Department of Primary Industries
Water

2015-16
NSW Water Supply and Sewerage
Performance Monitoring Report

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LOCAL GOVERNMENT NSW

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NSW WATER SUPPLY AND SEWERAGE

PERFORMANCE MONITORING REPORT

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BEST PRACTICE MANAGEMENT

MINISTER'S FOREWORD

The *2015-16 NSW Performance Monitoring Report* provides an overview of the current status of regional NSW local water utilities and also provides an indication of future water supply and sewerage needs of regional NSW.

The report, together with the associated *Benchmarking Report*, has been prepared annually by DPI Water and its predecessors since 1986. These reports present key performance indicators for all regional NSW local water utilities and provide appropriate data to enable utilities to improve their productivity and performance through continuous monitoring and also through benchmarking against data from other similar utilities. The *Performance Monitoring Report* highlights the overall statewide performance of the regional NSW local water utilities and compares that performance with interstate utilities. These reports are important for public accountability and have been strongly endorsed by the Productivity Commission.

The NSW State Government continues to work with regional water utilities to ensure the community benefits from safe, secure and sustainable water supply and sewerage services through the provision of water and sewerage infrastructure subsidy programs and by the effective implementation of the outcomes required by the *NSW Government's Best-Practice Management of Water Supply and Sewerage Framework* (page xiv).

To provide a balanced view of the long-term sustainability of regional NSW water utilities, this report adopts a triple bottom line accounting focus, with performance reported on the basis of social, environmental and economic factors.

The report provides details of each utility's compliance with the *NSW Government's Best-Practice Management Framework* and its implementation of the framework's nineteen planning, pricing and management requirements. I am pleased to note that the evidence shows the regional NSW local water utilities are continuing to perform very well.

The report, in addition to summarising the key regulatory and technical support activities of DPI Water, also highlights the outcomes that are being achieved from NSW Government's infrastructure subsidy programs. It is pleasing to note that these infrastructure programs are enabling the regional NSW water utilities to accelerate their priority projects that are critical in maintaining strong and healthy regional communities which are vital to the resilience, liveability and economic growth in regional NSW. In recognising this link, investment in regional water infrastructure is a key Government priority and this Government will continue to address the security and reliability of water supply and sewerage systems to ensure they are well equipped to continue operations into the future in all weather conditions.

DPI Water in consultation with stakeholders is undertaking a major review of regulation of the regional NSW local water utilities to ensure regulatory arrangements for this important sector are suitable for the challenges of the 21st century. This review will build on the success of the present arrangements, reflect the now mature regional NSW local water utility environment, and work to further streamline regulation and reduce financial and regulatory burdens on the utilities.

The Hon. Niall Blair MLC
Minister for Primary Industries
Minister for Regional Water
Minister for Trade and Industry

ACKNOWLEDGEMENTS

Local Government NSW (LGNSW) is acknowledged for its strong and continuing support for the NSW annual water supply and sewerage performance monitoring system since its commencement in 1986.

The public health regulator, NSW Health, is acknowledged for its oversight of drinking water quality in regional NSW, including administering the preparation and implementation of a Drinking Water Management System (*Public Health Act 2010*) by each utility providing a public drinking water supply. NSW Health has also provided additional water quality data (from the NSW Health Drinking Water Database) and water quality monitoring compliance data. This data has been incorporated into Appendix D and Figures 9 and 10 of this Report and Tables 5 and 12 and Appendices D1 and D3 of the *2015-16 NSW Water Supply and Sewerage Benchmarking Report*.

The NSW Local Government Water Directorate is also acknowledged for its strong support, contributions and feedback to facilitate ongoing review and refinement of the NSW Performance Monitoring System.

The continuing success of the NSW Performance Monitoring System as a robust evidence basis for productivity and performance improvement relies on participation by all regional NSW local water utilities (LWUs). DPI Water particularly acknowledges the continuing efforts of each LWU in providing current, accurate and timely data on its performance and in implementing the outcomes required by the NSW Best-Practice Management Framework (page xiv).

LIST OF NSW WATER UTILITIES

This report discloses performance indicators for all NSW water utilities: 92 regional local water utilities (LWUs) and four metropolitan utilities (Sydney Water Corporation, Hunter Water Corporation, Water NSW and Hawkesbury Council).

The NSW utilities are listed alphabetically on page iii. LWUs are grouped in four size ranges: over 10,000; 4,001 to 10,000; 1,501 to 4,000, and 200 to 1,500 connected properties.

To facilitate comparisons with similar sized LWUs, Appendices C to F of this report list LWUs in order of the number of connected properties served.

COUNCIL AMALGAMATIONS

On 12 May 2016, 25 regional NSW LWUs were involved in amalgamations. These amalgamations resulted in a reduction in the overall number of LWUs from 105 to 92.

The amalgamations were:

Armidale Regional Council – Armidale Dumaresq Council and Guyra Shire Council.

Central Coast Council – Gosford City Council and Wyong Shire Council.

Cootamundra-Gundagai Regional Council – Cootamundra Shire Council and Gundagai Shire Council.

Dubbo Regional Council – Dubbo City Council and Wellington Council.

Edward River Council – Deniliquin Council and Conargo Shire Council.

Federation Council – Corowa Shire Council and Urana Shire Council.

Hilltops Council – Young Shire Council, Harden Shire Council and Boorowa Council.

Murray River Council – Murray Shire Council and Wakool Shire Council.

Murrumbidgee Council – Murrumbidgee Shire Council and Jerilderie Shire Council.

Queanbeyan-Palerang Regional Council – Queanbeyan City Council and Palerang Council.

Snowy Monaro Regional Council – Snowy River Shire Council, Cooma-Monaro Shire Council and Bombala Council.

Snowy Valleys Council – Tumut Shire Council and Tumbarumba Shire Council.

This report discloses performance on the basis of the 92 LWUs existing on 12 May 2016. Appendices C to F also report the performance of the amalgamated LWUs by aggregating the reported data from their constituent LWUs. For clarity, Figure 1 on page 31 reports results for the amalgamated LWUs, but not those of their constituent LWUs. The basis for aggregating the results of amalgamated LWUs is shown in Appendix J on page 114.

The financial results for the amalgamated LWUs are for the period 1 July 2015 to 12 May 2016.

Table 1- NSW water utilities (regional and metropolitan) in alphabetical order

No.	Utility	No.	Utility	No.	Utility
11	Albury City	12	Fish River WS (BS)	63	Narrandera
111	Armidale Regional*	51	Forbes	62	Narromine
24	Ballina (R)	84	Gilgandra	83	Oberon (R)
100	Balranald (DS)	60	Glen Innes Severn	19	Orange
21	Bathurst Regional	28	Goldenfields (NO SGE)	36	Parkes
23	Bega Valley	20	Goulburn Mulwaree	7	Port Macquarie-Hastings
47	Bellingen	80	Greater Hume	119	Queanbeyan-Palerang* (R)
53	Berrigan (DS)	30	Griffith	33	Richmond Valley
72	Bland (NO WS)	44	Gunnedah	8	Riverina (NO SGE)
78	Blayney (NO WS)	81	Gwydir	4	Rous (BS) (NO SGE)
89	Bogan	30A	Hawkesbury (NO WS)	3	Shoalhaven
87	Bourke (DS)	86	Hay (DS)	35	Singleton
105	Brewarrina (DS)	116	Hilltops* (R)	120	Snowy Monaro Regional*
27	Byron (R)		Hunter Water	121	Snowy Valleys*
91	Cabonne	37	Inverell		Sydney Water
92	Carrathool	77	Junee (NO WS)	13	Tamworth Regional
112	Central Coast*	25	Kempsey	69	Temora (NO WS)
103	Central Darling (DS)	70	Kyogle	68	Tenterfield
40	Central Tablelands (NO SGE)	59	Lachlan	6	Tweed
14	Clarence Valley	48	Leeton	45	Upper Hunter
67	Cobar (R)	22	Lismore (R)	73	Upper Lachlan
66	Cobar WB (BS)	31	Lithgow	85	Uralla
10	Coffs Harbour	61	Liverpool Plains	9	Wagga Wagga (NO WS)
99	Coolamon (NO WS)	102	Lockhart (NO WS)	98	Walcha
75	Coonamble	5	MidCoast	79	Walgett (DS)
115	Cootamundra-Gundagai* (R)	32	Mid-Western Regional	96	Warren (DS)
39	Cowra	38	Moree Plains	55	Warrumbungle
122	Dubbo Regional*	117	Murray River* (DS)		Water NSW (formerly SCA)
54	Edward River*	118	Murrumbidgee*	95	Weddin (NO WS)
26	Essential Energy	41	Muswellbrook	74	Wentworth (DS)
15	Eurobodalla	34	Nambucca	16	Wingecarribee
114	Federation*	46	Narrabri	56	Yass Valley

R - Reticulator; DS - Dual Supply; BS - Bulk Supplier; NO WS - No water supply; NO SGE - No sewerage

* Amalgamated LWU from 12 May 2016

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EXECUTIVE SUMMARY

In regional NSW the reticulated public water supply and sewerage services are the most important factor in protecting public health and in contributing to community liveability. There are 92 local water utilities (LWUs) providing these services across regional NSW. These LWUs continue to face challenges from issues such as climate variability, competition for available water and financial resources, population changes (growth primarily in coastal NSW and a decline in some inland areas), compliance and documentation requirements, together with a projected shortage of skills and resources in water engineering.

Challenges and trends

In the last decade NSW has been severely affected by drought and wet years with major flooding in 2010 to 2012, followed by a moderately dry period from 2012 to early 2016. Mid 2016 saw a return of major flooding to most parts of regional NSW (Chart 1). The 2015-16 statewide median rainfall was 104% of the long-term median.

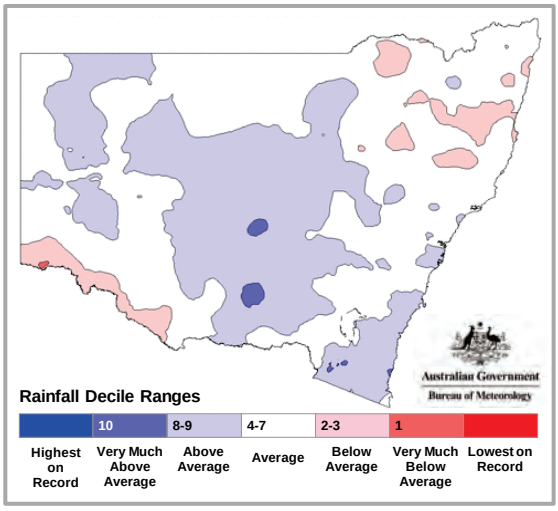

Chart 1 - NSW rainfall deciles - 1 July 2015 to 30 June 2016

In these challenging operating conditions LWUs need to undertake sound strategic long term planning in accordance with the NSW Government's *Best-Practice Management (BPM) of Water Supply and Sewerage Framework* (page xiv). The NSW Government continues to actively encourage LWUs to achieve safe, secure and cost-effective water and sewerage services through implementation of the BPM framework.

LWUs have continued to achieve consistently high standards despite the challenges outlined above. The current overall level of implementation of the 19 planning, pricing and management outcomes required by the BPM framework is 92%, up from 46% 11 years ago.

There has been a real increase of only 22% in the water supply median typical residential bill (TRB) over the past 21 years to $625. The water supply TRB is now lower than the national median and all other Australian states and capital city utilities except Sydney, Melbourne and country Victoria. The current median water and sewerage TRB is $1343, which is a real increase of only 24% over the same period and has remained below the national median over recent years (Chart 2).

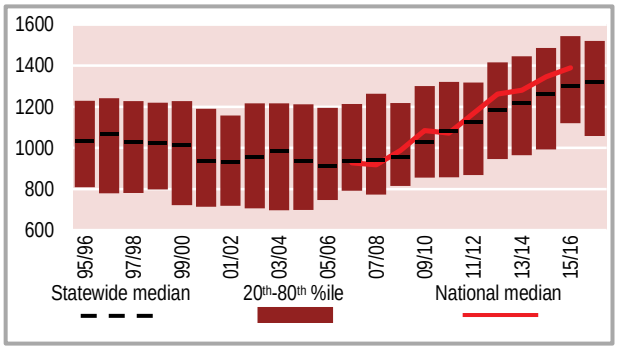

Chart 2 - Typical Residential Bill - water supply and sewerage - P8 ($/assessment Jan 2017$)

The current average annual residential water supplied is 162 kilolitres (kL) per property, which is 51% lower than in 1991 (Chart 3). This trend in reductions is due mainly to strong pay-for-use water pricing signals together with implementation of water conservation measures and drought water restrictions.

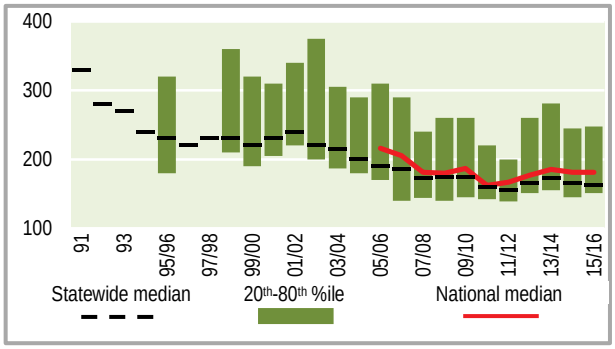

Chart 3 - Average annual residential water supplied - W12 (kL/connected property)

The current median water usage charge is 230 cents per kilolitre (c/kL), a real increase of 145% over the past 17 years. Water usage charges now provide 73% of residential revenue for water supply, up from 20% in 1996-97 following major reforms.

99.8% of the population provided with a water supply complied with the microbiological compliance indicator, an increase from 91% in 1991. All LWUs complied with the microbiological compliance indicator, up from 50% in 1998-99.

Additionally, the percentage of LWUs complying with the 90-percentile limit of their licence for Biochemical Oxygen Demand (BOD) has increased from 50% to 90% over the past 22 years. During the same period licence limits for sewage effluent quality have become more stringent for many LWUs.

Utility characteristics

As of June 2016, there were 92 LWUs (excluding Sydney and Hunter Water Corporations and Hawkesbury Council), a reduction from 105 LWUs in 2014-15 due to Council amalgamations. 78 LWUs provided both water supply and sewerage services, 6 provided water supply services only and 8 provided sewerage services only.

There are currently 350 water supply schemes in regional NSW providing a water supply to a permanent population of 1.85 million (98.1% coverage) and to 838,000 connected properties. In 1995-96 less than 300 water supply schemes served a permanent population of 1.57M. The total annual water supplied in 2015-16 was 300,000 megalitres (ML), which has fallen by 23% over the past 25 years.

At present there are 300 sewerage schemes providing a sewerage service to 1.75 million people (96.4% coverage) and to 760,000 connected properties. This has increased from less than 250 schemes in 1995-96, serving a permanent population of 1.46 million (92.3% coverage). The increase in coverage (dark line in Chart 4) is largely due to the implementation of the small town backlog sewerage program, delivered as part of the *Country Towns Water Supply and Sewerage* (*CTWSS*) program.

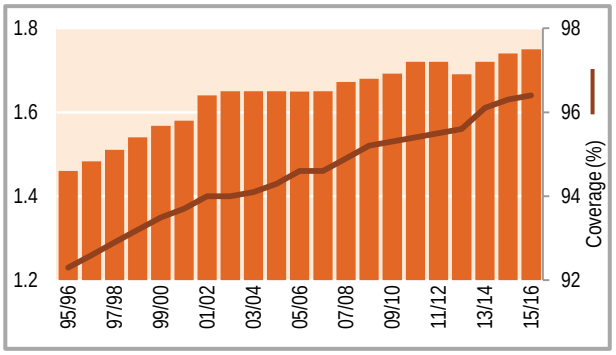

Chart 4 - Population with reticulated sewerage (millions)

The number of skilled operators has increased significantly over the past 20 years, with 429 operators currently meeting the National Certification Framework for Water Treatment Operators (96% of LWUs). Similarly, there are 445 fully qualified Wastewater Treatment Operators who meet the NSW Certification requirements (98% of LWUs).

Performance highlights for 2015-16

Social – charges and bills

- The median typical residential bill for water supply is $625 (Jan 2017$), a 4% increase from the previous year. The median typical residential bill for sewerage is $718 (a 3% increase). The median typical residential bill for water supply and sewerage is $1,343, an increase of 3.5%.
- The median water usage charge for the first step is 230 c/kL, a 2% increase on last year.
- 57% of LWUs had fair pricing with no significant cross-subsidies between residential and non-residential customers for both water supply and sewerage.
- The current median developer charge for water and sewerage is $10,300 per equivalent tenement. This is 31% of the $32,800 median current replacement cost of assets per assessment.

Social – health

- 99.9% of 21,600 samples tested for E. coli in 2015-16 complied with the *2011 Australian drinking water guidelines* (*ADWG*).
- 99.8% of 3,100 samples complied with health related chemical water quality guidelines.

Social – levels of service

- Water quality complaints remain low and are similar to most other Australian utilities.
- Water main breaks were 9 per 100km of main, remaining steady over recent years. This is similar to country Queensland but much lower than all other Australian states and capital city utilities, indicating good asset condition.
- The statewide median water supply and sewerage complaints were 26 per 1,000 properties, an increase from 19 in 2014-15, but down from a maximum of 49 over the past 11 years.

Environmental – water usage and reuse

- Average annual residential water supplied decreased by 2% from last year to 162 kL/connected property. This was similar to Melbourne, Brisbane and country Victoria but

lower than the national median and all other Australian states and capital city utilities.

- Reuse of recycled water has remained stable at 35,500 ML, which is 20% of the total sewage volume collected. Reuse is carried out by 70% of the LWUs, mostly for agricultural purposes.

Environmental – effluent management

- A total of 4,290 sewage effluent quality samples were analysed for BOD and suspended solids, with 99% and 96% of samples, respectively complying with the *Environment Protection Authority* (*EPA*) licences. This has improved from last year's results of 96% and 92% respectively.
- The statewide median for sewerage mains breaks and chokes was 38 per 100 km of main, which has been steady in recent years. However, this is higher than the national median, country Victoria and Queensland.

