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DOMESTIC USE OF WATER AND ENERGY

WESTERN AUSTRALIA

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CONTENTS

INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or Carolann Hoad on Perth (08) 9360 5947.

NOTES

ABOUT THIS PUBLICATION

This publication contains results from the State Supplementary Survey conducted in Western Australia (WA) in October 2006. It presents information on energy using devices, water using appliances and the water use behaviour of households in WA. Topics covered include cooling and heating devices, water sources, water heating, water using appliances, garden water use, swimming pools and electrical safety.

Data items were collected from Any Responsible Adult (ARA) on behalf of the household. A full data item list is available in the Appendix.

ABOUT THIS SURVEY

The survey was conducted as a supplement to the ABS Monthly Population Survey. Please refer to the Explanatory Notes at the back of this publication for further details about this survey.

ABBREVIATIONS

ABS	Australian Bureau of Statistics
ARA	any responsible adult
ASGC	Australian Standard Geographical Classification
MPS	Monthly Population Survey
RSE	relative standard error
SE	standard error
SR	statistical region
WA	Western Australia

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Regional Director, Western Australia

SUMMARY OF FINDINGS

SOURCES OF ENERGY

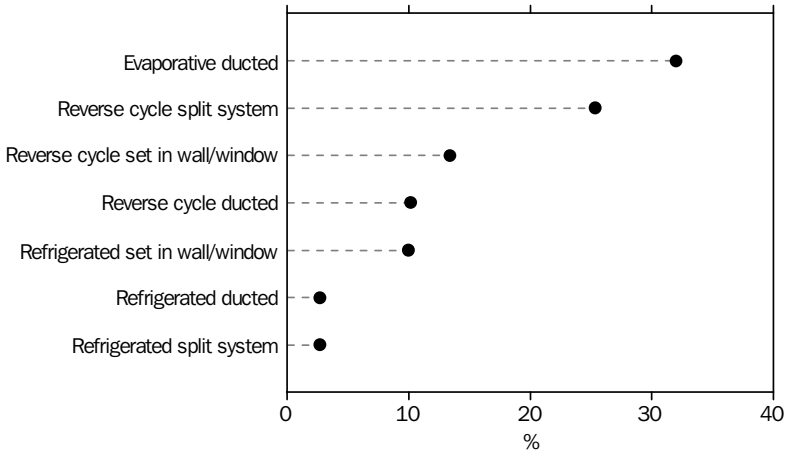
In October 2006, there were an estimated 800,800 households in WA. Almost all WA households used mains electricity, 68% used mains gas and 17% used solar energy. It was more likely for multiple energy sources to be used in separate houses, rather than in semi-detached, row or terrace houses or flats, units and apartments. One in five separate houses used solar energy, compared with 4% in other dwelling types.

COOLING AND HEATING

Cooling units

At the time of the survey almost three-quarters of WA households used an air conditioner or evaporative cooling (567,600 or 71%). Of the different cooler types and positions the most common units used in WA homes were ducted evaporative coolers (32%) followed by reverse cycle split system air conditioners (25%).

MOST COMMON TYPE OF COOLING USED IN WA HOMES



By the type of unit, around half of WA households reported that their main cooling unit was a reverse-cycle air conditioner (49%) and another 35% used evaporative cooling. Almost half of WA households reported that the position of their cooling unit was ducted (45%), a further 28% used a split system. Similar proportions of households with five or more persons had reverse cycle air conditioners (46%) and evaporative cooling (42%). Whereas in smaller households, reverse cycle air conditioners were more common. Most evaporative cooling was ducted through the home (92%). Reverse cycle air conditioners were more likely to be split systems (52%).

Of those WA homes with cooling, almost three-quarters had some type of ceiling insulation. The proportion with ceiling insulation was highest for those homes with ducted cooling (84%).

Heaters

An estimated 709,800 WA households reported having some form of heating (89%). Almost half of these households reported that their main heater was a gas heater (46%). One in five households used a reverse-cycle air conditioner as their main heater (21%), 17% used wood and a further 14% used an electric heater.

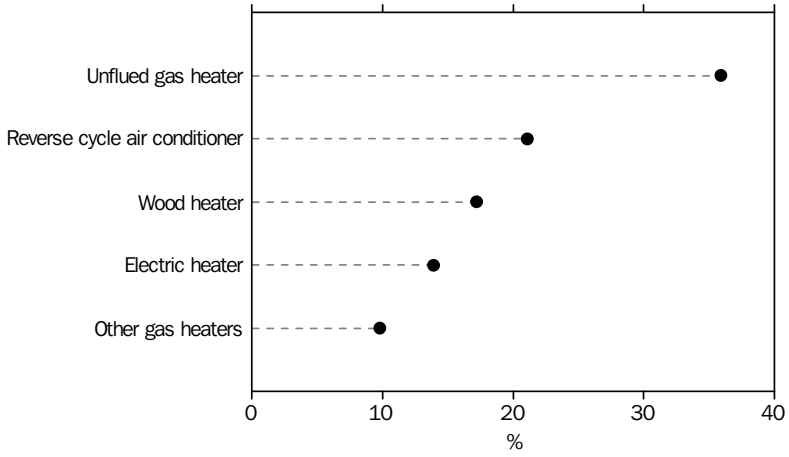
Gas was the most popular form of heating across all household sizes. However one person households were more likely than other households to use electric heaters as their main form of heating (20% compared with around 10% for other household sizes) and less likely to use wood (10% compared with around 20% for other household sizes).

Heaters continued

In double brick and brick veneer houses, gas heaters were more commonly used as the main type of heating (50% and 42% respectively), whereas in fibro cement houses, wood heaters were more commonly used (46%).

Of the estimated 324,000 WA households who reported using gas for their main heater, 79% used a portable unflued gas heater. This accounted for approximately one-third of all WA households with heating (36%). Most of these households used only one portable unflued gas heater (75%) in their homes with a further 22,200 WA households using a portable unflued gas heater as their secondary heater.

MOST COMMON TYPE OF MAIN HEATER USED IN WA HOMES



SOURCES OF WATER

Mains water supply

An estimated 758,500 households in WA (95%) received their domestic water supply from mains or town water. In Perth, 2% of households were not connected to mains water, compared with 15% of households in the Balance of WA.

Rain water tanks

For those households connected to mains water supply in WA, 9% had a rain water tank. The proportion was higher for those living in separate houses (11%) compared with other types of dwellings (3%), and for households in the Balance of WA (24%) compared with Perth households (5%).

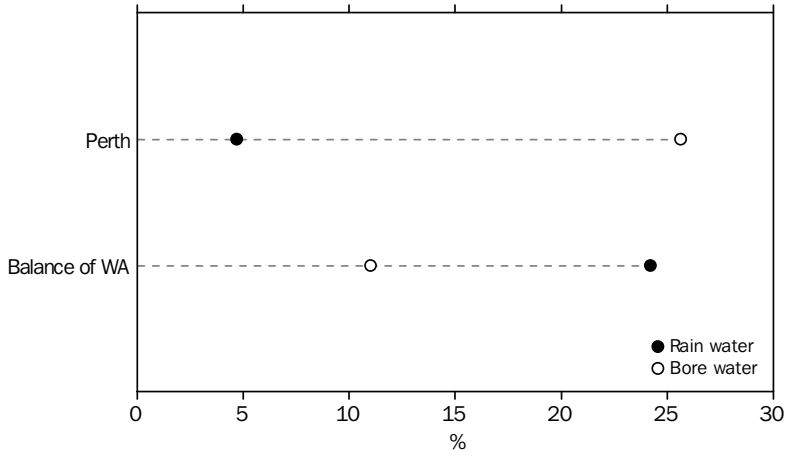
Of those households that used water from a rain water tank, the most common uses were drinking water (68%), watering the garden (43%) and food preparation (32%).

Bore water

For those WA households connected to mains water supply around one-fifth reported using bore water (22%). A higher proportion of Perth households used bore water (26%) compared with households in the Balance of WA (11%). Less than one-fifth of households that used a bore shared it with other households or properties (16%).

Bore water continued

ADDITIONAL WATER SOURCES, by area of usual residence, WA

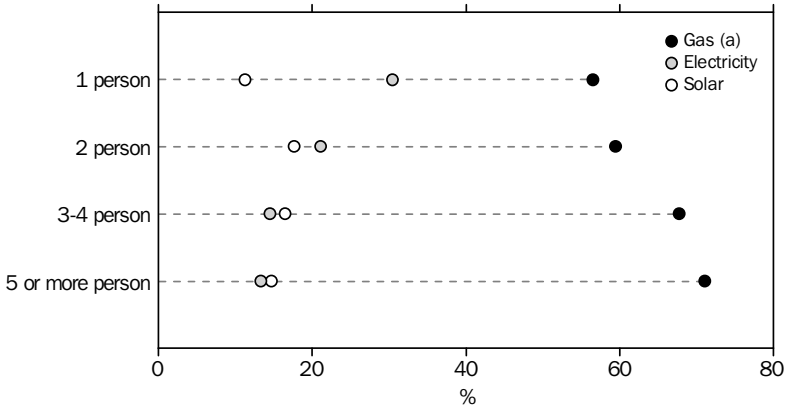


WATER HEATING

More than half of WA households had a mains gas hot water system (56%). Electricity was used for water heating by 21% of households and solar heating was used by 15% of households. Electric water heating was more popular in single person households (30%) than in other household types, conversely solar heating was a little less popular (11%).

