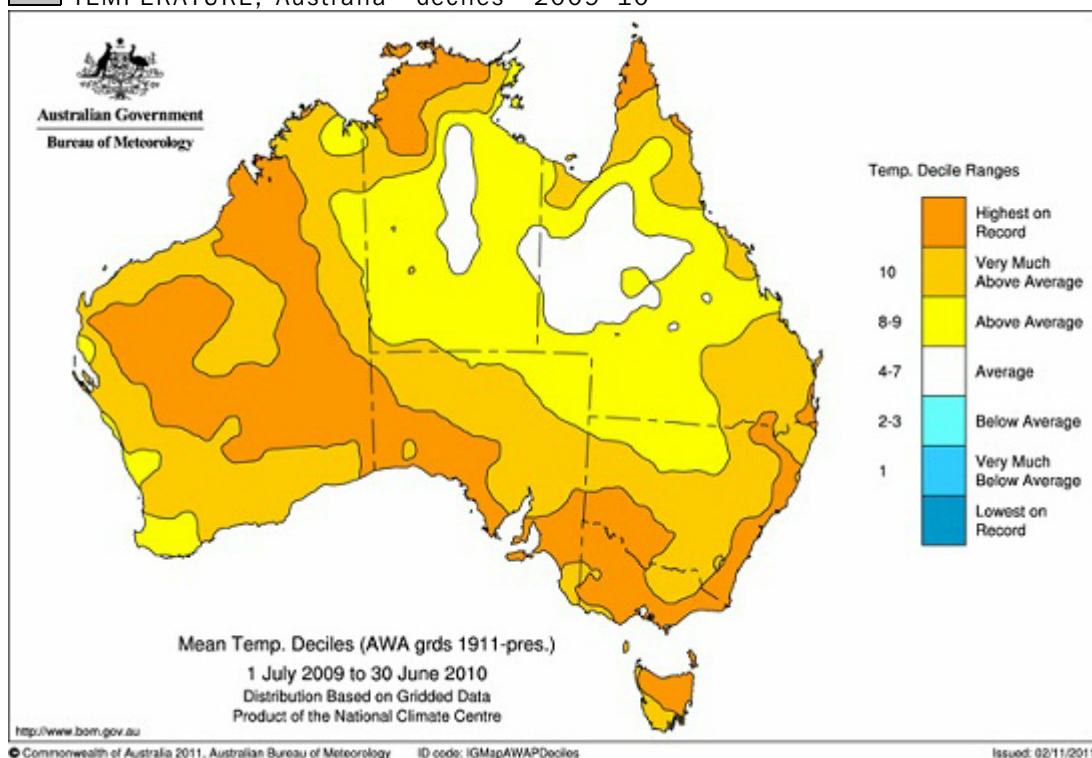
**6.8** RAINFALL, Australia—deciles—July 2007 to June 2010**CONDITIONS FOR  
2009–10**

The period from July 2009 to June 2010 saw average to high levels of rainfall for a majority of Australia and below average rainfalls in most of Western Australia. This resulted in the 26th wettest July–June in 110 years of records (map 6.3). The national area rainfall was 503mm, 8% above the 30 year average for 1960–1990.

Five States and Territories recorded rainfall above the 30 year average rainfall in 2009–10: Victoria, Queensland (16%), South Australia (22%), Tasmania (6%) and the Northern Territory (29%). Summer and autumn rains contributed significantly to the above average rainfalls, with Australia recording 28% and 13% above average rainfalls for these seasons. Victoria recorded its highest autumn rainfall since 1995 (8% above average) and New South Wales since 2000 (2% above average), ending long runs of drier-than-normal autumns in both states. Whilst the rains of 2009–10 eased the long term drought considerably, some areas with 3-year rainfalls in the lowest decile remained, particularly in Victoria

However, to highlight the variability of rainfall in Australia, Western Australia had low rainfall, having its 29th driest July to June in 110 years.

The south-west was particularly dry, experiencing its 9th driest July to June on record. The period included an exceptionally warm and dry summer for Western Australia. Much of the west coast experienced very low rainfall levels with several places recording no rain over the summer, including Perth Airport which recorded a 122 day dry spell, and the April to June period was also very dry in the south-west. The heatwave in Western Australia resulted in its hottest summer on record for both daytime maximums (1.52°C above normal) and overnight minimums (1.12°C above normal) as seen in map 6.5.

**6.9** TEMPERATURE, Australia—deciles—2009–10**CONDITIONS FOR  
2009–10 continued**

Mean temperatures during 2009–10 were much warmer than normal,  $0.87^{\circ}\text{C}$  above the 1961 to 1990 mean, with each month recording warmer than average mean temperatures. It was the warmest July to June period on record for Australia, as well as for states of Western Australia, Victoria and Tasmania, with record mean annual temperatures covering 28% of Australia.

During August, daytime maximum temperature anomalies in the  $3$  to  $5^{\circ}\text{C}$  range occurred across much of Australia, with Australia recording its warmest August on record ( $3.2^{\circ}\text{C}$  above normal) and the highest temperature anomaly of any month. Both Queensland and the Northern Territory also had their warmest August on record (with  $4.24^{\circ}\text{C}$  and  $3.91^{\circ}\text{C}$  above normal). November was also an exceptionally warm month, particularly in the south eastern states, with Australia recording its second warmest November on record ( $2.12^{\circ}\text{C}$  above normal). These hot spells also meant overnight minimums were elevated by up to  $4^{\circ}\text{C}$  during this time, with Australia setting a new November record ( $1.61^{\circ}\text{C}$  above normal).

**EL NIÑO / LA NIÑA  
PHENOMENA**

The Southern Oscillation Index (SOI) calculates the air pressure difference between Tahiti and Darwin. The SOI in conjunction with the Walker Circulation gives an indication of the stage of El Niño or La Niña events in the Pacific Ocean.

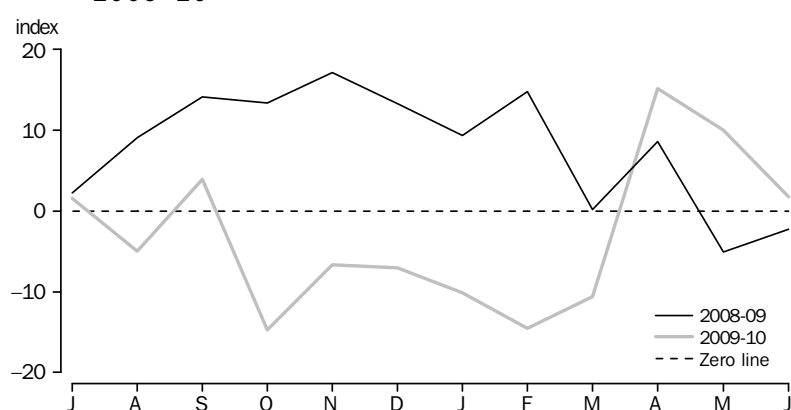
A strongly negative SOI (below  $-10$ ) is characteristic of El Niño, which is often associated with below average winter and spring rainfall over eastern Australia, and a weaker than normal monsoon in the north. A strongly positive SOI (above  $+10$ ) is characteristic of La Niña, which is often associated with above average winter and spring rainfall over eastern Australia, and an earlier than normal start to the northern monsoon season with above-average rainfall during the tropical wet season.

## EL NIÑO / LA NIÑA

PHENOMENA *continued*

In 2009-10, Australia experienced a weak El Niño event. The largest impact of El Niño occurred during spring with below average rainfall levels across much of Australia. After a relatively dry winter and spring, the warmer months exhibited rainfall patterns atypical of those normally associated with El Niño. In comparison, for much of 2008-09 (the period of the previous WAA) Australia was under the influence of La Niña. Consistent with the weather patterns associated with a weak La Niña, large areas of Australia had above average rainfall, particularly in the north of the continent, due to a strong monsoonal trough.

**6.10** SOUTHERN OSCILLATION INDEX, July to June—2008-09 and 2009-10



Source: Bureau of Meteorology 2010

## EXPLANATORY NOTES .....

### INTRODUCTION

**1** The ABS *Water Account Australia* (WAA) is one of the environmental-economic accounts produced by the ABS based on the *System of Environmental-Economic Accounts* (SEEA). It consists of supply and use tables (collectively referred to as flow tables) for both physical and monetary volumes. The aim of the WAA is to integrate data from different sources into a consolidated information set making it possible to link physical data on water to economic data, such as that in Australia's National Accounts.

**2** Environmental-Economic accounts can provide information and improved understanding on a range of issues that include:

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

**3** One advantage of environmental-accounts is that by linking together physical and economic data in a consistent framework it is possible to undertake scenario modelling. Issues that can be modelled include future water demand, assessing relative efficiencies in interactions between different sectors of the economy and the environment, and resource implications of structural change.

**4** When the ABS produced the 1993–94 to 1996–97 and 2000–01 editions of WAA, any readily available data on water resources from various government and non-government organisations were used and aggregated. This tied together industry, regional and state data into a single system showing the supply and use of water within the Australian economy.

**5** The survey activity undertaken by the ABS for the 2009–10 WAA collected comprehensive data on all organisations supplying water in the WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES industry (hereafter referred to as WATER SUPPLY industry) in Australia, however the amount of survey information collected on water use from across the economy was less than that collected for the previous two editions of WAA (2004–05 and 2008–09). As with the previous editions, data from other sources was also used to fill gaps, as well as for data consistency and checking. There will be more information available from surveys for the WAA in 2010–11 and 2011–12.

### ENVIRONMENTAL ACCOUNTING FRAMEWORK

**6** The WAA was developed using the SEEA and the *SEEA-Water*. SEEA was first published by the United Nations in 1993, and revised in 2003. SEEA is a supplementary account to the *System of National Accounts* (SNA) 1993 and will be elevated to an international statistical standard in 2012. Environmental accounts extend the boundaries of the SNA framework to include environmental resources, which occur outside the economic production and asset boundaries measured by the SNA.