Economic – financial

- Total LWU revenue in 2015-16 was $1,490M and has increased by 67% in real terms over the past 17 years.
- The total current replacement cost of water supply and sewerage assets in regional NSW is $28,100M. This has increased by 102% in real terms over the past 17 years.
- The median economic real rate of return was 1.8% for water supply and sewerage, which was higher than country Victoria but lower than the national median and the capital city utilities.
- The median net debt to equity for water supply and sewerage was -3%, ranging from -37% to 26% across LWUs. 78% of LWUs had a negative net debt to equity compared to 75% last year.
- The median net profit to income for water supply and sewerage was 17%, ranging from -52% to 49% across LWUs. 23% of LWUs had a negative net profit to income compared to 21% last year.
- The total capital expenditure for water supply and sewerage during 2015-16 was $440M, an increase of 6% on 2014-15.

Economic – efficiency

- The water supply operating cost increased by 8% in the past year to $440 (Jan 2016$). This is lower than the national median and all other Australian states and capital city utilities except Perth and Sydney.
- The sewerage operating cost increased by 10% to $470 (Jan 2016$). This is higher than the national median and all other Australian states and capital city utilities.

Best-practice management

Implementation status

- 78% of LWUs have implemented over 85% of the required outcomes for water supply and sewerage. Currently, 56% of LWUs have implemented all of the required outcomes for water supply and 59% for sewerage.
- 8 LWUs paid a dividend in 2015-16 from the surplus of their water or sewerage businesses, up from 5 in 2014-15.
- 88% of LWUs have either completed or commenced their integrated water cycle management strategy, which includes a 30-year total asset management plan and a supporting 30-year financial plan and report.
- All LWUs are achieving full cost recovery for water supply and 93% for sewerage.
- All LWUs have abolished water allowances and have pay-for-use water pricing, a key requirement of the National Water Initiative.
- 78% of LWUs achieved the required outcome for residential revenue from usage charges.
- The appropriate non-residential charges outcome was achieved by 86% of LWUs for water supply and 81% for sewerage.
- 88% of LWUs have an appropriate liquid trade waste policy and 83% of LWUs achieved the appropriate liquid trade waste fees and charges outcome.
- 21 LWUs have authorisation to approve medium risk liquid trade waste discharges, an increase of 11% from last year.
- 85% of LWUs have an appropriate development servicing plan (DSP) with commercial developer charges for each of water supply and sewerage.
- All 84 LWUs providing a drinking water supply have a risk-based drinking water management system (DWMS), in accordance with the *NSW guidelines for drinking water management systems 2013*. Many LWUs have completed the annual review of their DWMS as required by the guidelines.
- 49 LWUs have an effluent reuse scheme with an approved recycled water management system, in accordance with the *NSW guidance for recycled water management systems 2015*.
- DPI Water provided 19 certified training courses and update seminars during 2015-16 on water and sewage treatment operation,

fluoridation, water supply and effluent reuse system management and liquid trade waste regulation. A total of 333 LWU staff attended these training sessions.

- All LWU water supply and sewerage treatment systems were inspected as required by the legislation to assure effective operation and maintenance. A total of 520 inspections were carried out in 2015-16.
- There were 116 Section 60 review activities relating to water and sewage treatment works and recycled water management systems covering 36 schemes. There were 13 Section 60 approvals with a total capital expenditure value of $220M.

New regulations and tools

DPI Water released the following to assist LWUs:

- Developer Charges Guidelines for Water Supply, Sewerage and Stormwater, 2016;
- NSW Guidance for Recycled Water Management Systems, 2015;
- Cost-benefit analysis (CBA) toolkit and typical residential bill (TRB) calculator.

DPI Water has contributed to the following reviews together with other agencies:

- Load-based licensing (LBL) scheme, EPA;
- Draft ADWG framework on microbial health based targets (HBT), NHMRC;
- Australian Guidelines for Water Recycling, Department of Agriculture and Water Resources;
- National guidelines for managing solids, fats, oils and grease from food premises, WSAA, to be used in conjunction with WSAA's Australian Sewage Quality Management Guidelines;
- National certification framework for water treatment operators, Australian Government;
- National Performance Framework, BOM.

NSW Government subsidy programs

CTWSS Program

- 519 projects have been completed out of the 550 projects in the *CTWSS* program. The total value of these projects to date is $3,260M, with a contribution from Government of $1,227M.
- In 2015-16, 11 water supply and 9 sewerage projects were completed. The total value of these projects was $280M, with Government contribution of $102M.

Regional Water and Waste Water Backlog Program

- The NSW Government has committed $110M towards previously unfunded water supply and sewerage backlog projects.
- A total of 32 projects with a value of $203M have been funded, with Government contribution of $90M.
- A further 5 projects have been recommended for funding with a Government contribution of $14.3M and project value of $31.6M.

Aboriginal Communities Water and Sewerage Program

- The NSW Aboriginal Land Council, in partnership with the NSW Government is investing around $200M over 25 years from 2009 on maintenance, operation, monitoring and repairs in 62 discrete Aboriginal communities across NSW.
- The total population serviced across these communities is over 6,000 people.
- Expenditure during 2015-16 was $8.1M.
  A total of 31 operation and maintenance service agreements have been signed to date, with 11 agreements signed in 2015-16.
  3 new water supply and sewerage projects were completed during 2015-16.
- 150 water supply and sewerage system inspections were carried out in these Aboriginal communities during 2015-16.
- 98% of communities complied with the microbiological compliance indicator, an increase from 92% in 2014-15. Compliance has increased significantly since 2008.
- 99.7% of 730 samples tested for E. coli complied with *ADWG*, up from 99.5% last year.
- 100% of 60 samples complied with health related chemical water quality guidelines.
- 2 water supply contamination incidents were reported in the previous year.

Restart NSW

- A total of 33 projects to the value of $130M, with Government contribution of $115M have been funded for 26 LWUs under the *Water Security for Regions* program.
- 4 projects have now been completed with a total value of $3M.
- 6 projects valued at $43.1M, with Government contribution of $37.3M have been funded under the *Resources for Regions* program.
- A further 3 projects have been shortlisted with a value of about $9M.

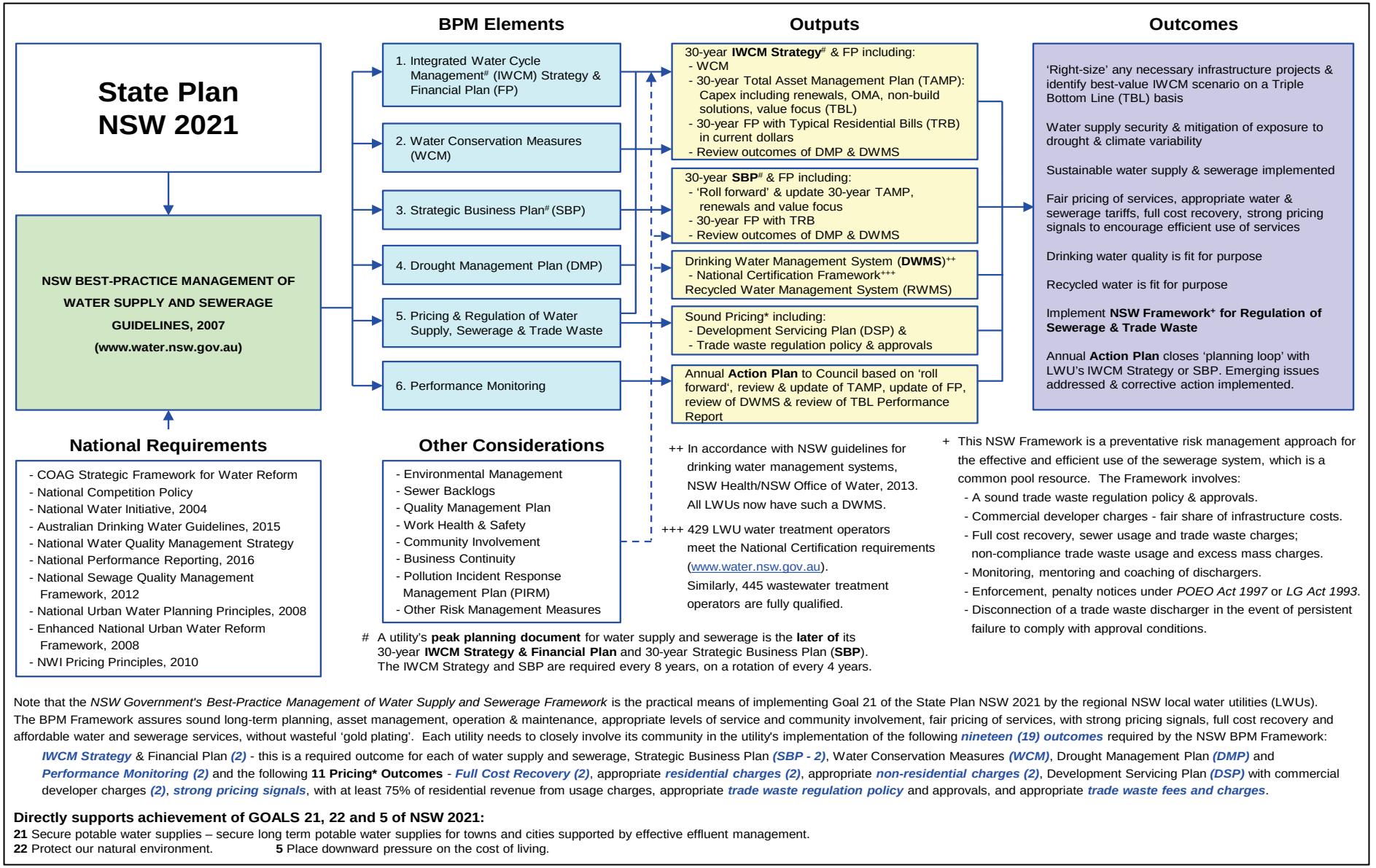

Chart 5 - NSW Best-Practice Management (BPM) of Water Supply and Sewerage Framework

1 INTRODUCTION

1.1 Overview

Performance monitoring and benchmarking are required under the National Competition Policy and the National Water Initiative[1], are important for public accountability, and have been strongly endorsed by both the NSW Independent Pricing and Regulatory Tribunal[2] and the Productivity Commission[3]. Performance monitoring and reporting is also a key outcome required by the NSW Government's *Best-Practice Management (BPM) of Water Supply and Sewerage Guidelines*[4], which drive the *NSW Best-Practice Management Framework* (Chart 5 on page xiv).

This Performance Monitoring Report presents the key NSW performance indicators (Figures 1 to 36 and Appendix D), discloses the statewide performance of the regional NSW local water utilities (LWUs) and compares that performance with interstate utilities. The full suite of performance indicators for each LWU is provided in the *2015-16 NSW Water Supply and Sewerage Benchmarking Report*.

To facilitate comparison, performance indicators have been prepared for each LWU's aggregated water businesses and aggregated sewerage businesses, rather than for individual water and sewerage systems.

Furthermore, to provide a balanced view of the long-term sustainability of the LWUs, this report uses a triple bottom line (TBL) accounting focus. This involves consideration of a utility's *BPM Framework* implementation status, together with its social, environmental and financial management practices.

1.2 Statewide performance

The statewide performance of the NSW LWUs is outlined in section 2, where the performance indicators are calculated on a 'percentage of connected properties basis', which gives weight to larger LWUs and reduces the effect of smaller LWUs.

When comparing performance, utilities should take into account the range of factors that can have a significant influence on their performance and typical residential bill (TRB), which is the principal indicator of the overall cost of water or sewerage services. Such factors include the size of utility, the water source, whether treatment is required, the local geography and topography and the amount of pumping required.

1.3 Interstate comparisons

Interstate comparisons are shown in section 3 and provide an overall assessment of the performance of NSW LWUs compared with key performance indicators reported by interstate utilities.

1.4 Best-practice management

The *BPM Framework* is an outcome focussed, locally based self-determination regulatory system, and DPI Water monitors and regulates the achievement of the required outcomes. As part of this monitoring role, DPI Water provides each LWU with an annual TBL Performance Report and a template for preparation of an Action Plan to Council for both its water supply and sewerage businesses.

The annual Action Plan template to council summarises the key BPM outcome areas that require corrective actions. Each LWU must review its TBL report and prepare and implement a sound annual action plan to council that demonstrates continued implementation of the BPM outcomes. The *BPM Framework* is outlined in section 4.

1.5 NSW Government subsidy programs

Section 5 provides a summary of the current NSW Government subsidy programs for water supply and sewerage infrastructure and the outcomes being achieved through these investment programs.

1.6 Data reliability and general notes

Section 6 provides an outline of the validation process to assure data reliability, together with general notes covering the calculation of some key performance indicators.

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[1] *National Performance Framework – 2013-14 Urban Performance Report Indicators and Definitions*, National Water Commission/Water Services Association of Australia, June 2014 (www.nwc.gov.au).

[2] *Pricing Principles for Local Water Authorities*, Independent Pricing and Regulatory Tribunal, NSW, 1996.

[3] *Australia's Urban Water Sector, Productivity Commission Inquiry Report No. 55*, August 2011 (www.pc.gov.au).

[4] *Best-Practice Management of Water Supply and Sewerage Guidelines, NSW Government 2007* (www.water.nsw.gov.au).

2 STATEWIDE PERFORMANCE SUMMARY

This section summarises the performance of the 92 local water utilities in regional NSW (LWUs) for key performance indicators. The full suite of performance indicators over the past six years is shown in the *2015-16 NSW Water Supply and Sewerage Benchmarking Report*, which contains benchmarking data to enable each LWU to monitor trends in its performance indicators over the past six years and to benchmark its performance against that of similar LWUs. The benchmarking report is available on the DPI Water website (www.water.nsw.gov.au).

The performance indicators have been prepared at the LWU level, rather than at the individual water and sewerage system level. Performance is reported on a triple bottom line (TBL) basis of social, environmental and economic indicators.

The performance indicators are calculated on a 'percentage of connected properties basis' to reduce the effect of smaller LWUs on the results.

When comparing performance, utilities should take into account the range of factors that can have a significant influence on their performance and typical residential bill (TRB), which is the principal indicator of the overall cost of water or sewerage services. Such factors include the size of utility, the water source, whether treatment is required, the local geography and topography, and pumping requirements.

2.1 Utility characteristics

Number of utilities

As of June 2016, there were 92 LWUs (excluding Sydney and Hunter Water Corporations and Hawkesbury Council), a reduction from 105 LWUs in 2014-15 as a result of Council amalgamations on 12 May 2016. 78 of these LWUs provided both water supply and sewerage services, 6 LWUs provided water supply services only and 8 LWUs provided sewerage services only.

Demographics

The NSW Government's *Country Towns Water Supply and Sewerage* (*CTWSS*) program (www.water.nsw.gov.au) has assisted NSW regional LWUs to achieve the present high levels of water supply and sewerage coverage[5] , with the resulting public health and environmental protection benefits for the NSW regional urban population. At present:

- water supply coverage is 98.1%, serving a permanent population of 1.85 million, an increase from 1.57 million in 1995-96;
- sewerage coverage is 96.4%, serving a permanent population of 1.75 million, an increase from 1.46 million in 1995-96.

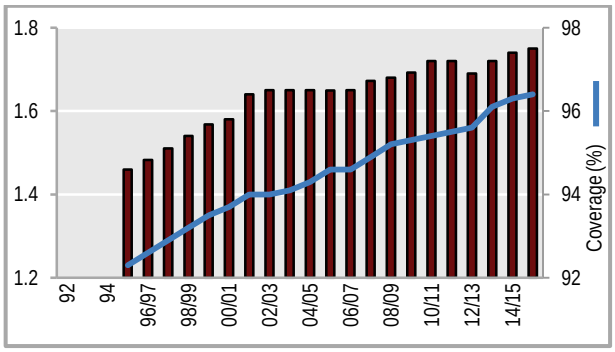


Chart 6 – Permanent regional NSW population with reticulated sewerage (millions)

Water was supplied to 838,000 connected properties in 2015-16, with 760,000 properties receiving a sewerage service, increases of 10% and 12% respectively over the past 10 years.

The median percentage of new residential dwellings to existing residential properties was 1.0% connected to water supply and 1.2% connected to sewerage.

Infrastructure

Currently, there are 350 water supply schemes in regional NSW, with 164 water treatment works, 78 chlorinators and aerators, 104 water supply dams, 443 water supply bores, 32,800 km of water mains and 885 pumping stations. In 1995-96 there were less than 300 water supply schemes.

There are at present 300 sewerage schemes with 20,085 km of sewer mains and 3,160 pumping stations. The number of schemes has increased from less than 250 in 1995-96.

49 LWUs have an effluent reuse scheme with an approved recycled water management system.

Current replacement cost

The total current replacement cost of water supply and sewerage assets in regional NSW is $28,100M. This has increased by 102% in real terms over the past 17 years.

Current revenue

Total revenue was $1,490M, an increase of 67% in real terms over the past 17 years.

[5] The systematic provision of backlog sewerage services for unsewered small towns under the NSW Government's CTWSS program has increased the sewerage coverage to 96.4% of the urban population, compared with 92.3% in 1996 (Chart 6).

Renewals expenditure

The median percentage of renewals expenditure to current replacement cost of system assets was 0.6% for water supply and 0.5% for sewerage.

Employees

There were 1,440 water supply employees in 2015-16, with 1,180 employed in sewerage, an increase of 5% and decrease of 2% respectively from last year.

The statewide median number of employees for water supply and sewerage has fluctuated around 3 per 1000 properties over the past 24 years (Chart 7). The current median is 3.2, which is close to the maximum of 3.4.

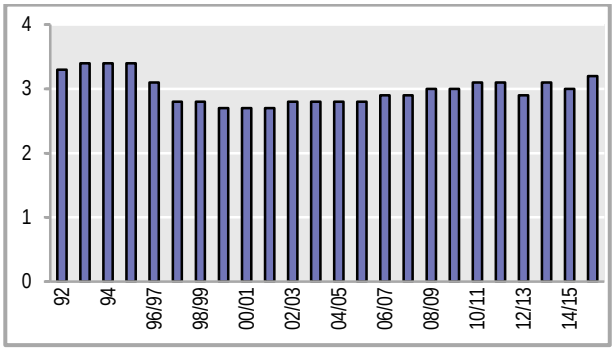


Chart 7 – Median number of employees - water and sewerage (per 1000 properties)

Water supply employees per 1000 properties have fallen by over 10% from a maximum of 1.7 to 1.5. Sewerage employees per 1000 properties have fallen by over 5% from a maximum of 1.8 to 1.7.