The majority (60%) of WA households used a storage rather than instantaneous hot water system (38%). The proportions for single person households were more evenly distributed with 51% using storage and 46% using instantaneous hot water systems.

WATER HEATING, by household size, WA



(a) Includes LPG bottled gas

WATER USING APPLIANCES AND FACILITIES

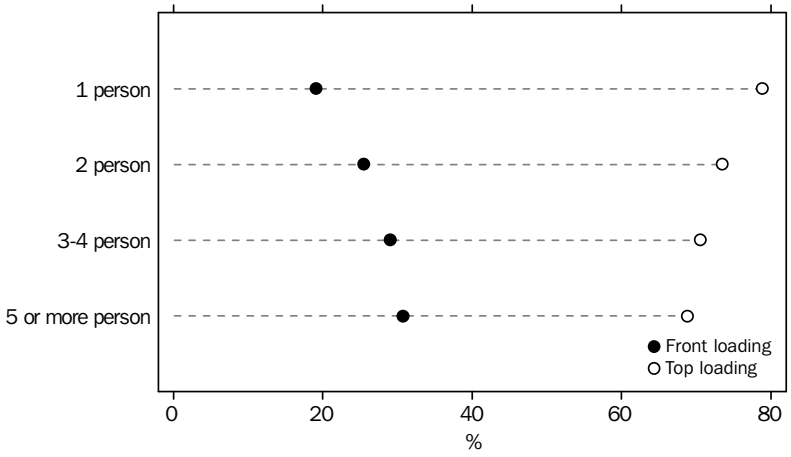
Only the results for Perth households connected to the mains water supply are discussed in this section on water using appliances and facilities.

Washing machines

The majority of all Perth households used a top loading washing machine (71%). Front loading washing machines become more popular as households get larger (ranging from 17% of one person households, to 30% of five or more person households). Almost one-third of households living in flats, units or apartments did not have a washing machine (32%).

Washing machines continued

TYPE OF WASHING MACHINE, by household size, WA



Dishwashers

More than one third (38%) of Perth households had a dishwasher. The proportion was higher for households living in a separate house (44%) compared with other dwelling types. The proportion of households with dishwashers also increased with household size, ranging from 19% in one person households to 52% of three or more person households.

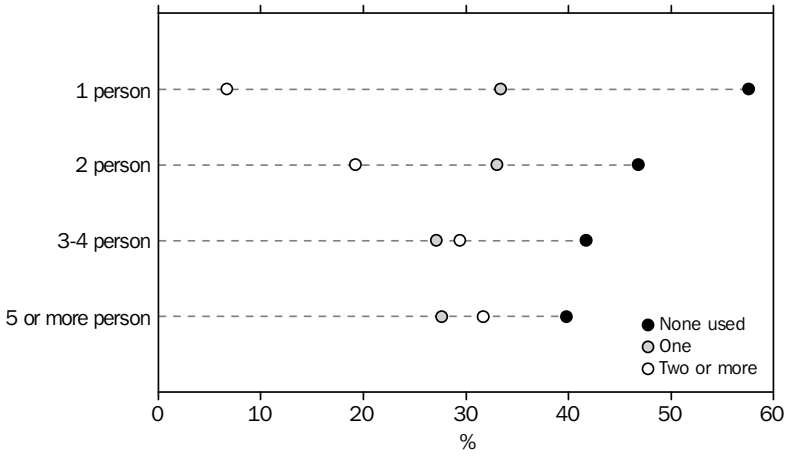
Toilets

More than half (55%) of all Perth households had two or more toilets. In households with three or more persons, the proportion was higher (73%). More than three-quarters (81%) of Perth households used only dual flush toilets. One person households were less likely to use dual flush toilets (74%) than other household sizes.

Showers

Almost half (44%) of all Perth households had two or more showers. A higher proportion of water efficient shower heads were used in separate house dwellings (47%) compared with the proportion used in flats, units or apartments (29%). The highest proportion of households that did not use water efficient shower heads were one person households (58%).

NO. OF WATER EFFICIENT SHOWER HEADS USED, by household size, WA



Baths and indoor spas

More than half (59%) of Perth households had a bath. The proportion of households with a bath increased with the size of the household, from 43% for one person households to 76% for five or more person households. Less than one in ten (6%) households had an indoor spa.

GARDEN WATER USE

Watering methods

An estimated 556,100 Perth households had gardens or lawns (92%). Over three-quarters of these households had reticulation systems (77%). More than two-thirds of reticulation systems were automatic electronic systems (68%), while 11% were not automated. For those households with multiple areas to water, the majority of reticulation systems could be set to water different zones, for example garden, lawn or hanging baskets, for different amounts of time or on different days (87%). Sprinklers, drippers or pop-ups were the most common methods used by reticulation systems to water the garden (99%). Other popular watering methods used by all households included using a hand held hose (71%), a watering can or container (42%) and sprinklers (15%).

Water conservation measures

More than two-thirds (68%) of Perth households used mulch in their garden in the twelve months prior to October 2006. Over one-third (36%) of Perth households reported re-using or recycling water for use in their gardens. This could include using sophisticated recycled water systems, collecting water from running a shower, and pouring leftover water from water bottles and vases onto gardens or lawns.

A small proportion of households in Perth with a garden reported not watering (15%).

SWIMMING POOLS

An estimated 97,700 Perth households had a swimming pool (16%). Almost one-third (31%) of these swimming pools were in the North metropolitan region, almost one-third (31%) had a pool cover and almost one-quarter (23%) were heated.

ELECTRICAL SAFETY SWITCHES

In 1992 it became compulsory for all newly constructed residential dwellings in WA to install electrical safety switches (DOCEP 2002). An estimated 500,400 or 62% of WA dwellings were built before 1992.

The majority of these older dwellings had electrical safety switches (70%). For those dwellings that did not have electrical safety switches installed, the most commonly reported reasons were:

- they had not got around to installing them (27%),
- the resident was not the home owner or not responsible (24%), and
- they had never thought about it before (24%).

Government of Western Australia, 2002 *Energy Safety: Safety Switches.* Department of Consumer and Employment Protection.

LIST OF TABLES

1 DWELLING FEATURES, by area of usual residence, WA

	Perth		*Balance of WA*		*Total*	
	'000	%	'000	%	'000	%
Dwelling type						
Separate house	469.1	77.8	167.9	85.0	637.1	79.5
Semi-detached, row or terrace house, town house	92.6	15.3	18.9	9.6	111.5	13.9
Flat, unit, apartment	37.0	6.1	9.0	4.6	45.9	5.7
Total households(a)	**603.3**	**100.0**	**197.5**	**100.0**	**800.8**	**100.0**
Tenure type						
Fully owned	202.1	33.5	71.4	36.2	273.5	34.1
Being paid off	227.5	37.7	63.5	32.1	291.0	36.3
Renting (publicly)	23.4	3.9	14.5	7.3	37.9	4.7
Renting (other)	146.2	24.2	46.4	23.5	192.6	24.0
Total households(b)	**603.3**	**100.0**	**197.5**	**100.0**	**800.8**	**100.0**
Type of external wall						
Double brick	541.1	89.7	91.5	46.3	632.6	79.0
Brick veneer	23.2	3.9	31.9	16.2	55.1	6.9
Fibro cement	15.6	2.6	43.5	22.0	59.1	7.4
Other(c)	23.3	3.9	30.6	15.5	53.9	6.7
Total households	**603.3**	**100.0**	**197.5**	**100.0**	**800.8**	**100.0**
Age of dwelling						
Less than 3 years old	25.9	4.3	12.4	6.3	38.4	4.8
3 to less than 15 years old	185.1	30.7	65.6	33.2	250.8	31.3
15 years old or more	383.7	63.6	116.8	59.1	500.4	62.5
Total households(d)	**603.3**	**100.0**	**197.5**	**100.0**	**800.8**	**100.0**
Insulation						
Dwelling has roof or ceiling insulation	413.7	68.6	123.3	62.4	536.9	67.0
Dwelling does not have roof or ceiling insulation	102.1	16.9	46.5	23.6	148.6	18.6
Don't know	87.6	14.5	27.7	14.0	115.3	14.4
Total households	**603.3**	**100.0**	**197.5**	**100.0**	**800.8**	**100.0**

(a) Includes a small number of households living in other types of dwellings
(b) Includes a small number of households with other tenure types
(c) Includes a small number of households with other external wall types or did not know what type of external wall
(d) Includes a small number of households that did not know the dwelling age

2 SOURCES OF ENERGY OR FUEL, by dwelling type, WA

	Separate house		*Semi-detached, row or terrace house, town house*		*Flat, unit or apartment*		*Total*(a)	
	'000	%	'000	%	'000	%	'000	%
Sources of energy or fuel								
Mains electricty	633.6	99.5	111.1	99.6	45.9	100.0	796.9	99.5
Mains gas	435.9	68.4	80.5	72.2	26.9	58.6	546.2	68.2
Solar	130.2	20.4	*5.0	*4.5	*1.3	*2.9	136.8	17.1
Wood	130.1	20.4	*2.0	*1.8	**0.2	**0.5	132.6	16.6
LPG bottled gas	120.6	18.9	6.6	5.9	**0.5	**1.1	129.3	16.2
Total households(b)(c)	**637.1**	**100.0**	**111.5**	**100.0**	**45.9**	**100.0**	**800.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes a small number of households living in other types of dwellings

(b) Components do not add to the total as more than one energy source may be specified