## RELATIONSHIP BETWEEN THE WATER ACCOUNT AUSTRALIA AND NATIONAL ACCOUNTS

### PHYSICAL SUPPLY AND USE

#### Scope

**7** Water supply and use tables provide a framework to link core components of the National Accounts to physical information. Physical data are presented in supply and use tables while some linkages to economic data are also made.

**8** The Physical water supply and use chapter presents aggregates of all available physical data (megalitres) in terms of the supply and use of water within the Australian economy for the financial year 2009–10. Supply and use tables illustrate the economic use of water and include: self-extracted, distributed, and regulated discharge (including in-stream use) and reuse.

**9** The WAA presents information on the supply and use of water in the entire Australian economy in both physical and monetary terms.

**10** The WAA includes the entire geographical area of Australia.

**11** The use of saline water (including water from estuaries) for power generation and other industrial uses, although measurable and reported, is not included in the supply and use tables. This is because the scope of the WAA is fresh water only.

#### Coverage

**12** Coverage for both supply and use tables includes the following:

- individuals and companies that directly extract water from surface water and groundwater sources for their own use (e.g. domestic, industrial, agricultural or other uses);
- households, government and businesses that use water supplied by water providers for domestic, industrial, agricultural or other uses;
- water providers that extract water from surface water, groundwater and sea water for desalination, and supply it to customers for use (e.g. domestic, industrial, or other use). The majority of water providers are categorised in WATER SUPPLY industry (ANZSIC 281) but the MINING, MANUFACTURING, and ELECTRICITY AND GAS SUPPLY industries also supply a small amount of water; and
- water providers that provide reuse water to 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 is available.

**13** Items not covered by the supply and use tables include:

- the volume of rainwater used by agricultural crops/pastures that are directly rain fed;
- discharges to the environment resulting from the run-off of irrigation water;
- the reuse/recycling of water on-farm or on-site (i.e. within homes or businesses);
- non-point/diffuse discharges; and
- the impact of storm water infiltration into the sewerage reticulation system.

#### Water consumption and use

**14** Calculating water use by industries is not straightforward. Water use can include self-extracted water, distributed water, or reuse water and sometimes a combination of all three sources are used. Calculating water use estimates for an industry or business is made more complicated when water is also supplied to other users, or when water is used in-stream (e.g. for cooling or hydro-power). As such simply adding self-extracted water, distributed water, and reuse water to derive a figure for total water use can be misleading.

**15** In the WAA, volumes of water used and supplied by each industry have been balanced to derive 'water consumption'. This figure takes into account the different characteristics of water supply and use of industries and is a way of standardising water use, allowing for comparisons between industries. As such the following accounting identities have been used:

*Water consumption and use  
continued*

- Total water use is equal to the sum of Distributed water use, Self-extracted water use and Reuse water use;
- Water consumption is equal to the sum of distributed water use, Self-extracted water use and Reuse water use less Water supplied to other users and less In-stream use. The use of Distributed water by the environment (Environmental flows (see paragraphs 33-36), is not included in total water consumption).

**16** For most industries, water use and water consumption are the same as most industries do not have any in-stream use or supply water to other users. However, water consumption and use will vary considerably for some industries, specifically the WATER SUPPLY industry, ELECTRICITY AND GAS SUPPLY industry and MINING industry, where in-stream water use and water supply volumes are significant.

*Reuse water*

**17** There are a variety of water sources that may be supplied as reuse water, including waste water (from sewerage systems), drainage water, storm water or other water providers (i.e. a 'bulk' reuse water supply). Sewerage systems collect and treat waste water which may be treated to primary, secondary or tertiary levels. Stormwater may also be collected using infrastructure separate to sewerage systems and, depending upon its intended use, may or may not be treated before being supplied as reuse water. Drainage water is also collected in regional collection drains managed by irrigation/rural water providers. This water may be supplied as reuse water to customers or discharged to the environment. This process is analogous to urban reuse systems, however the water is typically treated in urban systems before it is supplied.

*Water discharges*

**18** The water discharged from the economy to the environment may be regulated or unregulated. Regulated discharge refers to water discharged after use where that discharge does not match the natural flow regime of the receiving water body. For example, the waste water discharged by sewerage service providers is a regulated discharge. The water discharged by the ELECTRICITY AND GAS SUPPLY industry after use in hydro-electric power generation is also regulated discharge.

**19** The water discharged by households and other industries to sewerage or drainage systems, however, is not a regulated discharge as the water is not discharged directly to the environment. This does, however, become a regulated discharge, after it has been treated by the WATER SUPPLY (sewerage in particular) industry and released back to the environment. Discharges from non-point sources, such as those from the AGRICULTURE industry (e.g. run-off from irrigation), are not included in this publication and are therefore represented in the supply and use tables as "*not available*".

*Data Sources*

**20** Data have come from a range of ABS surveys as well as State, Territory and Local Government agencies, water authorities and industry organisations.

**21** The main ABS surveys used were:

- 2009–10 Water Supply and Sewerage Services Survey (WSSSS)
- 2009–10 Agricultural Resource Management Survey (ARMS)
- 2008–09 Energy, Water and Environment Survey (EWES)
- 2008–09 Economic Activity Survey (EAS)
- 2009–10 Economic Activity Survey (EAS)

Note that data from the latter three surveys listed above did not feed directly into the 2009–10 WAA. Rather, aggregate factors produced from the data collected in these surveys were used to estimate water use for 2009–10.

**22** State and Territory government agencies and major businesses, including major state/territory water corporations, provided data that were used in this publication, including:

- In New South Wales, NSW Office of Water. In particular, the 2009–10 *NSW Water Supply and Sewerage Benchmarking Report*.

*Data Sources continued*

- In Victoria, the Department of Sustainability and Environment. In particular, the 2009–10 *Victorian Water Accounts*.
- In Queensland, the *Queensland Statewide Water Information Management* (SWIM) under arrangements with the Queensland Water Directorate.
- In Western Australia, the Department of Water, the Economic Regulatory Authority and major water corporations.
- In Tasmania, the Department of Primary Industries, Parks, Water and Environment.

**23** Surveys conducted by other government agencies, industry associations, as well as annual reports of water providers were used. These include:

- National Water Commission (NWC) and Water Services Association Australia (WSAA) *National Performance Report 2009–10: Urban Water Utilities*.
- National Water Commission (NWC) *National Performance Report 2009–10: Rural Water Service Providers*.
- Annual/environmental reports for 2009–10 for various water providers.

*Methods for Calculating Water Supply and Use*

**24** These notes are intended as a general guide to the method of calculating estimates of water supply and use. For more detail on the methods please contact the National Information and Referral Service on 1300 135 070.

**25** A complete list of water providers in 2009–10 was compiled using the ABS Business Register (ABSBR) supplemented by additional information supplied by State and Territory regulatory departments, industry bodies, and other water data providers. All water providers identified were surveyed in the ABS 2009–10 WSSSS survey.

**26** Water providers provided information on:

- Volume of water extracted from the environment and/or the volume of water received from other water providers (this information was used to reconcile total supplies and to avoid double counting of water volumes).
- Volumes of water supplied to particular industries (e.g. AGRICULTURE, MINING and MANUFACTURING) and for household use. This information was reconciled with water use as reported by water users. It also enabled the calculation of coefficients (e.g. ML/employee) for industries for which there was little or no data on water use.
- The amount of water used by the water supply organisation (including mains flushing and water used on parks and gardens operated by councils that supplied water).
- Volume of water lost from the supply system (including customer meter errors and system water losses).
- Volume of water discharged by location.
- Volumes of reuse water supplied to particular industries (e.g. AGRICULTURE, MINING and MANUFACTURING) and for household use. Water reuse volumes were not imputed where water providers did not provide reuse water volumes.
- Distributed water supplied to households and the number of connections served by water supply and sewerage services. Where information was not available for distributed water supplied to households, neighbouring or matched Local Government Area (LGA) coefficients based on average megalitre use per connection were used.
- The amount of water released for environmental flows. This only includes those environmental flows released in accordance with a specific plan prepared in conjunction and/or approved by the appropriate environmental (resource) regulator (see paragraphs 33–36).

**27** For Agriculture:

- Distributed water use was the amount supplied to the AGRICULTURE industry by water providers.

*Methods for Calculating Water  
Supply and Use continued*

- Total water consumption by AGRICULTURE was sourced from the 2009–10 ABS ARMS survey. Generally, the amount of distributed and reuse water consumed (collected on the ABS 2009–10 WSSSS survey) was subtracted from total water consumed; the remainder was assumed to be self-extracted water. Note that self-extracted water for the AGRICULTURE industry includes all groundwater that is extracted by Agriculture businesses.
- Reuse water usage includes water used from regional reuse schemes.
- Data for Victoria were confronted by the Victorian Water Register (Department of Sustainability and Environment, State Government Victoria, 2010).
- Two different views of agriculture are provided in the 2009–10 WAA: an industry view and an activity view (presented in the Appendix only). In an industry view all businesses are coded to an industry according to the *Australian and New Zealand Standard Industrial Classification* (ANZSIC 2006) (ABS cat. no. 1292.0). An industry view provides direct links to the economic information in the SNA. This enables data such as industry value added to be compared to water consumption.
- The AGRICULTURE industry view presents only the agricultural activity that occurs in businesses where the primary income producing activity (i.e. the activity with value added that exceeds the value added of any other activity carried out by the same business) of the business is agricultural production. Businesses which undertake some agricultural activity but for which other activities provide most of the income are excluded from the AGRICULTURE industry view. For example, a business which generates most of its income from transporting agricultural produce, but also grows some agricultural commodities would be classified to the industry Transport, postal and warehousing industry. The agricultural production is still counted but is attributed to the Transport, postal and warehousing industry. As such the industry view of agriculture shows a lower level (around 5%) of water consumption than the agricultural activity view.
- The tables and graphs presented in the Agriculture chapter of this publication present an industry view for agriculture, while the Appendix presents an activity view. Note that, as in the 2008–09 WAA, the Physical water supply and use tables in this publication present the industry view, whereas previous editions of the WAA presented an activity view, so care must be taken when comparing the different sets of estimates.