The number of skilled treatment plant operators has increased significantly over the past 20 years. At present there are a total of 429 fully qualified operators who meet the requirements of the national certification framework for water treatment operators (have a Certificate III in Water Treatment Operations or equivalent) and are employed in operating a LWU treatment works.

Appendix I of the *2015-16 NSW Benchmarking Report* discloses that each of the 84 LWUs with water treatment works responsibility has at least one fully qualified water treatment operator to operate the LWU's water treatment works and the chlorinators and aerators.

In addition, there are 445 fully qualified wastewater treatment operators with a Certificate III in Wastewater Treatment Operations or equivalent and are employed in operating a LWU sewage treatment works.

Rainfall

For the first 3 quarters of 2015-16, most of inland NSW experienced dry conditions, while the last quarter saw flooding across the state. The result was that most of inland and south-eastern NSW experienced above average rainfall for 2015-16.

Charts 8 and 9 show the rainfall decile ranges for NSW and the total annual rainfall (mm) for NSW, indicating the above average rainfall received statewide in 2015-16 (www.bom.gov.au).

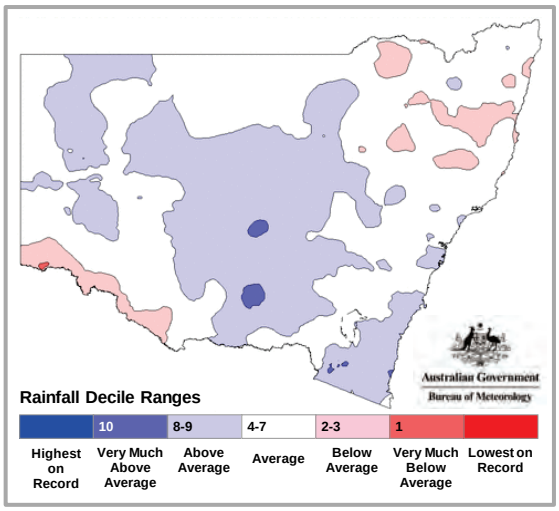


Chart 8 - NSW rainfall deciles - 1 July 2015 to 30 June 2016

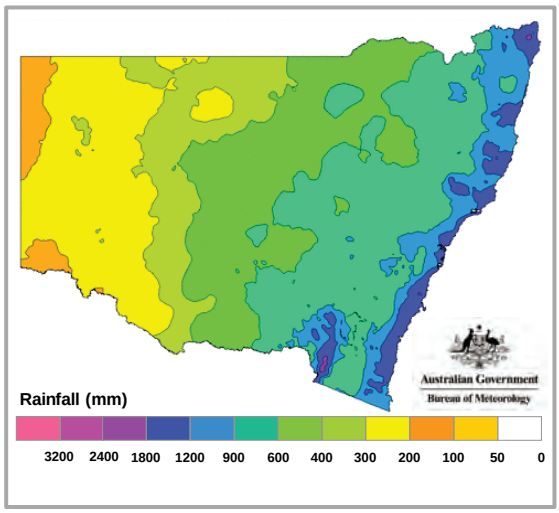


Chart 9 - NSW rainfall totals (mm) - 1 July 2015 to 30 June 2016

The statewide annual median rainfall was 104% of the long-term median while 48% of water supply utilities received less than their long-term median.

Bellingen (71%), Clarence Valley (76%), Moree Plains (74%), Nambucca (75%) and Wentworth (70%) received the lowest percentage of their median rainfall.

Bega Valley (179%), Bland (140%), Eurobodalla (136%), Lachlan (139%) and Shoalhaven (151%) received the highest percentage of their median rainfall.

Water restrictions

During at least part of 2015-16, 23% of LWUs applied drought water restrictions (Table 12 of the *2015-16 NSW Benchmarking Report*).

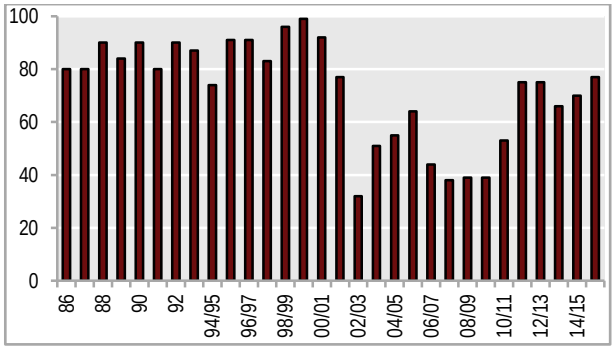


Chart 10 - Per cent of utilities with no drought water restrictions

For the 15 years from 1986 to 2000/01, on average, the NSW utilities did not apply any drought water restrictions for 87% of the years, which include the severe 1993 to 1994 drought (Chart 10). This is consistent with the implied target of no drought water restrictions in 90% of years in the NSW Security of Supply basis (commonly referred to as the "5/10/10 rule").

For the 30 years from 1986 to 2015/16, on average, NSW utilities did not apply any drought water restrictions for 72% of years. This period included both the above 1993 to 1994 drought and the very severe Millennium drought (2001 to 2010).

2.2 Social – charges/bills

Tariffs

All NSW LWUs had both pay-for-use water pricing and full cost recovery for water supply. Since July 2012, all NSW utilities have had a metered potable water supply with a two-part tariff (an access charge and a usage charge for all potable water usage) or an inclining block tariff (Chart 11). These tariffs comply with National Competition Policy and the National Water Initiative. All LWUs have since July 2007 abolished the annual water allowances for their potable water supply.

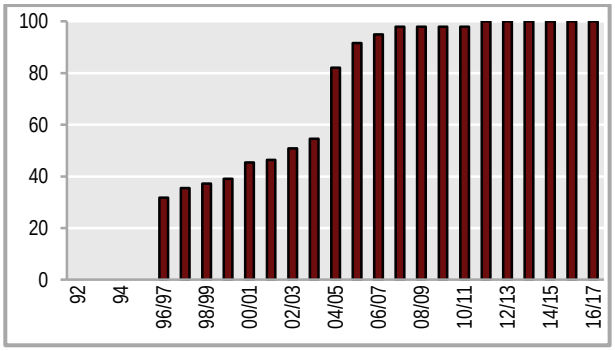


Chart 11 - Per cent of LWUs with pay-for-use tariff

93% of LWUs had sound pricing with full cost recovery for sewerage as required under the National Water Initiative.

57% of LWUs had fair pricing[6] with no significant cross-subsidies between residential and non-residential customers for both water supply and sewerage. All LWUs should levy appropriate non-residential sewerage access and sewer usage charges, together with trade waste charges for all commercial and industrial dischargers to the sewerage system (section G5). Cross subsidies can be identified by comparing the percentage of sewage discharged or the percentage of water supplied for non-residential customers with the percentage of the revenue from access and usage charges paid by such customers.

Where a significant cross-subsidy is identified, the utility should move to phase it out. For example, note 7 on page 75 shows that 25% of the water supplied was non-residential, and that these customers paid 24% of the revenue, which indicates fair pricing of services across the residential and non-residential sectors.

Water usage charge

The NSW Government encourages LWUs to use a two-part tariff with a uniform water usage charge that is sufficiently high to encourage efficient water use. The statewide median water usage charge for the first step is 230 c/kL, a 2% increase from last year and a real increase of 145% over the past 17 years. These charges provide a strong pricing signal, thereby significantly inhibiting increases in the TRB. This is evident from the very small increases reported in recent years.

Water usage charges now provide 73% of the residential revenue for water supply, up from 20% in 1996-97 following the major reforms in 2004.

Residential water billing in accordance with national guidelines

44% of LWUs now have residential water billing in accordance with the *National Guidelines for Residential Customers' Water Accounts, 2006*. A further 12% have made significant progress towards such billing.

Sewer usage charge

81% of LWUs have a non-residential sewer usage charge per kL to provide a strong pricing signal to commercial and industrial dischargers. The median sewer usage charge was 159 c/kL.

[6] Pricing is deemed to be fair where the percentage of revenue from non-residential customers is within 10 per cent of the volume of water supplied to non-residential customers.

Access charge

Median 2016-17 residential access charge was:

- $197 per assessment for water supply
- $718 per assessment for sewerage.

Developer charges

Median 2016-17 typical developer charge per equivalent tenement (ET) was:

- $5,600 per ET for water supply
- $4,700 per ET for sewerage.

The typical developer charge for water and sewerage was $10,300 per ET, which is 31% of the current replacement cost of system assets per assessment of $32,800.

Typical residential bill

The TRB is the principal indicator of the overall cost of water or sewerage services. It is the bill paid by a residential customer using the LWU's average annual residential water supplied.

The median 2016-17 TRB per assessment was:

- $625 for water supply (a 4% increase from last year)
- $718 for sewerage (a 3% increase from last year)
- $1,343 for water supply and sewerage (a 3.5% increase from last year).

Over the past 21 years, the real increase in the water supply TRB has been only 22%, while the combined water supply and sewerage TRB has increased by only 24%. These are excellent results compared to other utility services such as electricity and gas, which have seen much higher increases over the same period[7].

The combined water supply and sewerage TRB has remained below the national median over recent years (Chart 12).

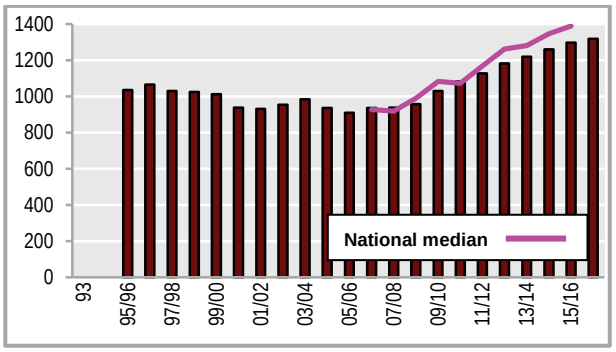


Chart 12 - Typical Residential Bill - water supply and sewerage - P8 ($/assessment Jan 2017$)

[7] Australian Energy Market Operator (www.aemo.com.au).

2.3 Social – health

Microbiological compliance for E. coli (health related)

In 2015-16, the public drinking water supply for 99.8% of the urban population in regional NSW complied with the guidelines for microbiological water quality, the primary health related indicator, which is an increase from 91% in 1991.

Of the 21,600 samples tested for E. coli during this reporting period, 99.9% complied with the 2011 *Australian drinking water guidelines* (*ADWG*). Over the past 15 years microbiological compliance has ranged from 97% to 99.9%.

Chart 13 shows that the percentage of LWUs complying with ADWG has increased from 50% to 100% (blue line) over the past 17 years.

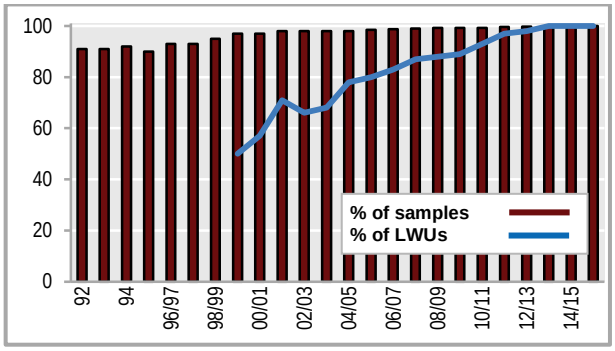


Chart 13 - Microbiological compliance (E. coli) with ADWG

The 1996, 2004 and 2011 ADWG are more stringent than earlier guidelines. For example, while 89% of LWUs complied with the 1987 guidelines in 1998-99, only 50% of LWUs were able to comply with the 1996 guidelines one year later.

Chemical compliance (health related)

In 2015-16, the public drinking water supply for 99.2% of the urban population in regional NSW complied with the guidelines for health related chemical water quality.

Of the 3,100 samples tested, 99.8% complied with the guidelines for chemical water quality. Over the past 15 years chemical water quality compliance has ranged from 95% to 99.9%.

All of the LWUs complied with the health related chemical water quality guidelines in 2015-16, up from 42% in 1999-00.

Physical compliance (aesthetic related)

Of the 3,700 samples tested, 99% complied with the guidelines for physical water quality (aesthetic). All of the LWUs complied with the guidelines for physical water quality, up from 54% in 1999-00.

Sampling

For LWUs with a number of separate water treatment works or sewage treatment works, the 2015-16 compliance with drinking water quality guidelines and EPA licence conditions have been pro-rated based on the number of samples tested for each treatment works.

The full 2015-16 results for each of the 242 LWU water treatment works/chlorinators are disclosed in Appendix D1 of the *2015-16 NSW Benchmarking Report* (available at www.water.nsw.gov.au).

Appendix D2 of the benchmarking report discloses the full 2015-16 results for each of the 300 LWU sewage treatment works.

Health incidents

11 LWUs reported 56 Category 1 water supply incidents with minor public health impacts[8], while 1 LWU reported a Category 2 (significant) incident, down from 3 last year.

177 sewerage related Category 2 (moderate) public health incidents were reported by 13 LWUs and no Category 3 (major) incidents were reported (1 last year).

2.4 Social – levels of service

Sewage odour complaints

The statewide median was 0.9 per 1000 properties (Chart 14). Odour complaints, which are a key sewerage system performance indicator, have remained low over the past 22 years.

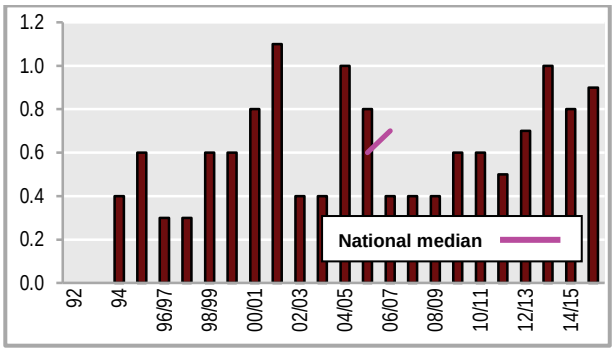


Chart 14 - Sewage odour complaints (per 1000 properties)

Sewerage service complaints

The statewide median was 5 per 1000 properties, a decrease from 20 over the past 21 years.

Water service complaints

The statewide median was 4 per 1000 properties.

Water quality complaints

The statewide median was 3 per 1000 properties (Chart 15), similar to other Australian utilities.

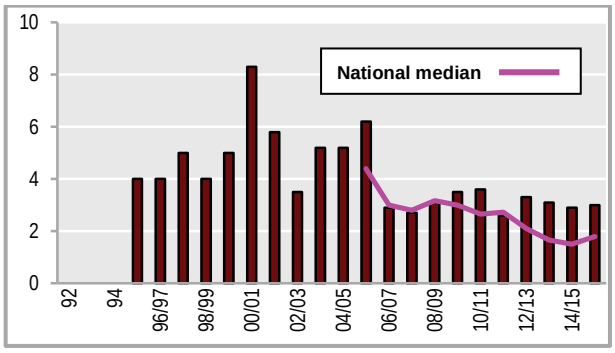


Chart 15 - Water quality complaints - C9 (per 1000 properties)

Water quality complaints have fallen from a maximum of eight to three over the past 21 years, while service complaints have decreased from seven to four. As indicated above, drinking water quality has improved over this period due to the commissioning of new water treatment facilities and improved operation and maintenance by LWUs.

Total complaints for water and sewerage

The statewide median was 26 per 1000 properties, an increase from 19 in 2014-15, but down from a maximum of 49 over the past 11 years (Chart 16). This level of complaints is higher than the national median.

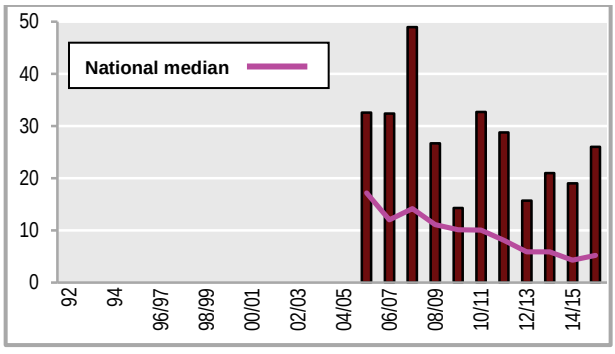


Chart 16 - Total water and sewerage complaints - C13 (per 1000 properties)

[8] An example of a Category 1 water supply public health incident would be a minor failure of a water treatment process or asset that results in a limited boil water alert. A Category 2 sewerage public health incident could include an algal outbreak in receiving waters attributable to the sewerage system or a sewer overflow affecting public access to land or water. More examples of Category 1, 2 and 3 Public Health and/or Environmental Incidents are shown in Appendix B of the *NSW Water Supply and Sewerage Benchmarking Report*.

Water main breaks

Chart 17 shows that the statewide median was 9 per 100km of main, which indicates good water main asset condition.

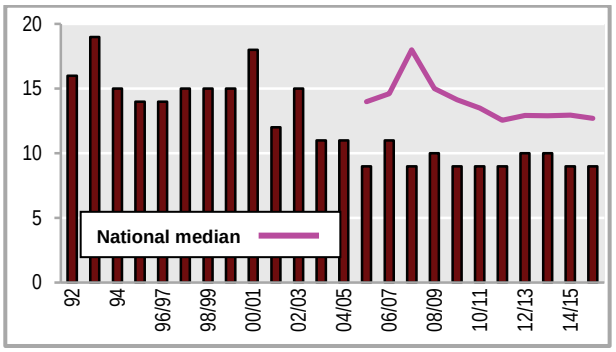


Chart 17 - Water main breaks - A8 (per 100km of water main)

2.5 Environmental – water usage and reuse

Total water supplied

The total urban water supplied in 2015-16 was 300,000 megalitres (ML), an increase from 291,000 ML in 2014-15. This volume has fallen by 23% over the past 25 years. The total comprises 270,000 ML of potable water, 19,800 ML of non-potable water and 11,700 ML of recycled water. The total surface and groundwater entitlement held by these regional LWUs is 638,400 ML under the LWU special purpose access licence category.