(c) Includes a small number of households with other energy sources

3 COOLING UNITS, by household size, WA

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
No. of cooling units used										
One	102.9	82.1	157.3	77.2	145.7	77.3	40.0	80.2	445.9	78.6
Two	19.4	15.5	32.7	16.1	32.3	17.2	7.9	15.7	92.4	16.3
Three or more	*3.0	*2.4	13.6	6.7	10.6	5.6	*2.0	*4.1	29.3	5.2
Total cooling units used	**125.4**	**100.0**	**203.6**	**100.0**	**188.6**	**100.0**	**50.0**	**100.0**	**567.6**	**100.0**
Type of main cooling unit										
Evaporative	32.3	25.8	75.1	36.9	69.2	36.7	21.2	42.5	197.9	34.9
Reverse cycle	68.3	54.4	95.1	46.7	92.3	48.9	23.2	46.5	278.8	49.1
Refrigerated	24.1	19.2	33.0	16.2	26.5	14.0	*5.2	*10.5	88.8	15.6
Total cooling units used(a)(b)	**125.4**	**100.0**	**203.6**	**100.0**	**188.6**	**100.0**	**50.0**	**100.0**	**567.6**	**100.0**
Position of main cooling unit										
Split system	40.2	32.0	56.7	27.9	52.3	27.7	11.9	23.8	161.1	28.4
Set in the wall or window	44.6	35.5	50.7	24.9	35.9	19.1	11.6	23.2	142.8	25.2
Ducted	36.2	28.8	94.4	46.4	99.0	52.5	25.6	51.3	255.3	45.0
Portable	*4.3	*3.4	*1.5	*0.7	*1.1	*0.6	**0.9	**1.7	7.8	1.4
Total cooling units used(a)(c)	**125.4**	**100.0**	**203.6**	**100.0**	**188.6**	**100.0**	**50.0**	**100.0**	**567.6**	**100.0**
No. of months main cooling unit used										
Less than 1 month	19.9	15.9	27.9	13.7	18.7	9.9	*4.8	*9.5	71.2	12.6
1 month to less than 3 months	62.2	49.6	97.7	48.0	89.1	47.2	24.5	49.1	273.6	48.2
3 months to less than 6 months	34.2	27.2	69.6	34.2	65.9	35.0	17.1	34.2	186.7	32.9
6 months or more	*2.2	*1.8	*3.6	*1.8	5.8	3.1	**0.8	**1.5	12.5	2.2
Total cooling units used(a)(d)	**125.4**	**100.0**	**203.6**	**100.0**	**188.6**	**100.0**	**50.0**	**100.0**	**567.6**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Applies to cooling units used most often

(b) Includes a small number of households with other types of cooling units

(c) Includes a small number of households that did not know the position of the cooling unit

(d) Includes a small number of households where the number of months the main cooling unit was used is unknown

4 COOLING UNITS, by type of external wall, WA

	Double brick		*Brick veneer*		*Fibro cement*		*Other*(a)		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
No. of cooling units used										
One	365.4	79.7	26.3	74.5	27.9	74.1	26.3	72.7	445.9	78.6
Two	71.4	15.6	6.3	17.8	7.2	19.2	7.5	20.7	92.4	16.3
Three or more	21.6	4.7	*2.8	*7.8	*2.5	*6.7	*2.4	*6.5	29.3	5.2
Total cooling units used	**458.3**	**100.0**	**35.3**	**100.0**	**37.7**	**100.0**	**36.2**	**100.0**	**567.6**	**100.0**
Type of main cooling unit										
Evaporative	164.4	35.9	9.7	27.5	11.3	30.1	12.5	34.4	197.9	34.9
Reverse cycle	228.0	49.7	15.1	42.9	17.8	47.2	17.9	49.4	278.8	49.1
Refrigerated	64.6	14.1	10.0	28.4	8.3	22.1	5.9	16.2	88.8	15.6
Total cooling units used(b)(c)	**458.3**	**100.0**	**35.3**	**100.0**	**37.7**	**100.0**	**36.2**	**100.0**	**567.6**	**100.0**
Position of main cooling unit										
Split system	128.3	28.0	10.3	29.3	11.0	29.3	11.4	31.6	161.1	28.4
Set in the wall or window	106.0	23.1	11.5	32.4	15.0	39.9	10.3	28.5	142.8	25.2
Ducted	219.6	47.9	12.4	35.0	10.2	27.0	13.1	36.3	255.3	45.0
Portable	*4.0	*0.9	**0.9	**2.7	*1.4	*3.8	*1.3	*3.7	7.8	1.4
Total cooling units used(b)(d)	**458.3**	**100.0**	**35.3**	**100.0**	**37.7**	**100.0**	**36.2**	**100.0**	**567.6**	**100.0**
No. of months main cooling unit used										
Less than 1 month	54.7	11.9	*4.7	*13.3	*5.1	*13.5	6.7	18.6	71.2	12.6
1 month to less than 3 months	227.8	49.7	12.9	36.4	16.0	42.5	16.8	46.5	273.6	48.2
3 months to less than 6 months	153.6	33.5	10.4	29.3	13.6	36.1	9.2	25.5	186.7	32.9
6 months or more	*5.1	*1.1	*4.8	*13.7	*1.6	*4.3	**1.0	**2.6	12.5	2.2
Total cooling units used(b)(e)	**458.3**	**100.0**	**35.3**	**100.0**	**37.7**	**100.0**	**36.2**	**100.0**	**567.6**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes a small number of households where the external wall type was unknown

(b) Applies to cooling units used most often

(c) Includes a small number of households with other types of cooling units

(d) Includes a small number of households that did not know the position of the main cooling unit

(e) Includes a small number of households where the number of months the main cooling unit was used is unknown

5 COOLING UNITS AND INSULATION, by cooling unit type, WA

	Evaporative		*Reverse cycle*		*Refrigerated*		*Total*(a)(b)	
	'000	%	'000	%	'000	%	'000	%
Position of main cooling unit								
Split system	*2.1	*1.0	143.7	51.5	15.1	17.0	161.1	28.4
Set in the wall or window	9.3	4.7	76.2	27.3	56.3	63.4	142.8	25.2
Ducted	181.5	91.7	58.1	20.8	15.2	17.1	255.3	45.0
Portable	*4.9	*2.5	**0.7	**0.2	*2.0	*2.2	7.8	1.4
Total cooling units used(a)(c)	**197.9**	**100.0**	**278.8**	**100.0**	**88.8**	**100.0**	**567.6**	**100.0**
No. of months main cooling unit used								
Less than 1 month	14.3	7.2	43.7	15.7	13.1	14.7	71.2	12.6
1 month to less than 3 months	86.5	43.7	141.7	50.8	44.4	50.0	273.6	48.2
3 months to less than 6 months	88.8	44.9	76.3	27.4	21.1	23.8	186.7	32.9
6 months or more	*2.5	*1.2	*3.0	*1.1	7.0	7.9	12.5	2.2
Total cooling units used(a)(d)	**197.9**	**100.0**	**278.8**	**100.0**	**88.8**	**100.0**	**567.6**	**100.0**
Insulation								
Dwelling has roof or ceiling insulation	157.7	79.7	205.3	73.6	58.4	65.8	422.7	74.5
Dwelling does not have roof or ceiling insulation	22.5	11.4	40.8	14.6	16.9	19.0	80.6	14.2
Don't know	17.8	9.0	32.7	11.7	13.5	15.2	64.2	11.3
Total cooling units used(a)	**197.9**	**100.0**	**278.8**	**100.0**	**88.8**	**100.0**	**567.6**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Applies to cooling unit used most often

(b) Includes a small number of households with other types of cooling units

(c) Includes a small number of households that did not know the position of the main cooling unit

(d) Includes a small number of households where the number of months main cooling unit was used is unknown

6 COOLING UNITS, by insulation, WA

	Has insulation		*Does not have insulation*		*Don't know if have insulation*		*Total*(a)	
	'000	%	'000	%	'000	%	'000	%
Position of main cooling unit								
Split system	118.7	28.1	23.8	29.5	18.6	29.0	161.1	28.4
Set in the wall or window	85.6	20.3	33.3	41.3	23.9	37.2	142.8	25.2
Ducted	213.7	50.6	22.3	27.6	19.3	30.0	255.3	45.0
Portable	*4.3	*1.0	*1.2	*1.5	*2.2	*3.5	7.8	1.4
Total cooling units used(a)(b)	**422.7**	**100.0**	**80.6**	**100.0**	**64.2**	**100.0**	**567.6**	**100.0**
No. of months main cooling unit used								
Less than 1 month	49.1	11.6	13.1	16.2	9.0	14.1	71.2	12.6
1 month to less than 3 months	210.5	49.8	35.2	43.6	27.9	43.5	273.6	48.2
3 months to less than 6 months	143.3	33.9	27.3	33.9	16.1	25.1	186.7	32.9
6 months or more	8.0	1.9	*2.1	*2.6	*2.4	*3.7	12.5	2.2
Total cooling units used(a)(c)	**422.7**	**100.0**	**80.6**	**100.0**	**64.2**	**100.0**	**567.6**	**100.0**
No. of cooling units used								
One	326.4	77.2	65.1	80.8	54.4	84.8	445.9	78.6
Two	74.2	17.5	10.3	12.7	7.9	12.4	92.4	16.3
Three or more	22.2	5.3	*5.2	*6.5	*1.8	*2.8	29.3	5.2
Total cooling units used	**422.7**	**100.0**	**80.6**	**100.0**	**64.2**	**100.0**	**567.6**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Applies to cooling unit used most often