Note that the ABS publication *Water Use on Australian Farms, 2009-10* (ABS cat. no. 4618.0) presents an activity view of agriculture - therefore total consumption estimates are slightly different to the industry estimates presented in the Physical water supply and use tables in the 2009–10 WAA. However, the activity estimates presented in the Appendix are the same as those published in *Water Use on Australian Farms*.

**28** For Mining and Manufacturing:

- Distributed water use was the amount supplied to the MINING and MANUFACTURING industries by water providers.
- Reuse water use was the amount supplied to the MINING and MANUFACTURING industries by water providers.
- Estimates for self-extracted and in-stream water use and water discharges were modelled (see paragraph 32) by simple application of aggregate factors based on outputs from the 2008–09 EWES survey and the 2008–09 and 2009–10 EAS survey (note that these factors were based on economic data and were adjusted for inflation using ABS *Producer Price Indexes* (PPI) data (ABS cat. no 6427.0)). Note that for the 2008–09 WAA, estimates were sourced directly from the 2008–09 EWES survey, a three-yearly survey that was not run in respect of the 2009–10 reference period.

*Methods for Calculating Water  
Supply and Use continued*

- Mine dewatering was assumed to be self-extracted in-stream (non-consumptive) use by the MINING industry. The water is usually used on-site or subsequently discharged to the environment.
- Only division level estimates are published at the State/Territory level (sub-division splits are presented at the National level) due to lack of survey input data for the MINING and MANUFACTURING industries. In previous editions of WAA, estimates for ANZSIC sub-division splits were published for MINING and MANUFACTURING for all states, however the modelled data which formed the basis of the 2009–10 estimates were deemed not sufficiently reliable for publication at the sub-division level.

**29** For Electricity and gas supply

- For the 2004–05 and 2008–09 editions of WAA, data for water use by electricity generators were sourced from the ABS Electricity Generators Survey of Water Use (a census of all energy producers with a greater than 10 MW capacity), however this survey was not run in reference to 2009–10, so these data were based on modelling using reliable administrative data from annual reports, websites and the *National Greenhouse Energy Reporting System* (NGERS).

**30** For "Other" industries (includes construction, service industries, government, education, health, arts and recreation - see Glossary for list of industries):

- Estimates of water use were modelled (see paragraph 32) by simple application of aggregate factors based on outputs from the 2008–09 EWES and the 2008–09 and 2009–10 ABS EAS survey (similar to *Mining* and *Manufacturing* - see paragraph 28), information supplied by water providers via the ABS WSSSS survey, as well as the application of industry specific coefficients.
- Data on bore water use for parks and gardens in Western Australia was provided by Western Australia's Department of Water.

**31** For household water use:

- Distributed and reuse water use was the amount supplied to households by water providers (these data were sourced mainly via the ABS 2009–10 WSSSS).
- Self-extracted water use by households was calculated by applying average regional "*volume (kL) per connection*" coefficients and applying these to the households known not to be served by water providers (estimated by subtracting the connections served by water providers from the total number of households in each State and Territory). Data on domestic bore water use in Western Australia was provided by WA Department of Water. Note that self-extracted water use estimates for households do not include rainwater tank usage for households connected to mains supply.

**32** Water use modelling:

- ABS conducts a detailed energy and water use survey every three years for the MINING, MANUFACTURING, CONSTRUCTION, ELECTRICITY GENERATION and the service industries. This survey (i.e. EWES survey) was conducted for the 2008–09 reference year, with the results feeding directly into the 2008–09 edition of WAA. The survey will be conducted again in the 2011–12 reference year. Water use by these industries has been modelled in this 2009–10 edition of WAA. Note that the water use estimates for households and agriculture are still conducted on the basis of annual surveys.

*Methods for Calculating Water  
Supply and Use continued*

- The water use modelling incorporates reported water use information from the 2008–09 EWES survey and corresponding industry output information from the 2008–09 EAS survey. The relationship between water as a production input and industry output is identified from these 2008–09 survey results and applied to the 2009–10 EAS survey. This structural relationship is assumed constant between years, meaning that the efficiency of water use is assumed to be the same between 2008–09 and these modelled water use estimates for 2009–10. Changes in water use efficiency will be identified when updated survey information becomes available in the 2011–12 reference year.

*Environmental flows*

**33** Key Commonwealth, State and Territory water agencies recognise two forms of water used for Environmental flows:

- Planned (rules-based) environmental water relates to statutory requirements to maintain specific water regimes (e.g. particular levels, flow rates, aquifer pressures).
- Held (entitlement or volumetric based) environmental water relates to specific entitlements, which accrue annual allocations of water that can be extracted (or left in-stream) for environmental purposes.

**34** In previous editions of the WAA the Physical water supply and use tables presented "*water supplied to the environment as Environmental flows*":

- on the supply side of the tables in the Distributed column; and
- on the use side of the tables in the Environment row in both the Distributed and Reuse columns. Note that for the 2004–05 and earlier editions of the WAA there were no data available for '*reuse*' Environmental flows.

**35** It is apparent that some water utilities do not measure all Environmental flows and there is subsequent uncertainty around the level estimates. In the 2008–09 WAA, Environmental flows estimates were primarily based on flows of '*held environmental water*' as these are volumetric based (i.e. ML) and reported by water suppliers. Rules-based environmental flows are not always recorded in volume terms and may not always be included within reporting of total Environmental flows. The estimates of Environmental flows presented in the 2008–09 WAA are thus likely to be an underestimate and should be used with caution.

**36** For the above reasons, Environmental flows are not separately identified in the 2009–10 edition of WAA. The Environmental flows that were reported in surveys are presented within the estimates for distributed, reuse water and in-stream water supplied and used by the WATER SUPPLY and ELECTRICITY AND GAS SUPPLY industries. Consumption for these industries is not affected by this treatment of Environmental Flows volumes (i.e. these flows are defined as non-consumptive use).

*Data Quality and Reliability*

**37** Data for the WAA are from a range of sources with variable degrees of consistency and reliability.

**38** All water supply, distributed water use and reuse water information was collected by the ABS and checked for coherence with other data sources. This information can be used with a high degree of confidence.

**39** Data on self-extracted water use was compiled from a range of sources. The degree of confidence that can be attached to these estimates is variable:

- WATER SUPPLY industry estimates were based on the ABS 2009–10 WSSSS survey and can be used with a high degree of confidence.
- AGRICULTURE industry estimates were based on the ABS 2009–10 ARMS survey and can be used with a high degree of confidence.
- ELECTRICITY AND GAS supply estimates can be used with a medium level of confidence as these data were based on sound modelling procedures using good quality administrative data.

*Data Quality and Reliability*  
continued

- MINING and MANUFACTURING industry estimates at the State/Territory level should be used with a medium-low degree of confidence as estimates for these industries were modelled based on economic data collected in the 2009–10 ABS EAS survey.
- Only a limited amount of survey data were available for "OTHER" industries - estimates were mostly based on coefficients of water use. These estimates should be used with a low degree of confidence.
- For households, estimates for distributed and reuse water use were based on information collected on the ABS 2009–10 WSSSS survey and can be used with a high degree of confidence; self-extracted water use was based on coefficients of water use and can be used with a medium degree of confidence.

MONETARY SUPPLY AND USE  
Scope

- 40** The Monetary supply and use section presents aggregates of all available quantitative monetary data (dollars) in terms of the supply and use of water within the Australian economy for the financial year 2009–10. Supply and use tables illustrate the economic transactions associated with the use of water and the provisions of sewerage, waste water and drainage services (also referred to as water related services).
- 41** The monetary chapter covers the following:
- supply of distributed water and water related services in the economy by the WATER SUPPLY industry;
  - expenditure on water and water related services by industries, households and governments; and
  - value added to the economy by the major water-using industries.
- 42** The scope of the section is limited to "*net distributed water*" which, in this context, is defined as water that has been supplied from one economic unit to another for a fee, creating a measurable economic transaction. The net distributed water excludes distribution losses and supply to the environment for which there is no matching economic transaction.
- 43** Monetary data for the supply (sales) of distributed water and monetary data for the use (purchase) of distributed water by industries, governments and households have been integrated during the compilation process. This requires some adjustments to input data to ensure consistency of information in the water accounts.
- 44** Comparisons of changes over time in measures of industry value added are based on chain volume estimates. Chain volume estimates adjust for the impact of inflation, thus allowing comparisons of financial data across time periods to be made on volume basis, the recommended method in the SNA. With chain volume measures, the prices used in valuation refer to the prices of the previous year. Further information on the calculation of chain volume measures can be found in the information paper *Introduction of Chain Volume and Price Indexes, Sep 1997* (ABS cat. no. 5248.0).
- 45** It is difficult to separately identify the revenue from reuse water with that from distributed mains supply. Therefore, estimates on revenue and expenditure on distributed water also include transactions associated with reuse water.
- 46** Many businesses and households use self-extracted water for their own use, such as farms for irrigation or hydro power plants to generate electricity. Estimates for the value of self-extracted water have not been included in this section due to lack of reliable data.
- 47** Data presented in this section are drawn from a variety of sources including those used in the Physical water supply and use section. In addition to these sources, the following ABS data were used:
- *Consumer price Index* (CPI) (ABS cat. no. 6401.0)
  - *Australian Industry* (ABS cat. no. 8155.0)
  - *Australian Demographic Statistics* (ABS cat. no. 3101.0)
  - *Households and Family Projections* (ABS cat. no. 3236.0)

*Data Sources*

*Data Sources continued*

- National Accounts supply-use benchmarks

**48** Administrative data were also sourced:

- Water suppliers' annual financial reports
- Public administration and finance data

*Methods for Calculating  
Monetary Supply and Use***49** The data collected from these sources were collated to a uniform standard and aggregated to a State and Territory level.**50** Output and value added:

- These are compiled by the ABS for the WATER SUPPLY industry and are published in *Australian Industry, 2009-10* (ABS cat. no. 8155.0) and the *Australian System of National Accounts* (ABS cat. no. 5204.0) and reproduced in this publication.

