

Perth Residential Water Use Study 2008/09



Water Industry Policy Branch
Water Corporation
December 2010

Perth Residential Water Use Study 2008/09

§ Context

§ Results

§ Key insights

§ Further research

§ Next steps



Need for the research

- § WA's drying climate
- § Population growth
- § Regulation
- § Programs
- § Change in urban form



Research Methodology

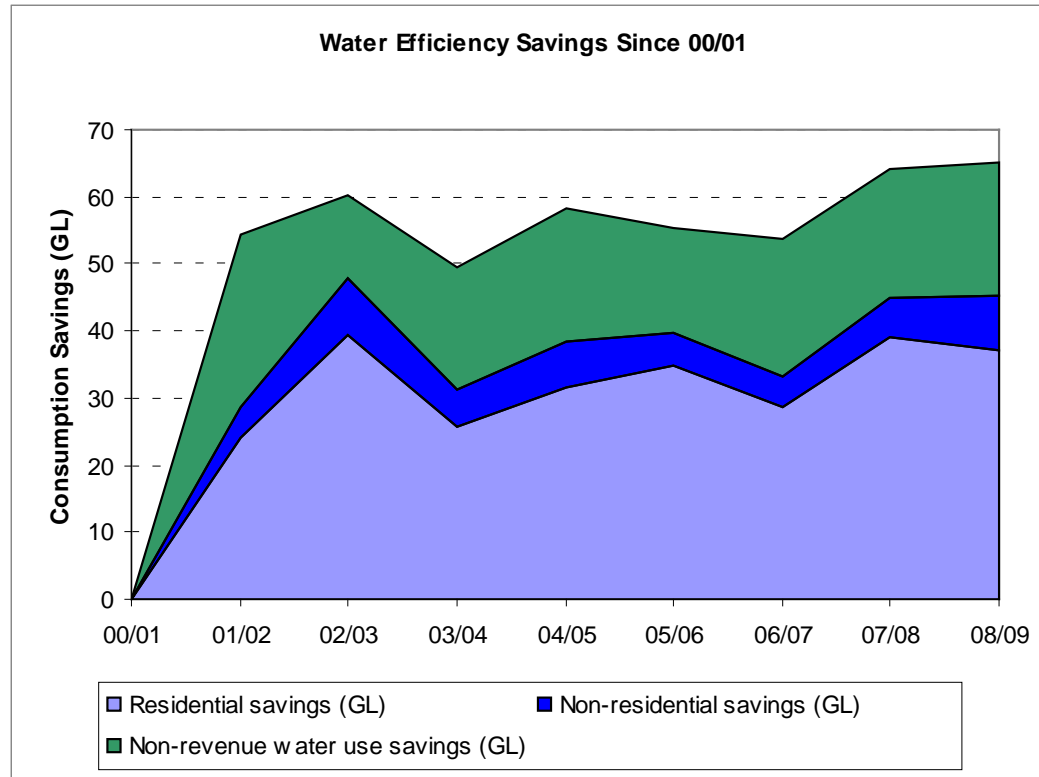
- § Recruitment of participants
 - § 1868 households
- § Completion of
 - § water use audits
 - § special meter reads
 - § provision of raw data
- § Data analysis
- § Published report



Sample characteristics

	Houses	Multi-Residential	Total
% of sample	74%	26%	100%
PRWUS sample use (kL/hh/yr)	272.8	204.4	254.9
All metropolitan use (kL/hh/yr)	300.4	174.1	276.8
PRWUS variation	- 9.2%	+ 17.4%	- 7.9%

Perth water savings – 2008 / 09



Total savings since 2000 / 01:

§ 65 GL pa (per person)

