7.1 A8—Water main breaks (per 100km of water main)

7.1.1 Introduction

This indicator reports the total number of breaks, bursts, and leaks in all distribution system mains (including both potable and nonpotable water mains), but excludes breaks associated with headworks and transfer mains. It provides a partial indication of the customer service provided and the condition of the network.

The number of main breaks is influenced by various factors, including soil type, rainfall, and pipe material, as well as the age and condition of the network.

Both median and mean results reported in 2013–14 support the observation that there is a relationship between utility size and mains breaks, with smaller utilities reporting fewer breaks per 100 km.

In 2013–14, 32 utilities reported an increase in the number of water main breaks per 100 km of water main compared with 2012–14, and 31 reported a decrease (Table 7.1). The national median for this indicator (Figure 7.1) has shown a steady decline since 2007–08 when, during the peak of the drought, breaks increased significantly.

Table 7.1 Overview of results: A8 (per 100 km of water main)[1]

Size group	Range		Number of utilities with increase/decrease from 2012–13		Median		% change in the median from 2012–13
	High	Low	Increase	Decrease	2012–13	2013–14	
100,000+ connected properties	51	6	4	8	28†	30†	6%
	Yarra Valley Water	Unitywater					
50,000–100,000 connected properties	29	13	5	6	19	22	18%
	Coliban Water	Western Water					
20,000–50,000 connected properties	60	3	10	8	10	10	4%
	GWMWater	Coffs Harbour					
10,000–20,000 connected properties	48	2	12	10	11	10	-9%
	South Gippsland Water	Queanbeyan					
All size groups (national)	60	2	31	32	13†	12†	–6%
	GWMWater	Queanbeyan					

Table notes

[1] Median water main breaks (per 100 km of water main) is calculated using data from all utilities (dual and single service providers) who reported data for A8 in both 2012–13 and 2013–14.

† As a result of changes to reporting boundaries for SA Water, the 2012–13 main breaks uses the main length weighted average of data for metropolitan Adelaide, Whyalla, and Mount Gambier, while the 2013–14 figure uses whole of SA Water data.

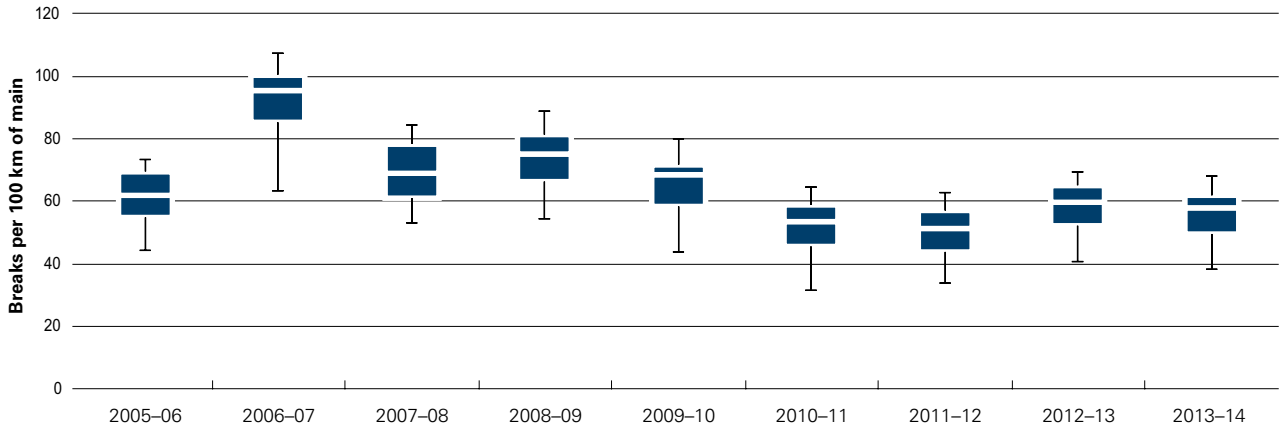

Figure 7.1 Summary of results: A8 (per 100 km of water main), 2005–06 to 2013–14 (per 100 km of water main)

7.1.2 Results and analysis

100,000+ group

Figure 7.2 presents breaks per 100 km of water main for this group over the last three reporting years. In 2013–14, four utilities reported increases and eight reported decreases compared with 2012–13.

Yarra Valley Water reported the highest number of breaks in 2013–14 (51 per 100 km of water main), down 3% from the previous year. The largest decreases were reported by ACTEW (42%) and Barwon Water (30%).

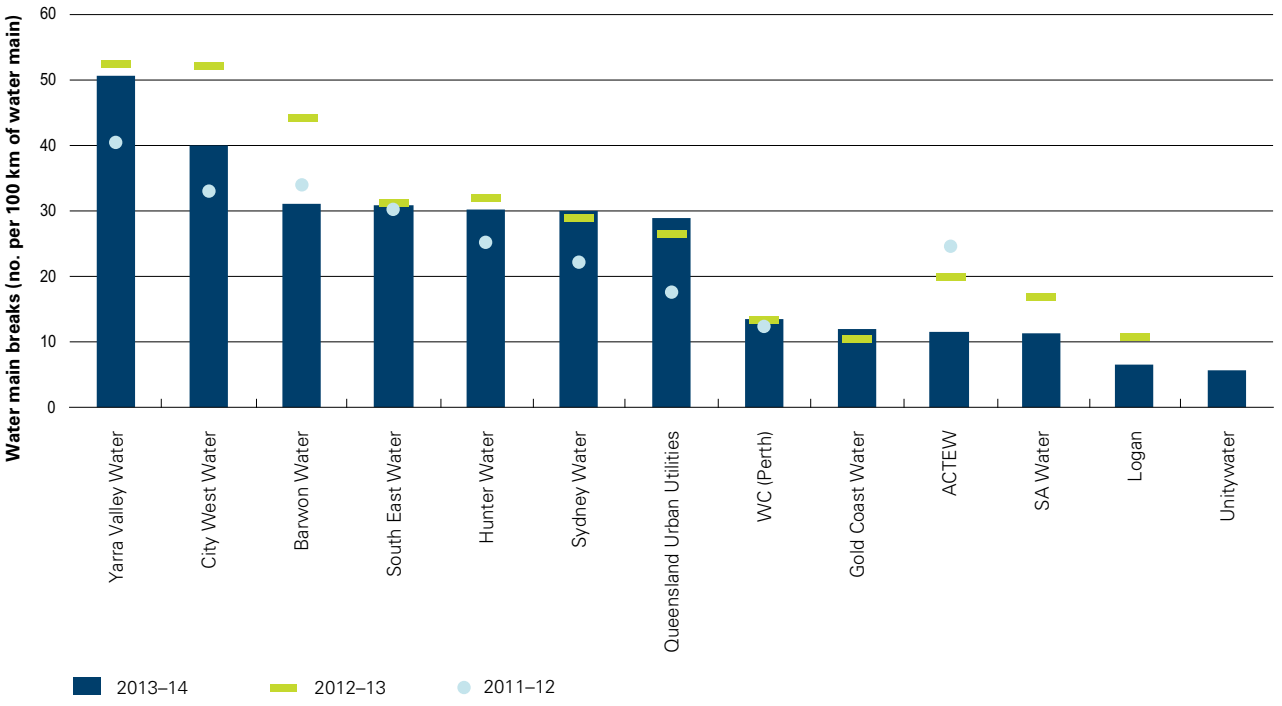

Figure 7.2 A8, 2011–12 to 2013–14 (per 100 km of water main), for utilities with 100,000+ connected properties

50,000–100,000 group

Within this group, five reported increases in the number of breaks per 100 km of water main in 2013–14 and six reported decreases (Figure 7.3). Overall, the median for the group increased from 19 breaks in 2012–13 to 22 in 2013–14 (18%).

Wyong reported the greatest increase (68%) from 2012–13 to 2013–14, continuing the trend from previous reporting years. Coliban Water reported the highest number of water main breaks (29) for this group and while this was a 7% increase on 2012–13 the number of breaks remains below its high of 2008–09.

The most significant decrease (29%) was reported by Western Water followed by Gippsland Water (25%) and Toowoomba (25%). Toowoomba's decrease was attributed to improvements in the scheduling of maintenance.