**51** For households:

- Expenditure on distributed water is calculated by taking total volume and connected properties reported by each water utility, calculating average consumption values per household and applying the utility's fixed and variable tariff structures to these average values. Where tariff information is not available, an average water rate (\$/kL) was applied to the volume of water consumed by the households within those service areas. This methodology has been applied to the 2008-09 household expenditure estimates, resulting in downward revisions to each of the State/Territory and National estimates. These revisions reduce the estimated value of household expenditure on distributed water by 8% at the National level. Please contact the National Information and Referral Service (1300 135 070) within the ABS for additional detail on the impacts of these revisions at the State and Territory level.

**52** For government:

- Government expenditure and social transfers in kind monetary data were obtained from ABS *Australian System of National Accounts, 2009-10* (unpublished data).

**53** For industries:

- Expenditure was estimated using modelled financial data sourced from ABS 2008-09 EWES Survey, 2008-09 Agriculture Commodity Survey and 2008-09 Electricity Generators Survey of Water Use.

**54** Water efficiency

- Water efficiency can be expressed as the amount of industrial output produced from a corresponding unit of water used in the production process. We express this in the monetary tables as industry gross value added (\$ millions) per GL of water used. Comparisons between industries and changes over time in the average gross value added per GL of water use is complicated by the impact of prices, particularly for AGRICULTURE and MINING, where commodity prices can vary substantially from year to year. This is relevant for analyses of incomes (current prices) generated per GL of water consumed in a given year. For this reason, the percentage change movements in industry gross value added per GL of water consumed between 2008-09 and 2009-10 have been calculated using chain volume measures of industry gross value added. It should also be noted that the data represent industry averages. Changes over time in the mix of commodities produced by a broad level industry such as AGRICULTURE, MINING or MANUFACTURING could result in significant changes in the average water use.

*Data Quality and Reliability***55** The data are high quality at the highest aggregated level, such as for the total revenue from sales of water and water related services by the WATER SUPPLY industry (i.e. the supply side estimates). The revenue reported in this publication covers revenue from sales of water and related services, community service obligations and government grants for non-capital/ operational services and excludes government grants for capital purposes, gifted assets, developer's contributions, investment activities, income from

*Data Quality and Reliability*  
*continued*

fixed assets disposals and rent and consulting income. There is less confidence in the estimates of revenue from sales of rural distributed water in some states due to paucity of information.

**56** Use side estimates for industries and governments were based on several ABS surveys and National Accounts data. There is a lack of information on expenditure on water and related services by industries and governments. Therefore, compared to the supply side, there is less confidence in these estimates. Use side estimates for industries were based on model estimates while expenditure for governments were based on National Accounts data (unpublished). Note that the use data for 2008–09 has been revised since the 2008–09 publication, so comparisons between 2008–09 and 2009–10 refer to the revised 2008–09 data. Data on water expenditure will be collected via the EAS survey in the 2010–11 financial year and will be used to compile monetary estimates for the 2010–11 WAA.

GROSS VALUE OF IRRIGATED  
AGRICULTURAL PRODUCTION

*Data Sources*

**57** The Gross Value of Irrigated Agricultural Production (GVIAP) was estimated using data from the ABS 2009–10 ARMS survey (see *Agricultural Commodities, 2009–10, Australia* (ABS cat. no. 7121.0)), and *Water Use on Australian Farms, 2009–10* (ABS cat. no. 4618.0), as well as other ABS collections and administrative data used to calculate the value of agricultural commodities produced (see *Value of Principal Agricultural Commodities Produced, 2009–10, Australia*, (ABS cat. no. 7503.0)).

*Method of Calculation*

**58** The ABS methodology for calculating GVIAP is described in the information paper *Methods of estimating the Gross Value of Irrigated Agricultural Production* (ABS cat. no. 4610.0.55.006). The GVIAP statistics presented in the 2009–10 WAA and the publication *Gross Value of Irrigated Agricultural Production, 2009–10* (ABS cat. no. 4610.0.55.008) are derived using this method. Note that in 2009–10 there was a slight change to the methodology used to estimate the gross value of irrigated agricultural production for livestock and therefore a break in the time series (see the explanatory notes in *Gross Value of Irrigated Agricultural Production 2009–10* (ABS cat. no. 4610.0.55.008) for more details).

*Data Quality and Reliability*

**59** Calculation of the gross value of irrigated production is based on several assumptions so these estimates should be used and interpreted cautiously.

NEXT EDITION

**60** The next release of the WAA, in respect of 2010–11, is scheduled for November 2012.

## ABBREVIATIONS .....

'000	thousand
\$m	million dollars
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ANZSIC	Australian and New Zealand Standard Industrial Classification
Aust.	Australia
AWA	Australian Water Association
BE	bulk entitlement
BoM	Bureau of Meteorology
COAG	Council of Australian Governments
CRB	collector record book
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DECCW	Department of Environment, Climate Change and Water
EAW	Environmental Accounts and Water
EFG	Environmental Flow Guidelines
FAO	Family Assistance Office
FAO	Food and Agriculture Organization
GL	gigalitre
GVAP	gross value of agricultural production
GVIAP	gross value of irrigated agricultural production
GWh	gigawatt hour
ha	hectare
I-O	input-output
IGVA	industry gross value added
IRWS	International Recommendations for Water Statistics
IVA	industry value added
kg	kilogram
kL	kilolitre
km <sup>2</sup>	square kilometre
LGA	local government area
mg	milligram
mm	millimetre
MAR	mean annual run-off
ML	megalitre
nec	not elsewhere classified
no.	number
NPR	National Performance Report
NSW	New South Wales
NT	Northern Territory
NWC	National Water Commission
NWI	National Water Initiative

## ABBREVIATIONS

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<b>Qld</b>	Queensland
<b>SA</b>	South Australia
<b>SEEA</b>	System of Integrated Environmental and Economic Accounting
<b>SNA</b>	System of National Accounts
<b>SWIM</b>	Statewide Water Information Management
<b>Tas.</b>	Tasmania
<b>UN</b>	United Nations
<b>Vic.</b>	Victoria
<b>WA</b>	Western Australia
<b>WASB</b>	Water Accounting Standards Board
<b>WSAA</b>	Water Services Association of Australia
<b>yr</b>	year

## APPENDIX 1

## AGRICULTURAL ACTIVITIES

### INTRODUCTION

As mentioned in chapter 5 (Agriculture) of this publication, there are two different views of agriculture: an industry view and an activity view. This appendix examines the consumption of water by agricultural activities in Australia, as opposed to the industry view presented in the main text.

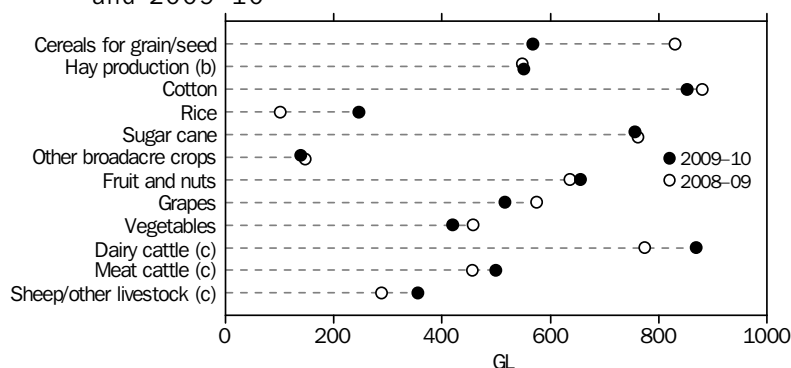
### MAIN FINDINGS

- The gross value of irrigated agricultural production was \$11.5 billion in 2009–10, a slight decrease from \$12.0 billion in 2008–09. (Note: Gross value is not a proxy for the highest value water use).
- Water consumption by all agricultural activities was 7,359 GL in 2009–10, a 3% decrease from 2008–09 when it was 7,589 GL.
- All agricultural activities accounted for 55% of total Australian water consumption in 2009–10, which is slightly more than 2008–09, when they accounted for 54%.
- Dairy cattle grazing (868 GL or 12%) and cotton growing (852 GL or 12%) were the agricultural activities with the highest water consumption in 2009–10, followed by sugar cane (756 GL or 10%), fruit and nuts (655 GL or 9%) and cereal crops for grain or seed growing (568 GL or 8%).
- The area of irrigated agricultural land in 2009–10 was 1.84 million hectares, a 5% increase from 2008–09 when it was 1.76 million.

#### Gross Value of Irrigated Agricultural Production

Estimating the value of agricultural production resulting from irrigation is difficult. This is because water consumed by crops comes from a variety of sources. In particular, rainwater, which is not included in the *Water Account Australia* (WAA), is usually a component of the water consumed by irrigated crops, and the timing and location of rainfalls affect the amount of irrigation water required. Other factors such as evaporation also affect irrigation water requirements. These factors contribute to regional and temporal variations in the consumption of water for irrigation.