(b) Includes a small number of households that did not know the position of the main cooling unit

(c) Includes a small number of households where the number of months main cooling unit was used is unknown

7 HEATERS, by household size, WA

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
No. of heaters used										
One	136.4	78.5	166.3	67.1	145.2	63.2	37.4	64.0	485.3	68.4
Two	32.6	18.8	65.6	26.5	57.5	25.0	15.7	26.9	171.4	24.2
Three or more	*4.7	*2.7	16.0	6.4	27.0	11.8	*5.3	*9.1	53.0	7.5
Total heaters used	**173.7**	**100.0**	**247.9**	**100.0**	**229.7**	**100.0**	**58.5**	**100.0**	**709.8**	**100.0**
Type of main heater										
Gas	77.3	44.5	111.8	45.1	111.6	48.6	23.3	39.9	324.0	45.7
Reverse cycle air conditioner	38.7	22.3	49.5	20.0	48.5	21.1	12.7	21.8	149.4	21.1
Wood	17.1	9.8	48.6	19.6	43.0	18.7	13.3	22.8	122.0	17.2
Electric	35.7	20.5	32.8	13.2	22.7	9.9	7.5	12.9	98.7	13.9
Total heaters used(a)(b)	**173.7**	**100.0**	**247.9**	**100.0**	**229.7**	**100.0**	**58.5**	**100.0**	**709.8**	**100.0**
No. of month main heater used										
Less than 1 month	18.7	10.8	16.2	6.5	11.2	4.9	*4.0	*6.9	50.1	7.1
1 month to less than 3 months	71.8	41.4	100.7	40.6	91.8	40.0	22.6	38.7	287.0	40.4
3 months to less than 6 months	72.5	41.8	121.3	48.9	116.4	50.6	30.5	52.2	340.7	48.0
6 months or more	6.8	3.9	7.6	3.1	8.1	3.5	*1.1	*1.8	23.5	3.3
Total heaters used(a)(c)	**173.7**	**100.0**	**247.9**	**100.0**	**229.7**	**100.0**	**58.5**	**100.0**	**709.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Applies to heater used most often

(b) Includes a small number of households with other types of heating

(c) Includes a small number of households where the number of months main heater was used in unknown

8 HEATERS, by type of external wall, WA

	Double brick		*Brick veneer*		*Fibro cement*		*Other*(a)		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
No. of heaters used										
One	390.7	69.7	28.6	62.0	34.6	62.5	31.5	65.6	485.3	68.4
Two	130.4	23.3	12.2	26.5	15.6	28.3	13.2	27.5	171.4	24.2
Three or more	39.4	7.0	*5.3	*11.4	*5.1	*9.1	*3.3	*6.9	53.0	7.5
Total heaters used	**560.5**	**100.0**	**46.0**	**100.0**	**55.2**	**100.0**	**48.0**	**100.0**	**709.8**	**100.0**
Type of main heater used										
Gas	281.2	50.2	19.3	41.9	10.7	19.4	12.9	26.8	324.0	45.7
Reverse cycle air conditioner	124.0	22.1	6.9	14.9	10.3	18.6	8.3	17.3	149.4	21.1
Wood	68.9	12.3	9.9	21.5	25.6	46.3	17.7	36.8	122.0	17.2
Electric	74.9	13.4	8.1	17.6	7.6	13.7	8.1	16.8	98.7	13.9
Total heaters used(b)(c)	**560.5**	**100.0**	**46.0**	**100.0**	**55.2**	**100.0**	**48.0**	**100.0**	**709.8**	**100.0**
No. of months main heater used										
Less than 1 month	41.2	7.3	*2.7	*5.9	*3.7	*6.7	*2.6	*5.4	50.1	7.1
1 month to less than 3 months	237.2	42.3	18.9	41.0	15.7	28.5	15.2	31.6	287.0	40.4
3 months to less than 6 months	264.1	47.1	21.0	45.6	31.2	56.4	24.4	50.9	340.7	48.0
6 months or more	11.8	2.1	*2.3	*4.9	*4.4	*8.0	*5.1	*10.5	23.5	3.3
Total heaters used(b)(d)	**560.5**	**100.0**	**46.0**	**100.0**	**55.2**	**100.0**	**48.0**	**100.0**	**709.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Includes a small number of households that did not know the external wall type

(b) Applies to heater used most often

(c) Includes a small number of households with other types of heating

(d) Includes a small number of households where the number of months main heater was used is unknown

9 PORTABLE UNFLUED GAS HEATERS, by household size, WA

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
Main and secondary heater portable unflued gas	*1.4	*0.8	*3.5	*1.4	7.3	3.2	**0.7	**1.2	12.9	1.8
Main heater portable unflued gas	57.5	33.1	82.0	33.1	83.4	36.3	18.7	32.0	241.6	34.0
Secondary heater portable unflued gas	*3.1	*1.8	8.5	3.4	7.2	3.1	*3.4	*5.8	22.2	3.1
No portable unflued gas heater used(a)	111.6	64.3	153.9	62.1	131.8	57.4	35.6	60.9	433.0	61.0
Total heaters used	**173.7**	**100.0**	**247.9**	**100.0**	**229.7**	**100.0**	**58.5**	**100.0**	**709.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes a small number of households where the use of portable unflued gas heaters is unknown

10 REGION OF USUAL RESIDENCE, by mains water connection, WA

	Connected		*Not connected*		*Total*	
	'000	%	'000	%	'000	%
Central Metropolitan	54.9	98.8	**0.6	**1.2	55.5	100.0
East Metropolitan	95.5	97.8	*2.2	*2.2	97.7	100.0
North Metropolitan	179.6	98.1	*3.6	*1.9	183.2	100.0
South West Metropolitan	125.9	98.1	*2.4	*1.9	128.3	100.0
South East Metropolitan	133.9	96.6	*4.8	*3.4	138.7	100.0
Perth Total	***589.8***	***97.8***	***13.6***	***2.2***	***603.3***	***100.0***
Lower Western WA	109.4	84.5	20.0	15.5	129.4	100.0
Remainder-Balance WA	59.3	87.1	8.8	12.9	68.1	100.0
Balance of WA Total	***168.7***	***85.4***	***28.8***	***14.6***	***197.5***	***100.0***
Total WA households	**758.5**	**94.7**	**42.4**	**5.3**	**800.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

11 ADDITIONAL WATER SOURCES, by dwelling type, WA

	Separate house		*Other dwellings*(a)		*Total*	
	'000	%	'000	%	'000	%
Rain water tank						
Dwelling has rainwater tank	64.0	10.7	*4.3	*2.7	68.4	9.0
Dwelling does not have rain water tank	531.6	89.3	158.5	97.3	690.1	91.0
Total households connected to mains water	**595.6**	**100.0**	**162.9**	**100.0**	**758.5**	**100.0**
Bore water						
Used water from a single household bore	138.2	23.2	*2.9	*1.8	141.1	18.6
Used water from a bore shared with one other household or property	10.3	1.7	*1.1	*0.7	11.4	1.5
Used water from a bore shared two or more other households or properties	*5.1	*0.9	10.4	6.4	15.5	2.0
Total bore water used(b)	***154.8***	***26.0***	***14.7***	***9.0***	***169.5***	***22.3***
Dwelling does not use bore water(c)	440.8	74.0	148.2	91.0	589.0	77.7
Total households connected to mains water	**595.6**	**100.0**	**162.9**	**100.0**	**758.5**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Includes other dwelling types such as duplex, townhouse, flat and apartment

(b) Includes a small number of households that did not know whether bore water was shared

(c) Includes a small number of households that did not know whether bore water was used

12 ADDITIONAL WATER SOURCES, by area of usual residence, WA

	Perth		*Balance of WA*		*Total*	
	'000	%	'000	%	'000	%
Rain water tank						
Has rain water tank	27.5	4.7	40.9	24.2	68.4	9.0
Does not have rain water tank	562.3	95.3	127.8	75.8	690.1	91.0
Total households connected to mains water	**589.8**	**100.0**	**168.7**	**100.0**	**758.5**	**100.0**
Bore water						
Single household bore	125.2	21.2	15.9	9.4	141.1	18.6
Bore shared with one other household	11.1	1.9	**0.3	**0.2	11.4	1.5
Bore shared with two or more other households	13.3	2.3	*2.2	*1.3	15.5	2.0
Total bore water used(a)	***150.9***	***25.6***	***18.5***	***11.0***	***169.5***	***22.3***
Dwelling does not use bore water(b)	438.8	74.4	150.2	89.0	589.0	77.7
Total households connected to mains water	**589.8**	**100.0**	**168.7**	**100.0**	**758.5**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes a small number of households that did not know whether bore water was shared

(b) Includes a small number of households that did not know whether bore water was used

13 RAIN WATER USAGE, by area of usual residence, WA

	Perth		*Balance of WA*		*Total*	
	'000	%	'000	%	'000	%
Inside house uses						
Drinking water	14.2	51.6	32.1	78.5	46.3	67.7
Food preparation	6.1	22.2	16.1	39.3	22.2	32.4
Washing clothes	*1.7	*6.3	*3.8	*9.2	*5.5	*8.0
Other inside house uses	*1.1	*4.0	*3.7	*9.2	*4.8	*7.1
Outside house uses						
Watering the garden	15.2	55.5	14.4	35.1	29.6	43.3
Other outside house uses	*1.5	*5.3	*5.3	*12.9	6.8	9.9
Total households with a rain water tank(a)(b)	**27.5**	**100.0**	**40.9**	**100.0**	**68.4**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Components do not add to the total because more than one use may be specified