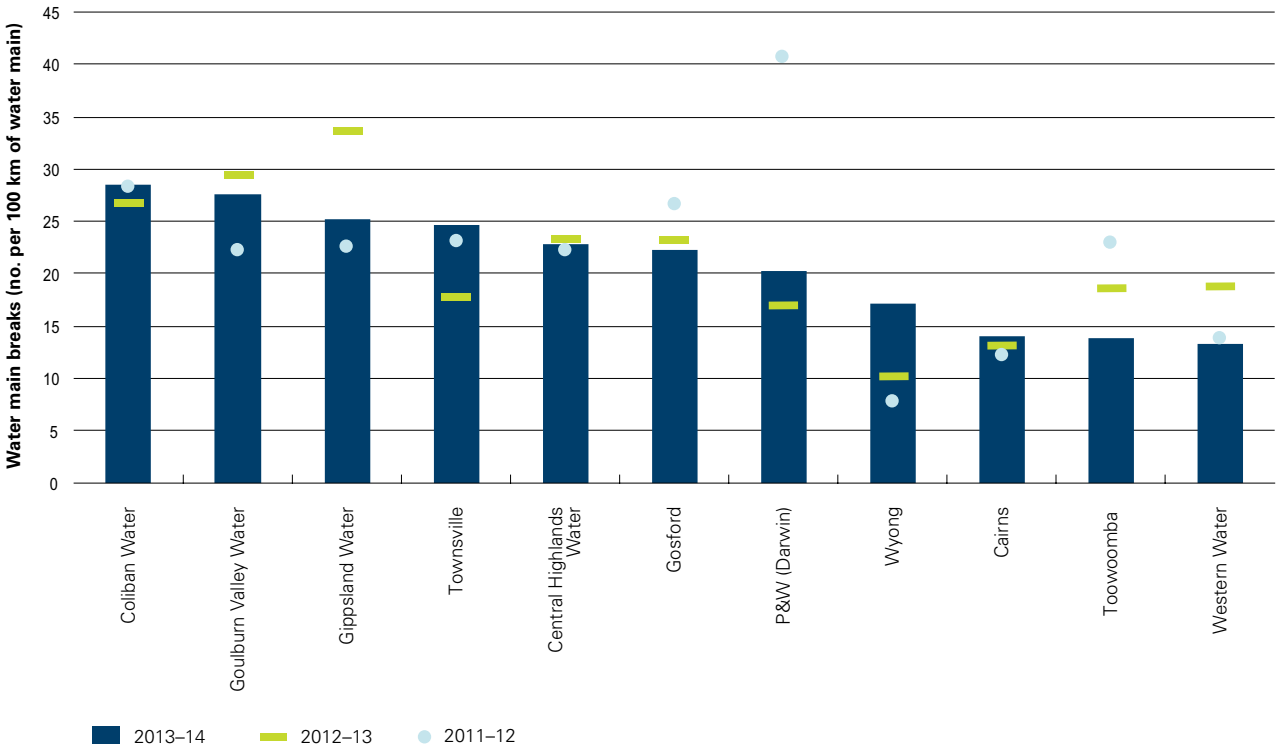

Figure 7.3 2011–12 to 2013–14 (per 100 km of water main), for utilities with 50,000–100,000 connected properties

20,000–50,000 group

There was wide variability in the number of breaks for the utilities in this group, with reported data spanning a range between 3 and 60 breaks per 100 km of water main (Figure 7.4). Of the 18 utilities, 10 reported increases in main breaks. The largest increase was reported by Port Macquarie Hastings, from 3 breaks in 2012–13 to 15 breaks in 2013–14. Tweed Shire Council also reported a large increase (82%) from 4 breaks in 2012–13 to eight breaks in 2013–14.

Other utilities which reported increases included Wide Bay Water (37%) and Albury (34%), as well as Riverina Water (W) and Fitzroy River Water, which both recorded a 33% increase. The data trends for Riverina Water and Fitzroy River Water show an increase in total number of main breaks over the last four years for both utilities.

The most significant decreases were reported by Coffs Harbour (67%) followed by WC (Mandurah) (54%) and North East Water (38%).

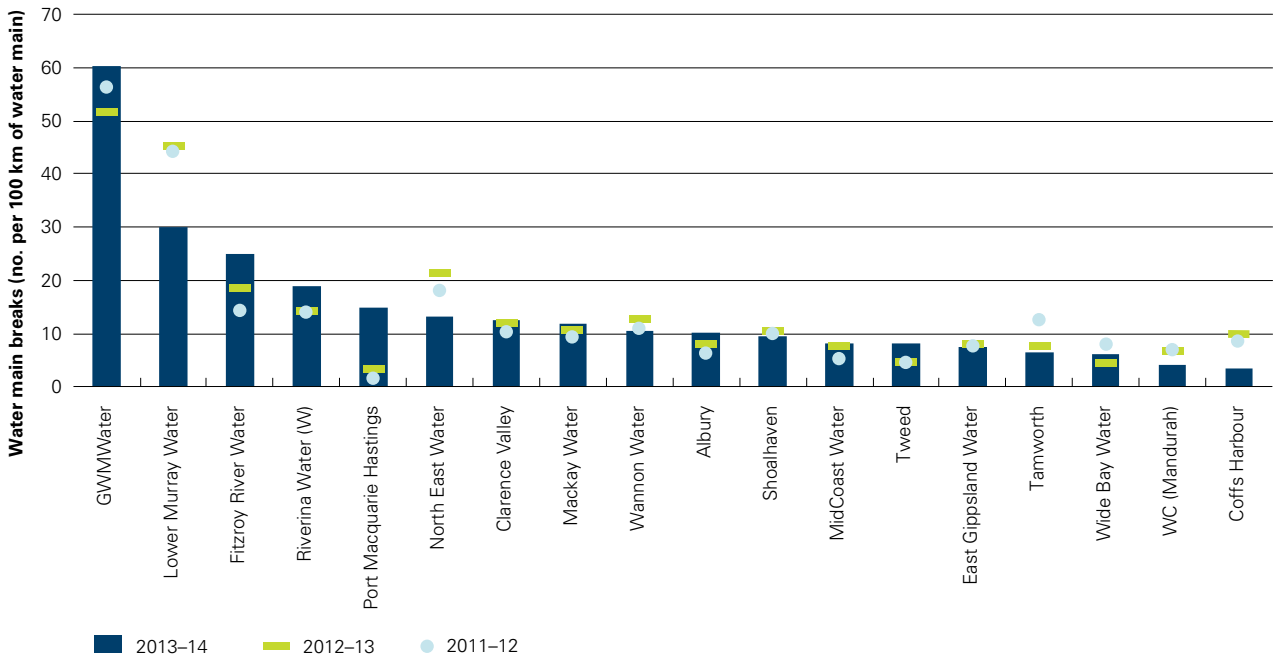

Figure 7.4 A8, 2011–12 to 2013–14 (per 100 km of water main), for utilities with 20,000– 50,000 connected properties

10,000–20,000 group

This group reported a wide variation in the number of breaks per 100 km of water main for 2013–14 (Figure 7.5). Of the 23 utilities that reported in both 2012–13 and 2013–14, 12 reported increases in water main breaks. The median for this size group was 11 in 2013–14, representing a 9% decrease from 2012–13.

The largest increase was reported by Wingecarribee (115%), followed by Bathurst (67%), and Power and Water (Alice Springs) (52%). South Gippsland Water reported the highest number of water mains breaks (48) which was a 30% increase from 2012—13.

The largest decrease was reported by Queanbeyan (66%), followed by Goldenfields Water (R) (50%), Ballina (48%) and Westernport Water (41%) (Figure 7.5).

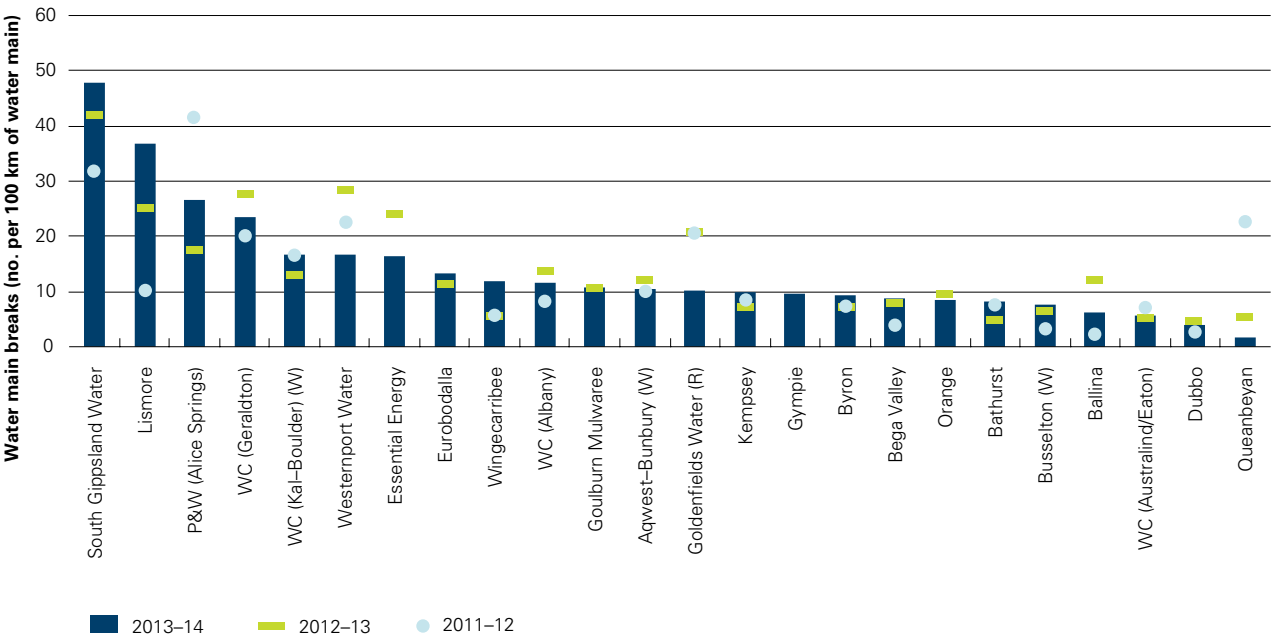

Figure 7.5 A8, 2011–12 to 2013–14 (per 100 km of water main), for utilities with 10,000–20,000 connected properties