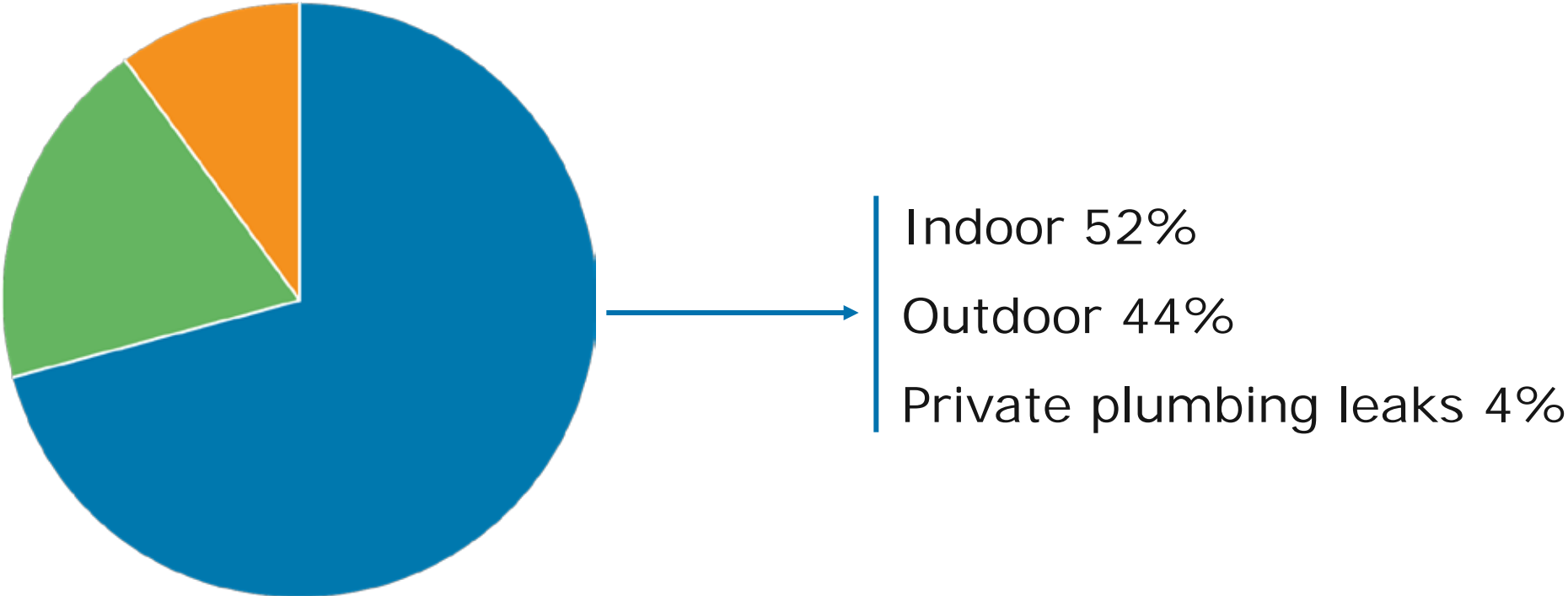
§ 22% per person reduction

Residential since 2000 / 01:

§ 37 GL pa (per person)

§ 18% per person reduction

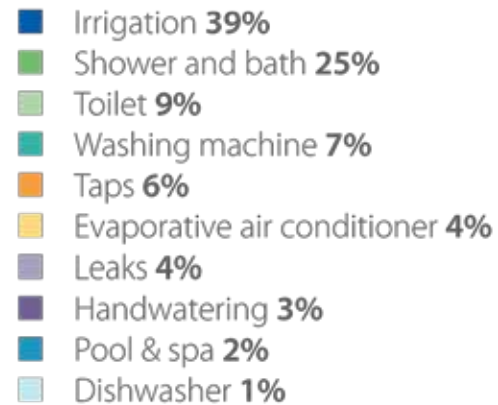
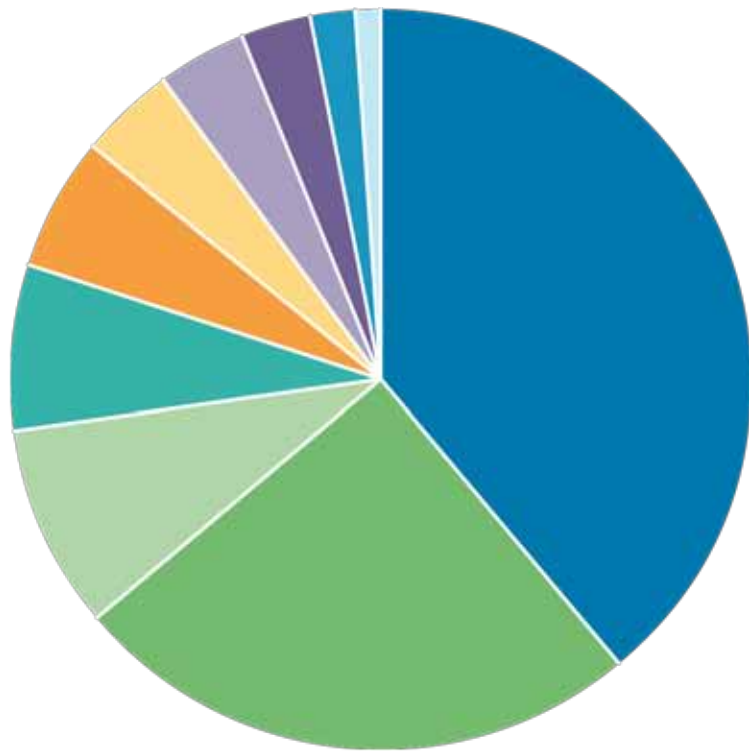
Overall residential use, Perth