Average annual residential water supplied

The statewide median average annual residential water supplied was 162 kL/connected property, a 2% decrease from 2014-15. Chart 18 shows that the median has fallen by 51% over the past 25 years.

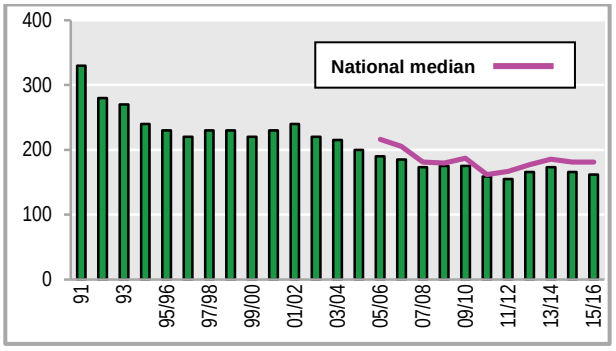


Chart 18 - Average annual residential water supplied - W12 (kL/connected property)

For inland water utilities, the hotter and drier climate, together with the use of evaporative cooling, results in significantly higher residential water usage than coastal utilities. As a result, the weighted median 'average annual residential water supplied' for the inland utilities was 248 kL/connected property while the weighted median for coastal utilities was 155 kL/connected property.

Peak day water supplied

The statewide median was 1.4 kL/connected property/day. The statewide median for this indicator has fallen by 54% over the past 16 years (Chart 19). LWUs contemplating any new water supply treatment, reservoir or distribution works should carefully review their data for this indicator to ensure they 'right size' their works.

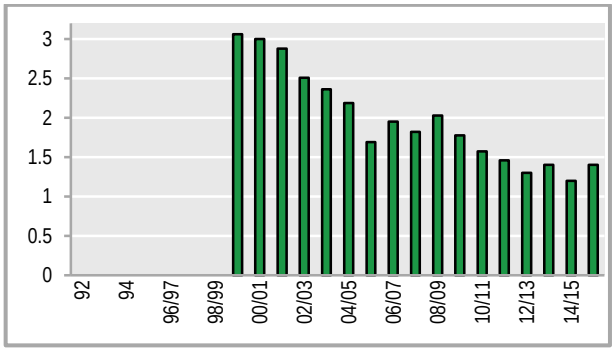


Chart 19 - Peak day water supplied (kL/connected property/day)

Recycled water

70% of LWUs carried out reuse of effluent, mostly for agricultural purposes. The total volume of water recycled in 2015-16 was 35,500 ML. This was 20% of the total volume of sewage collected, compared with 14% in 1998-99 (Chart 20). 16% of LWUs recycled over 50% of their effluent.

The highest volume recycled by one utility was 5,700 ML (Wagga Wagga) and a further four LWUs (Albury, Dubbo, Orange and Tamworth) each recycled over 2,000 ML. The demand for recycled water in 2015-16 remained stable as a result of the moderate rainfall conditions (104% of the long-term median).

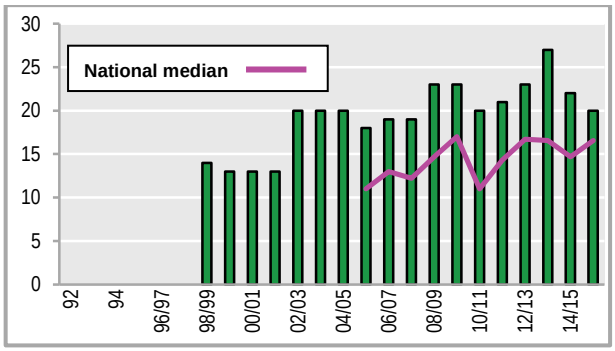


Chart 20 - Recycled water - W27 (% of effluent reused)

Real losses (leakage)

The statewide median real water loss was 70 L/connection/day, which is lower than the national median (Chart 21). 82 LWUs (pre-amalgamation) have recently carried out water loss management activities, including leakage testing, analysis and leakage reduction. The Regional NSW Water Loss Management Program completed in 2011 resulted in reducing the average water losses for the 68 participating LWUs from 154 to 92 L/connection/day, or from 16% to 10% of the potable water supplied, a total saving of 5,500 ML/a.

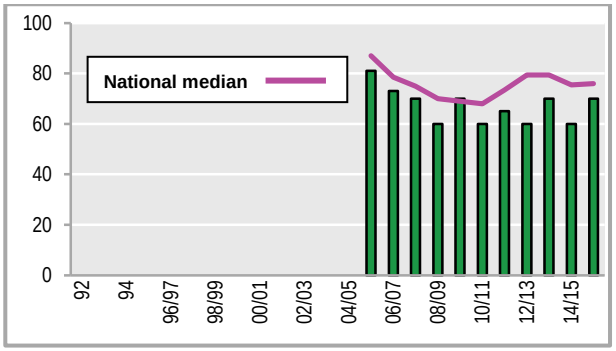


Chart 21 - Real losses - A10 (L/connection/day)

Non-revenue water

The statewide median was 92 L/connection/day, which is 28,100 ML/annum or 10% of water supplied (Chart 22).

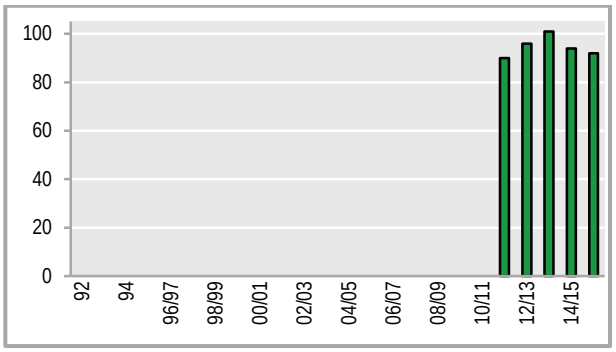


Chart 22 - Non-revenue water - W10.1 (L/connection/day)

2.6 Environmental – effluent management

Sound sewerage and trade waste pricing and regulation are an essential pre-requisite to the effective and efficient management of a sewerage system.

Sewage effluent quality (BOD)

Chart 23 shows that 99% of the 4,290 samples tested complied with the 90-percentile limits of the Environment Protection Authority (EPA) licences for Biochemical Oxygen Demand (BOD), an increase from 96% last year. 90% of LWUs complied with the 90-percentile limit of their BOD licence, up from 89% last year.

Chart 23 shows that over the past 22 years, statewide compliance for BOD has ranged from 92% to 99%. The percentage of LWUs complying has increased from a low of 50% to 90% (blue line in Chart 23) over this period while licence limits for both BOD and Suspended Solids (SS) have become more stringent for many LWUs.

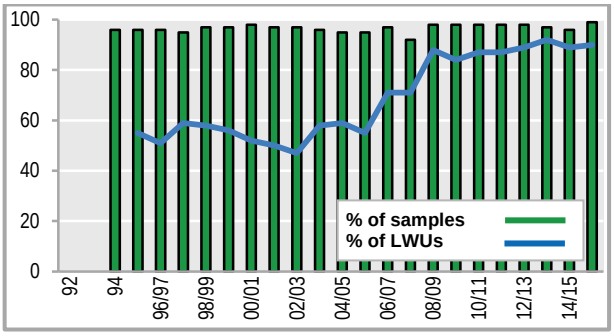


Chart 23 - Compliance with BOD in licence (%)

Sewage effluent quality (SS)

Chart 24 shows that 96% of the 4,290 samples tested for suspended solids (SS) complied with the 90-percentile limits of the EPA licences, an increase from 92% last year. 84% of LWUs complied with 90-percentile SS limits of their licence, up from 82% last year. Over the past 22 years statewide compliance for SS has ranged from 86% to 96%. The percentage of LWUs complying has increased from a low of 30% to 84% (blue line in Chart 24) over this period. The major cause of non-compliance is the growth of algae in maturation ponds being measured as SS.

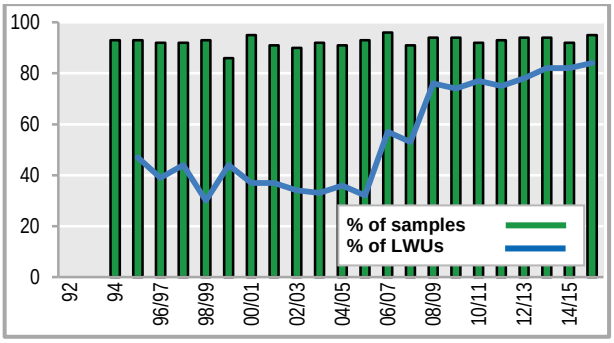


Chart 24 - Compliance with SS in licence (%)

Greenhouse gas emissions

The median greenhouse gas emissions was 390 tonnes per 1000 properties and has remained steady over recent years.

Biosolids reuse

The statewide median LWU reuse of biosolids was 100% in 2015-16, mostly for agricultural purposes. This has increased from 43% in 1998-99.

Sewage treated that was compliant

Median sewage volume treated that was compliant was 100%, up from 90% ten years ago (Chart 25). Forty LWUs fully complied with the regulator's requirements and 229 of the 300 LWU sewage treatment works were compliant at all times.

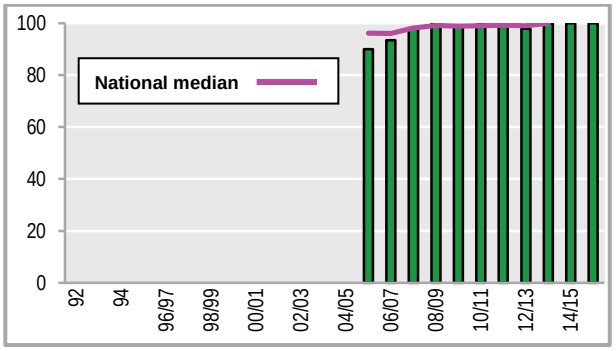


Chart 25 - Sewage treated that was compliant (% of volume)

Sewer main breaks and chokes

The statewide median was 38 per 100 km of main and has remained steady over recent years. The median has fallen from 75 to 38 over the past 24 years, partly as a result of the revision of the national definition for this indicator in 2009-10.

Sewer overflows reported to the environmental regulator

The statewide median was 0.9 per 100km of main.

Environmental incidents

7 Category 1 (minimal) water supply environmental incidents[8] were reported by 5 LWUs (no change from last year).

152 Category 2 (minor) sewage related environmental incidents were reported by 9 LWUs (165 by 12 LWUs last year) and 32 Category 3 (major) environmental incidents were reported by 1 LWU due to wet weather overflows (45 from 2 LWUs last year).

2.7 Economic – financial

Economic real rate of return

The statewide median was:

- 2.3% for water supply;
- 2.5% for sewerage.

The median economic real rate of return (ERRR) for water supply and sewerage was 1.8%. This has declined over the past 21 years. The 2001 to 2010 Millennium drought and the high rainfalls in 2010-11 and 2011-12 adversely impacted water supply and sewerage ERRRs.

Net debt to equity

The statewide median net debt to equity for the combined water supply and sewerage services[9] was -3% and it ranged between -37% and 26%, suggesting relatively little LWU borrowings. 78% of LWUs had a negative net debt to equity compared to 75% last year. Provided the LWU has a soundly based 30-year IWCM strategy or strategic business plan, which includes a 30-year total asset management plan (TAMP) and 30-year financial plan (including sensitivity analysis), net debt to equity of up to 50% would be satisfactory when financing a major capital works program for growth and/or improved levels of service (Appendix H).

Net profit after tax

The median net profit to income for water supply and sewerage was 17% (up from 10% last year) and ranged from -52% to 49% across the regional NSW LWUs. 23% of LWUs had a negative net profit to income compared to 21% last year.

Of the 21 LWUs with a negative net profit to income, 4 of these LWUs also had a positive net debt to equity, indicating a higher level of gearing.

Current revenue

The total revenue (less grants for capital works) in 2015-16 was $1,490M, comprising $800M for water supply and $690M for sewerage.

Total revenue has increased by 67% in real terms over the past 17 years.

Current replacement cost

The total current replacement cost of water supply and sewerage assets in regional NSW is 28,100M. This has increased by 102% in real terms over the past 17 years.

The median current replacement cost of system assets for water supply and sewerage was $17,400 and $15,400 per assessment respectively.

Capital expenditure

The total capital expenditure during 2015-16 was $238M for water supply and $204M for sewerage, an increase of 16% and decrease of 3% respectively from 2014-15.

The median capital expenditure per property was $212 for water supply and $186 for sewerage.

[9] It is important to note that most NSW LWUs have relatively little borrowings. The 2015-16 net debt to equity for major Australian utilities include 103% for Sydney Water, 116% for ICON Water, 154% for Melbourne Water, 140% for Yarra Valley Water, 62% for Queensland Urban Utilities, 53% for Water Corporation (WA), 116% for SA Water and 91% for Hunter Water.

Renewals expenditure

The median percentage of renewals expenditure to current replacement cost of system assets was 0.6% for water supply and 0.5% for sewerage.

While this expenditure may appear low, it is considered appropriate as the bulk of renewals expenditure is required towards the end of the economic life of an asset. Utilities should ensure that their asset management and financial plans are up to date, reflecting current asset condition.

2.8 Economic – efficiency

Water supply and sewerage operating cost

The statewide median operation, maintenance and administration (OMA) cost was $910 per property for water supply and sewerage. This has increased from $519 to $910 (Jan 2016$) over the past 24 years (Chart 26), largely due to more stringent drinking water and effluent quality standards and to increasing management costs.

LWUs with higher operating costs than the below medians should carefully examine their operations to determine whether they can improve their cost-effectiveness.

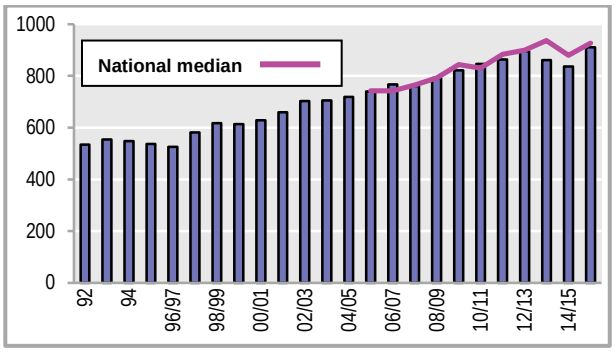


Chart 26 - Operating cost (OMA) - water and sewerage - F13 ($/property Jan 2016$)

Water supply operating cost

Chart 27 shows that the statewide median water supply operating cost per property was $440 (Jan 2016$), an 8% increase from last year.

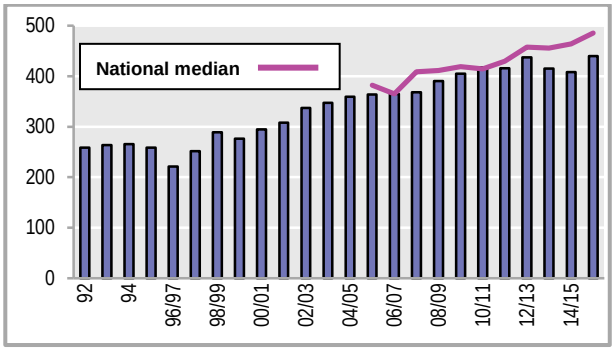


Chart 27 - Operating cost (OMA) - water supply - F11 ($/property Jan 2016$)

The median water supply operating cost per kL was 120 c/kL (Jan 2016$). This has risen from 58 c/kL over the past 21 years largely due to the reduced volume of water supplied per property and higher drinking water quality standards and management costs. Chart 28 shows the percentage each component contributes to this operating cost.

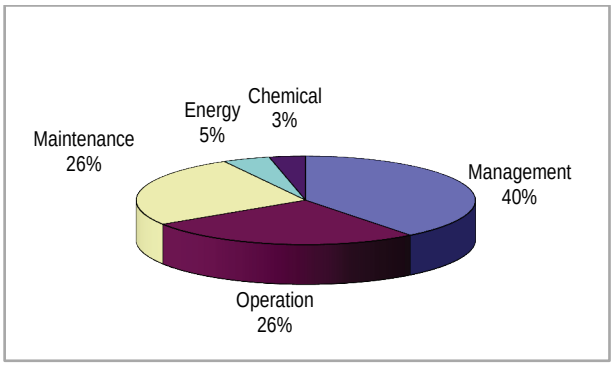


Chart 28 - Water components of operating cost (OMA) (%)

Sewerage operating cost

The statewide median sewerage operating cost per property was $470 (Jan 2016$), a 10% increase from last year.

The median sewerage operating cost per kL was 208 c/kL (Jan 2016$). This has risen from 89 c/kL over the past 24 years due to more stringent standards for effluent quality and sewage treatment, reduced sewage volumes and increasing management costs. Chart 29 shows the percentage each component contributes to this operating cost.

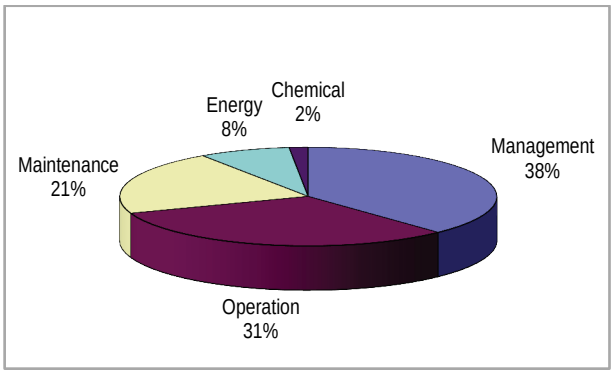


Chart 29 - Sewerage components of operating cost (OMA) (%)

Management cost

Chart 30 shows that the statewide median management cost was $312 per property for water supply and sewerage. The management cost per property has increased from $179 to $312 (Jan 2016$) over the past 24 years. The median management cost per property for water supply was $148. The median management cost for sewerage was $164.