7.2 A14—Sewerage mains breaks and chokes (no. per 100 km of sewer main) and A15—Property connection sewer breaks and chokes (no. per 1,000 properties)

7.2.1 Introduction

Indicator A14 reports the number of breaks and chokes per 100 km of sewerage main, and Indicator A15 reports the number of property-connection sewerage breaks and chokes per 1,000 properties. The indicators are presented together to provide a complete picture of sewer system performance, which is important because water utilities have sewer networks with various configurations. For example, some have a very long property connection (from the customer's sanitary drain to the middle of a road), while others have a very short or no property connection (i.e., the sanitary drain may connect straight to the sewer main, which runs down an easement at the back of the property).

Some utilities do not own or maintain the property connections and therefore do not report them (in accordance with the definition of the indicator). Other utilities are responsible for only a portion of property sewer connections, and so only report results on those for which they are responsible.[4]

The performance of a sewerage system is influenced by such factors as soil type, pipe material, and sewerage configuration, as well as age, tree root intrusion, the management of trade waste, the volume of sewage inflows, and rainfall. The results are a partial indicator of the condition of the network and level of customer service.

In 2013–14, 35 utilities reported increases in sewerage main breaks and chokes while 24 reported decreases (Table 7.2). The national median in 2013–14 remained consistent with that of 2012–13, rising just 2% to 19.4.

Across the four utility groups, 26 reported increase in property-connection sewer breaks and chokes, while 17 reported decreases. The national median for property-connection sewerage breaks and chokes rose 35% from 3.1 per 1,000 properties in 2012–13 to 4.2 per 1,000 properties in 2013–14 (Table 7.3).

[4] For such utilities, each property owner is responsible for the property's sewer connections.

Table 7.2 Overview of results: A14 (per 100 km of sewerage main)[1]

Size group	Range		Number of utilities with increase/decrease from 2012–13		Median		% change in the median from 2012–13
	High	Low	Increase	Decrease	2012–13	2013–14	
100,000+ connected properties	61 Sydney Water	12 Logan	10	1	25.2†	27.6†	10%
50,000–100,000 connected properties	63 Coliban Water	5 Townsville	8	3	16.1	18.8	17%
20,000–50,000 connected properties	80 Wagga Wagga (S)	1 Tweed	9	7	16.1	12.1	–25%
10,000–20,000 connected properties	115 Essential Energy	1 P&W (Alice Springs)	8	13	24.0	20.0	–17%
All size groups (national)	115 Essential Energy	1 Tweed	35	24	19.1†	19.4†	2%

Table notes

[1] The median sewer main breaks (per 100 km of water main) is calculated using data from all uses (dual and single service providers) that reported data for A14 in both 2012–13 and 2013–14.

† As a result of changes to reporting boundaries for SA Water the 2012–13, sewer main breaks uses the length of sewer main weighted average of data for metropolitan Adelaide, Whyalla, and Mount Gambier, while the 2013–14 figure uses whole of SA Water data.

Table 7.3 Overview of results: A15 (per 1,000 properties)[1]

Size group	Range		Number of utilities with increase/decrease from 2012–13		Median		% change in the median from 2012–13
	High	Low	Increase	Decrease	2012–13	2013–14	
100,000+ connected properties	30 SA Water	0 Barwon Water	6	3	5.0†	4.6†	–8%
50,000–100,000 connected properties	18 Coliban Water	0 Gippsland Water	8	1	3.1	4.11	35%
20,000–50,000 connected properties	21 Wagga Wagga (S)	0 Multiple utilities	6	6	2.7	2.3	–17%
10,000–20,000 connected properties	37 Essential Energy	0 Multiple utilities	6	7	4.5	4.8	7%
All size groups (national)	37 Essential Energy	0 Multiple utilities	26	17	3.1†	4.2†	35%

Table notes

[1] The median property-connection sewer breaks and chokes (per 1,000 properties) is calculated using data from all uses (dual and single service providers) that reported data for A15 in 2012–13 and 2013–14.

† As a result of changes to reporting boundaries for SA Water, the 2012–13 property-connection sewer breaks and chokes (per 1,000 properties) uses the connected-properties weighted average of data for metropolitan Adelaide, Whyalla, and Mount Gambier while the 2013–14 figure uses whole of SA Water data.

7.2.2 Results and analysis

100,000+ group

Where data was available, all utilities in this group reported increases in sewerage main breaks and chokes (A14), with the exception of SA Water. The greatest change was reported by ACTEW (36%), followed by Sydney Water (33%), and Hunter Water (27%) (Figure 7.6).

Sydney Water reported that its increase may be due to climatic variation in the past 18 months, with unusually warm temperatures that resulted in drier ground conditions, leading to tree roots seeking moisture in sewerage pipes and increasing chokes and breaks in the system.

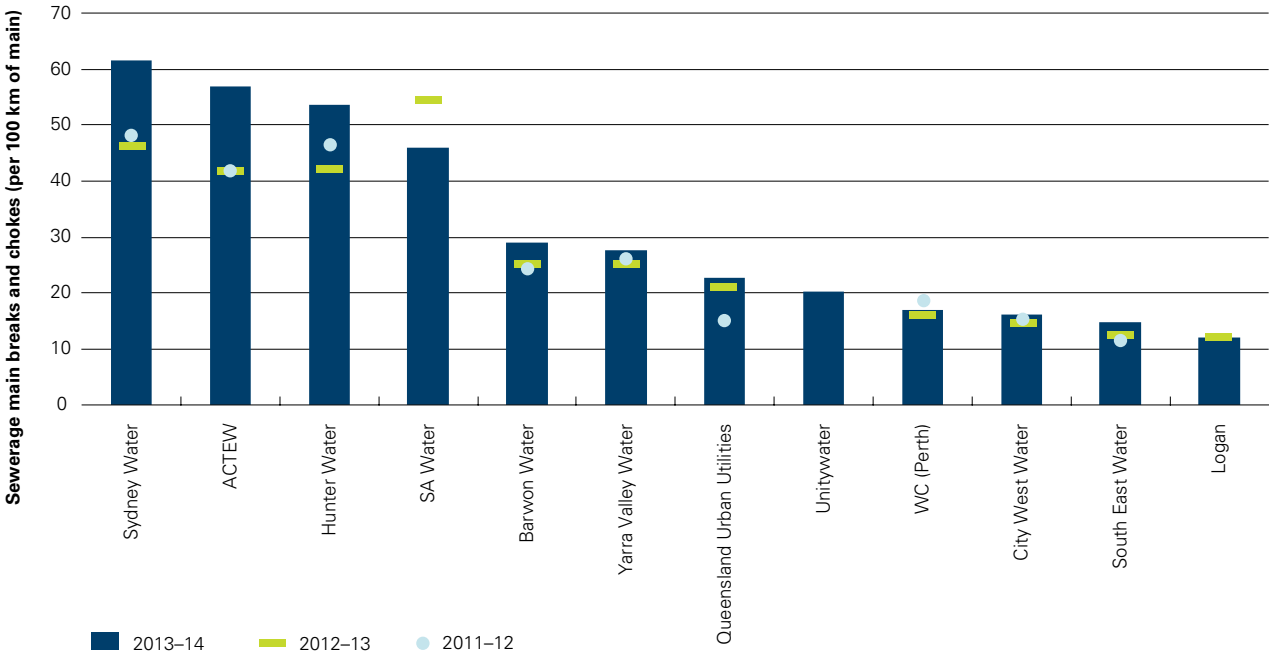

Figure 7.6 A14, 2011–12 to 2013–14 (per 100 km of sewer main), for utilities with 100,000+ connected properties

For property-connection breaks (A15), South East Water reported the greatest decrease (32%) followed by SA Water (20%), and Logan (18%) (Figure 7.7). Sydney Water reported the greatest increase (31%); however, this is an artefact of its low base of 0.16 breaks per 1,000 properties in 2012–13, rising to 0.21 breaks per 1,000 properties in 2013–14, which is the lowest of all the utilities in the group.

SA Water reported the largest number breaks (30) per 1,000 properties for 2013–14, followed by Hunter Water and ACTEW (both reporting 10 breaks per 1,000 properties). SA Water's decrease can in part be attributed to changes in its reporting for 2013–14, with the utility providing a single value for each indicator for its entire operation in 2013–14.