**A1.1** WATER CONSUMPTION, Agriculture, by activity (a)—2008–09 and 2009–10



- (a) See table A1.3 (Water Consumption, Agriculture, by activity) for complete list of activities.  
 (b) Includes pasture for silage  
 (c) Irrigated land used for grazing

*Gross Value of Irrigated  
Agricultural Production  
continued*

In addition, water is not the only input to agricultural production from irrigated land. Land, fertiliser, labour, machinery and other inputs are also used. Separating the contribution these factors make to total production is practically impossible with current data. Therefore, the estimates of the Gross Value of Irrigated Agricultural Production (GVIAP) presented below (table A1.2) attribute all of the gross value of production from irrigated land to irrigated agricultural production. GVIAP should not be used as a proxy for determining the highest value water uses.

**A1.2** GROSS VALUE OF IRRIGATED AGRICULTURAL PRODUCTION (a)—2008–09 and 2009–10

	AUSTRALIA		STATE/TERRITORY 2009–10							
	2008–09	2009–10	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
<i>Commodity groups</i>	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Cereals for grain and seed	317	143	98	^ 8	30	^ 3	np	4	np	np
Total hay production	170	192	^ 56	^ 58	^ 54	^ 18	^ 1	5	^ 1	—
Cotton	620	664	394	—	271	—	—	—	—	—
Rice	34	90	89	—	^ 1	—	—	—	—	—
Sugar cane	537	750	np	—	np	—	—	—	—	—
Other broadacre crops	87	116	np	*2	np	*1	np	85	np	—
Fruit and nuts	2 390	2 242	289	732	700	260	150	73	39	—
Grapes	1 200	1 069	163	^ 367	^ 31	376	*109	^ 18	np	np
Vegetables for human consumption and seed	2 625	2 386	286	511	721	393	253	202	np	np
Nurseries, cut flowers and cultivated turf	983	1 037	241	324	261	49	133	21	6	2
Dairy production	2 274	1 826	^ 341	^ 906	^ 178	^ 141	^ 65	195	—	—
Production from meat cattle	455	608	108	^ 185	216	^ 49	^ 18	33	—	—
Production from sheep and other livestock	201	362	^ 69	^ 159	*1	^ 71	^ 26	36	—	—
<b>Total GVIAP</b>	<b>11 953</b>	<b>11 485</b>	<b>2 147</b>	<b>3 254</b>	<b>3 224</b>	<b>1 360</b>	<b>757</b>	<b>671</b>	<b>69</b>	<b>3</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Gross value in current prices

Note: ^ estimate has a relative standard error of 10% to less than 25% and should be used with caution. \* estimate has a relative standard error of 25% to 50% and should be used with caution

GVIAP estimates for 2009–10 were derived from the ABS Agricultural Resource Management Survey, which collected information including area and production of crops, livestock numbers and products, area of crops/pastures irrigated and volume of water applied. The ABS also collects and publishes data on the value of agricultural commodities produced (see *Value of Agricultural Commodities Produced, Australia, 2009–10* (ABS cat no. 7503.0)). Further details on the methods used to derive the estimates are presented in the Explanatory Notes of the publication *Gross Value of Irrigated Agricultural Production, 2000–01 to 2009–10* (ABS cat. no. 4610.0.55.008) and in the information paper *Methods of estimating the Gross Value of Irrigated Agricultural Production* (ABS cat. no. 4610.0.55.006).

The total gross value of irrigated agricultural production in 2009–10 was \$11.5 billion compared to \$12.0 billion in 2008–09, a 4% decrease (table A1.2). Vegetables were the largest contributor to the value (\$2,385 million or 21%), followed by fruit and nuts (\$2,242 million or 20%) and dairy production (\$1,826 million or 16%).

The greatest decreases in GVIAP from 2008–09 to 2009–10 occurred in South Australia, from \$1,635 million to \$1,360 million (a 17% decrease) and Western Australia, from \$846 million to \$758 million (a 10% decrease).

*Gross Value of Irrigated  
Agricultural Production  
continued*

Between 2008–09 and 2009–10 there were significant reductions in the GVIAP of dairy production (from \$2,274 million to \$1,826 million), vegetables (from \$2,625 million to \$2,386 million) and cereals for grain and seed (from \$317 million to \$143 million). Over the same time period the largest increase in GVIAP was for sugar (from \$537 million to \$750 million), while rice had the largest percentage increase (161%), from \$34 million to \$90 million.

Note that estimates of GVIAP are given in current prices; that is, estimates are valued at the commodity prices of the period to which the observation relates.

Also, please note that there was a slight revision to the methodology used to estimate GVIAP for livestock (dairy, meat cattle, sheep and other livestock) in 2009–10, so the movements in these estimates between 2008–09 and 2009–10 should be treated with caution. See the Explanatory Notes in the ABS publication *Gross Value of Irrigated Agricultural Production, 2009–10* (ABS cat. no. 4610.0.55.008) for more details.

For a full time series of GVIAP data from 2000–01 to 2008–09 (for all States and Territories), plus Murray–Darling Basin and Natural Resource Management (NRM) region data from 2005–06 to 2008–09, see the ABS publication *Experimental Estimates of the Gross Value of Irrigated Agricultural Production, 2000–01 to 2008–09* (ABS cat. no. 4610.0.55.008). Note that the changes in the livestock methodology (described above) will be reflected in a revised GVIAP time series to be published in 2012.

*Water Consumption*

The agricultural activity with the highest water consumption in 2009–10 was dairy cattle grazing (868 GL or 12% of total consumption for Australia), followed by cotton growing (852 GL or 12%) and sugar cane growing (756 GL or 10%) (table A1.3). The activity with the largest increase in water consumption from 2008–09 to 2009–10 was rice growing (143%).

**A1.3** WATER CONSUMPTION, AGRICULTURE, by activity—2008–09 and 2009–10

	AUSTRALIA		STATE/TERRITORY 2009–10							
	2008–09	2009–10	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
Commodity groups	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML
Cereals for grain/seed	829 495	567 821	393 865	31 762	112 499	6 621	15 533	np	np	np
Hay production(a)	547 790	551 170	183 232	136 997	116 184	86 581	np	np	3 263	—
Pastures for seed	182 055	na	na	na	na	na	na	na	na	na
Cotton	880 003	851 950	468 843	—	383 107	—	—	—	—	—
Rice	101 474	246 909	np	np	np	—	—	—	—	—
Sugar cane	761 086	756 317	np	—	np	—	—	—	—	—
Other broadacre crops	147 042	139 292	42 314	np	32 416	3 175	20 879	34 616	np	—
Fruit and nuts	635 103	654 663	116 531	259 716	122 668	103 372	36 519	7 649	8 208	—
Grapes	575 095	515 484	150 580	155 293	16 279	174 513	14 019	np	np	69
Vegetables for human consumption and seed	457 348	419 229	68 528	93 797	87 576	73 272	50 315	44 322	1 395	25
Nurseries, cut flowers and cultivated turf	69 377	63 483	18 488	11 247	18 438	2 880	10 783	896	610	142
Dairy cattle(b)	773 545	868 294	109 942	500 519	53 625	84 202	28 856	91 120	29	—
Meat cattle(b)	455 937	498 506	85 154	208 876	93 538	39 419	40 117	31 324	78	—
Sheep/other livestock(b)	289 041	354 803	104 804	88 364	7 555	90 695	20 506	42 846	32	—
Other agricultural water use(c)	824 909	762 716	201 820	139 366	213 380	60 291	88 207	23 413	np	232
<b>Total(d)</b>	<b>7 588 682</b>	<b>7 358 756</b>	<b>2 204 243</b>	<b>1 644 108</b>	<b>2 037 251</b>	<b>772 283</b>	<b>340 265</b>	<b>305 366</b>	<b>54 634</b>	<b>607</b>

— nil or rounded to zero (including null cells)

na not available

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes pasture for silage

(b) Irrigated land used for grazing

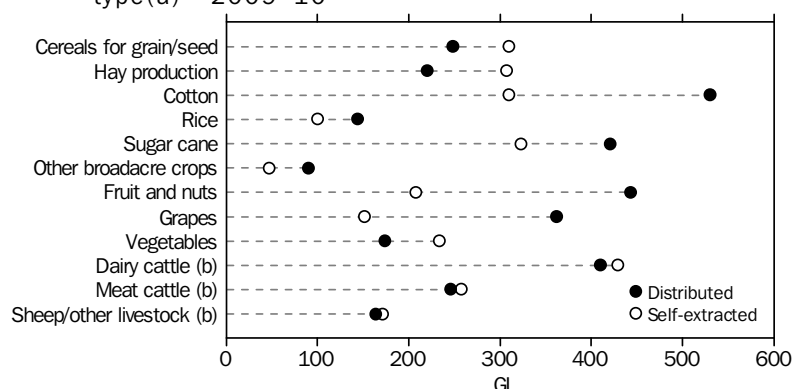
(c) Includes livestock drinking water and dairy and piggeries cleaning

(d) Total includes pastures or crops not classified elsewhere

## Water Source

The agricultural activities with the highest self-extracted water consumption in 2009–10 were dairy cattle grazing (433 GL), 'other' agricultural water use (which includes livestock drinking water and dairy and piggeries cleaning) (382 GL), sugar cane growing (323 GL) and cotton growing (310 GL) (see graph A1.4 and table 1.5). The activity with the highest distributed water consumption was cotton growing (530 GL), which was one of the few activities that consumed more distributed water than self-extracted, the others being fruit and nut growing, grape growing, rice, other broadacre crops, and nurseries, cut flowers and cultivated turf growing.

**A1.4** WATER CONSUMPTION, Agriculture, by activity and water type(a)—2009–10



(a) Excludes reuse water.

(b) Irrigated land used for grazing.