(b) Includes other uses of rain water and a small number of households who did not use water from their rain water tank

14 WATER HEATING, by household size, WA

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
Main energy source for water heating										
Mains gas	104.0	50.2	143.7	52.3	156.9	61.9	40.6	62.6	445.2	55.7
Mains electricity	63.2	30.5	58.0	21.1	36.8	14.5	8.6	13.3	166.6	20.8
Solar	23.4	11.3	48.7	17.7	41.7	16.5	9.6	14.7	123.4	15.4
LPG bottled gas	13.1	6.3	19.5	7.1	14.7	5.8	*5.5	*8.5	52.8	6.6
Total households with water heating(a)	**207.1**	**100.0**	**274.7**	**100.0**	**253.3**	**100.0**	**64.9**	**100.0**	**799.9**	**100.0**
Type of water heating system										
Storage	106.6	51.5	174.2	63.4	154.1	60.9	41.0	63.1	476.0	59.5
Instantaneous	94.6	45.7	95.5	34.8	93.6	37.0	22.2	34.2	305.9	38.2
Total households with water heating(b)	**207.1**	**100.0**	**274.7**	**100.0**	**253.3**	**100.0**	**64.9**	**100.0**	**799.9**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Includes a small number of households that had other energy sources and households where the energy source was unknown

(b) Includes a small number of households with other water heating types

15 WATER HEATING, by household type, WA

	Person living alone		*Couple only*		*Couple with children*		*Lone parent with children*		*Other households*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%
Main energy source for water heating												
Mains gas	104.0	50.2	107.1	52.1	152.5	62.9	44.9	58.3	36.7	54.2	445.2	55.7
Mains electricity	63.2	30.5	39.4	19.1	30.8	12.7	17.6	22.8	15.6	23.1	166.6	20.8
Solar	23.4	11.3	41.3	20.1	39.4	16.2	9.1	11.8	10.3	15.2	123.4	15.4
LPG bottled gas	13.1	6.3	14.2	6.9	16.8	6.9	*4.6	*5.9	*4.2	*6.3	52.8	6.6
Total households with water heating(a)	**207.1**	**100.0**	**205.6**	**100.0**	**242.5**	**100.0**	**77.1**	**100.0**	**67.7**	**100.0**	**799.9**	**100.0**
Type of water heating system												
Storage	106.6	51.5	137.2	66.7	148.6	61.3	45.8	59.4	37.8	55.7	476.0	59.5
Instantaneous	94.6	45.7	65.4	31.8	88.6	36.5	29.3	38.0	28.0	41.4	305.9	38.2
Total households with water heating(b)	**207.1**	**100.0**	**205.6**	**100.0**	**242.5**	**100.0**	**77.1**	**100.0**	**67.7**	**100.0**	**799.9**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Includes a small number of households with other energy sources and households where the energy source was unknown

(b) Includes a small number of households with other water heating types

16 WATER USING APPLIANCES , by dwelling type, Perth

	Separate house		*Semi-detached, row or terrace house, town house*		*Flat, unit or apartment*		*Total*(a)	
	'000	%	'000	%	'000	%	'000	%
Washing machines								
Top loading	331.9	72.8	65.9	71.4	17.5	47.5	417.1	70.7
Front loading	116.1	25.5	22.4	24.3	6.8	18.5	145.3	24.6
Do not have washing machine	*4.0	*0.9	*3.1	*3.4	11.8	32.2	21.9	3.7
Total households connected to mains water(b)	**456.0**	**100.0**	**92.4**	**100.0**	**36.7**	**100.0**	**589.8**	**100.0**
Dishwashers								
Dishwasher	198.3	43.5	18.4	19.9	*5.5	*14.9	222.1	37.7
No dishwasher	257.7	56.5	74.0	80.1	31.2	85.1	367.7	62.3
Total households connected to mains water	**456.0**	**100.0**	**92.4**	**100.0**	**36.7**	**100.0**	**589.8**	**100.0**
Toilets								
Single flush only	66.6	14.6	17.5	18.9	6.4	17.5	91.9	15.6
Dual flush only	371.2	81.4	73.2	79.2	30.3	82.5	477.6	81.0
Total households connected to mains water(c)	**456.0**	**100.0**	**92.4**	**100.0**	**36.7**	**100.0**	**589.8**	**100.0**
Showers								
Normal shower heads only	197.7	43.4	53.5	57.9	25.0	68.1	279.4	47.4
Water efficient heads only	214.7	47.1	34.7	37.5	10.8	29.5	261.3	44.3
Both normal and water efficient shower heads	38.1	8.3	*1.5	*1.6	**0.2	**0.6	39.8	6.7
Total households connected to mains water(d)	**456.0**	**100.0**	**92.4**	**100.0**	**36.7**	**100.0**	**589.8**	**100.0**
Baths and indoor spas								
Bath	298.2	65.4	42.7	46.2	8.6	23.4	350.1	59.4
No bath	157.8	34.6	49.7	53.8	28.1	76.6	239.7	40.6
Total households connected to mains water	**456.0**	**100.0**	**92.4**	**100.0**	**36.7**	**100.0**	**589.8**	**100.0**
Indoor spa	34.0	7.5	*2.0	*2.2	**0.2	**0.6	36.5	6.2
No indoor spa	422.0	92.5	90.4	97.8	36.5	99.4	553.3	93.8
Total households connected to mains water	**456.0**	**100.0**	**92.4**	**100.0**	**36.7**	**100.0**	**589.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes a small number of households living in other dwelling types

(b) Includes a small number of households with other washing machine types

(c) Includes a small number of households where the type of toilet was unknown, both dual and single flush toilets were used or they had no toilet

(d) Includes a small number of households where the shower head type was unknown or they had no shower

17 WATER USING APPLIANCES, by household size, Perth

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
Washing machines										
Top loading	107.4	70.4	142.9	72.6	134.9	69.7	31.9	68.1	417.1	70.7
Front loading	26.0	17.0	49.6	25.2	55.5	28.7	14.3	30.4	145.3	24.6
Do not have washing machine	16.6	10.9	*2.6	*1.3	*2.3	*1.2	**0.5	**1.0	21.9	3.7
Total households connected to mains water(a)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
Dishwashers										
Dishwasher	28.4	18.6	69.6	35.4	101.5	52.5	22.6	48.3	222.1	37.7
No dishwasher	124.2	81.4	127.3	64.6	91.9	47.5	24.2	51.7	367.7	62.3
Total households connected to mains water	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
Toilets										
Single flush only	36.5	23.9	30.0	15.3	21.2	11.0	*4.2	*8.9	91.9	15.6
Dual flush only	112.6	73.8	159.6	81.0	164.4	85.0	41.0	87.6	477.6	81.0
Total households connected to mains water(b)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
Showers										
Normal shower heads only	87.9	57.6	92.1	46.8	80.7	41.7	18.6	39.8	279.4	47.4
Water efficient heads only	56.4	37.0	92.9	47.1	89.7	46.4	22.4	47.8	261.3	44.3
Both normal and water efficient shower heads	*4.9	*3.2	9.9	5.0	19.6	10.1	*5.4	*11.5	39.8	6.7
Total households connected to mains water(c)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
Baths and indoor spas										
Bath	65.1	42.7	107.1	54.4	142.2	73.5	35.6	76.1	350.1	59.4
No bath	87.5	57.3	89.8	45.6	51.2	26.5	11.2	23.9	239.7	40.6
Total households connected to mains water	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
Indoor spa	*3.8	*2.5	10.9	5.6	16.2	8.4	*5.5	*11.8	36.5	6.2
No indoor spa	148.8	97.5	186.0	94.4	177.2	91.6	41.3	88.2	553.3	93.8
Total households connected to mains water	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes a small number of households with other washing machine types

(b) Includes a small number of households where the type of toilet was unknown, both dual and single flush toilets were used or they had no toilet

(c) Includes a small number of households where the shower head type was unknown or they had no shower

18 TOILETS(a), by household size, Perth

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
No. of toilets										
One	110.1	72.1	91.8	46.6	55.5	28.7	10.2	21.8	267.6	45.4
Two	38.3	25.1	92.3	46.8	117.3	60.6	30.6	65.4	278.4	47.2
Three or more	*3.8	*2.5	12.6	6.4	20.6	10.7	6.0	12.9	43.1	7.3
Total toilets used(b)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
No. of single flush toilets										
One	35.8	23.5	26.8	13.6	19.5	10.1	*4.6	*9.7	86.7	14.7
Two or more	*3.8	*2.5	10.3	5.2	9.4	4.9	*1.3	*2.7	24.8	4.2
No single flush toilets used	112.6	73.8	159.6	81.0	164.4	85.0	41.0	87.6	477.6	81.0
Total toilets used(c)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
No. of dual flush toilets										
One	80.6	52.8	78.1	39.7	49.5	25.6	8.7	18.5	216.9	36.8
Two or more	35.1	23.0	88.6	45.0	122.7	63.4	33.9	72.5	280.4	47.5
No dual flush toilets used	36.5	23.9	30.0	15.3	21.2	11.0	*4.2	*8.9	91.9	15.6
Total toilets used(d)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Connected to mains water supply

(b) Includes a small number of households with no toilets

(c) Includes a small number of households where the number of single flush toilets was unknown or they had no toilet

(d) Includes a small number of households where the number of dual flush toiolets was unknown or they had no toilet