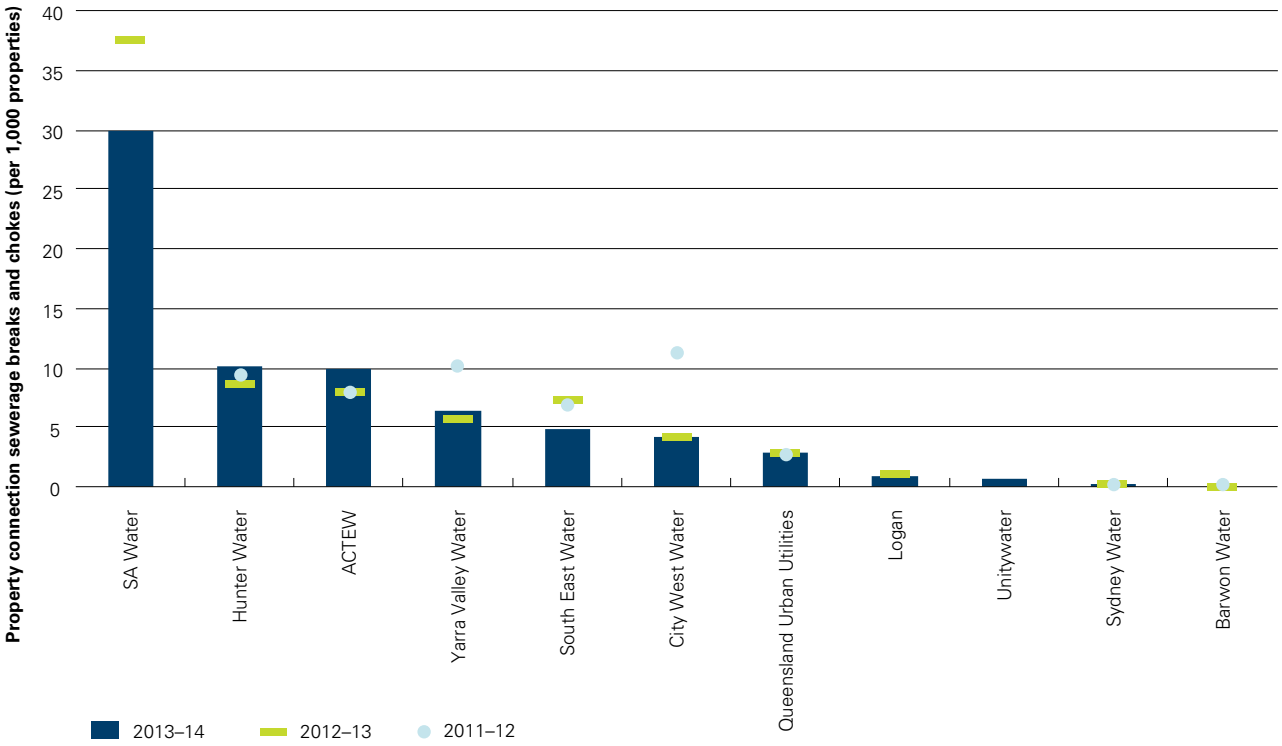

Figure 7.7 A15, 2011–12 to 2013–14 (per 1000 properties), for utilities with 100,000+ connected properties

50,000–100,000 group

In this group, three utilities reported decreases in breaks per 100 km of sewerage mains, while eight reported increases (Figure 7.8). Power and Water (Darwin) reported the greatest decrease of 46% (from 15.7 to 8.5), while Townsville reported the greatest increase of 101% (from 2.7 to 5.4), followed by Toowoomba at 91% from (16.1 to 30.7).

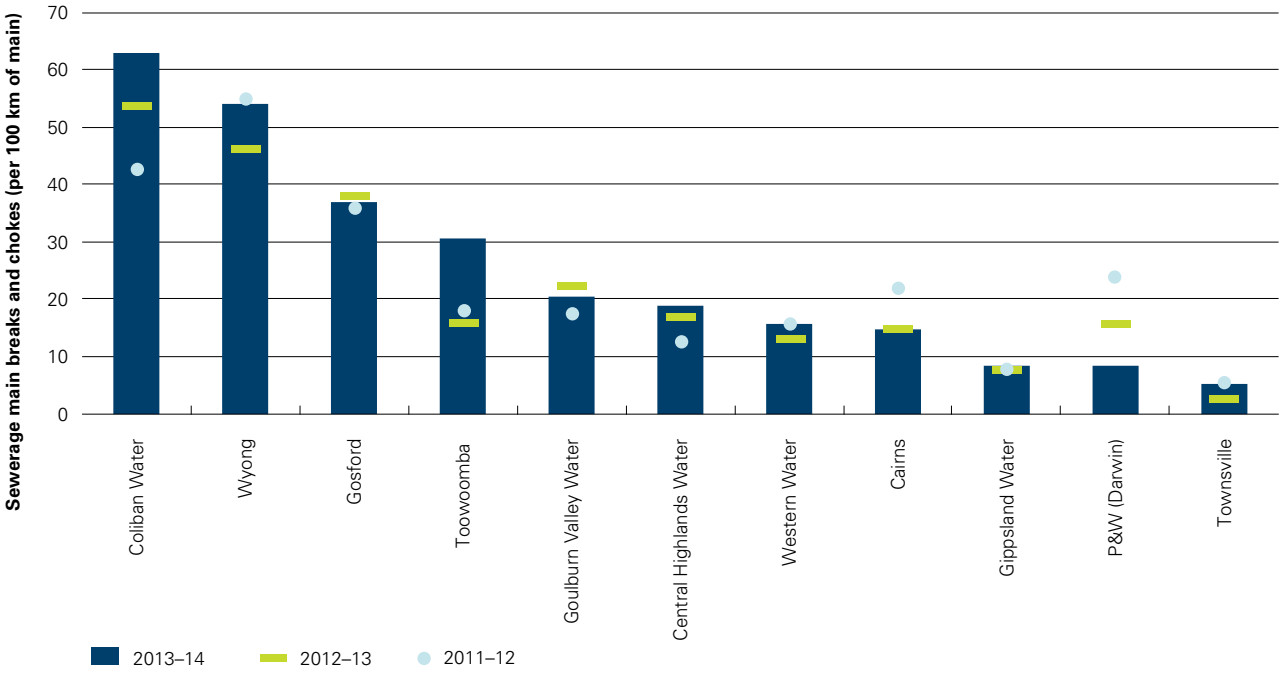

Figure 7.8 A14, 2011–12 to 2013–14 (per 100 km of sewerage main), for utilities with 50,000–100,000 connected properties

In 2013–14, all utilities within this group reported an increase in property-connection sewerage breaks and chokes, except Goulburn Valley Water which recorded a 37% decrease. Breaks and chokes were down overall from 8.25 to 5.2 (Figure 7.9). Cairns reported the largest percentage increase with a rise of 142% (1.32 to 3.19). Coliban Water reported the highest number of property-connection sewerage breaks at 18 per 100 km of sewerage main, representing a year-on increase of 24%.