- Residential **71%**
- Non-residential **19%**
- Non-revenue **10%**

Scheme water use by sector

Average Perth residential scheme water use

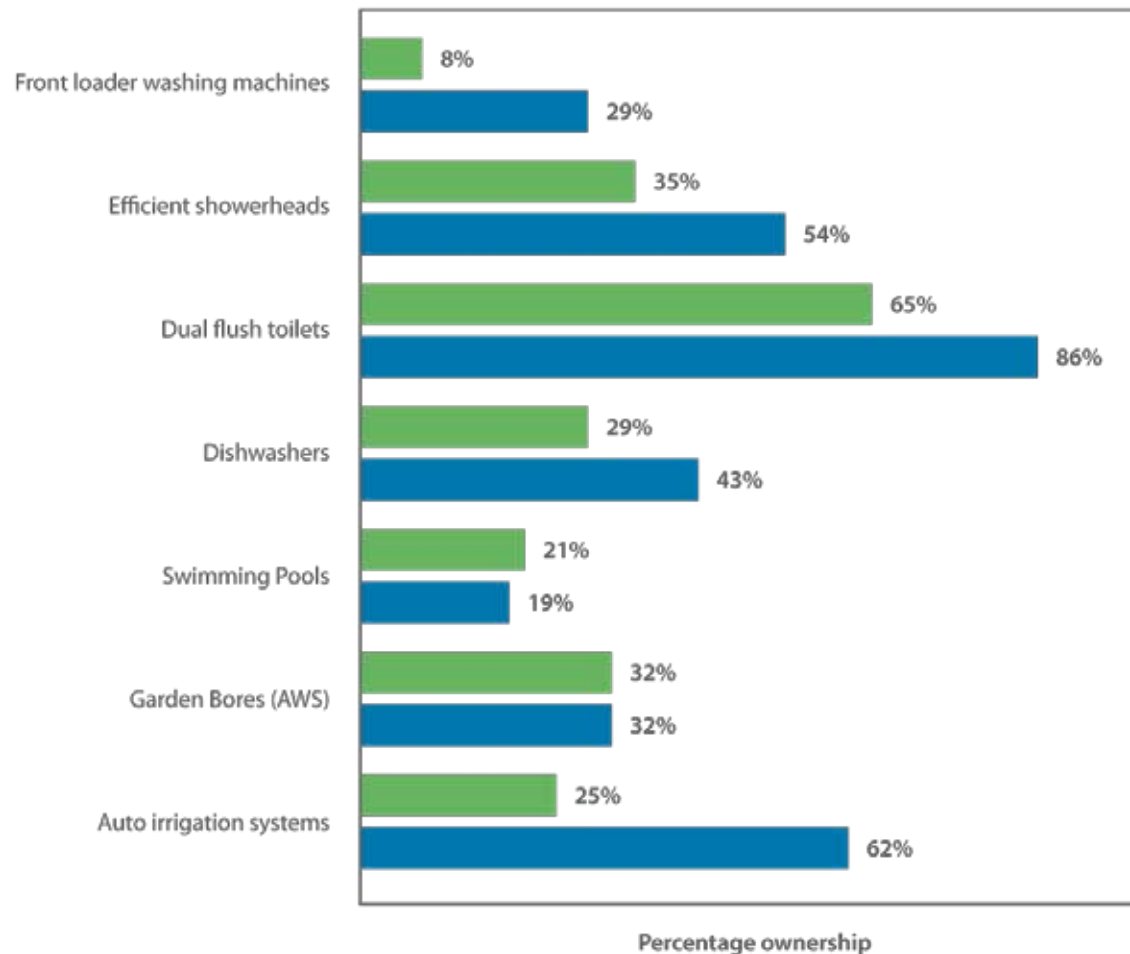


Average Perth residential water use, by area (%)

§ Average total consumption – 277 kL/yr

§ 106kL / person / yr

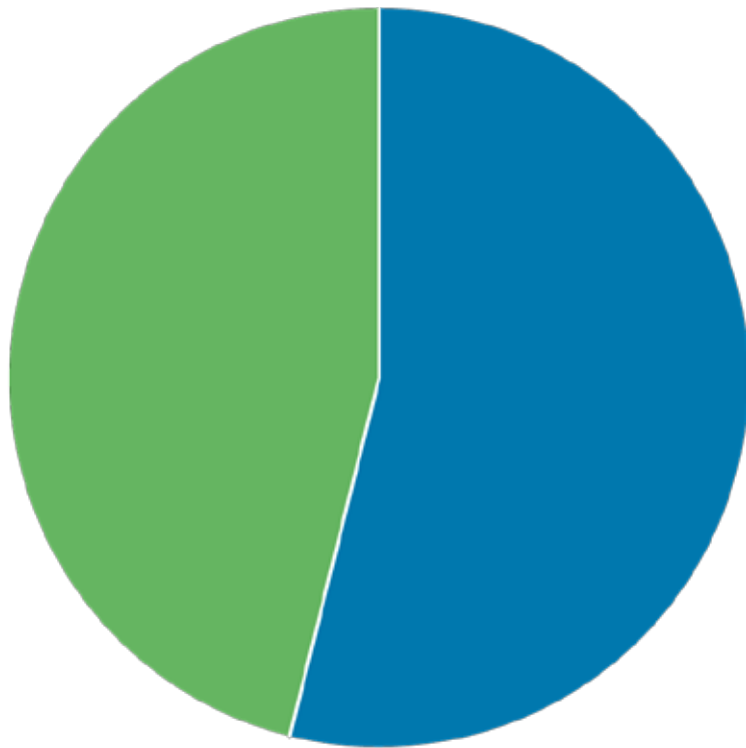
Appliance ownership – 20 year history



■ DWUS 1998/2001
■ PRWUS 2008/2009

Appliance Ownership - 10 Year History

Indoor fixtures - Showers



■ Efficient **54%**
■ Standard **46%**

Showerhead ownership

No. of showers
(per week)