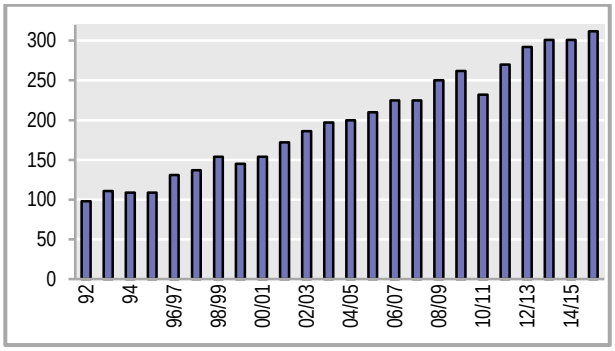


Chart 30 - Management cost - water and sewerage ($/property Jan 2016$)

Treatment cost

The statewide median treatment cost per property was:

- $59 for water treatment*
- $159 for sewage treatment (including chemical and energy costs).

* Only the utilities with water treatment works involving at least filtration and disinfection for over 50% of their supply have been considered.

Pumping cost

The statewide median pumping cost per connected property (including energy) was:

- $28 for water supply
- $59 for sewerage.

Water main and sewer main cost

The statewide median water and sewer main cost per connected property was:

- $71 for water mains
- $51 for sewer mains.

3 INTERSTATE COMPARISONS

To provide an overall assessment of the performance of regional NSW local water utilities (LWUs), key performance indicators are compared below with those reported by interstate utilities[10]. For detailed graphs on interstate performance comparisons over the past 10 years and an explanation of the utility abbreviations, refer to Appendix A[11]. For a discussion of the characteristics of the Australian urban water sector, refer to Appendix I.

It is noted that many performance indicators are significantly affected by the density of development (ie the number of properties served per km of water or sewer main), which for country NSW, Victoria and Queensland utilities is significantly lower than the capital city utilities. Also, the performance of smaller utilities such as the NSW LWUs and other country utilities is significantly affected by a lack of economy of scale[12].

3.1 Social

Water quality compliance with the ADWG microbiological indicator, the primary health related indicator, for NSW LWUs was high (99.9% of the 21,600 samples tested) and similar to most other Australian utilities.

Also, water quality complaints of 3 per 1000 properties were low and similar to most other Australian utilities.

Chart 31 shows that NSW LWUs continue to provide strong pricing signals through their residential revenue from usage charges of 73% (NWI Indicator F4), which was higher than the national median and all other Australian states and capital city utilities except for Sydney and Canberra.

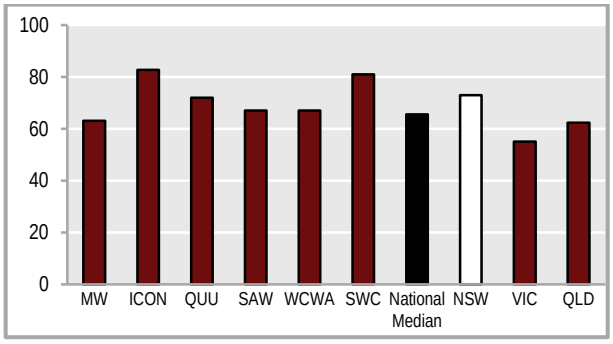


Chart 31 - Residential revenue from usage charges - water - F4 (2015-16) (%)

Typical residential bill (TRB) is the principal indicator of the overall cost of a water supply or sewerage service. It is the bill paid by a residential customer using the utility's average annual residential water supplied. The median **water supply TRB** for NSW LWUs is now lower than the national median and all the other Australian states and capital city utilities except for Sydney, Melbourne and country Victoria (Chart 32).

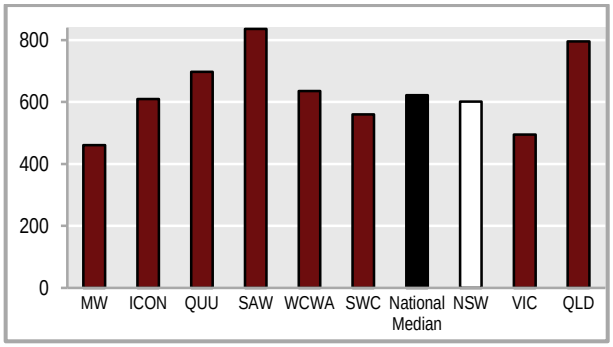


Chart 32 - Typical residential bill - water - P3 (2015-16) ($/assessment)

[10] Queensland Urban Utilities (QUU) commenced operation in July 2010 to provide water and sewerage services to former customers of Brisbane Water and 4 neighbouring councils (note 3 on page 68). From 2013-14, SA Water results include the country results due to the amalgamation of SA Water Adelaide and Country. Refer also to the **legend** and **notes 5, 6, 9 and 10** on page 68.

[11] Note 10 on page 68 explains why Hobart and Darwin have not been included in the comparisons. Although Notes 4 to 7 on page 68 indicate that statewide results for the country utilities are only available for Victoria and NSW, it is possible to also compare the results for country NSW and country Victoria with the reported results for country utilities for a few key NWI Indicators such as F4, P3, P8, A8 and W12 above. This has been done using the reported results for 19 country utilities in Queensland and 7 country utilities in Western Australia in the *National Performance Report 2015-16 for Urban Water Utilities*.

[12] The lack of economy of scale and the lower development density in small towns result in a **capital cost per property** for providing water supply trunk mains to a town of 300 properties being typically over **3 times** that required for servicing a contiguous city of 15,000 properties. The capital cost per property for other structures such as water treatment works, service reservoirs, pumping stations and dams is similarly affected. This highlights the importance of Government financial assistance towards the capital cost of servicing backlog areas (eg footnote 5 on page 2) and why appropriate standards should be used, such as those in the *National Handbook on Affordable Water Supply and Sewerage for Small Communities, ARMCANZ/WSAA, 1999*.

The median **sewerage TRB** for NSW LWUs was lower than Perth, similar to the national median and the 19 reporting country Queensland utilities but higher than country Victoria and other capital city utilities (Chart 33).

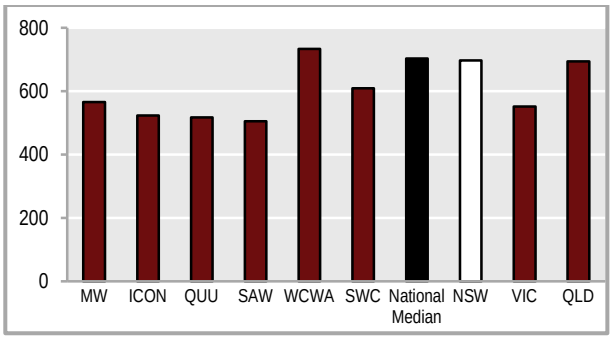


Chart 33 - Typical residential bill - sewerage - P6 (2015-16) ($/assessment)

The median **water and sewerage TRB** for the NSW LWUs was lower than country Queensland, the national median, Perth and Adelaide, but higher than country Victoria and all other capital city utilities. However, the first step water usage charge for NSW LWUs of 230 c/kL and the residential revenue from usage charges (NWI Indicator F4) are relatively high and provide strong pricing signals to encourage efficient water use.

Water main breaks of 9 per 100 km for the NSW LWUs (NWI Indicator A8) were similar to country Queensland and have remained much lower than all the other Australian states and the capital city utilities, indicating relatively good water main asset condition (Chart 34).

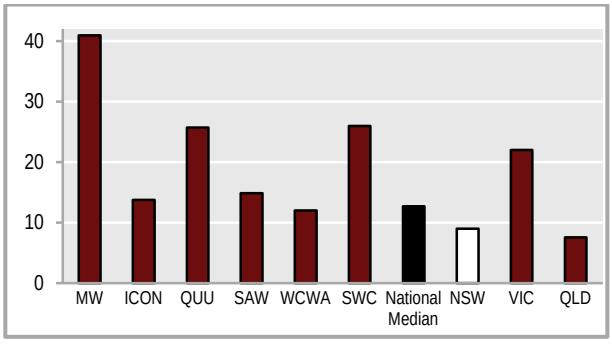


Chart 34 - Water main breaks - A8 (2015-16) (No. per 100km of main)

3.2 Environmental

Chart 35 shows that the **annual residential water supplied** (NWI Indicator W12) was 162 kL per connected property, which was similar to Melbourne, Brisbane and country Victoria but lower than the national median and all other Australian states and capital city utilities.

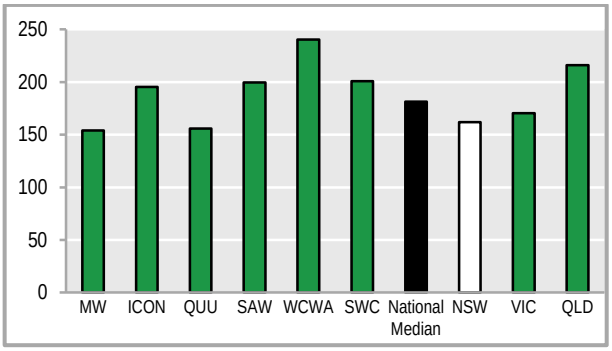


Chart 35 - Annual residential water supplied - W12 (2015-16) (kL per property)

The **sewage collected per property** of 234 kL (NWI Indicator W19) was lower than Sydney but higher than country Victoria, country Queensland, the national median and the other capital city utilities (Chart 36 and Table 15 of the *Benchmarking Report*).

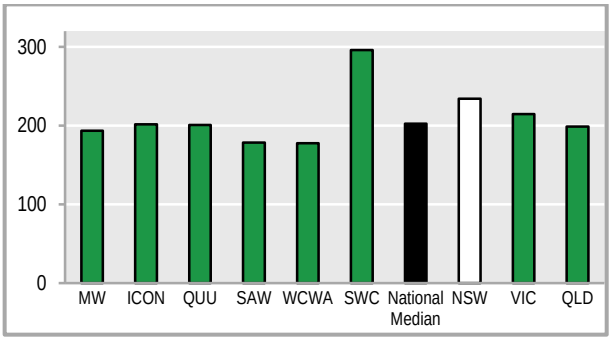


Chart 36 - Sewage collected per property - W19 (2015-16) (kL per property)

Real losses (leakage) of 70 L/connection/day (NWI Indicator A10) were similar to Melbourne, Canberra, Brisbane and country Victoria but lower than the national median, country Queensland and all the other capital city utilities (Chart 37 and Figure 26, and Tables 8A, 10 and 10A of the *Benchmarking Report*).

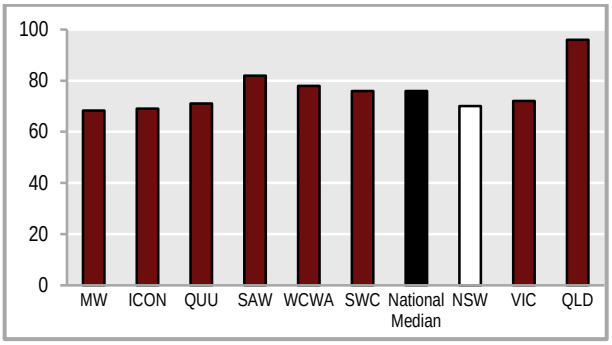


Chart 37 - Real losses - A10 (2015-16) (L/service connection/day)

The **percentage of sewage treated to a tertiary level** of 95% (NWI Indicator E3) was similar to Melbourne, Canberra, Brisbane and Adelaide but higher than country Victoria, country Queensland, the national median and the other capital city utilities (Chart 38 and Table 15 of the *Benchmarking Report*).

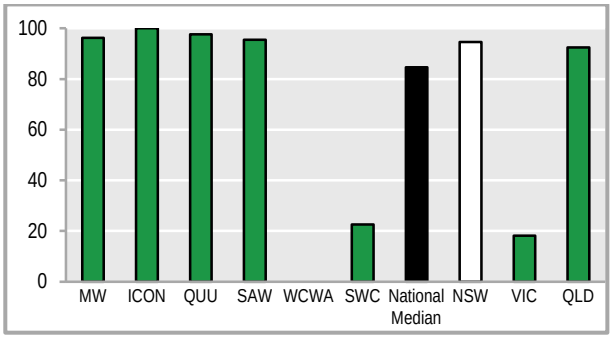


Chart 38 - Per cent of sewage treated to a tertiary or advanced level - E3 (2015-16) (%)

In total, 35,500 ML of **effluent** was **recycled** in regional NSW in 2015-16, which was 20% of the volume of sewage collected. Chart 39 shows that this percentage (NWI Indicator W27) was lower than country Victoria but higher than country Queensland, the national median and all the capital city utilities except Adelaide. The total volume recycled by each LWU (NWI Indicator W26) is shown in Appendix D.

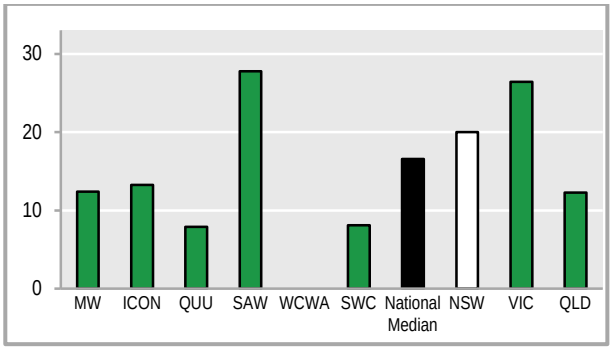


Chart 39 - Per cent of effluent recycled - W27 (2015-16) (%)

Sewer overflows reported to the environmental regulator (NWI Indicator E13) of 0.9 per 100 km of main were higher than the national median (Table 15 of the *Benchmarking Report*), as were the **sewer main breaks and chokes** (NWI Indicator A14) of 38 per 100 km of sewer main.

Total **greenhouse gas emissions** (NWI Indicator E12) was 390 tonnes per 1000 properties, which was lower than country Victoria and Perth, but higher than the national median and the other capital city utilities (Chart 40).

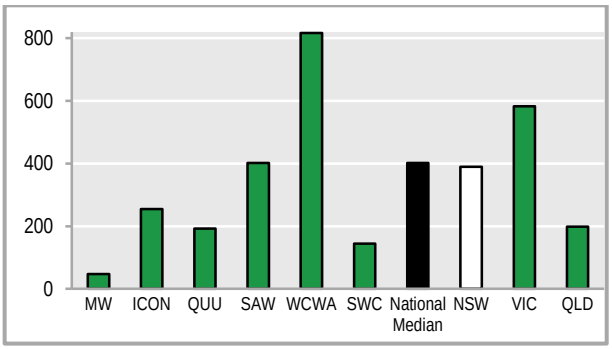


Chart 40 - Greenhouse gas emissions - water and sewerage - E12 (2015-16) (net tonnes CO2-equivalents per 1000 properties)

3.3 Economic

Chart 41 shows that the **economic real rate of return for water supply and sewerage** (NWI Indicator F19) of 1.8% was higher than country Victoria, similar to Sydney but lower than the national median, country Queensland and all the capital city utilities.

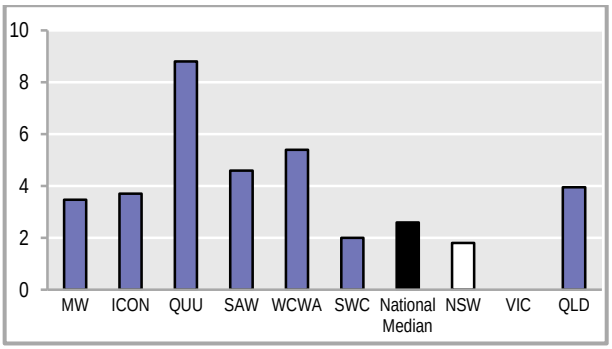


Chart 41 - Economic real rate of return - water and sewerage - F19 (2015-16) (%)

Annual median **operation, maintenance and administration (OMA) cost** for water supply (NWI Indicator F11) was $440 per connected property, which was lower than the national median and all other Australian states and capital city utilities except Sydney and Perth (Chart 42).

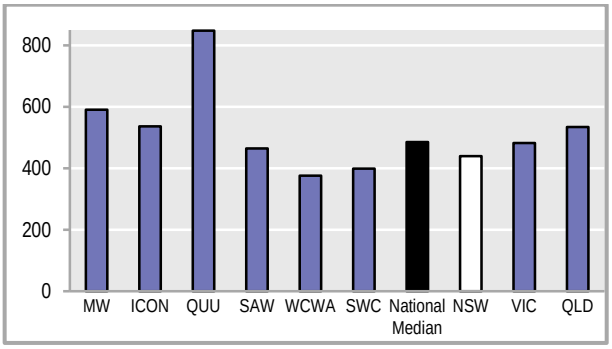


Chart 42 - Water supply operating cost (OMA) - F11 (2015-16) ($ per connected property)

Chart 43 shows that the median **OMA cost for sewerage** (NWI Indicator F12) was $470 per connected property, which was higher than country Victoria, country Queensland, the national median and the capital city utilities.

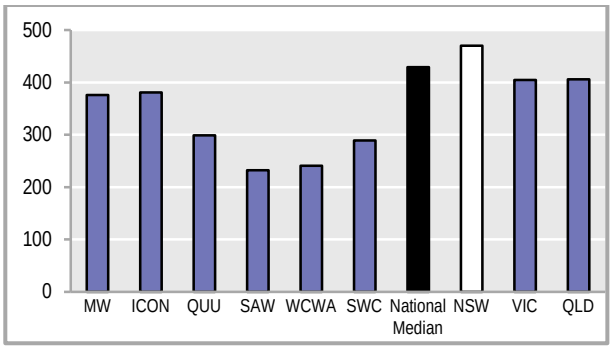


Chart 43 - Sewerage operating cost (OMA) - F12 (2015-16) ($ per connected property)

Water and sewerage capital expenditure per property (NWI Indicators F28 + F29) of $398 was similar to Adelaide, the national median and country Victoria but higher than country Queensland and the other capital city utilities except Canberra (Chart 44).

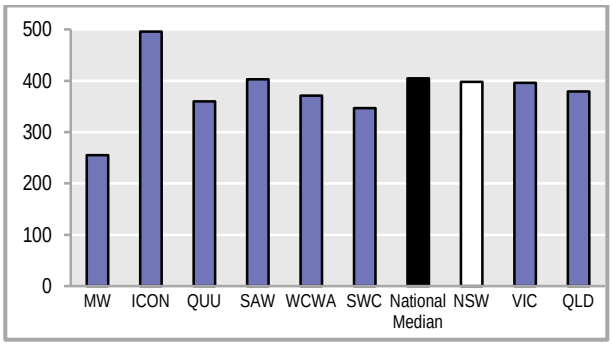


Chart 44 - Capital expenditure - water and sewerage - F28+F29 (2015-16) ($ per connected property)

Written down replacement cost per property for water supply (NWI Indicator F9/C4) of $10,700 (Chart 45 and Table 11 of the *Benchmarking Report*) was higher than country Victoria, country Queensland, the national median and all the capital city utilities except Canberra and Adelaide.