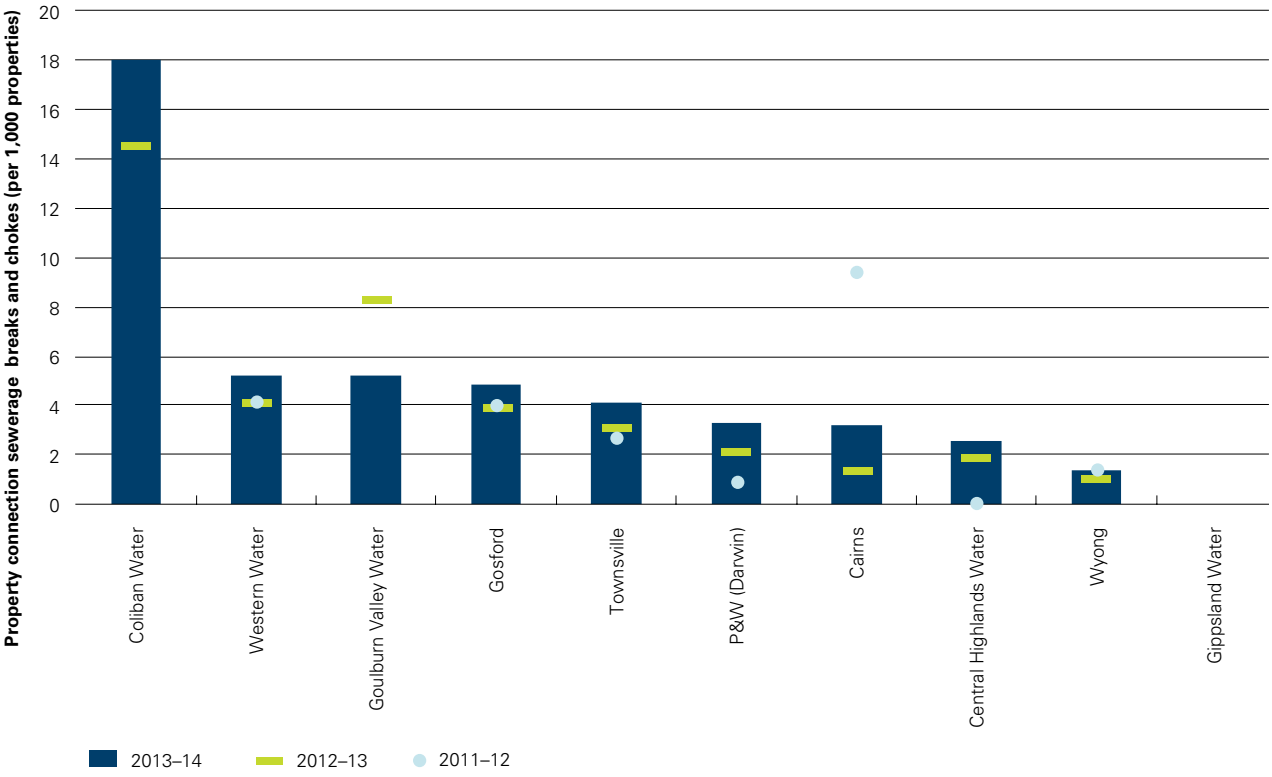

Figure 7.9 A15, 2011–12 to 2013–14 (per 1,000 properties), for utilities with 50,000–100,000 connected properties

20,000–50,000 group

In 2013–14, nine utilities in this group reported increases in the number of sewerage main breaks and chokes (A14), while seven reported decreases and MidCoast Water remained constant (Figure 7.10). Mackay Water reported the largest percentage increase (351%), from 4 to 19. Fitzroy River Water reported the largest percentage decrease (83%), from 70 to 12.

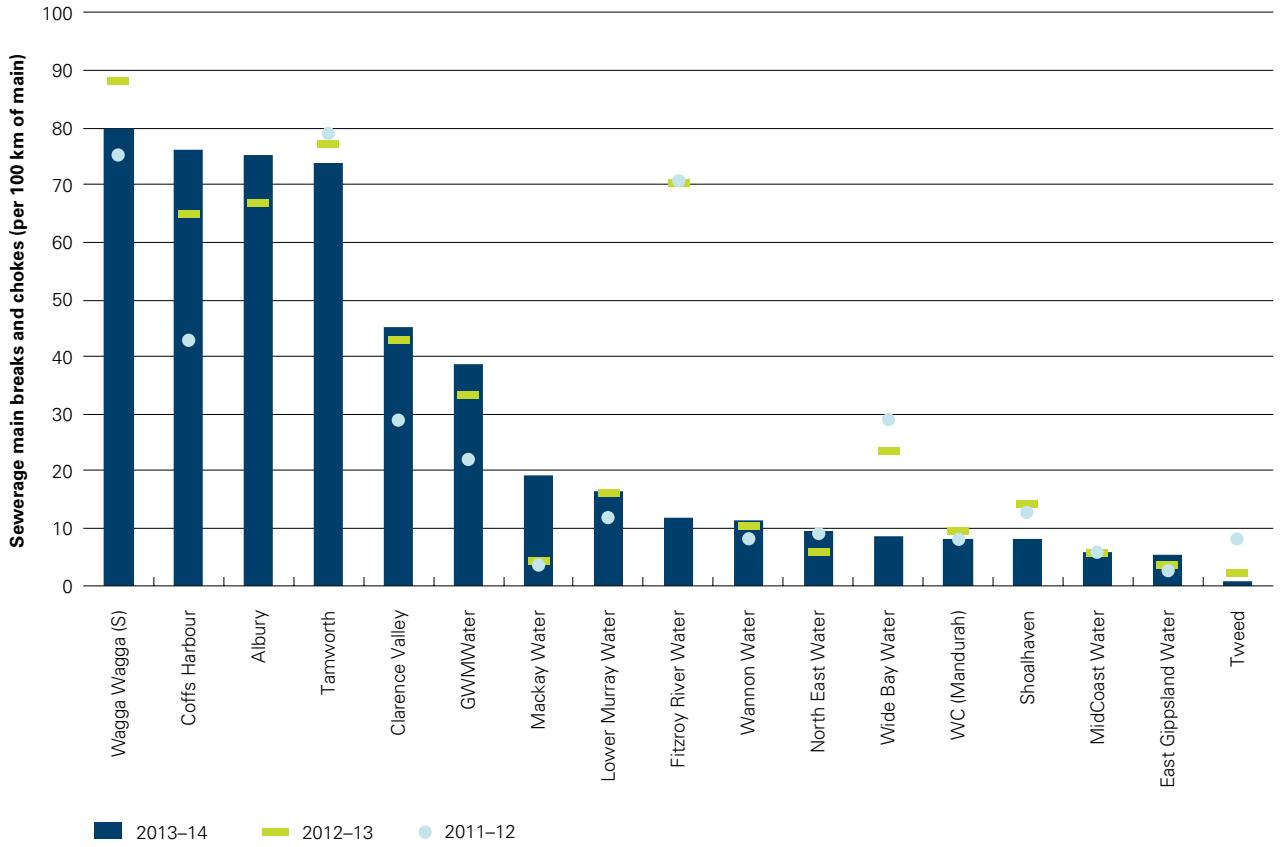

Figure 7.10 A14, 2011–12 to 2013–14 (per 100 km of sewerage main), for utilities with 20,000–50,000 connected properties

Within this utility group, six reported increases in property-connection breaks and chokes in 2013–14, while six reported decreases (Figure 7.11). GWM Water recorded the largest decrease, from 4.8 per 1,000 properties to zero.

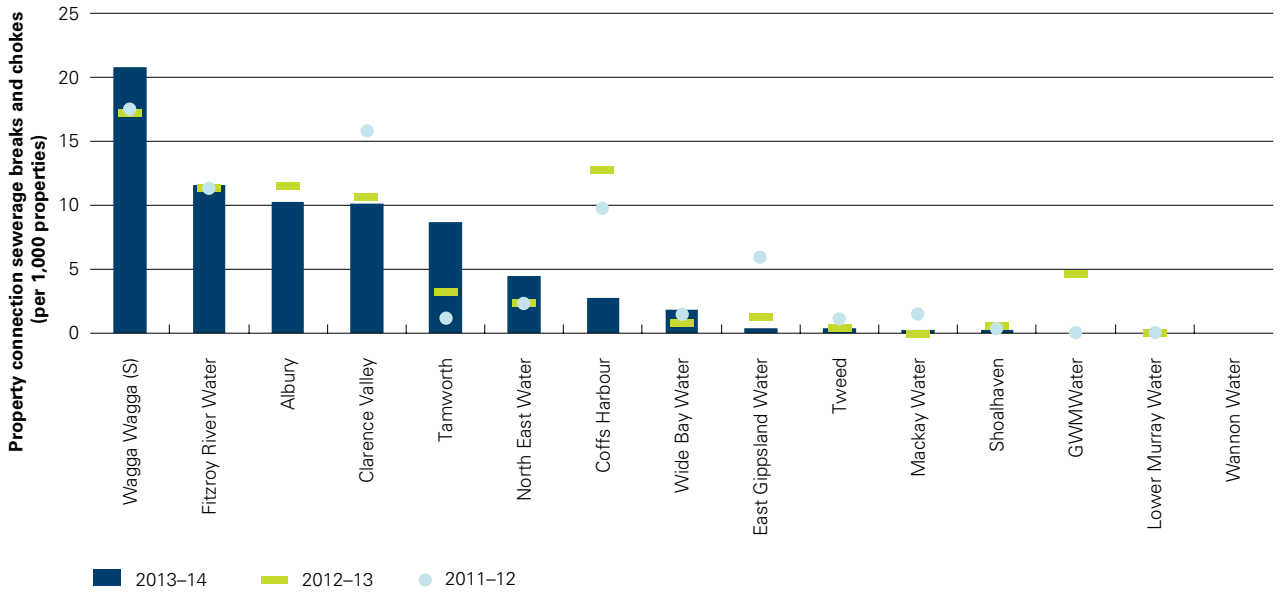

Figure 7.11 A15, 2011–12 to 2013–14 (per 1,000 properties), for utilities with 20,000–50,000 connected properties

10,000–20,000 group

Within this group, eight of the 21 utilities reported increases in the number of sewerage main breaks and chokes (A14) while 12 reported decreases (Figure 7.12).

Ballina reported the greatest increase from 8 to 20 per 100 km of sewerage main (150%), followed by Bega Valley with an increase from 9 to 22 (144%); however, 2012–13 figures for Ballina and Bega were low compared with the preceding reporting years (2011–12 and 2012–13), and were also much lower than other utilities in this group for 2013–14. P&W (Alice Springs) reported the biggest percentage decrease within the group, from 9.6 to 1.4 (85%).