**A1.5** WATER CONSUMPTION, AGRICULTURE, by activity and water type—2009–10

	Self-extracted	Distributed	Reuse	Total
Commodity groups	ML	ML	ML	ML
Cereals for grain/seed	309 955	248 031	9 835	567 821
Hay production(a)	307 155	219 808	24 207	551 170
Pastures for seed	—	—	—	—
Cotton	309 627	530 126	12 197	851 950
Rice	99 981	144 214	2 713	246 909
Sugar cane	322 520	420 544	13 253	756 317
Other broadacre crops	47 361	89 904	2 026	139 292
Fruit and nuts	207 740	442 666	4 257	654 663
Grapes	151 418	361 985	2 082	515 484
Vegetables for human consumption and seed	233 630	173 685	11 915	419 229
Nurseries, cut flowers and cultivated turf	26 014	34 081	3 387	63 483
Dairy cattle(b)	432 866	413 762	21 666	868 294
Meat cattle(b)	248 518	237 550	12 439	498 506
Sheep/other livestock(b)	176 878	169 072	8 853	354 803
Other crops	76 827	30 559	734	108 119
Other agricultural water use(c)	381 837	377 250	3 629	762 716
<b>Total volume applied(d)</b>	<b>3 332 327</b>	<b>3 893 236</b>	<b>133 194</b>	<b>7 358 756</b>

— nil or rounded to zero (including null cells)

(a) Includes pasture for silage

(b) Irrigated land used for grazing

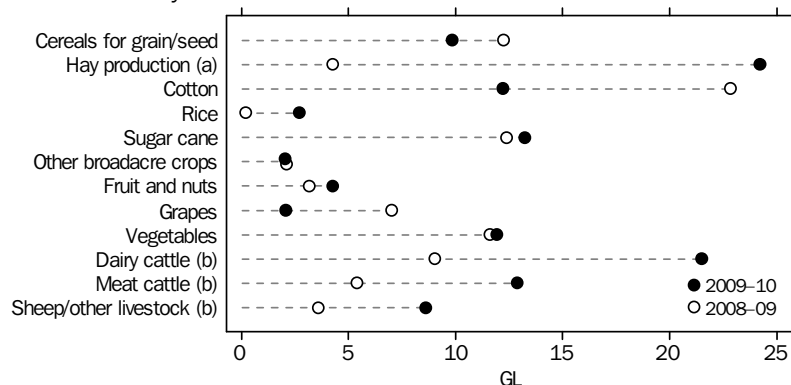
(c) Includes livestock drinking water and dairy and piggeries cleaning

(d) Total includes pastures or crops not classified elsewhere

## Reuse Water

Reuse water consumption for all agricultural activities in 2009–10 was 133 GL (see table A1.5) which was 25% higher than in 2008–09, when reuse water consumption was 106 GL. The agricultural activities consuming the most reuse water were hay production (24 GL), dairy cattle grazing (22 GL) and sugar cane growing (13 GL). There were large decreases in the consumption of reuse water for cotton growing (11 GL), and grape growing (5 GL) between 2008–09 and 2009–10 (graph A1.6).

**A1.6** REUSE WATER CONSUMPTION, Agriculture, by activity—2008–09 and 2009–10



(a) Includes pastures for silage.

(b) Irrigated land used for grazing.

*Irrigated Land*

The area of irrigated agricultural land increased from 1.76 million hectares in 2008–09 to 1.84 million hectares in 2009–10 (table A1.7), a 5% increase. There were increases in all irrigated commodity groups except for grapes, cereals for grain/seed and vegetables for human consumption and seed. The largest absolute increase in the area of irrigated land was in sheep/other livestock from 88,700 hectares in 2008–09 to 141,300 hectares in 2009–10. The largest absolute decrease in the area of land irrigated was for cereals for grain/seed, from 292,700 hectares in 2008–09 to 217,600 hectares in 2009–10.

**A1.7** AREA IRRIGATED CROPS AND PASTURES, by activity —2008–09 and 2009–10

Commodity groups	AUSTRALIA		STATE/TERRITORY 2009–10							
	2008–09	2009–10								
	'000 ha	'000 ha	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
			'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
Cereals for grain/seed	292.7	217.6	151.5	18.7	37.1	5.1	np	3.8	np	—
Hay production	156.5	192.2	58.2	62.5	38.4	24.4	np	np	0.3	—
Pastures for seed	39.7	—	—	—	—	—	—	—	—	—
Cotton	141.9	153.2	80.1	—	73.1	—	—	—	—	—
Rice	7.2	18.9	np	np	np	—	—	—	—	—
Sugar cane	191.9	212.6	np	—	np	—	—	—	—	—
Other broadacre crops	51.8	59.1	21.1	np	np	1.4	3.0	17.1	np	—
Fruit and nuts	128.0	134.2	26.5	45.6	33.6	14.9	7.5	3.1	3.2	—
Grapes	172.3	162.6	37.2	38.1	—	71.9	11.2	1.3	np	0.1
Vegetables for human consumption and seed	104.6	104.3	14.8	25.2	29.4	11.8	8.0	14.6	0.7	—
Nurseries, cut flowers and cultivated turf	12.9	13.1	3.8	3.0	4.0	0.8	1.2	np	np	—
Dairy cattle(a)	221.7	229.5	37.0	131.7	15.9	13.3	5.7	25.9	—	—
Meat cattle(a)	133.0	171.4	40.4	70.1	30.5	10.1	6.8	13.5	—	—
Sheep/other livestock(a)	88.7	141.3	55.6	39.1	4.3	22.2	3.4	16.6	—	—
<b>Total irrigated land(b)</b>	<b>1 760.8</b>	<b>1 840.6</b>	<b>550.0</b>	<b>440.7</b>	<b>502.6</b>	<b>186.5</b>	<b>50.8</b>	<b>104.8</b>	<b>5.0</b>	<b>0.2</b>
<b>Total agricultural land(c)</b>	<b>409 028.7</b>	<b>398 580.2</b>	<b>58 548.0</b>	<b>12 851.5</b>	<b>129 667.6</b>	<b>45 747.0</b>	<b>94 391.5</b>	<b>1 647.4</b>	<b>55 686.8</b>	<b>40.5</b>

— nil or rounded to zero (including null cells)

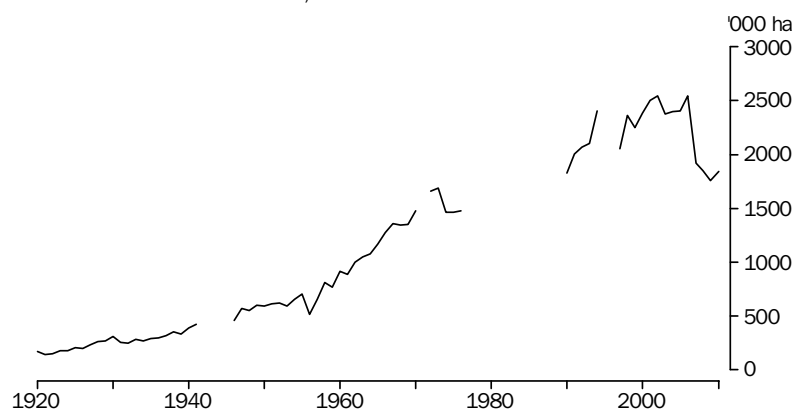
np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Irrigated land used for grazing

(b) Total includes pastures or crops not classified elsewhere

(c) Total area of all agricultural holdings. Note that not all land on agricultural holdings is used for agricultural purposes

Graph A1.8 shows the increases in area irrigated in Australia from 1920 to 2010. There are some gaps in the data series, however it can be seen that the area irrigated increased steadily from 1955 to 2006. There is a noticeable decrease from 2007 due to the effects of the drought leading to reduced water availability.

*Irrigated Land continued***A1.8** AREA IRRIGATED, Australia—1920–2010*Source: ABS unpublished data*

## INTRODUCTION

Water accounting is a way of arranging information on water to suit a variety of management and policy needs. There are many types of water accounts produced by a variety of business and government organisations in Australia, from river catchment geographic regions, to river basins, states, territories and at the national level. As competition for water resources increases so too does the need to fully and consistently account for how water is shared between the economy, people and the environment. In Australia, several state government agencies produce water accounts, while two federal government agencies (the Australian Bureau of Statistics (ABS) and the Bureau of Meteorology (BoM)) produce national water accounts of different types, for differing but complementary purposes. Both report annually on the year from 1 July to 30 June.

BoM'S NATIONAL WATER  
ACCOUNT AND ABS' WATER  
ACCOUNT AUSTRALIA

The BoM's *National Water Account* (NWA) and the ABS' *Water Account Australia* (WAA) emphasise different aspects of Australian water resources and the use of these resources by the Australian community. The NWA focuses on the volume of water in the environment<sup>1</sup> its availability, the rights to abstract water and the actual abstraction<sup>2</sup>. The NWA includes relevant information on climate and weather impacts on water availability, along with water management policies and practices. The WAA shows how much water is used<sup>3</sup> by human activity. It focuses on flows of water from the environment to the water supply industry and other economic activities, particularly agricultural production and the flows of water from the water supply industry to households and businesses. The WAA also records the monetary values associated with water supplied and used in the economy. A particular feature of the WAA is the ability to link water use to the economic data contained in the System of National Accounts (from which the headline indicator 'Gross Domestic Product' is derived).

The area of intersection between the NWA and the WAA is the amount of water abstracted from the environment by the water supply industry and other economic activities. The intersection between the two national water accounts is depicted in the figure below where the NWA focus is represented on the left hand side by the blue sphere and WAA focus is represented on the right hand side by the yellow sphere.