7.12

Duration

6.7 mins

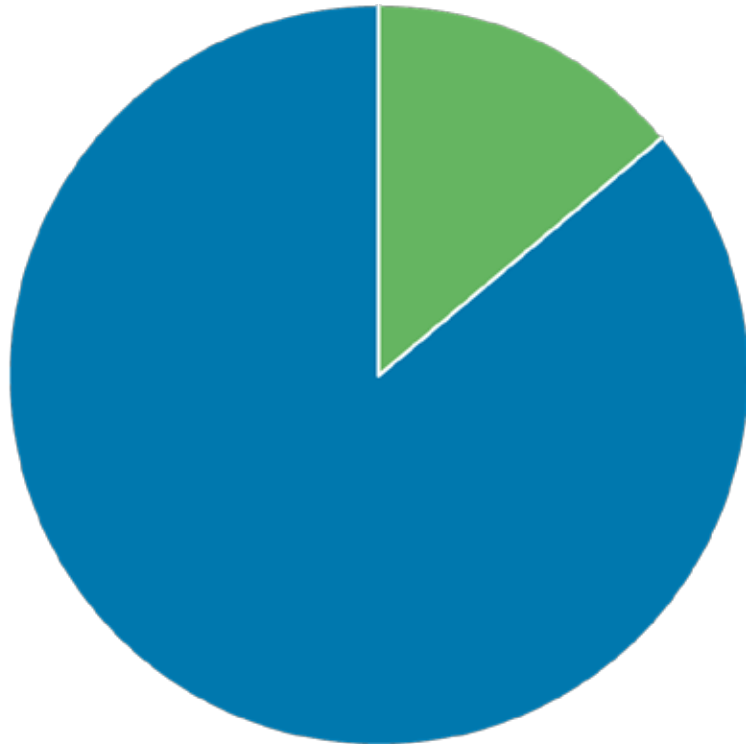
Flow rate

10 L/min

Average (per
person/year)

23 kL

Indoor fixtures - Toilets

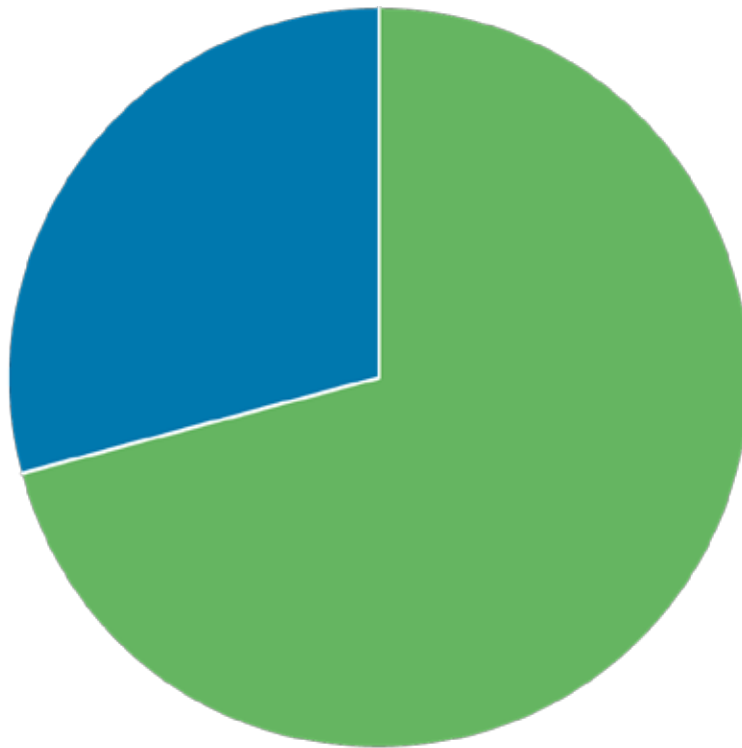


■ Dual Flush **86%**
■ Single Flush **14%**

Toilet ownership

No. of flushes (per person per day)	5
Flush rate	5.53 L/flush
Average (per person/year)	10 kL

Indoor appliances - Washing machines



■ Top Loaders **71%**
■ Front Loaders **29%**

Washing machine ownership

No. of loads
(per week)

4.1 (top loaders)
5.8 (front loaders)