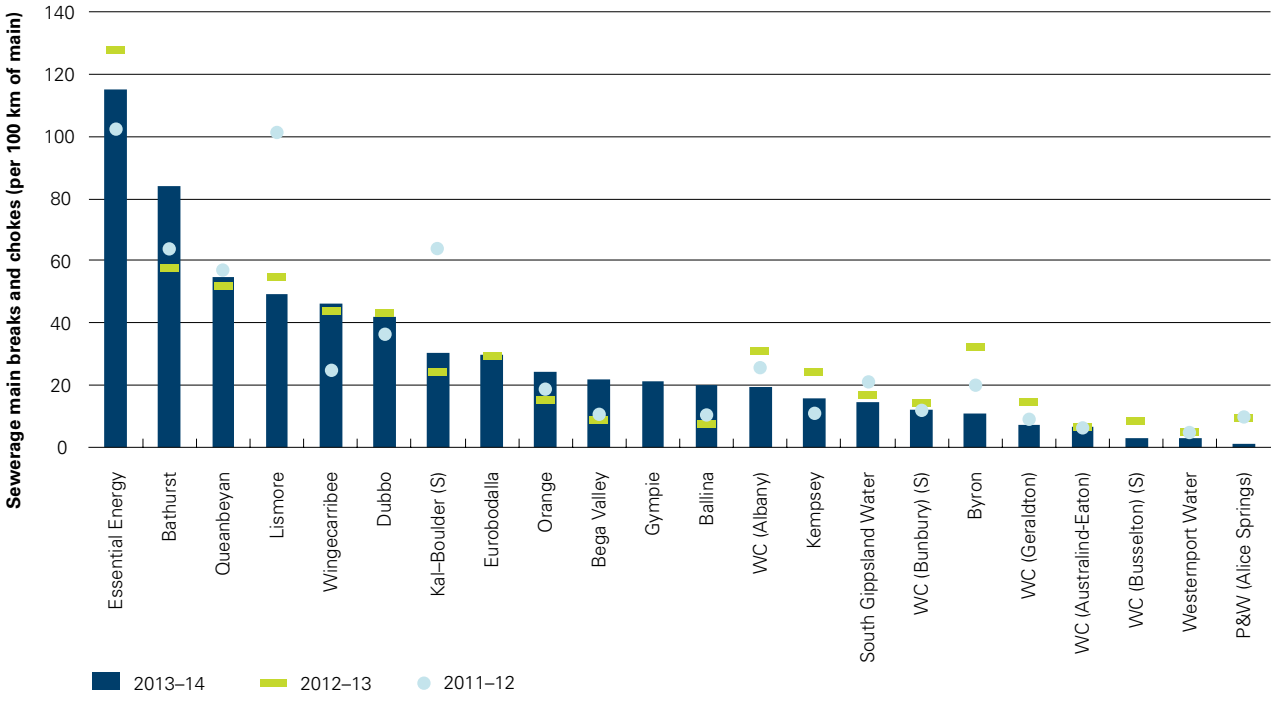

Figure 7.12 A14, 2011–12 to 2013–14 (per 100 km of sewer main), for utilities with 10,000–20,000 connected properties

Within this group, six of the 13 utilities reported property-connection breaks and chokes in 2013–14 compared with 2012–13, and seven reported decreases. Orange reported the highest percentage increase (650%), with a change from 0.6 to 4.5. Power and Water (Alice Springs) reported the highest percentage decrease (88%), with a change from 1.56 to 0.18 (Figure 7.13).

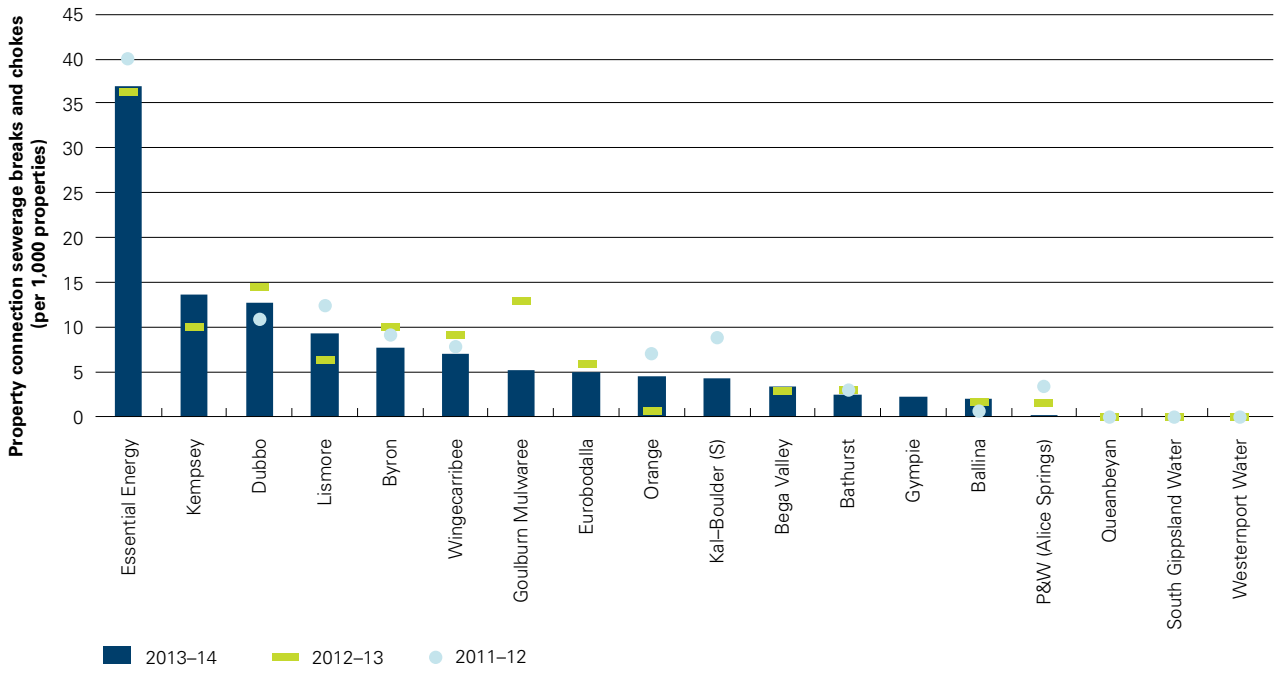

Figure 7.13 A15, 2011–12 to 2013–14 (per 1,000 properties), for utilities with 10,000–20,000 connected properties

7.3 A10—Real losses (L/service connection/day)

7.3.1 Introduction

'Real' losses are leakages and overflows from potable water mains, service reservoirs, and service connections before the customer meter. This indicator does not include metering errors and unauthorised consumption (which are referred to as 'apparent' losses). It also excludes unbilled authorised consumption, which may include water used for firefighting. Performance on this indicator can be influenced by the condition of mains and other infrastructure and also by water pressure.

Real losses are estimated using a range of assumptions, including assumed errors in metered water deliveries, estimates of unmetered components, and metering of night flows. Therefore, the real losses reported are not likely to be as accurate as for some of the other indicators (for example, water main breaks), and that should be considered when comparing utilities.

In 2013–14, 31 utilities reported increases in real losses and 25 utilities reported decreases; the median value for all utilities increased by 2% (Table 7.4). Between 2007–08 and 2010–11, the national median generally decreased; however, in the past three years it has increased, which is consistent with increasing usage (Figure 7.14).

Table 7.4 Overview of results: A10 (L/service connection/day)[1]

Size group	Range		Number of utilities with increase/decrease from 2012–13		Median		% change in the median from 2012–13
	High	Low	Increase	Decrease	2012–13	2013–14	
100,000+ connected properties	110	33	4	8	78†	70†	–10%
	Gold Coast Water	Logan					
50,000–100,000 connected properties	268	33	5	5	77	68	–11%
	P&W (Darwin)	Western Water					
20,000–50,000 connected properties	228	37	9	5	68	66	–3%
	Fitzroy River Water	Port Macquarie Hastings					
10,000–20,000 connected properties	291	25	14	7	89	94	5%
	P&W (Alice Springs)	Westernport Water					
All size groups (national)	291	25	32	25	79†	81†	2%
	P&W (Alice Springs)	Westernport Water					

Table notes

[1] Median real losses (L/service connection/day) is calculated using data from all uses (dual and single service providers) which reported data for A15 in both 2012–13 and 2013–14.

† As a result of changes to reporting boundaries for SA Water, the 2012–13 real losses (L/service connection/day) uses the connected properties weighted average of data for metropolitan Adelaide, Whyalla, and Mount Gambier, while the 2013–14 figure uses whole of SA Water data.