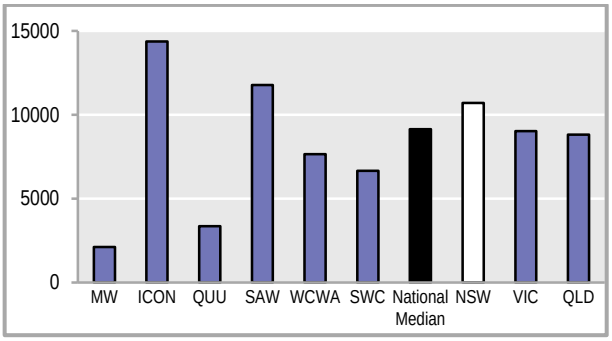


Chart 45 - Written down replacement cost - water supply - F9/C4 (2015-16) ($ per connected property)

Written down replacement cost per property for sewerage (NWI Indicator F10/C8) of $11,200 (Chart 46 and Table 16 of the *Benchmarking Report*) was higher than country Victoria, country Queensland, the national median and all the capital city utilities except Sydney.

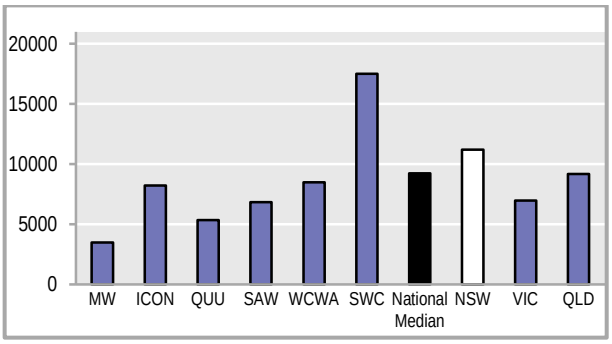


Chart 46 - Written down replacement cost - sewerage - F10/C8 (2015-16) ($ per connected property)

Net debt to equity (NWI Indicator F22) of -3% (Table 5A of the *Benchmarking Report*) was lower than country Victoria, country Queensland, the national median and all the capital city utilities.

Revenue from community service obligations (NWI Indicator F8) of 1% (Chart 47 and Table 5A of the *Benchmarking Report*) was lower than country Victoria, the national median and all the capital city utilities, but higher than country Queensland.

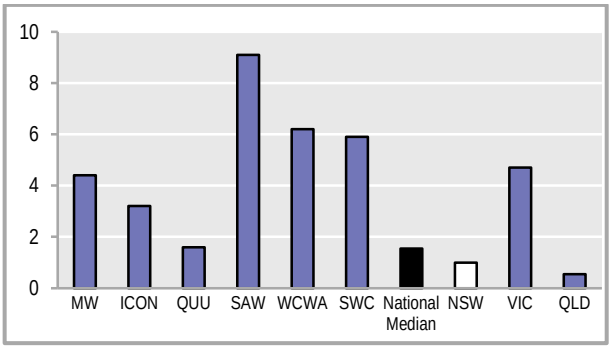


Chart 47 - Revenue from community service obligations - F8 (2015-16) (%)

4 BEST-PRACTICE MANAGEMENT

4.1 Legislative context

Of the 92 NSW regional local water utilities (LWUs), 4 LWUs (Central Coast Council, Cobar Water Board, Essential Water and Fish River water supply) are referred to as water supply authorities (WSA) and are listed in Schedule 3 of the *Water Management Act* (*WMA*) *2000* and operate under the powers and responsibilities[13] contained within the *WMA and Water Management (General) Regulation (WMGR*), with the Minister for Regional Water being responsible for the administration of the *WMA* and *WMGR*. The Minister and IPART have responsibilities relating to service charges[14] (refer s315 of the *WMA*) for these water supply authorities (except for Fish River water supply). Although maximum prices are determined by IPART, the service charges must be approved by the Minister annually and in addition the Minister, subject to the concurrence of the Treasurer, may specify/approve lower service charges. These WSAs do not have an operating licence but are expected to implement the outcomes required by the *NSW Government's Best Practice Management of Water Supply and Sewerage Guidelines (BPMG*)[15].

The powers and responsibilities[13] relating to the water service provision for the 88 council owned LWUs are contained within the *Local Government Act 1993 (LGA*). The *LGA* provides the governance and regulatory framework for local government and s24 of the *LGA* provides that local council may generally provide water supply and sewerage services appropriate to the current and future needs within its local community. Section 402-405 of the *LGA* specifies the long term planning and reporting requirements for council's services and s406 allows the Minister for local government to issue guidelines relating to integrated planning and reporting (IP&R) requirements. The IP&R Manual states 'councils that have responsibility for water supply and sewerage infrastructure need to comply with the requirements and timeframes of the *BPMG'*. These LWUs do not have an operating licence but are expected to implement the *BPMG* requirements and unlike the WSAs, the LWUs are allowed to set their own prices (service charges) in accordance with the *BPMG*.

The *NSW Government's Best-Practice Management (BPM) of Water Supply and Sewerage Framework* (page xiv) is the practical means of implementing the outcomes required by the *BPMG* (www.water.nsw.gov.au).

4.2 Best-practice management framework

The *BPM framework* is an outcome focussed, locally based self-determination regulatory system, and DPI Water monitors and regulates the achievement of these outcomes. The *BPM framework* addresses the 10 key national requirements (page xiv) and is the key driver for reform of planning, pricing, management, operation and maintenance and for continuing productivity and performance improvement by each utility.

Implementing the 19 outcomes required by the BPM framework will enable each utility to achieve appropriate, affordable, cost-effective and sustainable piped water supply and sewerage services. A utility must demonstrate implementation of the outcomes in order to pay a dividend from the surplus of its water supply and sewerage businesses or to seek financial assistance towards the capital cost of backlog infrastructure under the Country Towns Water Supply and Sewerage program.

All the LWUs should implement the 19 outcomes, involving the following six interrelated elements:

1. Integrated water cycle management
2. Water conservation and demand management
3. Strategic business planning
4. Drought management
5. Pricing and regulation of water supply, sewerage and trade waste
6. Annual performance monitoring

As noted on page 102, the *BPM framework* was streamlined in 2014 to minimise the regulatory burden and the cost to LWUs.

Nine documents[16] previously required over an 8 year cycle have been deleted. However, the analysis and responses for these documents have

[13] These in general relate to area of operation, type of service provision and functions, powers needed to carry out the necessary operational and administrative activities relating to its service provision.

[14] This is done for declared government monopoly services with an object to determine maximum service charges to protect customers.

[15] The guidelines were gazetted in 2007.

[16] The 9 deleted documents are 4 water conservation plans, 2 IWCM evaluation studies, 1 IWCM strategy, 1 strategic business plan and 1 drought management plan. Refer also to appendix H2 and figure H2.

been subsumed into the integrated water cycle management (IWCM) strategy and financial plan and the strategic business plan (SBP) and financial plan, which will need to be prepared every 8 years on a rotation of every 4 years (Chart 48).

A LWU's **peak planning document** for water supply and sewerage is the **later** of its 30-year **IWCM strategy and financial plan** and 30-year **SBP and financial plan**.

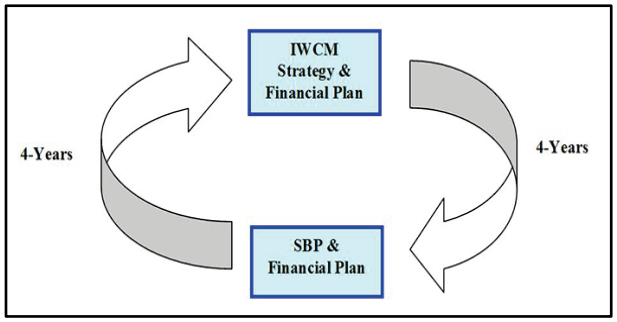


Chart 48 - IWCM strategy & financial plan and SBP & financial plan

Accordingly, in addition to the pricing outcomes and the annual performance monitoring, the streamlined implementation of the BPM framework involves preparation of an IWCM strategy and financial plan and a SBP and financial plan every 8 years on a rotation of every 4 years.

In addition, each LWU should annually 'roll forward', review and update its 30-year total asset management plan (TAMP) and its 30-year financial plan and to review its drinking water management system (DWMS), recycled water management system (RWMS) and triple bottom line (TBL) performance report in order to identify and address any emerging issues and necessary corrective action in its annual action plan to council. Importantly, the preparation of its annual action plan to council for both its water and sewerage businesses closes the 'planning loop' with the LWU's IWCM strategy or SBP.

4.3 Implementation of framework

NSW regional LWUs are required to report annually whether they have implemented each of the 19 planning, pricing and management outcomes required by the *BPM framework* (ten for water supply and nine for sewerage - page xiv) in notes 2 and 3 of the special purpose financial statements of their audited annual financial report. The current implementation of the outcomes is shown in Appendix C.

A LWU that prepares an IWCM strategy and financial plan and report in accordance with the 2014 IWCM check list (www.water.nsw.gov.au) will address 6 of the 19 BPM outcomes (2 x IWCM strategy, 2 x SBP, 1 x water conservation and 1 x drought management). After 4 years, the LWU will need to carry out a mid-term review of its IWCM strategy and prepare a strategic business plan and financial plan and report in accordance with the 2014 SBP check list (www.water.nsw.gov.au).

Preparation of an annual action plan to council for each of water supply and sewerage will address the remaining 5 BPM outcomes (2 x performance monitoring, 2 x full cost recovery and 1 x strong pricing signals - NWI Indicator F4 (residential revenue from water usage charges)). The 8 remaining pricing outcomes are addressed by implementation of sound residential pricing, non-residential pricing, commercial developer charges, a sound trade waste regulation policy and approvals and appropriate trade waste pricing.

The current **overall level of implementation** of the 19 planning, pricing and management BPM outcomes is 92%, comprising 93% for water supply and 90% for sewerage. 78% of LWUs have implemented over 85% of the required outcomes for water supply and sewerage. Currently, 56% of the utilities have implemented all of the outcomes for water supply and 59% for sewerage.

88% of LWUs have either completed or commenced their **IWCM strategy and financial plan**. 67 LWUs need to prepare a new 30-year IWCM strategy, financial plan and report in accordance with the 2014 IWCM check list. There are 12 LWUs that only need to complete the conditions of approval for their IWCM Strategy. These IWCM strategies once completed should have sound water conservation and drought management measures for implementation. Water conservation measures implemented by each LWU are disclosed in Table 8C of the *2015-16 NSW Benchmarking Report*.

Although 93% of LWUs have a SBP and financial plan (Chart 49), the SBPs for 69 LWUs are over 4 years old. These LWUs need to prepare a new 30-year IWCM strategy, financial plan and report in accordance with the 2014 IWCM check list.

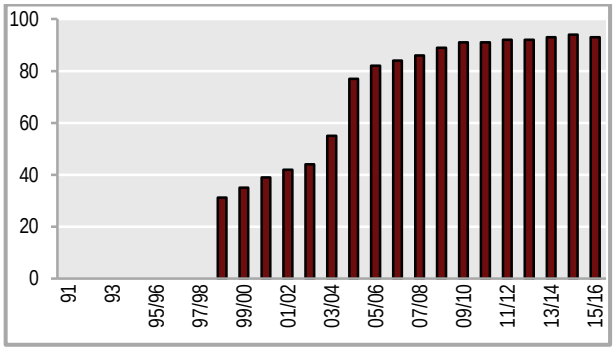


Chart 49 - Per cent of LWUs with 30-year strategic business plan

All LWUs are achieving **full cost recovery** for water supply and 93% are achieving full cost recovery for sewerage. Six sewerage utilities did not achieve full cost recovery. All LWUs have now abolished water allowances and have pay-for-use water supply **pricing**, a key requirement of the National Water Initiative.

Each LWU should continue to review its annual tariffs for water, sewerage and trade waste, its developer charges, its operation, maintenance and administration costs, and its projected volume of water to be supplied to customers and the resulting revenue in order to ensure it continues to achieve full cost recovery.

Further guidance on achieving full cost recovery and assessing infrastructure renewal needs is provided in sections 4.5 and 5.4 of the *2015-16 NSW Benchmarking Report*.

78% of utilities are achieving the required outcome for **residential revenue from usage charges** including 34 LWUs (72% of utilities) with 4,000 or more connected properties achieving the 75%/25% usage/access charge revenue split and 29 LWUs (85% of utilities) with fewer than 4,000 connected properties achieving the 50%/50% usage/access charge revenue split. Water usage charges now provide 73% of the residential revenue for water supply, up from 20% in 1996-97 following the major reforms in 2004.

At present, 86% of LWUs have appropriate **non-residential** water supply **charges** while 81% have appropriate non-residential sewerage charges. Non-residential water supply and sewerage charges for each LWU are shown in Tables 6B and 7B of the *2015-16 NSW Benchmarking Report*.

85% of LWUs now have an appropriate water supply **development servicing plan** (DSP) with commercial **developer charges** and 85% of LWUs have a sewerage DSP.

88% of LWUs have an appropriate **liquid trade waste regulation policy** and have issued a liquid trade waste approval to all their trade waste dischargers. 83% of LWUs have appropriate **liquid trade waste fees and charges**, compared with 20% of LWUs eleven years ago. However, only 21 LWUs have authorisation to approve medium risk liquid trade waste discharges, an increase of 11% from last year.

All LWUs reported their water supply and sewerage **performance monitoring** data to DPI Water, including the 28 LWUs required to report for the National Performance Report (NPR). Data for the NPR was audited and provided to the Australian Bureau of Meteorology (BOM) by the due date as per the National Performance Framework.

All 84 LWUs providing a drinking water supply have a risk-based **drinking water management system** (DWMS), in accordance with the *NSW guidelines for drinking water management systems 2013*. Many LWUs have completed the annual review of their DWMS as required by the guidelines.

49 LWUs have an effluent reuse scheme with an approved **recycled water management system**, in accordance with the *NSW guidance for recycled water management systems 2015*.

Many LWUs are at various stages of implementing the outcomes required by the **protocol for assuring the safety of water supply distribution systems** as per Circular LWU 18.

4.4 Dividend payment

Appendix C indicates that only 8 LWUs paid a dividend in 2015-16 from the surplus of their water or sewerage businesses. Although, it is slightly up from 5 in 2014-15.

Each utility which has implemented all the BPM outcomes, including a current IWCM strategy and financial plan, is encouraged to pay an ‘efficiency dividend’ from the surplus of its water supply and sewerage businesses to the council’s general revenue.

4.5 Statutory approvals, concurrences and inspections

All LWU proposals for the construction or modification of a dam, a water or sewage treatment works or a recycling project require DPI Water approval under section 60 of the *Local Government Act, 1993* and section 292 (1) (a) of the *Water Management Act, 2000*. This approval process assures the use of ‘right infrastructure technology’ for these key specialist barrier assets.

There were 66 section 60 review activities relating to sewage treatment works and recycled water management systems for 26 schemes in 2015-16. Additionally, there were 9 section 60 approvals with a total capital expenditure value of $140M.

There were 50 section 60 review activities relating to water treatment works for 10 schemes. Additionally, there were 4 section 60 approvals with a total capital expenditure value of $80M.

DPI Water also provides technical support and endorsement for the design and operation of fluoridation plants for NSW Health in the implementation of water fluoridation under the *NSW Fluoridation of Public Water Supplies Act 1957*.

In 2015-16 11 plants for 9 LWUs were endorsed for construction and operation.

Although LWUs are responsible for approving liquid trade waste dischargers to their sewerage system through section 68 of the *Local Government Act, 1993*, under s90 (1) of the *Local Government Act* and clause 28 of the *Local Government (General) Regulation 2005,* LWUs are required to obtain concurrence from DPI Water to the LWU's approval. LWUs are also required to obtain DPI Water consent to the LWU's trade waste policies. To assist LWUs with best-practice regulation of sewerage and trade waste in regional NSW, the NSW Government has issued the *Liquid Trade Waste Regulation Guidelines, 2009* (www.water.nsw.gov.au).

All LWUs were provided assumed concurrence to approve low risk trade waste applications. LWUs can also apply to authorise assumed concurrence for medium risk dischargers.

During 2015-16 there were 159 review activities relating to liquid trade waste covering 43 LWUs. Additionally, there were 110 concurrences issued for LWU approval of high and medium risk dischargers and 9 policies reviewed covering 8 LWUs. All concurrences were issued within the timeframes nominated in the guidelines.

DPI Water is also responsible for approving applications for temporary trade of surplus town water allocation from a LWU's specific purpose access licence in accordance with clauses 17 (5) and 19(5) of the *Access Licence Dealing Principles Order, 2015*.

During 2015-16 a total of 20 temporary water trade applications were assessed and approved covering 7 LWUs. The total volume of surplus town water allocation traded was 2,000 ML.

As required by the BPM framework, there were 112 review activities relating to IWCM strategies, SBPs, DSPs, financial plans, asset management plans, and water and sewerage pricing covering 90% of LWUs in 2015-16. A total of 32 concurrences and deemed pricing compliance were issued.

Under section 61 of the *Local Government Act, 1993*, DPI Water carries out regular independent inspections of the 543 LWU water and sewage treatment works and recycled water systems to assure effective, efficient and safe operation and maintenance of these key specialist assets. A risk management framework is employed in determining the frequency of these statutory inspections. An inspection report is issued to the LWU following each inspection. LWUs are required to review the report and implement the recommendations.

All LWU water supply and sewerage treatment systems were inspected in 2015-16. A total of 520 inspections were carried out, with 226 on water treatment works and 294 on sewage treatment works and recycled water systems.

4.6 Regulations, tools and training

DPI Water provides expert advice and technical support to LWUs and other stakeholders for regional water supply and sewerage services. This support covers all aspects relating to planning, pricing, treatment technology selection, capital works procurement, operation, maintenance and training.