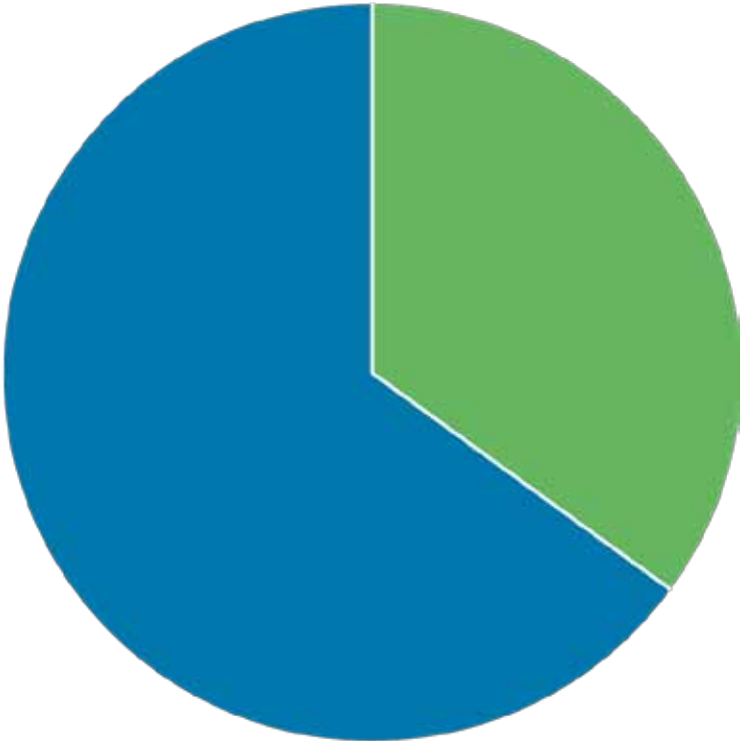
Avg water use
(1 load per week)

5.8 kL/yr (top loaders)
3.5 kL/yr (front loaders)

Average (per
person/year)

8 kL

Cooling - Evaporative air conditioners

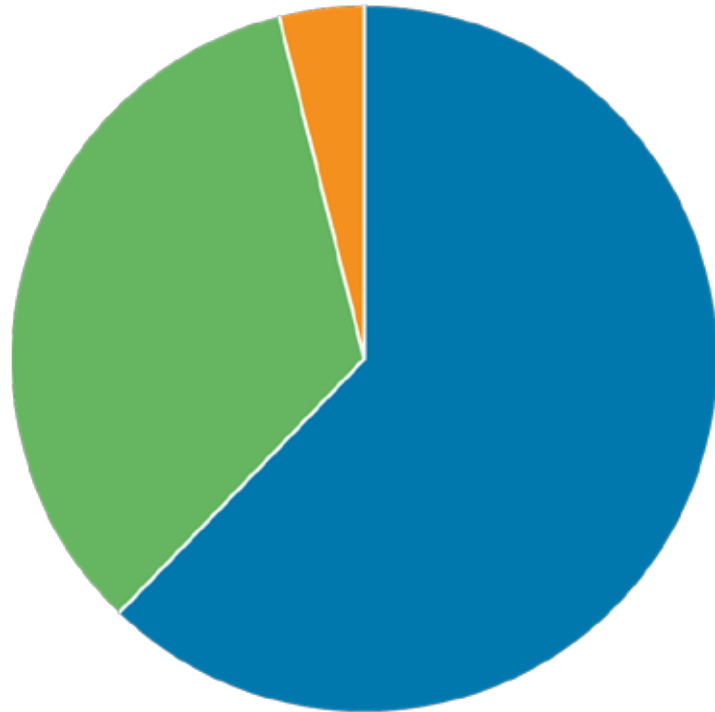


- Houses without Evaporative AC **65%**
- Houses with Evaporative AC **35%**

Evaporative air conditioner ownership

Water use	90 L /hour
Average (per person/year)	4 kL

Outdoor water use – Irrigation (scheme)



■ Automatic **62%**
■ Manual **34%**
■ Tap Timer **4%**

Irrigation control type

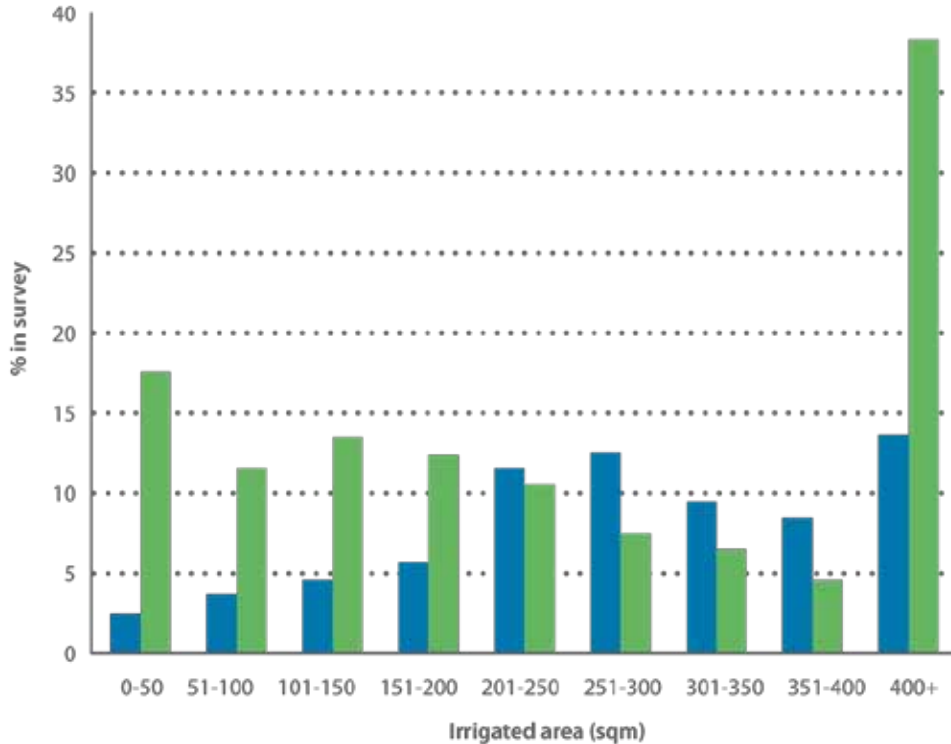
Households using
scheme water for
irrigation