The NWA reports on the total water resource of a region: the inputs to, outputs from and movements of water within, a hydrological region. It includes atmospheric inputs and outputs such as rainfall and evaporation, as well as flows of water through rivers, pipes, channels and aquifers within the region. The water available for abstraction is a subset of this total water resource, as some of the water is not physically or legally accessible. Legal rights and claims to water regulate the amount of water that is available for abstraction by individuals and businesses. The volume of water they actually abstract is also a function of their needs at the time. These key aspects of the NWA are represented in the figure below by the three overlapping shapes within the sphere labelled 'Water in the Environment'.

1 Environment, in this context, encompasses natural and man-made environments

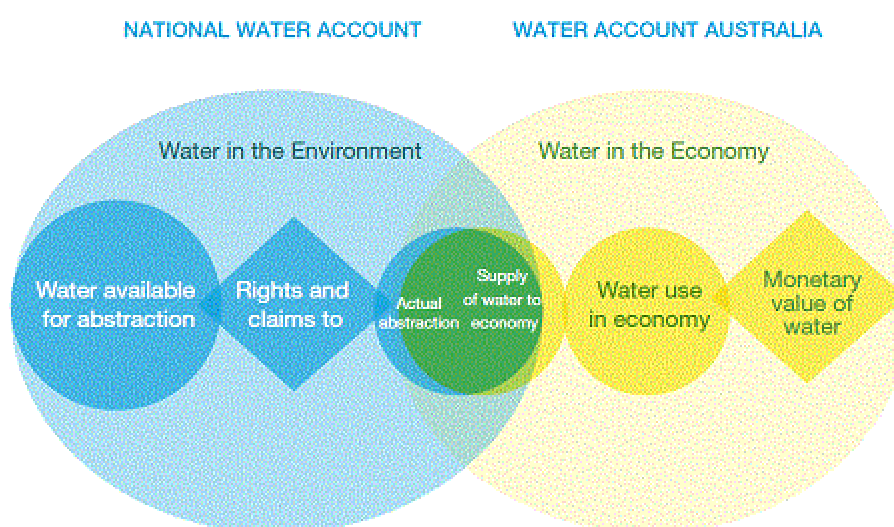
2 Abstraction is the removal of water from a store of water resources. The store may be natural, such as a pond, lake, aquifer or river, or man-made, such as a tank, reservoir, channel or pipe. It may be located above or below the surface of the earth. Removal may be by diversion or pumping and results, at least temporarily, in a depletion of the resources

3 Water use can be 'in-stream' or 'consumptive'. Consumptive water use is the part of water use which is not distributed to other economic units and does not return to the environment (to water resources, sea and oceans) because during use it has been incorporated into products, consumed by households or livestock. In-stream use refers to the use of freshwater in-situ. The water is returned back to its source after use.

BoM'S NATIONAL WATER  
ACCOUNT AND ABS' WATER  
ACCOUNT AUSTRALIA *continued*

The NWA reports the volume of water that was stored within a region, what entitlements to the water existed, how much of the water store was allocated for abstraction and how much was actually abstracted in a given year. The series of NWAs will show changes in these volumes over time. The changes in water stored arise from inflows to, and outflows from the region. Natural processes, such as rainfall, evaporation and the drainage of rivers to the sea produce flows of water. Human activity also produces flows of water, such as wastewater discharges to the sea or abstraction of water for use in the economy. The latter is described in detail in the WAA.

The WAA provides detail on how abstracted water is supplied and used within the economy, along with the monetary values associated with the supply and use of water. Water is abstracted from the environment, generally by the water supply industry, and supplied to users, including households and businesses. WAA also tracks the monetary values associated with the flow of water through the economy and its return to the environment. These key aspects of the WAA are represented by the overlapping shapes within the sphere labelled 'Water in the Economy'.



**Figure 1. The aspects of, and intersection between, the National Water Account and the Water Account Australia**

Source: Australian Bureau of Statistics and Bureau of Meteorology

The principle intersection between the two accounts is the actual abstraction of water. Water is abstracted for own use (primarily in the agriculture industry) and by the water supply industry for supply to the economy. Within a geographic region, the volume, in the NWA, of actual water abstraction is equal to the volume, in the WAA, of water abstracted for own use (agricultural irrigation) plus water abstracted for supply to others. This equivalence facilitates the integration of information from the two accounts in derived reports. It is represented in the figure above by the small green shape representing the intersection of the spheres of the NWA and the WAA.

It is important to note however, that the reporting units for the two accounts are different; where the WAA mainly reports on a jurisdictional basis, the NWA reports on the basis of a hydrological region. So, while the NWA and WAA will complement each other, the Murray–Darling Basin is currently the only common region reported.

The NWA and the WAA are both developed in accordance with rigorous conceptual frameworks. Preparation of the NWA is guided by the *Water Accounting Conceptual Framework and Australian Water Accounting Standards*. The preparation of the WAA is guided by the *System of Environmental–Economic Accounting for Water* (SEEA–Water).

BoM'S NATIONAL WATER  
ACCOUNT AND ABS' WATER  
ACCOUNT AUSTRALIA *continued*

These two standards for report preparation were developed separately and for different purposes. However, they do have similar conceptual bases and prescribe similar reporting characteristics, namely:

- the data items to be reported;
- the quantification units to be used;
- the rules for collecting and aggregating data; and
- how the information is to be presented

This article is also available on the Bureau of Meteorology's website  
<http://www.bom.gov.au/water/about/publications/index.shtml>.

## GLOSSARY .....

<b>ANZSIC</b>	The <i>Australian and New Zealand Standard Industrial Classification</i> (ANZSIC) (ABS cat. no. 1292.0) is the standard classification used in Australia and New Zealand for the collection, compilation, and publication of statistics by industry.
<b>Aquifer</b>	A geologic formation which is capable of holding water and through which water can percolate. Aquifers are capable of yielding quantities of groundwater for economic activities.
<b>Australian Water Resources 2005 (AWR 2005)</b>	Australian Water Resources 2005 is the baseline assessment of water resources for the National Water Initiative.
<b>Basic price</b>	The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.
<b>Bulk water</b>	Water supplied by a water provider to another water provider.
<b>Bulk entitlement</b>	A type of water access entitlement in Victoria, issued to rural and regional water authorities, who then distribute the water to their rural and urban customers, to some electricity generating companies and to the State Minister for Environment.
<b>Catchment</b>	The area of land determined by topographic features, within which rainfall will contribute to run-off at a particular point. The catchment for a major river and its tributaries is usually referred to as a River basin.
<b>Chain Volume Measures</b>	Annually-reweighted chain Laspeyres volume indexes referenced to the current price values in a chosen reference year (i.e. the year when the quarterly chain volume measures sum to the current price annual values). Chain Laspeyres volume measures are compiled by linking together (compounding) movements in volumes, calculated using the average prices of the previous financial year, and applying the compounded movements to the current price estimates of the reference year.
<b>Cooling water</b>	Water used for cooling purposes (e.g., for electricity generation).
<b>Current Prices</b>	Estimates are valued at the prices of the period to which the observation relates. For example, estimates for 2008–09 are valued using 2008–09 prices. This contrasts to chain volume measures where the prices used in valuation refer to the prices of the previous year.
<b>Desalination</b>	A process where salt is removed from water with a high salt content (usually seawater but sometimes other brackish water) to make it suitable for domestic or industrial use.
<b>Discharge</b>	The transfer of water or waste water (of any treatment level) from the control of a water supplier or user to the environment.
<b>Distributed water</b>	Distributed water is water supplied to a user including through a natural (e.g. river) or non-natural network (piped or open channel), and where an economic transaction has occurred for the exchange of this water. The majority of distributed water is supplied by the WATER, SEWERAGE AND DRAINAGE SERVICES industry (ANZSIC Division 28). 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. Distributed water can include potable, mains and raw water but does not include reuse or bulk water.

<b>Domestic or residential water supply</b>	Water supplied primarily to domestic or residential customers. In rural areas this includes water supplied for stock and domestic uses.
<b>Drainage services</b>	The collection of water through a regional network of surface and/or subsurface drains. This water may be reused or discharged to the environment.
<b>Drainage water</b>	Excess surface or subsurface water collected and conveyed from irrigated lands. It may be captured for reuse or conveyed for downstream demands.
<b>Effluent discharge</b>	The discharge of used water by an organisation into the environment, with its associated quality characteristics, including, for example, the temperature of the discharge.
<b>Environmental allocation</b>	An amount of water allocated for environmental purposes and released to meet the environmental needs of a given area, e.g. a forest.
<b>Environmental flow</b>	This is a general term that can have a variety of meanings, however the 2000–01, 2004–05 and 2008–09 editions of <i>Water Account Australia</i> and the ABS 2004–05 Water Supply Survey defined environmental flows to be: water delivered (released) for the purpose of the environment in accordance with a specific plan prepared in conjunction with and/or approved by the appropriate environmental (resource) regulator. Note that environmental flows can be either Planned (rules-based) or Held (entitlement-based) - see Explanatory Notes paragraphs 33-36 for more details. Note that in the Physical water supply and use tables, volumes of water supplied to the environment as 'environmental flows' are presented within the estimates for distributed, reuse water and in-stream water supplied and used by the WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES and ELECTRICITY AND GAS SUPPLY industries. Consumption for these industries is not affected by this treatment of environmental flows volumes (i.e. these flows are defined as non-consumptive use).
<b>Evapotranspiration</b>	Process of moisture loss from the Earth's land surface to the atmosphere by evaporation and plant transpiration.
<b>Gigalitre</b>	One thousand million litres.
<b>Gross State Products (GSP)</b>	GSP is defined equivalently to gross domestic product. It is the total market value of goods and services produced in a state within a given period after deducting the cost of goods and services used up in the process of production but before deducting allowances for the consumption of fixed capital.
<b>Gross Value</b>	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.
<b>Gross value of irrigated agricultural production (GVIAP)</b>	Refers to the gross value of agricultural commodities that are produced with the assistance of irrigation.
<b>Gross water supply</b>	Water supplied to other water providers and customers, plus losses, own use by water providers, and environmental flows.
<b>Groundwater</b>	Water occurring below the ground's surface. Note that in the Physical water supply and use tables all ground water is included in self-extracted water.
<b>Industry Gross Value Added (IGVA)</b>	The value of an industry's output at basic prices, minus the value of goods and services consumed as inputs during the process of production. Basic prices valuation of output removes the distortion caused by variations in commodity taxes and subsidies across the output of individual industries.
<b>In-stream use</b>	The use of freshwater in situ (e.g. 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. In-stream use is usually a subset of self-extracted use, however in some instances in-stream can be a subset of distributed water, for example where an unplanned release