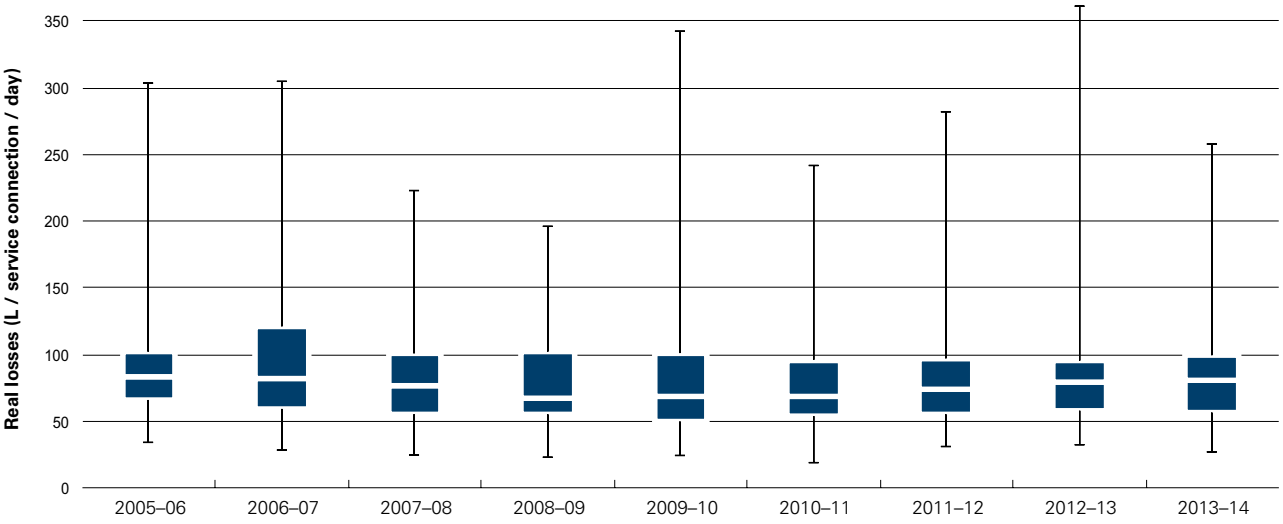

Figure 7.14 Summary of results: A10 (L/service connection/day)

7.3.2 Results and analysis

100,000+ group

As shown in Figure 7.15, this group's real losses in 2013–14 varied between 33 and 110 litres per service connection per day (L/service per connection/day). The median was 70, which was a 10% decrease on 2012–13. Of the 12 utilities that reported in both 2012–13 and 2013–14, four reported increases in real losses while eight reported a decrease in losses.

Gold Coast Water reported the greatest increase (36%), although its real losses rate is consistent with its 5-year average. Barwon Water reported the greatest decrease in real losses over the past year (39%), followed by ACTEW (27%), and Logan (26%). The decrease in real losses for these water utilities correlates with a decrease in water main break rates for 2013–14. The real losses for Barwon Water and ACTEW were at their lowest levels for the last five reporting years.

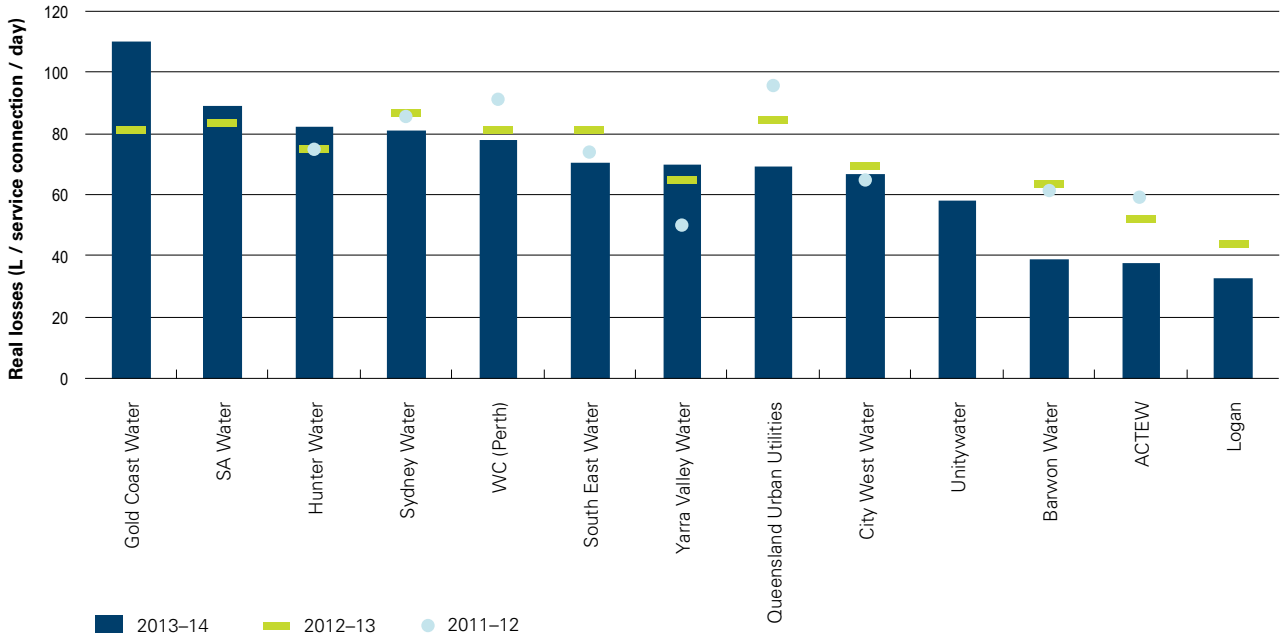

Figure 7.15 A10, 2011–12 to 2013–14 (L/service connection/day), for utilities with 100,000+ connected properties

50,000–100,000 group

In 2013–14, five utilities in this group reported increases in real losses, while five reported decreases (Figure 7.16). The 2013–14 median for this group was 68 L/service per connection/day, down 11% from 2012–13.

Power and Water (Darwin) experienced the highest per-connected-property volume of real losses (268 L/service per connection/day) in 2013–14; however this was a 36% decrease from 2012–13 (416 L/service connection/day). This decrease has been attributed to the implementation of a comprehensive demand management programme, Living Water Smart. Aiming to reduce water use in the Darwin region, the programme includes works to minimise water losses from water supply infrastructure (Power and Water 2014a: 38).

Gosford reported the greatest increase in real losses, from 32 to 116 L/service per connection/day (263%), The largest decrease was reported by Western Water (38%), followed by Power and Water (Darwin) and Coliban Water, with both reporting 36%. The rate of decrease in real losses for Western Water appears to be consistent with its decrease in water main breaks for 2013–14 (26%); this is that utility's lowest rate in real losses reported in the last five reporting years.

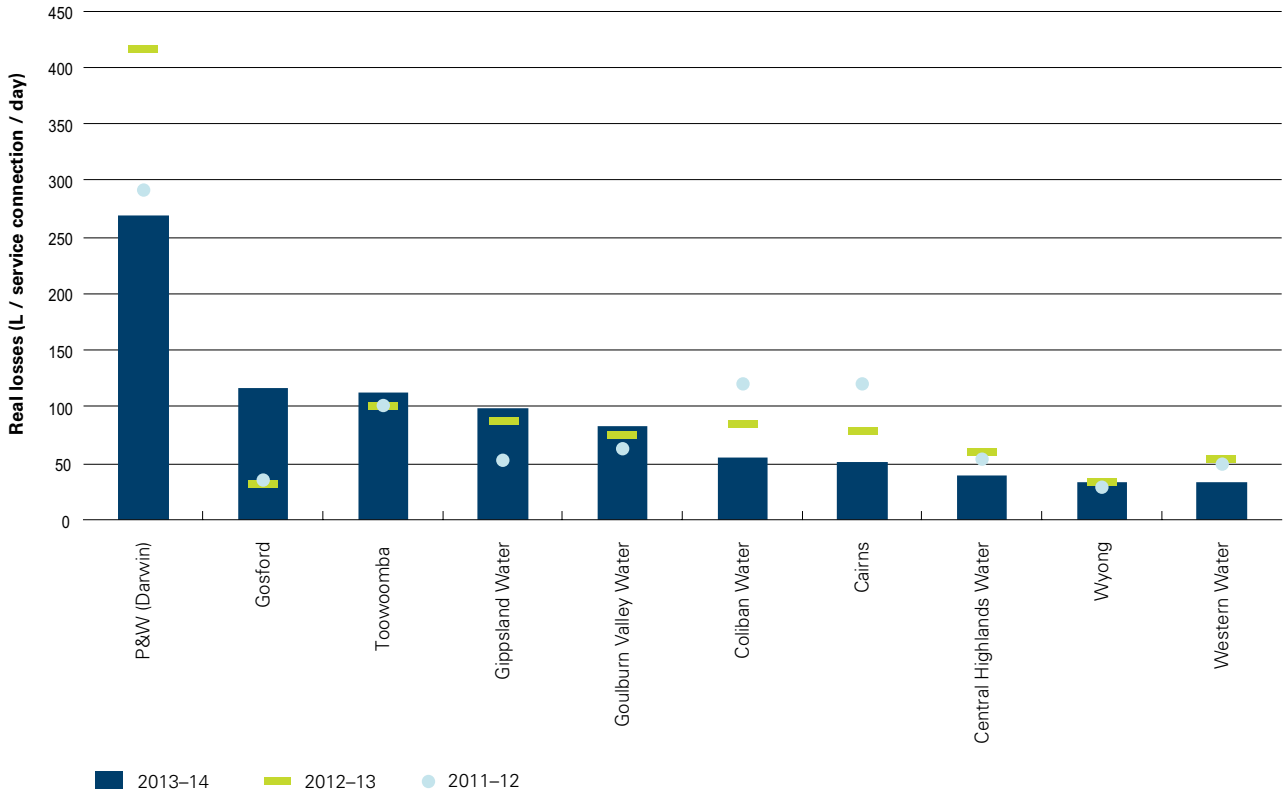

Figure 7.16 A10, 2011–12 to 2013–14 (L/service connection/day), for utilities with 50,000–100,000 connected properties

20,000–50,000 group

This group reported a large variation in the 2013–14 results, ranging between 37 and 228 L/service/ connection/day (Figure 7.17). Increases in real losses were reported by nine utilities, while five reported decreases compared with 2012–13. Riverina Water (W), North East Water, MidCoast Water, and Port Macquarie Hastings remained constant.