68%

Average per
person/year

41 kL

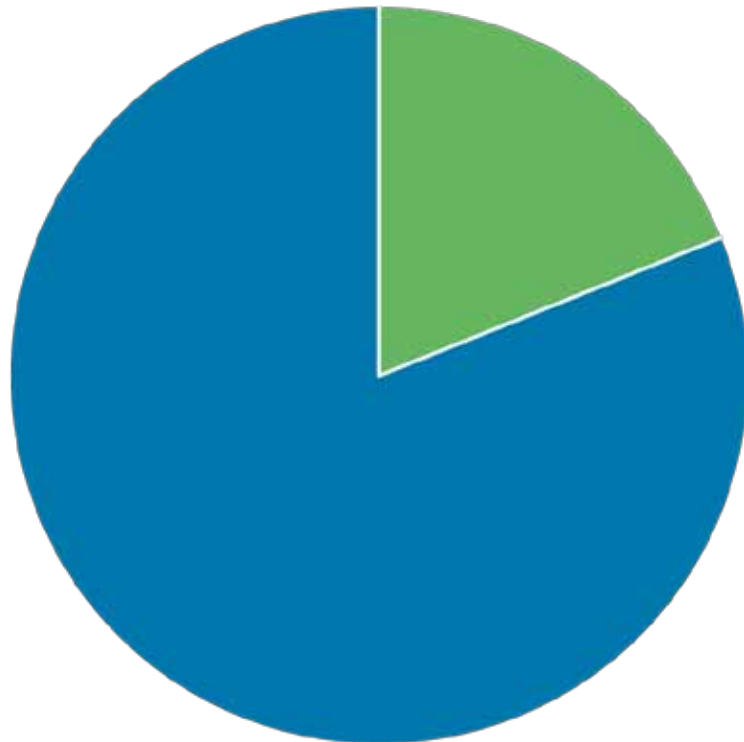
Outdoor water use – Irrigated area



■ Scheme
■ Bore
 Irrigated area

Average irrigated area (sq m)	235
Average irrigated area – scheme (sq m)	213
Average irrigated area – bore (sq m)	370

Outdoor water use - Swimming pools



- Households without a pool **81%**
- Households with a pool **19%**

Swimming pool ownership

Average (per person/year)