Regulations and tools

In carrying out its leadership, regulatory and mentoring role, DPI Water has prepared a series of comprehensive guidelines, check lists, software and tools to provide a framework for efficient implementation of the best-practice management requirements.

During 2015-16 DPI Water released the following to assist the LWUs:

- *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater, 2016*;
- *NSW Guidance for Recycled Water Management Systems, 2015*;
- Cost benefit analysis (CBA) toolkit and typical residential bill (TRB) calculator;
- Annual update of the NSW water supply and sewerage construction cost indices. Attachment 1 in the *NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets, 2015*, NSW Office of Water (www.water.nsw.gov.au);
- Annual update of the liquid trade waste fees and charges. Appendix 1 in the *Liquid Trade Waste Regulation Guidelines, 2009*.

DPI Water also contributed to the following reviews together with other agencies:

- Load-based licensing (LBL) scheme, EPA;
- Draft ADWG framework on microbial health based targets (HBT), NHMRC;
- Australian Guidelines for Water Recycling, Department of Agriculture and Water Resources;
- National guidelines for managing solids, fats, oils and grease from food premises, WSAA;
- National certification framework for water treatment operators, Australian Government;

- National Performance Framework, BOM;
- IPART report on the Review of Reporting and Compliance Burdens on Local Government.

Other existing guidelines and tools include:

Australian drinking water guidelines 2011 – A high priority for each local water utility is to provide a public drinking water supply that:

1. complies with ADWG for microbiological quality (health related);
2. complies with ADWG for chemical quality (health related);
3. maintains the microbiological[17] and chemical drinking water quality through providing appropriate water supply and treatment infrastructure and carrying out the necessary operation and maintenance activities. These include adjusting treatment processes in response to changes in raw water characteristics and regular inspections of service reservoirs[18] in order to detect and repair any defects in the reservoir roof, wall or vermin proofing which may allow contamination of the stored water by birds, wasps, vermin, animals and windborne contaminants; and
4. maintains effective disinfection and the integrity of the utility's water supply distribution systems in accordance with Circular LWU 18 of June 2014.

Further guidance is available in section 4.3 of the *2015-16 NSW Benchmarking Report*.

NSW guidelines for drinking water management systems, NSW Health and NSW Office of Water, 2013 provide guidance on the development and implementation of a drinking water management system (DWMS) for water suppliers in NSW including local water utilities and larger private suppliers to meet the provisions of the *NSW Public Health Act 2010* and *Public Health Regulation 2012* (www.health.nsw.gov.au/environment/water).

The ***NSW Water and Sewerage Strategic Business Planning Guidelines****, July 2011* (http://www.water.nsw.gov.au/__data/assets/pdf_file/0004/549652/utilities_nsw_water_sewerage_strategic_planning_guidelines.pdf) assist local water utilities to prepare and implement a sound strategic business plan and financial plan for water supply and sewerage. Such planning enables each utility to improve the management and the efficiency of its operations.

DPI Water has published comprehensive ***Water Supply, Sewerage and Trade Waste Pricing Guidelines*** *2002* and ***Liquid Trade Waste Regulation Guidelines*** *2009* (under review) (http://www.water.nsw.gov.au/__data/assets/pdf_file/0008/549602/town-planning-water-utilities-liquid-trade-waste-guidelines.pdf).

2016 NSW ***Developer Charges Guidelines for Water Supply, Sewerage and Stormwater*** pursuant to section 306 (3)(C) of the *Water Management Act 2000*. These guidelines modify and supersede the *Water Supply, Sewerage and Stormwater Developer Charges Guidelines, 2002* in accordance with the recommendations of the *IPART Review Report* and stakeholder feedback on a consultation draft of the new guidelines (http://www.water.nsw.gov.au/__data/assets/pdf_file/0011/663698/2016-Developer-Charges-Guidelines.pdf).

NSW Guidance for Recycled Water Management Systems, DPI Water, 2015 was released following extensive industry consultation. The guidance is the practical means of implementing the requirements of the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)*[19].

National performance framework – the 28 regional NSW LWUs with more than 10,000 connected properties are required to annually report urban water data to the BOM for the *National Performance Report for Urban Water Utilities* (www.bom.gov.au).

Independent audits of the auditable indicators in the *2013-14 National Performance Framework* for the 28 LWUs were undertaken in 2006-07, 2009-10, 2012-13 and 2015-16. Indicators which met the rigorous national auditing requirements have been published in the *National Performance*

[17] While a boil water alert will be necessary to protect the community, for example if a LWU's raw water sources become highly turbid due to major flooding, over 80 per cent of recent boil water alerts in regional NSW were found to be avoidable through appropriate maintenance and chlorine residuals (page 10 of *2015-16 NSW Benchmarking Report*). LWUs need to follow the NSW Health response protocol if E. coli bacteria is found, or if there is failure of the disinfection system, or disinfection is otherwise ineffective eg due to poor treated water quality (http://www.health.nsw.gov.au/environment/water/Pages/nswhrp-microbiological.aspx).

[18] A copy of Circular LWU 18 – Assuring the Security of Urban Water Supplies is available in Appendix E of the *2015-16 NSW Benchmarking Report* (www.water.nsw.gov.au). Key results of the LWU service reservoir inspection reports are shown on page 13 of the *Benchmarking Report*.

[19] Environment Protection and Heritage Council, the Natural Resource Management Ministerial Council and the Australian Health Ministers' Conference, November 2006.

Report 2015-16. These LWUs serve 75% of the connected properties in regional NSW. In addition, the reported values for the 30 NWI financial performance indicators have been independently audited annually since 2006-07 for all of the LWUs.

The NSW Government's ***assuring future urban water security: assessment and adaption guidelines for NSW local water utilities***, NSW Office of Water, Draft – December 2013 (www.water.nsw.gov.au) is tackling the challenge of the impact of climate variability on regional local water utilities. The guidelines build on the existing robust[20] **NSW security of supply basis** for sizing of urban water supply headworks. The guidelines are informed by the results of a pilot study[21] on 11 existing water supplies in regional NSW.

The guidelines provide a sound basis for LWUs to assess the impact of future climate variability on the secure yield of their urban water supply. The impact on secure yield is influenced by the location of the LWU and the utility's headworks system.

The NSW Security of Supply basis for sizing water supply headworks was developed in response to the experiences and lessons learnt from the severe 1979-1983 drought. This basis for sizing headworks is commonly referred to as the "**5/10/10 rule**" and is designed to maintain water supply to customers with only moderate water restrictions during a more severe drought than had been experienced over the previous 100 or more years.

Future 30-year IWCM strategies will need to include assessment of the secure yield of the utility's water supply in accordance with the new climate variability guidelines.

*NSW **Water and Sewerage Community Involvement Guidelines** – consultation draft*, October 2012, NSW Office of Water is available on request to assist with planning and developing a community engagement program (urbanwater.ctw@dpi.nsw.gov.au).

Training and mentoring

DPI Water provides nationally accredited training for water utility operators in water and wastewater treatment operation, fluoridation and trade waste regulation. Training courses on assuring the safety of water supply in distribution systems, water treatment operations for engineers, recycled water systems and best-practice management have recently been developed and delivered at the request of the LWUs.

DPI Water offers a number of accredited training courses and update seminars to assist the LWUs in implementing the requirements of the *BPM framework* (www.water.nsw.gov.au).

DPI Water's **water and wastewater treatment courses** were initially developed in the 1960s and have been evolving since then to provide best-practice training for LWUs. The comprehensive technical courses are designed to complement the support provided by DPI Water through its water and sewerage inspection program under section 61 of the *Local Government Act, 1993*. Water and wastewater treatment courses are divided into two parts. Part 1 addresses basic treatment principles while Part 2 concentrates on advanced operations and practical experience and competency at the operator's own treatment works. Completion of both parts usually takes one to two years. After completion of Part 2 of water or wastewater treatment courses, the successful candidates are awarded a Certificate III, comprising current nationally accredited competency units, through an auspice agreement with TAFE NSW (OTEN). Completion can usually take up to a year.

TAFE NSW offers **training in the operation of water fluoridation plants**, supported by NSW Health. DPI Water provides for the technical sessions covering aspects relating to *NSW Code of Practice for Fluoridation of Public Water Supplies*, fluoridation equipment design and control requirements to ensure the precise capacity and operation of the plant, and satisfactory public health, environmental and safety outcomes.

The trade waste regulation course was developed in the mid-1990s to support LWUs in the regulation of liquid trade waste discharges to sewer. The course is aligned with the *BPM framework* and the requirements of the National Training Package. This course has been developed for LWU trade waste officers, environmental health officers and wastewater engineers involved with the regulation of trade waste discharges. The course is designed to provide LWU staff with necessary skills in the regulation of trade waste discharges. This includes policy and pricing development and

[20] *Impacts of the 2001-2007 Drought and Climate Change on Security of Water Supplies in Country NSW* – Peter Cloke, NSW Public Works and Sam Samra, NSW Office of Water, Institution of Engineers Australia, 32nd Hydrology and Water Resources Symposium, Newcastle, December 2009 (available on request from urbanwater.ctw@dpi.nsw.gov.au).

[21] *NSW Response for Addressing the Impact of Climate Change on the Water Supply Security of Country Towns* – Sam Samra, NSW Office of Water and Peter Cloke, NSW Public Works, Institution of Engineers Australia, *Practical Responses to Climate Change National Conference*, Melbourne, October 2010 (available on request from urbanwater.ctw@dpi.nsw.gov.au).

implementation, trade waste approvals, monitoring and coaching of trade waste dischargers to assist them to comply with their approval conditions, as well as enforcement provisions to address any persistent non-compliance. Successful candidates from this course are awarded a Certificate IV in Water Operations (Trade Waste) through an auspice agreement with TAFE NSW (OTEN).

DPI Water also conducts update seminars in water treatment, wastewater treatment, trade waste regulation and best-practice management for updating employee training and skills, which needs to be attended at least once every 3 years (www.water.nsw.gov.au). Additionally, **recognition of prior learning** (RPL) workshops are also conducted to ensure skilled operators with outdated qualifications are able to get a nationally accredited qualification.

DPI Water training highlights for 2015-16 include:

- 6 water treatment operation courses and update seminars were delivered. There were 89 attendees from 50 LWUs with 12 receiving Certificate III.
- 4 fluoridation courses were delivered. There were 58 attendees from 30 LWUs with 58 receiving competency certification.
- 6 sewage treatment operation courses and update seminars were delivered. There were 85 attendees from 39 LWUs with 21 receiving Certificate III.
- 5 recycled water management system training courses were delivered. Of the 127 attendees, 87 represented 36 LWUs.
- One each liquid trade waste regulation course and update seminar was delivered. There were 63 attendees from 27 LWUs. 18 enrolled in the Certificate IV course. 14 Certificate IV were awarded to officers from 10 LWUs.
- One each assuring the safety of water supply in distribution systems course and water treatment operations for Engineers course was delivered, with 20 attendees from 10 LWUs.
- No best-practice management seminars or courses were offered.

Appendix I of the *2015-16 NSW Benchmarking Report* discloses that each of the 84 LWUs with water treatment works responsibility[22] has at least one fully qualified water treatment operator[23] to operate the 164 LWU water treatment works and 78 chlorinators and aerators[24].

NSW LWUs have a total of 429 fully qualified operators who meet the requirements of the national certification framework for water treatment operations. Continuing professional development and updating of operator training and skills is required at least every 3 years.

In addition, 445 LWU operators are fully qualified wastewater treatment operators, with a Certificate III in wastewater treatment operations or equivalent and are employed in operating a LWU sewage treatment works.

In addition to training, DPI Water provides mentoring support to LWUs, including regular inspections and mentoring of operators of LWU water and sewage treatment works, chlorinators and aerators, recycled water systems, as well as assistance with the preparation and review of LWU planning, pricing and strategy documents.

4.7 Triple bottom line (TBL) performance reports

DPI Water provides each utility and IPART with an annual TBL performance report for the utility's water supply business and for its sewerage business (a sample report is shown on pages 75 and 76). The draft TBL report and the annual action plan template were provided to each LWU in February 2017 for review with the final provided in March 2017.

Each LWU's annual TBL performance report provides a brief description of the LWU's water supply or sewerage system together with a summary of the LWU's performance for over 50 key performance indicators. The TBL report also discloses whether the LWU has implemented each of the ten water supply and nine sewerage outcomes required by the *BPM framework*.

Each TBL report groups the performance indicators under system characteristics, social, environmental and economic factors. For each indicator, the LWU's result is shown against the statewide and national medians, and ranked against all LWUs and also against similar sized

[22] Excludes Cobar Water Board which provides a bulk raw water supply.

[23] An operator of a water treatment works must have a Certificate III in Water Operations (Water Treatment) or equivalent and must be employed in operating a LWU treatment works (refer to page 23 of *NSW Guidelines for drinking water management systems*, NSW Health and NSW DPI Water, 2013).

[24] An operator of a chlorinator or aerator must have a DPI Water Part 1 Certificate (Chemical Dosing Systems) or equivalent, must have also completed chlorine safety training and must be employed in operating a LWU chlorinator/aerator (refer to page 23 of NSW Guidelines for drinking water management systems).

LWUs. These rankings help each LWU to quickly understand its relative performance. The rankings are based on quintile groupings, with the top 20% of LWUs for each indicator being ranked 1 and the bottom 20% being ranked 5 (LWUs in the range 40% to 60% are ranked 3).

LWUs will appreciate that each of the performance indicators is a 'partial' indicator only and therefore cannot be interpreted in isolation. It is also emphasised that the rankings are indicative only and do not take account of the wide range of factors that can impact on a LWU's performance, as discussed in section 4.9. The rankings help LWUs to quickly identify any areas of apparent under-performance in comparison with similar sized LWUs.

The second page of the TBL report provides graphs with the LWU's performance and statewide medians over the past 10 years for 15 key indicators. These graphs enable the LWU to compare its performance with the statewide median and review trends over time for each indicator, which provide the most meaningful assessment of performance.

Each LWU needs to review its performance using its annual TBL performance report and prepare and implement a sound annual action plan to council, which addresses any emerging issues or areas of underperformance, as outlined in section 4.8.

Following the review of its TBL performance report, each LWU should 'roll forward', review and update its 30-year total asset management plan and 30-year financial plan. A brief report[25] to council should be provided on the updated financial plan and any necessary corrective action must be noted in the action plan to council.

4.8 Review performance and prepare action plan

Each utility should aim to provide the levels of service negotiated with its community at the lowest sustainable typical residential bill. This is done by setting cost-reflective developer charges, non-residential charges, and liquid trade waste fees and charges, and then minimising the TRB on a sustainable basis. Utilities that have implemented the *BPM framework* and wish to pay an 'efficiency dividend' to the council's general revenue should also include the dividend amount.

[25] An example report to council on the updated financial plan is provided in Appendix H of the *NSW Water and Sewerage Strategic Business Planning Guidelines, July 2011* (www.water.nsw.gov.au).

Each LWU is required to prepare and implement a sound annual action plan to council, based on its review of the TBL performance report, its DWMS, its RWMS, section 61 reports and its updated TAMP and financial plan. The action plan addresses any areas of under-performance and documents any target dates for remedial actions. It should also report results for the financial year for the key actions set out in the later of the utility's strategic business plan and IWCM strategy.

Guidance for councillors on quickly understanding and using your TBL performance report and action plan is provided in Appendix G of the *NSW Water and Sewerage Strategic Business Planning Guidelines, July 2011* (www.water.nsw.gov.au). This appendix will also assist the water and sewerage manager in preparing a sound action plan to council. An updated copy of this appendix is emailed annually by DPI Water to each LWU with the LWU's TBL reports and action plan templates.

A key role of the annual action plan is to **'close the planning loop'** with the later of your IWCM strategy and financial plan and strategic business plan. The utility's **TRB** must therefore be compared with its projection and any necessary corrective action documented in the action plan.

An example action plan is shown on pages 77 and 78. DPI Water will continue to provide a template for each LWU's action plan together with the annual TBL reports for each LWU. The template will show your LWU's results, the drivers for each indicator, and the ranking relative to similar sized LWUs followed by the ranking relative to all LWUs. Space is provided for the LWU to document its proposed actions and its findings.

To prepare and implement a sound action plan to council, each LWU should review its performance indicators under 'health', 'levels of service', 'environmental' and 'economic', taking into account factors that may affect performance, as outlined in section 4.9. If the indicators are unsatisfactory, the LWU will need to develop, assess and adopt options to improve performance.

It is important to note that the **typical residential bill** is the **principal indicator of the overall cost** of a water supply or sewerage service and is the annual bill paid by a residential customer using the utility's average annual residential water supplied. A critical element in minimising the typical residential bill and providing value for money for the community is to ensure that the operating cost (OMA) is efficient. Each LWU therefore needs to carry out an ongoing review of the components of its operating cost. Particular attention is required for components with a low ranking (ie 4 or 5).

The components[26] of operating cost highlight the significant differences that can arise depending on the type of infrastructure (eg. whether a bulk storage dam is provided or whether the utility has a groundwater supply) and the type of service (eg. pumped vs gravity, full treatment vs chlorination). Components are:

Management cost – includes administration, engineering and supervision and is typically almost 40% of the total operating cost.

Treatment cost (water) – dependent on the type and quality of the water source and the extent of treatment provided. There are great economies of scale for the operation of water treatment works.

Treatment cost (sewage) – dependent on the type of treatment and the discharge requirements. Where discharge licence conditions are stringent (eg low levels of phosphorus), treatment costs will be high. There are significant economies of scale for operation of treatment works.

Pumping cost (water) – dependent on topography and the location of the water source. For example, Essential Energy has a high pumping cost due to the long distance required to pump from the water source, while Fish River is almost a fully gravitational supply, with negligible pumping costs. There are significant economies of scale in pumping cost per property.

Pumping cost (sewage) – dependent on topography. There are significant economies of scale in pumping cost per property.

Energy cost – for water supply, this is mainly a consequence of pumping requirements. Energy cost may be reduced by maximising pumping in off-peak periods or by obtaining a competitive energy rate from the energy supplier (eg maximising off-peak pumping has provided annual savings in energy costs of over $200,000 for a number of large water supplies).