The largest increase (66%) was reported by Water Corporation (Mandurah), followed by Shoalhaven (33%). Fitzroy River Water reported the highest amount of real losses in the group (228 L/service connection/day) with a 23% increase compared to 2012–13. This rate of increase is consistent with Fitzroy River Water's increase in its water main break rate for 2014 (33%). Fitzroy River Water has also noted that its Rockhampton and Gracemere water supply schemes have observed higher losses than targeted.

East Gippsland Water recorded the greatest decrease in real losses in this group (37%), followed by Mackay Water (29%). The rate of decrease in real losses for both of these utilities correlates with the decrease in their water main break rates for 2013–14.

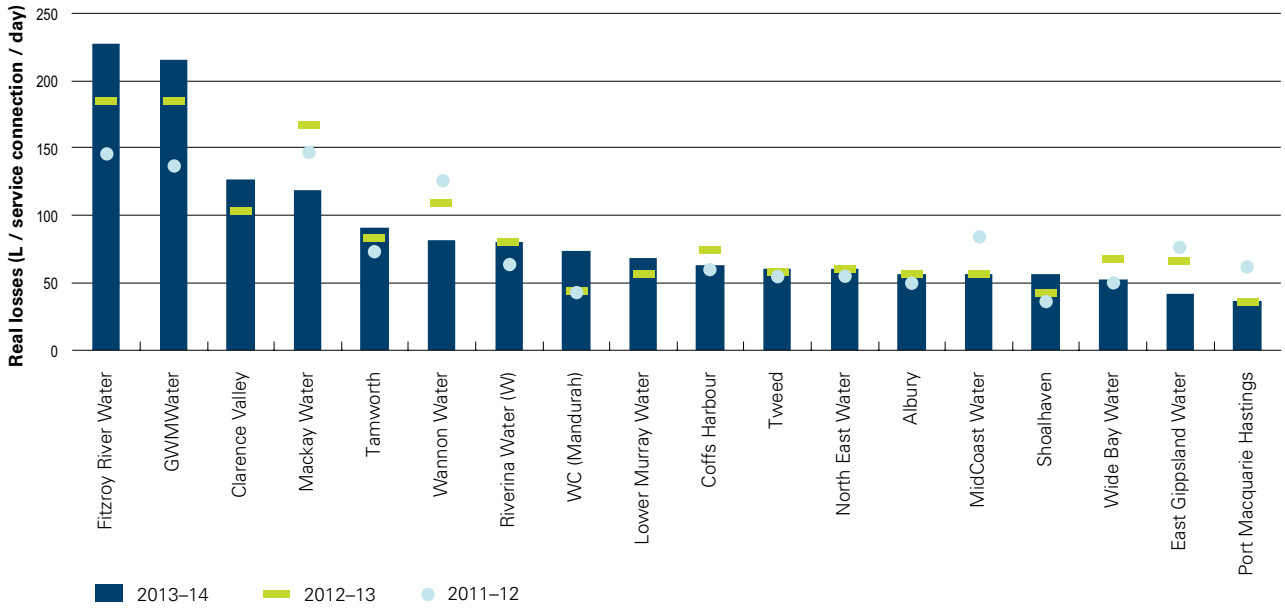

Figure 7.17 A10, 2011–12 to 2013–14 (L/service connection/day), for utilities with 20,000–50,000 connected properties

10,000–20,000 group

Of the utilities in this group that reported in both 2012–13 and 2013–14, 14 recorded increases in real losses since 2012–13 and seven recorded decreases. Eurobodalla remained constant (Figure 7.18).

Power and Water (Alice Springs) reported the highest real losses in 2013–14 for all utilities nationally (291 litres per service connection per day), although it reported the second biggest decrease of 32% from last year. Power and Water is continuing to implement a water efficiency programme that started last year (P&W 2014a: 42).

The largest increases observed were for Kempsey (92%), Westernport Water (64%), South Gippsland Water (45%), Water Corporation (Kal–Boulder) (W), and Water Corporation (Geraldton) (both 41%). South Gippsland Water has shown a constant increase in its real losses rate in the last five reporting years (2009–10 to 2013–14). In 2013–14, Kempsey and WC (Geraldton) reported their highest rates of real losses for the past five reporting years (2009–10 to 2013–14).

Bega Valley recorded the largest decrease (33%), followed by P&W (Alice Springs) (32%), although Bega Valley's 2013–14 real losses rate of 96 L/service per connection/day was 73% above its average for the past three reporting periods (2010–11 to 2012–13) of 55 L/service per connection/day. The real losses rate of Power and Water (Alice Springs) is consistent with its 5-year average.

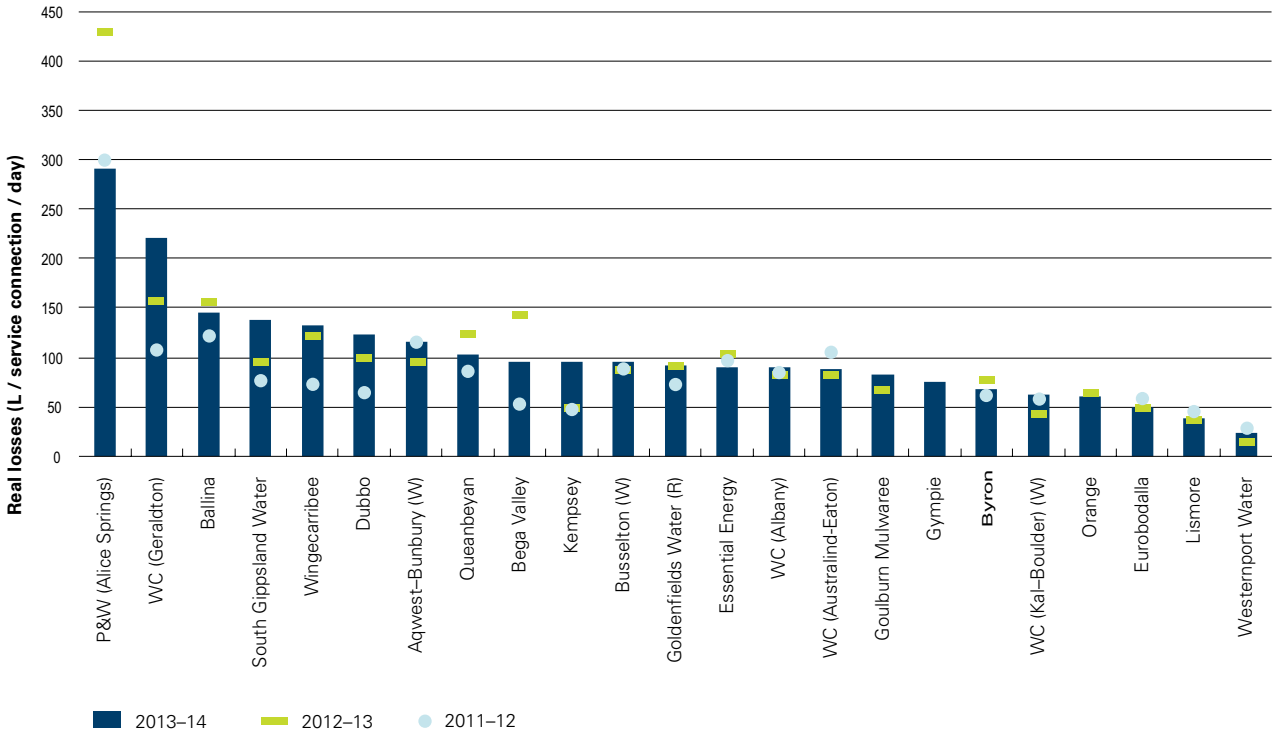

Figure 7.18 A10, 2011–12 to 2013–14 (L/service connection/day), for utilities with 10,000–20,000 connected properties.