2 kL

Pool cover ownership

34%

Plumbing leaks



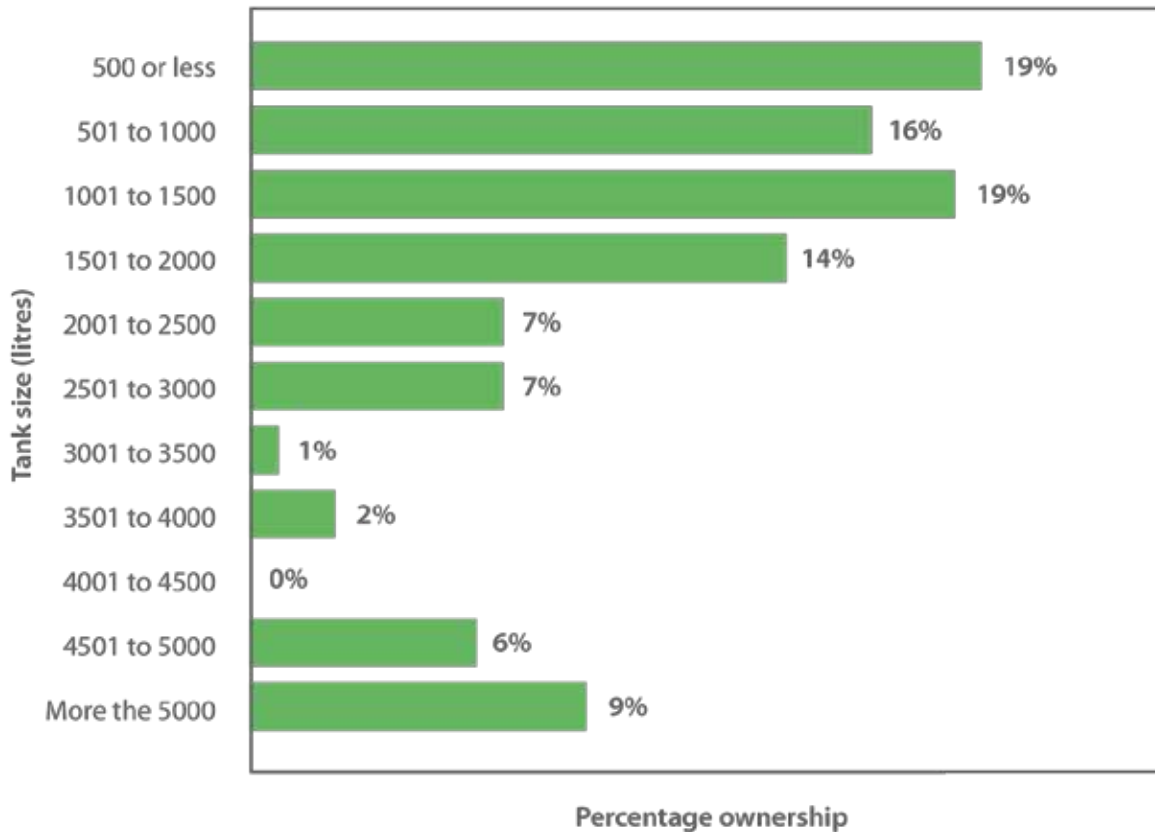
Households with
continuous leaks

17%

Average water loss
(per person/year)

4 kL

Alternative water sources – Rainwater Tanks



Tank ownership

8%

Percentage of these plumbed in for internal uses

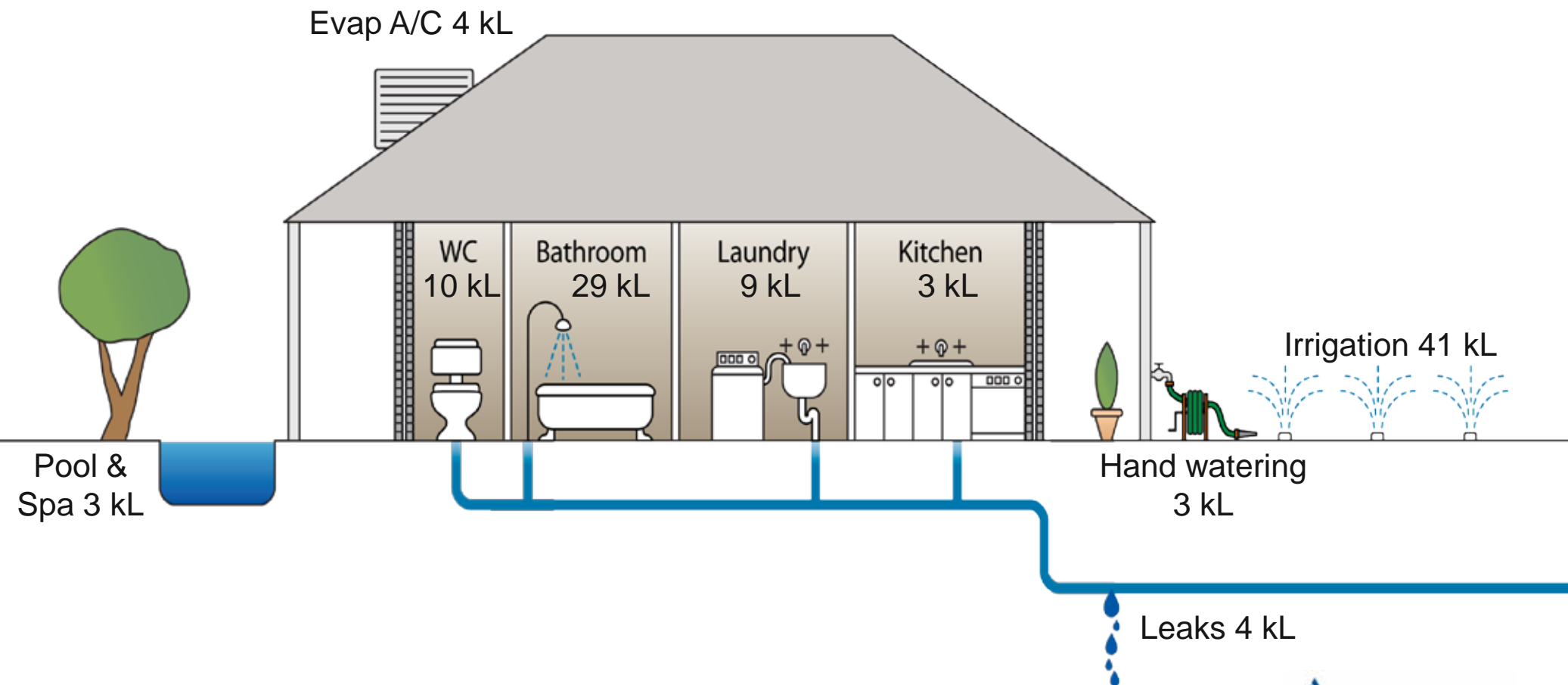
5%

Rainwater tank size

Annual residential scheme water use (houses)