<b>In-stream use <i>continued</i></b>	of distributed water is used to dilute polluted water to an acceptable concentration for release into the environment.
<b>Inland surface water</b>	All waters on the surface of the earth, excluding sea water. Includes lakes, rivers, dams, wetlands, snow and ice.
<b>Irrigation</b>	Water artificially applied to soils (i.e. does not include precipitation/rainfall).
<b>Irrigation/Rural water provider</b>	A water provider undertaking the supply of retail irrigation water in rural areas. Functions of irrigation/rural water providers include the delivery of water for the purpose of irrigation and the collection of drainage off agricultural land through surface or sub-surface drainage systems. In addition most supply water for stock and domestic purposes and either bulk or reticulated water to service rural towns. Delivery systems can range from channel/canal to pipes to carriers and natural streams/water courses.
<b>Kilolitre (kL)</b>	One thousand litres.
<b>Major urban water provider (Metropolitan)</b>	An urban water provider servicing >50,000 water or sewerage connections. A connection corresponds to a water meter or sewerage connection regardless of the type of customer.
<b>Megalitre (ML)</b>	One million litres.
<b>Minor urban water provider</b>	An urban water provider servicing <10,000 water or sewerage connections. A connection corresponds to a water meter or sewerage connection regardless of the type of customer.
<b>National Water Initiative (NWI)</b>	An intergovernmental agreement on water reform created in June 2004.
<b>Net water supply</b>	The quantity of water supplied to customers of the water provider. This comprises distributed water supply less: losses, environmental flows, and water used directly by the Water supply industry.
<b>Non-major urban water provider</b>	An urban water provider servicing between 10,000 and 50,000 water or sewerage connections. A connection corresponds to a water meter or sewerage connection regardless of the type of customer.
<b>Other industries</b>	<p>In the Physical water supply and use tables, 'Other' industries refers to the following list of industries, according to the <i>Australian and New Zealand Standard Industrial Classification</i> (ANZSIC):</p> <ul style="list-style-type: none"> <li>■ CONSTRUCTION</li> <li>■ WHOLESALE TRADE</li> <li>■ RETAIL TRADE</li> <li>■ ACCOMMODATION AND FOOD SERVICES</li> <li>■ TRANSPORT, POSTAL AND WAREHOUSING</li> <li>■ INFORMATION MEDIA AND TELECOMMUNICATIONS</li> <li>■ FINANCIAL AND INSURANCE SERVICES</li> <li>■ RENTAL, HIRING AND REAL ESTATE SERVICES</li> <li>■ PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES</li> <li>■ ADMINISTRATIVE AND SUPPORT SERVICES</li> <li>■ PUBLIC ADMINISTRATION AND SAFETY</li> <li>■ EDUCATION AND TRAINING</li> <li>■ HEALTH CARE AND SOCIAL ASSISTANCE</li> <li>■ ARTS AND RECREATION SERVICES</li> <li>■ OTHER SERVICES</li> </ul>
<b>Other water provider</b>	An organisation that supplies water but whose main activity is in an industry other than the WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES industry (e.g., MINING and MANUFACTURING).
<b>Potable water</b>	Treated water that is suitable for human consumption, e.g. drinking water.

<b>Process water</b>	Water used in the production of goods or the provision of services. For example, water use in the production of food, cleaning in industrial production, or water used in laundry facilities.
<b>Purchaser's price</b>	The purchaser's price is the amount paid by the purchaser, excluding any tax deductible by the purchaser, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place.
<b>Raw water</b>	Water extracted from the environment that has not been treated.
<b>Recycled water</b>	Recycled water is any water that is reused by the same organisation on-site after it has been used once, or water that would normally go down the drain but is used for another purpose.
<b>Regulated discharge</b>	Water discharged to the environment after use where that discharge does not match the natural flow regime of the receiving water body. For example, wastewater discharged into a river, ocean or land outfall by a sewerage service provider is considered a regulated discharge. Water discharged from a household is not considered to be a regulated discharge because it is usually discharged into a sewerage system, rather than directly to the environment.
<b>Residential connections</b>	Number of residential connections was collected in the <i>National Performance Report: Urban Water Utilities</i> (Water Services Association of Australia and the National Water Commission), and in the Water Supply and Sewerage Services Survey by the ABS. In both cases, a residential connection is a residential unit, or dwelling, usually separately metered.
<b>Reuse water</b>	Drainage, waste or storm water that has been used again without first being discharged to the environment. It may have been treated to some extent. It excludes "on-site" recycling.
<b>River basin</b>	The 245 River basins in Australia are defined by the area drained by a stream and its tributaries where surface run-off collects. In an area of uncoordinated drainage, drainage patterns define a basin.
<b>Run-off</b>	The part of precipitation in a given area and period of time that appears as stream flow.
<b>Rural distributed water</b>	Water supplied via mains, open channels or natural water ways, carted untreated water, or treated effluent supplied by water suppliers (including industries other than the Water supply industry), for irrigation and other rural use.
<b>SEEA</b>	SEEA is the <i>System for Environmental-Economic Accounts</i> . 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 interrelationship between the natural environment and the economy.
<b>SEEA-Water</b>	The <i>International System for Environmental-Economic Accounts for Water</i> . It is an elaboration of the SEEA and provides a conceptual framework for organising hydrological and economic information in a coherent and consistent framework. It was adopted as an interim international statistical standard by the United Nations in 2007.
<b>Self-extracted water</b>	Water extracted directly from the environment for use (including rivers, lakes, groundwater and other bodies). Some of this water may be then distributed via water providers to others. Excludes water supplied by water suppliers via regulated systems.
<b>Sewerage</b>	Infrastructure used to remove sewage (waste water).
<b>Storm water</b>	Rainfall that is collected after it has run off urban surfaces.
<b>Supply Use Framework</b>	Physical water supply and use tables provide information on the volumes of water abstracted, supplied within the economy and discharged back into the environment by economic activity and households.

<b>Surface water</b>	Water flowing or held in streams, rivers and other wetlands in the landscape.
<b>System of National Accounts (SNA)</b>	The System of National Accounts (SNA) is an international framework which can be used to develop a comprehensive, consistent and flexible set of macro-economic accounts.
<b>Third pipe</b>	System of distributing non-potable water to households through a " <i>third</i> " pipe. The term " <i>third</i> " is used because the first pipe brings potable water into the house and the second pipe takes waste water away from the house.
<b>Unaccounted water</b>	Unaccounted water is the difference between the measured intake volume to a supply network and the total deliveries from the network. It includes unintended outflows (due to operational errors), evaporation, seepage, leakage, measurement error and theft. It does not include environmental flows or passing flows to downstream users who are not customers of the reporting Water Service Provider.
<b>Urban distributed water</b>	Treated water supplied to urban areas via mains water systems.
<b>Urban water provider</b>	Includes major, non-major and minor urban water provider.
<b>Walker circulation</b>	A deep east-west overturning in the atmosphere normally confined to within about 20 degrees latitude of the equator extending from low-levels to near the tropopause (lower atmosphere).
<b>Waste water</b>	Any water that has been used once and cannot be used again without treatment, for example untreated effluent, sewage water and trade waste.
<b>Water consumption</b>	Water consumption is equal to distributed water use plus self-extracted water use plus reuse water use minus in-stream water use minus distributed water supplied to other users minus water supplied to the environment as ' <i>environmental flows</i> '. Note that in the Physical water supply and use tables, volumes of water supplied to the environment as ' <i>environmental flows</i> ' are presented within the estimates for distributed, reuse water and in-stream water supplied and used by the Water supply, sewerage and drainage services and ELECTRICITY AND GAS SUPPLY industries. Consumption for these industries is not affected by this treatment of environmental flows volumes (i.e. these flows are defined as non-consumptive use).
<b>Water losses</b>	Water that enters the water distribution system of a water provider but does not reach the end users/customers. Water losses can be attributed to seepage, leakage, evaporation (excluding evaporation from water storages), meter inaccuracies and theft.
<b>Water provider</b>	A business or organisation that provides a reticulated water supply, irrigation water, reuse/recycle water and/or bulk water supply service. Water providers may be government or private and often operate water storage, purification and supply services. They may also provide sewerage or drainage services.
<b>Water stocks</b>	Surface and groundwater resources available in Australia for economic and environmental use.
<b>Water system</b>	A system that is hydrologically connected and described at the level desired for management purposes (e.g. sub-catchment, catchment, basin or drainage division and/or groundwater management unit, sub-aquifer, aquifer, groundwater basin).
<b>Water treatment plant</b>	An individual location receiving raw or partially treated water for treatment and ultimate delivery to customers. There may be more than one water treatment plant at an individual facility. Secondary or booster disinfection plants are not included, even where they have pH treatment. Water treatment plants that provide fluoridation only should be classified as disinfection only.
<b>Water use</b>	Water use is equal to distributed water use plus self-extracted water use plus reuse water use. Note that this definition differs to the water consumption definition (above) in that it is a gross measure, rather than netting out the volumes of water used in-stream, supplied to other users or supplied to the environment as ' <i>environmental flows</i> '.

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