19 SHOWERS(a), by household size, Perth

	1 person household		*2 person household*		*3-4 person household*		*5 or more person household*		*Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%
No. of showers used										
One	125.5	82.3	120.0	60.9	74.2	38.4	12.4	26.5	332.1	56.3
Two	24.6	16.1	70.4	35.7	108.5	56.1	29.9	63.9	233.4	39.6
Three or more	*1.3	*0.9	6.2	3.2	10.7	5.6	*4.5	*9.6	22.8	3.9
Total showers used(b)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
No. of normal shower heads used										
One	82.3	54.0	71.9	36.5	56.4	29.2	9.8	21.0	220.5	37.4
Two or more	10.5	6.9	30.1	15.3	43.9	22.7	14.2	30.3	98.7	16.7
No normal flow shower heads used	56.4	37.0	92.9	47.1	89.7	46.4	22.4	47.8	261.3	44.3
Total showers used(c)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**
No. of water efficient shower heads used										
One	51.0	33.4	65.0	33.0	52.4	27.1	12.9	27.6	181.3	30.7
Two or more	10.3	6.7	37.7	19.2	56.9	29.4	14.9	31.7	119.8	20.3
No water efficient shower heads used	87.9	57.6	92.1	46.8	80.7	41.7	18.6	39.8	279.4	47.4
Total showers used(d)	**152.6**	**100.0**	**197.0**	**100.0**	**193.4**	**100.0**	**46.8**	**100.0**	**589.8**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Connected to mains water supply

(b) Includes a small number of households with no shower

(c) Includes a small number of households that did not use a shower or did not know whether normal flow shower heads were used

(d) Includes a small number of households that did not use a shower or did not know whether water efficient shower heads were used

	Total households	
	'000	%
Type of reticulation system control		
Automatic electronic system	291.4	67.9
Manual tap timer	74.9	17.4
Electronic tap timer	8.9	2.1
Not automated/controlled	48.5	11.3
Households with a reticulation system(a)	**429.4**	**100.0**
Use of reticulation system		
Lawn watering	352.9	84.1
Garden watering	394.2	94.0
Pot plants or hanging basket watering	95.1	22.7
Households that use reticulation(b)	**419.5**	**100.0**
Watering method of reticulation system		
Sprinklers/drippers/pop-ups	414.9	98.9
Sub-surface irrigation	13.9	3.3
Households that use reticulation(b)(c)(d)	**419.5**	**100.0**
Reticulation zones		
Allows separate zone watering	292.2	86.7
Does not allow separate zone watering	39.2	11.6
Households that use reticulation to water multiple areas(d)(e)	**336.9**	**100.0**

(a) Includes a small number of households that used other types of reticulation system controls or did not know what type
(b) Components do not add to the total as more than one reticulation area can be specified
(c) Excludes households that do not use reticulation to water
(d) Reticulation can be used to water the lawns, gardens and/or pot plants or hanging baskets
(e) Excludes households that use reticulation to water one area only and those that do not use reticulation to water

21 OTHER GARDEN WATERING METHODS AND WATER CONSERVATION(a), by dwelling type, Perth

	Separate house		*Other dwelling*(b)		*Total*	
	'000	%	'000	%	'000	%
Watering methods						
Hand held hose	328.0	71.6	67.0	68.2	395.0	71.0
Watering can or container	195.3	42.6	35.6	36.2	230.9	41.5
Sprinkler	70.0	15.3	12.5	12.7	82.5	14.8
Soaker hose	10.4	2.3	**0.9	**0.9	11.3	2.0
Sub-surface irrigation	*1.7	*0.4	**0.2	**0.2	*2.0	*0.4
Other method	16.3	3.6	*2.8	*2.9	19.1	3.4
Did not water	67.1	14.7	17.8	18.1	84.9	15.3
Total households with gardens or lawns(c)	**457.9**	**100.0**	**98.2**	**100.0**	**556.1**	**100.0**
Use of mulch						
Mulch used in the last 12 months	321.9	70.3	57.0	58.0	378.9	68.1
Mulch not used in the last 12 months	130.0	28.4	40.4	41.1	170.4	30.6
Total households with gardens or lawns(d)	**457.9**	**100.0**	**98.2**	**100.0**	**556.1**	**100.0**
Re-use of water in the garden						
Water re-used	171.1	37.4	31.7	32.2	202.7	36.5
Water not re-used	285.1	62.3	66.1	67.3	351.2	63.2
Total households with gardens or lawns(e)	**457.9**	**100.0**	**98.2**	**100.0**	**556.1**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Excludes reticulation as a garden watering method

(b) Includes other dwelling types such as duplex, townhouse, flat and apartment

(c) Components do not add to the total as more than one watering method may be specified

(d) Includes a small number of households where it was unknown whether mulch was used

(e) Includes a small number of households where it was unknown whether water was re-used in the garden

22 SWIMMING POOLS(a), by region of usual residence, Perth

	Central Metropolitan		*East Metropolitan*		*North Metropolitan*		*South West Metropolitan*		*South East Metropolitan*		*Perth Total*	
	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%
Whether swimming pool has a cover												
Has cover	*3.7	*35.1	*4.7	*32.3	9.2	30.7	7.1	33.4	*5.2	*24.3	29.9	30.6
Does not have cover	6.8	64.9	9.9	67.7	20.8	69.3	14.2	66.6	16.2	75.7	67.8	69.4
Households with a swimming pool(b)	**10.5**	**100.0**	**14.6**	**100.0**	**30.0**	**100.0**	**21.3**	**100.0**	**21.4**	**100.0**	**97.7**	**100.0**
Whether swimming pool is heated												
Heated	*2.8	*26.9	*1.6	*10.8	8.2	27.4	6.0	28.2	*3.9	*18.1	22.5	23.0
Not heated	7.7	73.1	12.8	87.6	21.8	72.6	15.3	71.8	17.5	81.9	75.0	76.7
Households with a swimming pool(c)	**10.5**	**100.0**	**14.6**	**100.0**	**30.0**	**100.0**	**21.3**	**100.0**	**21.4**	**100.0**	**97.7**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Connected to mains water supply

(b) Includes a small number of households that did not know whether the swimming pool had a cover

(c) Includes a small number of households that did not know whether the pool was heated

23 ELECTRICAL SAFETY SWITCHES, by dwelling type, WA

	Separate house		*Semi-detached, row or terrace house, town house*		*Flat, unit or apartment*		*Total*(a)	
	'000	%	'000	%	'000	%	'000	%
Has electrical safety switches in the meter box	292.2	71.7	38.0	65.1	15.7	51.6	349.5	69.8
Does not have electrical safety switches in the meter box	81.5	20.0	9.5	16.2	*5.3	*17.3	96.7	19.3
Don't know	33.6	8.3	10.9	18.7	9.5	31.1	54.2	10.8
Total households aged 15 years or more	**407.3**	**100.0**	**58.4**	**100.0**	**30.5**	**100.0**	**500.4**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Includes a small number of households living in other dwelling types

24 ELECTRICAL SAFETY SWITCHES(a), by main reason they have not been installed, WA

	Total households(a)	
	'000	%
Not home owner/not responsible	23.0	23.8
Never thought about it	22.8	23.6
Have not got around to it	25.8	26.7
Don't consider it necessary/important	8.4	8.7
Too expensive to buy or install	7.5	7.8
Will be installing one soon	*2.6	*2.7
Other	6.5	6.8
Households that do not have electrical safety switches	**96.7**	**100.0**

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Applies to dwellings that are aged 15 years or more

EXPLANATORY NOTES

INTRODUCTION

1 This publication contains results from the WA Domestic Use of Water and Energy Survey, which was conducted throughout WA during the two weeks commencing Monday, 9 October 2006.

2 The survey was conducted as a supplement to the ABS Monthly Population Survey (MPS). The MPS is based on a multi-stage area sample of private dwellings and a list sample of special dwellings (hotels, motels, hospitals, prisons, short-stay caravan parks, etc.). Persons living in special dwellings were excluded from the scope of this survey. Information is obtained from the occupants of the selected dwellings by specially trained interviewers. For details of the design, scope and coverage of the MPS, users should refer to any recent edition of the ABS publication, *Labour Force, Australia* (cat. no. 6202.0) or the November 2002 edition of *Information Paper: Labour Force Survey Sample Design* (cat. no. 6269.0).

SCOPE

3 The WA Domestic Use of Water and Energy Survey was conducted on a subset of the full sample of private dwellings in WA that were included in the MPS. The survey covered all persons who were usual residents of private dwellings except:

- members of the Australian permanent defence forces;
- certain diplomatic personnel of overseas governments, customarily excluded from censuses and surveys;
- overseas residents in Australia;
- members of non-Australian defence forces (and their dependents) stationed in Australia; and
- persons living in sparsely settled areas of WA.

4 Information was collected by either face to face or telephone interview from one responsible adult per household. This adult answered questions on behalf of the household. Information was sought from approximately 3,630 households and data was obtained from approximately 98% of these households.

5 Data items collected on water using appliances and facilities, garden water use and swimming pools and outdoor spas were only collected for the Perth Metropolitan Statistical Region (SR). This was primarily due to data requirements being required for the Perth Metropolitan SR only, as well as questionnaire timing restraints. Remaining data items were collected for all households in WA.

COVERAGE

6 Coverage rules were applied to ensure that each person was associated with only one dwelling and hence had only one chance of selection in the survey.

EFFECTS OF ROUNDING

7 Estimates in this publication have been rounded and discrepancies may occur between sums of the component items and totals.