2008/09

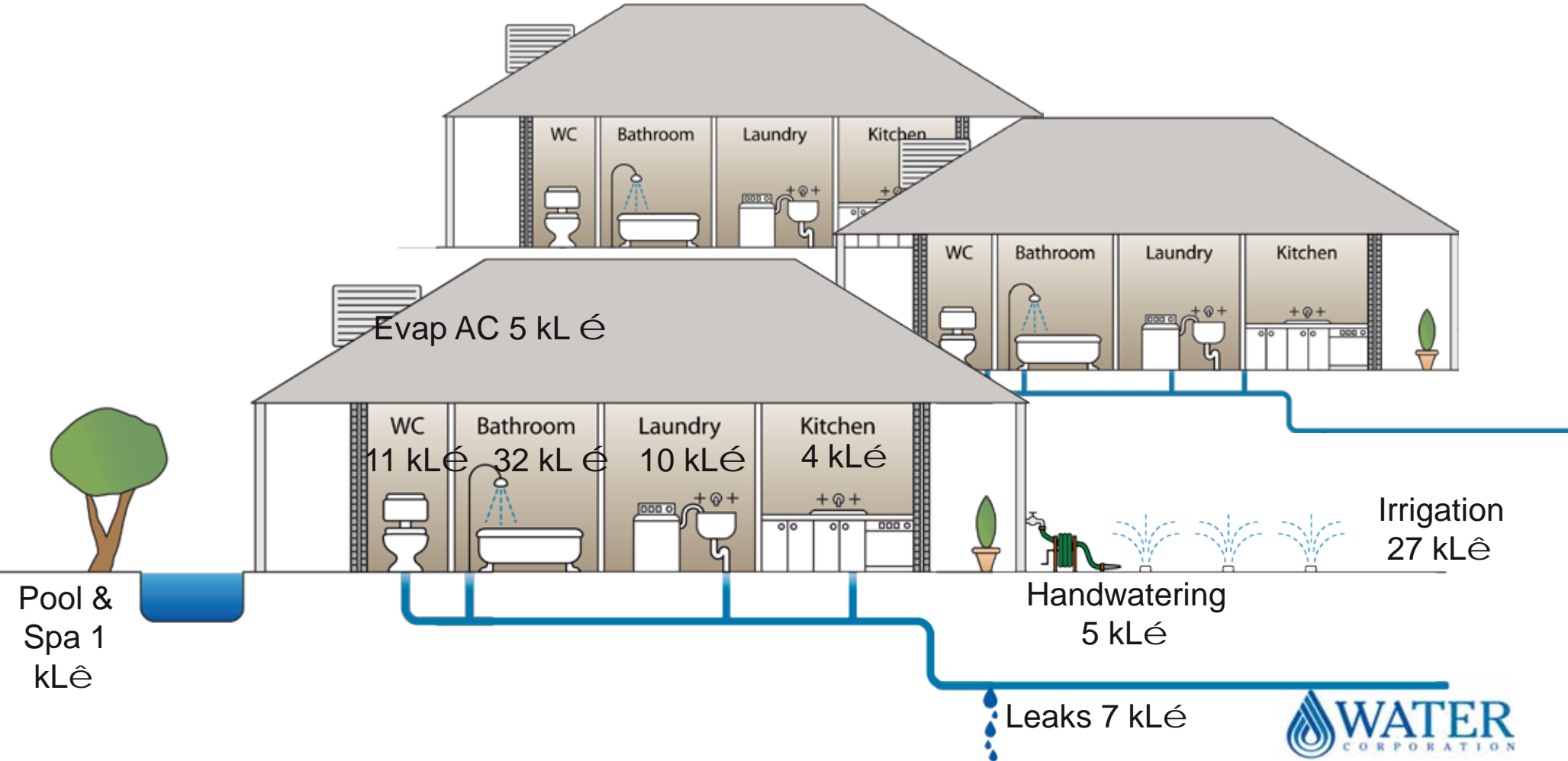
Average total house consumption = 106 kL/person /yr



Annual scheme water use (multi-residential)

2008/09

Average total multi-residential consumption = 102kL/person/year



Key insights - overall

Total residential use
Perth

52% indoors
44% outdoors
4% leakage

Reduction in per person
residential water use

From 128 kL in 2000/01 to 106 kL in 2008/09

Indoor savings

Mainly through
§ behavioural change
§ water efficient appliances / rebates
§ Building Codes

Outdoor savings

Mainly through
§ 2 day per week sprinkler rosters
§ smaller irrigated areas
§ evidence of seasonal watering

Multi-residential
properties

§ **Use 7% less water per person**
§ Smaller savings due to smaller household size

Focus for water efficiency programs

§ Changing behaviour

- § Seasonal adjustment of irrigation systems
- § Reduce irrigation areas of garden
- § Increase waterwise plants
- § Keep focus on reducing shower time
- § Use of pool covers
- § Identifying leaks

§ Technological change

- § Greater use of flow control valves and 3 star WELS showerheads
- § Replacing single flush with dual flush toilets
- § Increasing number of pool covers
- § Increasing front loading washing machines
- § WELS program
 - § More products (irrigation equipment)
 - § Minimum standards
- § Pressure management



Further research and collaboration

Evaporative air conditioners

- § Partner with energy sector
- § Targeted research

Private leaks

- § Targeted research

Partnering with Dept of Water on irrigation

- § Include garden bores, grey water systems & rainwater tanks

Opportunity for WSAA

- § Explore a national approach to residential end use studies