ACKNOWLEDGMENT

8 ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated. Without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the *Census and Statistics Act, 1905*.

RELATED PUBLICATIONS

9 The ABS produces a wide range of publications concerning social, housing and

RELATED PUBLICATIONS *continued*

demographic statistics. Users may wish to refer to the following ABS publications which relate to the survey topic:

Domestic Water and Energy Use, New South Wales, October 2006. cat. no. 8621.1
Environmental Issues: People's Views and Practices, March 2006. cat. no. 4602.0
Domestic Use of Water and Energy, South Australia, October 2005. cat. no. 4618.4
Domestic Water Use, Western Australia, October 2003. cat. no. 4616.5.55.001
Domestic Water Use, New South Wales, October 2002. cat. no. 4616.1
Conservation of Energy, Water and the Environment, Perth Statistical Division, November 1992. cat. no. 4650.5

10 Current publications and other products released by the ABS are listed in the *Catalogue of Publications and Products* (cat. no. 1101.0). The Catalogue is available from any ABS office or the ABS web site <http://www.abs.gov.au>. The ABS also issues a daily *Release Advice* on the web site which details products to be released in the week ahead.

ADDITIONAL DATA AVAILABLE

In addition to the statistics provided in this publication, the ABS can produce customised tabulations on request. Subject to confidentiality and sampling variability constraints, tabulations can be produced from the survey by cross-classifying any of the following data items for the relevant survey populations.

DATA ITEMS

Dwelling characteristics

Area of usual residence
- Perth
- Balance of WA

Region of usual residence
- Central Metropolitan
- East Metropolitan
- North Metropolitan
- South West Metropolitan
- South East Metropolitan
- Lower Western WA
- Remainder-Balance of WA

Dwelling type
- Separate house
- Semi-detached, row or terrace house, townhouse
- Flat, unit or apartment
- Other

Sources of energy or fuel in dwelling
- Mains electricity
- Mains gas
- LPG bottled gas
- Wood
- Solar
- Oil
- Other

Age of dwelling
- Less than three years
- Three to less than fifteen years
- Fifteen years old or more

Whether dwelling has roof or ceiling insulation

Household characteristics

Tenure type
- Fully owned
- Being purchased
- Renting (public)
- Renting (other)
- Other

Household type
- Person living alone
- Couple only
- Couple with children
- Lone parent with children
- All other households

Household size
- 1 person household
- 2 person household
- 3-4 person household
- 5 or more person household

Household characteristics continued	Whether children in the household
	Children (at least one household resident aged 0-14 years)
	Without children (no household resident aged 0-14 years)
Cooling and heating	Whether household has a cooling unit
	Number of cooling units used
	One
	Two
	Three or more
	Type of cooling unit used most often
	Evaporative
	Refrigerated
	Reverse cycle
	Position of cooling unit used most often
	Split system
	Set in wall or window
	Ducted
	Portable
	Number of months cooling unit used most often is used
	Less than one month
	One month to less than three months
	Three months to less than six months
	Six months or more
	Whether household has a heater
	Number of heaters used most often
	One
	Two
	Three or more
	Type of heater used most often
	Electric
	Gas
	Reverse cycle air conditioner
	Wood
	Oil
	Other
	Whether gas heater (used most often) was portable unflued
	Number of months heater used most often is used
	Less than one month
	One to less than three months
	Three to less than six months
	Six months or more
Water sources	Whether household was connected to mains water supply
	Whether household had a rain water tank

Water sources continued	What the water from the rain water tank was used for Drinking water Watering the garden Food preparation Washing clothes Other uses inside the house Outside uses, other than watering the garden Other Water from rain water tank not used
	Whether household uses bore water
	Whether household shares a bore with other households or properties
	How many households or properties share this bore One other household or property Two or more other households or properties
Water heating	Energy source for hot water Mains electricity Mains gas LPG bottled gas Wood Solar Oil Other
	Type of hot water system Storage tank Instantaneous
	Type of booster for solar hot water system Electric booster Main gas booster LPG bottled gas booster Wood booster Not boosted Other
Water using appliances and facilities	Whether household has a washing machine
	Type of washing machine Top loading Front loading Other
	Whether household has a dishwasher
	Whether household connected to sewerage or septic tank
	Number of toilets used (inside and outside) None One Two Three Four or more
	Type of toilets Single flush only Dual flush only Both single and dual flush

Water using appliances and facilities continued

Number of single flush toilets used (inside and outside)
- None
- One
- Two
- Three
- Four or more

Number of dual flush toilets used (inside and outside)
- None
- One
- Two
- Three
- Four or more

Number of showers used (inside and outside)
- None
- One
- Two
- Three
- Four or more

Type of shower heads used
- Normal flow shower heads only
- Water efficient shower heads only
- Both normal and water efficient shower heads
- Type of shower head unknown

Number of normal flow shower heads that are used (inside and outside)
- None
- One
- Two
- Three or more

Number of water efficient shower heads that are used (inside and outside)
- None
- One
- Two
- Three or more

Number of baths used
- None
- One
- Two
- Three or more

Number of indoor spas used
- None
- One
- Two
- Three or more

Garden water use

Whether household has any gardens or lawns

Whether mulch was used on the garden in the last 12 months

Whether household has reticulation

Whether reticulation was automated

Garden water use continued

Type of reticulation control
- Automatic electronic system
- Manual tap timer
- Electronic tap timer
- Not automated or controlled
- Other

Use of reticulation
- Lawn watering
- Garden bed watering
- Pot plant or hanging basket watering
- Did not use reticulation system

Use of different reticulation zones when watering

Methods of watering garden beds and/or lawns by reticulation
- Sprinklers, dippers or pop-ups
- Sub-surface irrigation
- Other
- Did not water

Methods of watering garden beds and/or lawns other than by reticulation
- Hand held hose
- Watering can or container
- Sprinkler
- Soaker hose
- Sub-surface irrigation
- Any other method
- Did not water

Whether reused water in garden

Swimming pools and outdoor spas

Whether household has a swimming pool

Type of swimming pool
- In ground pool
- Above ground pool

Whether swimming pool had a cover

Use of pool cover in the warmer months
- Always
- Sometimes
- Rarely
- Never

Whether pool heated

Energy source used to heat pool
- Electricity
- Gas
- Solar
- Other

Whether household had an outdoor spa

Whether outdoor spa had a cover

Whether outdoor spa heated

Swimming pools and outdoor spas continued

Energy source used to heat outdoor spa
- Electricity
- Gas
- Solar
- Other

Electrical safety

Whether dwelling has electrical safety switches

Main reason electrical safety devices are not installed in dwelling
- Not home owner/not responsible
- Never thought about it
- Have not got around to it
- Don't consider necessary/important
- Too expensive to buy or install
- Will be installing one soon
- Other

FURTHER INFORMATION

For further information about additional data available on request, please contact Carolann Hoad on Perth 08 9360 5947.

ESTIMATION PROCEDURE

1 The survey weights are calculated to ensure that the survey estimates conformed to an independently estimated distribution of households (by number of adults and children within the household, and by part of the state).

2 The estimates were then obtained by summing the weights of households with the characteristic of interest. For example, an estimate of the total number of households living in a dwelling with heating is obtained by adding together the weight for each household in the sample living in a dwelling with heating. For a comparison between dwellings and households please refer to the Glossary.

RELIABILITY OF ESTIMATES

3 Estimates in this publication are subject to non-sampling and sampling errors.

Non-sampling errors

4 Non-sampling errors may arise as a result of errors in the reporting, recording or processing of the data and can occur even if there is a complete enumeration of the population. Non-sampling errors can be introduced through inadequacies in the questionnaire, non-response, inaccurate reporting by respondents, errors in the application of survey procedures, incorrect recording of answers, and errors in data entry and processing.

5 It is difficult to measure the size of the non-sampling errors and the extent of these errors could vary considerably from survey to survey and from question to question. Every effort was made in the design of this survey and in the development of survey procedures to minimise the effect of these errors.

Sampling errors

6 Sampling error is the difference between the published estimate, calculated from a sample of dwellings, and the value that would have been produced if all dwellings had been included in the survey.

ESTIMATES OF SAMPLING ERRORS

7 One measure of the likely difference between a survey estimate and the 'true' population value is given by the Standard Error (SE). There are about two chances in three (67%) that a survey estimate is within one SE of the figure that would have been obtained if all households had been included in the survey, and about nineteen chances in twenty (95%) that the estimate lies within two SEs.

8 Due to space limitations, it is impractical to print the SE of each estimate in the publication. Instead, a table of SEs is provided to enable readers to determine the SE for an estimate based on the size of that estimate (see SE table below). The SE table is derived from a mathematical model, which is created using the data collected in the survey. The figures in the SE table will not give a precise measure of the SE for a particular estimate but will provide an indication of its magnitude.

9 Linear interpolation can be used to calculate the SE of estimates falling between the sizes of estimates presented in the table below, using the following general formula:

$$SE \text{ of estimate} = \text{lower } SE + \left[\left(\frac{\text{upper } SE - \text{lower } SE}{\text{upper estimate} - \text{lower estimate}} \right) \times (\text{estimate} - \text{lower estimate}) \right]$$

10 An example of the calculation and use of SEs is as follows. Table 2 shows that the estimated number of households in WA that lived in a separate house was 637,100. Since this estimate is between 500,000 and 1,000,000, the SE table shows that the SE will lie between 8,331 and 9,669. The approximate value of the SE can be interpolated as follows:

$$SE \text{ of estimate} = 8{,}331 + \left[\left(\frac{9{,}669 - 8{,}331}{1{,}000{,}000 - 500{,}000} \right) \times (637{,}100 - 500{,}000) \right]$$

$$= 8{,}698 \text{ (rounded to the nearest whole number)}$$

ESTIMATES OF SAMPLING ERRORS *continued*

11 Therefore, there are about two chances in three that the true number of persons in WA that lived in a separate house lies between 628,402 and 645,798, and there are about nineteen chances in twenty that the value lies between 619,704 and 654,496.

12 The SE can also be expressed as a percentage of the estimate, known as the Relative Standard Error (RSE). The RSE is calculated by dividing the SE of an estimate by the estimate, and expressing it as a percentage. That is:

$$RSE = \frac{SE}{estimate} \text{ x } 100$$

13 For example, the RSE for the number of households that lived in a separate house is:

$$RSE = \frac{8,698}{637,100} \times 100$$
$$= 1.4\%$$

14 In general, the size of the SE increases as the size of the estimate increases. Conversely, the RSE decreases as the size of the estimate increases. Very small estimates are thus subject to high RSEs and are considered unreliable for general use.

15 Proportions and percentages formed from the ratio of two estimates are also subject to sampling errors. The size of the error depends on the accuracy of both the numerator and the denominator. A formula to approximate the RSE of a proportion is given below. This formula is only valid when the numerator is a subset of the denominator.

$$RSE\left(\frac{x}{y}\right) = \sqrt{\left[RSE(x)\right]^2 - \left[RSE(y)\right]^2}$$

16 Published estimates are sometimes used to calculate the difference between two survey estimates. Such estimates are also subject to sampling error. The sampling error of the difference between two estimates depends on the SE of each estimate and the relationship (correlation) between them. The approximate SE of the difference between two estimates may be calculated using the following formula:

$$SE(x - y) = \sqrt{\left[SE(x)\right]^2 + \left[SE(y)\right]^2}$$

17 While this formula will only be exact for differences between separate and uncorrelated characteristics or subpopulations, it is expected to provide a good approximation for all differences likely to be of interest in this publication.

18 For example, Table 2 shows that an estimated 136,800 households in WA lived in a dwelling with solar energy and 546,200 households lived in a dwelling with mains gas. This equates to a difference of 409,400 households. The standard error for each estimate is calculated using linear interpolation (as described above) and then the standard error on the estimate of the difference is calculated as:

$$SE(x - y) = \sqrt{\left[5,674\right]^2 + \left[8,455\right]^2}$$
$$= 10,182 \text{ (rounded to the nearest whole number)}$$

ESTIMATES OF SAMPLING ERRORS *continued*

19 Therefore, there are about two chances in three that the true difference between the number of households in WA living in a dwelling with solar or mains gas energy sources lies between 399,218 and 419,582, and there are about nineteen chances in twenty that the value lies between 389,036 and 429,764.

STANDARD ERRORS ON ESTIMATES OF WA HOUSEHOLDS, Domestic Use of Water and Energy, October 2006

Size of estimate	*Standard Error* no.	*Relative Standard Error* %
1,000	501.1	50.1
1,500	652.7	43.5
2,000	782.0	39.1
2,500	896.1	35.8
3,000	999.1	33.3
3,500	1 093.4	31.2
4,000	1 180.7	29.5
5,000	1 338.8	26.8
8,000	1 724.8	21.6
10,000	1 935.0	19.3
20,000	2 705.9	13.5
30,000	3 242.4	10.8
50,000	4 007.1	8.0
100,000	5 189.9	5.2
200,000	6 503.5	3.3
300,000	7 308.4	2.4
500,000	8 330.5	1.7
1,000,000	9 668.5	1.0
2,000,000	10 856.8	0.5

20 Where differences between data items have been noted in the Summary of Findings, they are statistically significant unless otherwise specified. In this publication a statistically significant difference is one where there are nineteen chances in twenty that the difference noted reflects a true difference between population groups of interest rather than being the result of sampling variability.

GLOSSARY

Area of usual residence	A person's area of usual residence as classified by the Statistical Region structure in the Australian Standard Geographical Classification (ASGC). The classification divides WA into two Major Statistical Regions – the Perth Statistical Division and the Balance of WA. For further information refer to *Australian Standard Geographical Classification* (cat. no. 1216.0)
Bore water	A source of groundwater brought to the surface by pump or windmill. Households can access bore water from a single household bore (used by one household only) or as a shared bore (more than one other adjoining households or properties).
Brick veneer	Brick veneer walls consist of a single external layer of brickwork, with a lined stud frame inside.
Dual flush toilet	A toilet that allows the volume in the cistern to be half or fully flushed. It may have two separate buttons, or one button or lever that is pushed down for full flush and up for half flush.
Evaporative air conditioner	These air conditioners draw outdoor air through a water filtration system whereby some heat from the air is absorbed through water evaporation. The cooled air is then redirected indoors.
Flat, unit or apartment	All dwellings in blocks of flats, units or apartments. These dwellings usually share a common entrance foyer or stairwell. This category also includes flats attached to houses such as granny flats, and houses converted into two or more flats.
Flued gas heater	A flued gas heater is connected to a chimney allowing excess gas to be vented from a room. It usually cannot be moved, such as being fixed into a fire place.
Front loading washing machine	An automatic washing machine that is loaded from the front.
Gardens or lawns	Private gardens or lawns attached to a dwelling.
Hot water system	A device used for heating water in a dwelling.
Household	A group of residents of a dwelling who share common facilities and meals or who consider themselves to be a household. It is possible for a dwelling to contain more than one household, for example, where regular provision is made for groups to take meals separately and where persons consider their household to be separate.
Instantaneous hot water system	Instantaneous hot water systems heat only the water required and do not use a storage tank.
Mains water supply	Water supplied to a user often through a non-natural network (piped/open channel or other carrier), and where an economic transaction has occurred for the exchange of water. Sometimes referred to as town water supply.
Mulch	Material that is put on the surface of the soil in gardens in order to reduce water evaporation and control weeds. Examples of types of mulch include grass clippings, wood chips, straw, hay and newspaper.
Normal flow shower head	A shower head that does not have a water efficient or low flow device fitted to it.
Portable air conditioner	A portable air conditioner can be moved from one location to another. It is often on wheels.
Portable unflued gas heater	A portable unflued gas heater is an appliance connected to the wall via a hose with a bayonet fitting. It may also have a power connection.
Rain water tank	A tank used to store rain water.
Refrigerated air conditioner	These air conditioners cool indoor air by blowing it over a refrigeration coil and then redirecting it indoors. The refrigeration coil is cooled externally by a fan or by natural convection using outdoor air.

Region of usual residence	A person's region of usual residence as classified by the Statistical Region (SR) structure in the ASGC. It divides WA into seven SRs for the purpose of providing regional statistical output. For further information refer to *Australian Standard Geographical Classification* (cat. No. 1216.0) and I*nformation Paper: Regional Labour Force Statistics, September 1997* (cat. No. 6262.0).
Reticulation system	A reticulation system provides a complete watering supply to your garden. It usually consists of a network of underground pipes connected to sprinklers.
Re-use of water	Includes a broad range of practices undertaken by households to re-use water from in and around the house for the purpose of watering the garden. Examples could include using sophisticated recycled water systems, collecting water from running a shower, or pouring leftover water from water bottles and vases onto gardens or lawns.
Reverse cycle air conditioner	Reverse cycle air conditioners are a type of refrigerated air conditioner that can also be used for space heating. The temperature can be varied between warm and cool settings.
Roof or ceiling insulation	Roof or ceiling insulation can help keep the home at a constant temperature by minimising heat transfer from the roof . There are a variety of products available, including fibreglass, rockwool and natural wool based batts. All have different acoustic and thermal insulation properties.
Safety switches	A device which will switch off the electrical power if a short circuit is detected. They are usually solid state electronic devices and can provide a greater level of protection from faulty electrical wiring or appliances than is afforded by a common fuse. Normal fuses, circuit breakers and surge protectors are not included. It is identifiable by a 'test' button.
Semi-detached, row or terrace house, townhouse	A dwelling that is either attached in some structural way to one or more dwellings or is separated from neighbouring dwellings by less than half a metre (includes duplexes). It has its own private grounds and no other dwelling above or below it.
Separate house	A house that stands alone in its own grounds separated from other dwellings by at least half a metre. It may have a flat attached to it, such as a granny flat or converted garage (the flat is categorised under *Flat, unit or apartment*).
Single flush toilet	An older style toilet that has one button or lever that flushes the full volume of the cistern.
Soaker hose	A hose with small holes along its length that lets water spray out in a fine mist or drip out.
Split system air conditioner	Split system air-conditioning units comprise internal and external units linked by refrigerant pipes. Indoor units can be wall mounted or ceiling mounted. The outdoor unit can be roof mounted, wall mounted or fixed directly to the ground. Besides being more energy efficient than traditional wall or window mounted units, they also reduce noise levels inside the house.
Sub-surface irrigation	Sub-surface irrigation waters through underground hose(s), which drip water directly to plant root systems. This method has the advantage of directly watering plants where it is most needed and eliminates the problem of water evaporation.
Swimming pool	A swimming pool situated in the grounds of a private dwelling.
Tenure type	Describes the legal right a person has to occupy a dwelling.
Top loading washing machine	An automatic washing machine that is loaded from the top.
Water efficient shower head	A water saving device that restricts water flow through shower heads. Sometimes referred to as a low flow shower head.

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