For sewerage, energy cost is a component of pumping and treatment costs. Significant cost savings may be available by optimising energy use in the treatment process (eg optimising energy use has provided annual savings of over $100,000 for a number of large sewage treatment works).

Water and sewerage mains cost – this is dependent on the age and condition of the mains, the ground conditions, and the number of connected properties per kilometre of mains.

4.9 Factors affecting performance

Many factors, including the extent of the services provided by each utility, geography and climate impact on a utility's performance and make the comparison of utilities complex. An understanding of these factors is vital for valid interpretation of performance data.

The most meaningful indicators for each utility are trends over time for each utility. However, even with these, care needs to be exercised due to changes in the factors over time. For comparison between utilities, each utility should benchmark its performance against utilities with similar characteristics. Examples of some of the factors affecting the performance of a utility's water supply system are outlined below.

Location

1. **Climate** – the variability of rainfall is a key driver of water supply costs in relation to water demand and water supply security during droughts. This will affect both capital and operating costs. For example, the average annual residential water supplied in inland NSW is approximately 60% higher than coastal NSW.
2. **Geography** – The geology, geography and topography can have a significant effect on water and sewage transportation costs, particularly with pumped systems compared to gravity systems.
3. **Water Resources Availability and Proximity** – Bulk storage and/or long water transfer mains and channels can incur significant capital and operating costs. Such costs would not apply for utilities relying on a nearby groundwater source or those receiving a regulated supply from a Water NSW dam.

Utility characteristics

4. **Asset life cycle** – Recently constructed systems have much lower maintenance and renewals costs compared with older systems.
5. **Development density** – Distribution networks are a major investment component of a water supply system. The density of urban

[26] Figures 31 to 37, Figures 60 to 66 and Tables 11, 13, 16 and 18 of the *2015-16 NSW Water Supply and Sewerage Benchmarking Report* detail these components for each LWU. Page 76 shows that each LWU's TBL Performance Report provides graphical comparisons of the components of its operating cost. Refer also to pages 75 and 76.

development has a large effect on the infrastructure cost (eg the number of properties served per km of main varies in regional NSW from 3 to nearly 70). Another key factor is the number of small discrete urban water supply systems operated by the utility that tend to greatly increase the operating cost per property.

6. **Size of LWU** – there are significant economies of scale for large utilities, particularly the capital cost of infrastructure and the operating cost of treatment works.
7. **Employees** – the number of employees per 1,000 properties is a good indicator of operating and management costs. If the number of employees per 1,000 properties is significantly higher than the median for the size of LWU, you should examine the management structure and identify the reasons for the difference and provide a brief explanation or your proposed remedial action in the action plan. However, it is important to note that a higher number of employees per 1,000 properties is necessary for **small** non-contiguous **water supply systems** and for **small water or sewage treatment works**.
8. **Employee awareness and training** is of strategic importance in the safe and effective delivery of water supply and sewerage services, eg refer to Element 7 of the *NSW guidelines for drinking water management systems*, NSW Health and NSW Office of Water, 2013 (www.health.nsw.gov.au/environment/water). In particular, LWUs need to ensure that water treatment operators, wastewater treatment operators, dam safety officers, trade waste officers and engineers update their training and skills at least every 3 years. LWUs should provide an average of at least 2 days/annum of appropriate training for each employee. Refer to the final note on page 1 of your water supply and sewerage TBL Performance Reports and Tables 9 and 14 of the *2015-16 NSW Benchmarking Report* (www.water.nsw.gov.au) for the training currently provided by each LWU.

Social – levels of service

9. **Service standards** – increasingly stringent standards for water quality and environmental health may result in additional capital and operating costs to the utility. Similarly, requirements for minimum pressures or rates of flow can also affect costs.
10. **Filtered supply** – will incur both a high capital cost per property and a high treatment cost per property for small discrete urban water supply systems (utilities without 'unfiltered' or 'groundwater' after their name in Appendices C to E have water treatment involving at least filtration and disinfection for over 50% of their water supply).

Environmental

11. **High residential water supplied per property** – such utilities should examine opportunities for achieving efficient water use through water demand management and providing appropriate water pricing signals to customers including the residential water usage charge/kL and the residential revenue from water usage charges. Many utilities with 4,000 to 10,000 connected properties are providing relatively weak pricing signals to their residential customers through their water usage charges. These utilities should review their tariff structure to provide appropriate pricing signals. Assistance is available from DPI Water (section 4.6).

Economic

12. **High loan payment per property** – indicates a relatively high capital cost per property, recent construction of significant capital works or use of short-term loans. Twenty-year loan terms are strongly recommended in order to avoid unfairly burdening existing customers and to facilitate inter-generational equity.
13. **High pumping cost** – is influenced mainly by topography and geography. The LWU may be able to achieve significant savings in energy cost.

Similar considerations apply to sewerage.
In addition, a significant cost impactor is whether the LWU is operating nutrient removal facilities at its treatment works or providing filtration and disinfection of its treated sewage effluent.

4.10 Benchmarking

Each LWU can improve its performance in areas of apparent under-performance by benchmarking its key work processes with those of one or two high-performing similar LWUs and implementing the identified best practices. This will provide better customer service, reduced environmental impact, and better value for the community.

Each LWU should also undertake 'syndicate benchmarking' with a group of LWUs with similar characteristics to determine current best practice and to identify existing practices that could be improved. A pilot study undertaken with a number of LWUs found that such process benchmarking should be highly cost-effective for all LWUs.

5 GOVERNMENT SUBSIDY PROGRAMS

The NSW Government recognises the importance of having reliable access to safe, secure and sustainable water and sewerage services for the protection of public health and the wellbeing of regional communities. The quality of these essential water services impacts regional investment that supports agriculture, mining, tourism and other industries.

Therefore NSW Government investment in infrastructure through subsidy programs over the last century has been critical to assist in maintaining strong and healthy regional communities that are vital to the resilience, liveability and economic growth in regional NSW.

5.1 CTWSS program

The Country Towns Water Supply and Sewerage (CTWSS) Program commenced in 1996 and provides technical and financial assistance to regional NSW local water utilities (LWUs) that are responsible for public water supply and sewerage services to regional NSW. The two key objectives of the program are to:

- promote adoption of better practices in water services planning, pricing and operation management through leadership, guidance, training and expert advice to the regional NSW LWUs, oversee and monitor LWUs' performance; and
- provide financial assistance towards the capital cost of water supply and sewerage infrastructure backlog works to bring water supply and sewerage services up to prevailing standards to meet the 1996 population demands (backlog requirements).

In 20 years, the program has delivered 519 out of the 550 identified projects. The NSW Government has contributed $1,227M to the program which has assisted LWUs to build more than $3,260M of new infrastructure.

In 2015-16, 11 water supply and 9 sewerage projects were completed. The total value of these projects was $280M, with a NSW Government contribution of $102M.

This program will end in June 2017 having achieved the program objectives and significantly improving the water and sewerage services across regional NSW.

5.2 Regional Water and Waste Water Backlog Program

Recognising the need, the NSW Government in October 2016 committed $110 million from the water security for regions program (part of the Restart NSW Fund) to deliver water and waste water backlog projects, to provide safe, secure and reliable water and sewerage services for the regional NSW communities. This program is managed by DPI Water.

A total of 32 projects with a value of $203M have been funded, with a NSW Government contribution of $90M.

A further 5 projects have been recommended for funding with a NSW Government contribution of $14.3M and a project value of $31.6M.

5.3 Aboriginal Communities Water and Sewerage Program

The Aboriginal Communities Water and Sewerage Program aims to improve water supply and sewerage services in eligible Aboriginal communities in New South Wales. This program, which began in July 2008, is a joint initiative of the NSW Government and the NSW Aboriginal Land Council and is managed by DPI Water.

Together, the NSW Government and the NSW Aboriginal Land Council are investing more than $200 million over a 25 year period to provide funding for the maintenance, operation and repair of water supply and sewerage systems in 62 eligible Aboriginal communities.

The program will provide:

- water disinfection systems and treatment infrastructure upgrades;
- improvements to drinking water quality;
- repairs to centralised sewerage systems and sub-surface irrigation;
- regular inspections and maintenance of pump stations and water treatment plants;
- regular maintenance and cleaning of sewer pumps and sewer mains; and
- regular collection and testing of drinking water.

The program aims to raise the standard of service in these communities by engaging LWUs with expertise and experience in the management of water supply and sewerage systems to take responsibility for the day-to-day operation and maintenance activities of the water and sewerage systems in these eligible Aboriginal communities.

Outcomes to date from the program include (as of April 2017):

- 21 of the 62 eligible communities were found to have satisfactory service equivalent to neighbouring communities;

- 31 communities now have long term service agreements with the LWU to provide full water and sewerage services equivalent to the broader community;
- Long term agreements are being progressively negotiated for a further 6 communities; and
- Services in 41 communities have been improved through backlog works, emergency works and infrastructure upgrades.

As a result of the program, 62 Aboriginal communities with a population in excess of 6,000 people are now receiving water and sewerage services at a higher level than before.

Prior to the program, Local Aboriginal Land Councils (LALCs) were responsible for water and sewerage services for 41 discrete Aboriginal communities and quite often did not have the skills base or resources to operate and maintain water and sewerage infrastructure on their land.

Drinking water management and sewerage management plans have been developed and implemented for each community, resulting in safer, more reliable operation of water and sewerage systems.

Following is a summary of the 2015-16 highlights:

- Expenditure for the period was $8.1M and 3 new water supply and sewerage projects were completed;
- 11 agreements were signed;
- 150 water supply and sewerage system inspections were carried out by DPI Water inspectors;
- 98% of communities complied with the microbiological compliance indicator for water supply, an increase from 92% in 2014-15. Compliance has increased significantly since 2008;
- 99.7% of 730 samples tested for E. coli in 2015-16 complied with *ADWG*, up from 99.5% in 2014-15;
- 100% of 60 samples complied with health related chemical water quality guidelines;
- 2 water supply contamination incidents were reported last year.

5.4 Restart NSW

In 2011, the NSW Government established the Restart NSW Fund to enable a range of high priority infrastructure projects across NSW to be funded and delivered to improve economic growth, productivity and the competitiveness of the State.

The NSW Government's Water Security for Regions program is part of the Restart NSW fund and is in place to improve both water security and water quality.

A total of 33 projects to the value of $130M, with a Government contribution of $115M have been funded for 26 LWUs under the *Water Security for Regions* program. Of these, 4 projects have now been completed with a total value of $3M.

A total of 6 projects to the value of $43.1M, with a Government contribution of $37.3M have been funded under the *Resources for Regions* program to address infrastructure constraints in communities affected by mining.

A further 3 projects have been shortlisted with a value of about $9M.

The construction of the $500M Broken Hill pipeline from Murray River is part of NSW Government's investment strategy to secure the township's water supply and create economic growth opportunities.

6 DATA RELIABILITY AND GENERAL NOTES

Data reliability

The performance indicators for the 28 regional NSW local water utilities (LWUs) serving over 10,000 connected properties, which is 75% of the connected properties in regional NSW, have been independently audited in accordance with the rigorous national auditing requirements and reported in the *National Performance Report 2015-16* (www.bom.gov.au).

In addition, all 30 NWI financial performance indicators for all the NSW LWUs have been independently audited annually since 2006-07. Furthermore DPI Water undertakes comprehensive data validation to assure the ongoing data reliability of the NSW Performance Monitoring System (note 2 below and Appendix G).

General notes

1. **Triple bottom line (TBL) focus** – To provide a balanced view of the long-term sustainability of the LWUs, a triple bottom line accounting focus has been adopted, with performance reported on the basis of social, environmental and economic indicators.
2. **Data validation** – the comprehensive data validation procedures for the NSW Performance Monitoring System are shown in Appendix G. These procedures include matters such as aggregated businesses, assessments, connected properties, the utility's pricing signals and typical residential bill, urban water used and recycled, greenhouse gas emissions, the fair value of assets and asset condition, including water main breaks and real water loss (leakage), sewerage main breaks and chokes, operating cost, whether the utility has achieved full cost recovery, drinking water management system (DWMS), drinking water quality compliance, sewage treatment works compliance and each utility's level of implementation of the 19 planning, pricing and management outcomes required by the NSW Best-Practice Management Framework.
3. **Statewide medians** – This report refers to statewide medians for the regional local water utilities, which are calculated on a 'percentage of connected properties' basis. These are a weighted median on the basis of connected properties and best reveal statewide performance by giving due weight to larger LWUs and reducing the effect of smaller LWUs. LWU rankings on a 'percentage of LWUs' basis are also provided where appropriate (eg for comparison of LWUs in the 'ranking' columns of the two-page TBL performance report (example in Appendix B)).
4. **Typical residential bill (TRB)** – The typical residential bill per assessment is the annual bill paid by a residential customer using the LWU's average annual residential water supplied and is the principal indicator of the overall cost of a water supply or sewerage system. Pensioners pay a lower amount due to the $87.50 pensioner rebate as do owners of vacant lots as they pay no water usage charges.

   Calculation of TRB – The 2016-17 typical residential bill is based on a customer of the LWU's principal water supply or sewerage system using the LWU's 2015-16 average annual residential water supplied per connected property. Refer also to section G4.3. These bills and tariff details are shown in Appendices E and F. The typical residential bill for 2015-16 and previous years is based on the reported average annual residential water supplied for that year (2015-16 residential water supplied is shown in column 17 of Appendix D and column 14b of Appendix E). The charges, bills and costs shown in Appendices E and F are those applicable for the relevant financial year and involve no CPI adjustment.
5. **Average annual residential water supplied** – The average annual residential water supplied per connected property (NWI Indicator W12) includes both potable and non-potable water supplied. Where a LWU has not separately reported its residential water supplied, such volume has been estimated using the statewide average of 58% of the LWU's total potable water supplied. As indicated in note 6 below, the potable water supplied and the total water supplied (potable + non-potable) have been separately reported for the 10 LWUs with a dual water supply.
6. **Dual supplies** – Ten LWUs had a dual water supply to over 50% of their residential customers in June 2016 (ie with a potable supply for indoor use and a non-potable supply for outdoor use).

   The total annual residential water supplied (ie potable + non-potable) in kilolitres per property for those LWUs with a dual water supply is shown below, together with their

potable residential water supplied in brackets. These volumes were: Balranald 1038 (304), Berrigan 461 (272), Bourke 1,157 (281), Brewarrina 1,629 (658), Central Darling 638 (181), Hay 527 (139), Murray River 338 (152), Walgett 522 (302), Warren 630 (302) and Wentworth 669 (180).

The TRB has been calculated for those LWUs with a dual supply using the above volumes.

7. **Water losses** – For consistency with national and international performance reporting, water losses comprise *Real Losses* (mostly leakage) plus *Apparent Losses* (under-registration of customer meters and illegal use). *Unbilled Water* supplied (fire fighting and mains flushing) is not a water loss but is a component of non revenue water (NRW). Real losses and NRW apply to the potable water supply only.

   NWI Indicator A10 (real losses in L/connection/day) is the relevant measure for **tracking a LWU's leakage performance over time**. Each LWU's real losses (L/connection/day) are shown in Table 10 of the *Benchmarking Report*.

   Due to perverse impacts shown in section 4.5 of the *Benchmarking Report*, it is inappropriate to track a utility's leakage as a percentage of the total water supplied. Similarly, use of Unaccounted for Water (**UFW**) is not appropriate. Rather '**Non Revenue Water (NRW)**' (L/connection/day) should be used, as recommended by the International Water Association – Reference: Kenneth J Brothers, Assessing UFW and Variable Water Rate Impacts, Use and Loss Metrics in a Declining Water Consumption Environment, IWA Water Loss Conference, 2012, February 2012, Manila, Philippines.

   NRW (L/connection/day) is shown in Figure 18 and column 41f of Table 10 of the *Benchmarking Report*. In addition, the 2015-16 adopted volume of NRW (NWI Indicator W10.1) and NRW as a percentage of the total potable water supplied are shown in Table 8A of the *Benchmarking Report*.

8. **Minimum real loss and NRW** – Further to note 7 above, the NSW Performance Monitoring System determines minimum values for each LWU's real loss and NRW as shown below.

   Leakage studies for 59 NSW LWUs indicate an average leakage from potable water supply distribution systems of 3% to 15% of total potable water supplied, as shown in Table 10 of the *Benchmarking Report*. These utilities have recently carried out a reservoir drop test, waste metering or night flow analysis to determine their real losses and opportunities for leakage reduction.
   Only 9 of these utilities had a real loss of under 6%. In addition, Table 10A of the *Benchmarking Report* discloses the real losses for 68 LWUs 'before' and 'after' leakage reduction under the Regional NSW Water Loss Management Program[27]. For these LWUs, Table 10A indicates average real losses of 10% of the potable water supplied after leakage reduction.

   Accordingly, a **minimum real loss** (mostly leakage) of 6% of the total potable urban water supplied (NWI Indicator W11.1) has been adopted. Reported real losses of less than 6% have only been accepted where the utility has provided evidence to support the adoption of a lower value. Where such evidence has not been provided, real losses have been increased to 6% of W11.1 and are shown in italics bold in Table 8 of the *Benchmarking Report*. Refer also to the final paragraph below on NRW.

   Similarly, statewide analysis of **NRW** (*real losses*, *apparent losses* and *unbilled water* supplied (refer to note 7 above)) for NSW water utilities other than bulk water suppliers, indicates a minimum of 10% of the potable water supplied.

   Accordingly, a **minimum NRW** of 10% of the total potable urban water supplied (W11.1) has been adopted. Where a LWU has reported NRW of less than 10% of the potable water supplied, the reported NRW has been increased to 10%, unless the LWU has provided evidence of a Real Loss of less than 6%. In such cases, the adopted value for NRW has been determined as the Real Loss plus 4%. Any increases to the real loss (above) or to the NRW (W10.1) have also been applied to W11.1. The adjusted values of the 2015-16 volumes of real loss, NRW (W10.1) and the total potable urban water supplied (W11.1) are shown in italics bold in Table 8 of the *Benchmarking Report*.

9. **Sydney Water, Hunter Water and Water NSW** (formerly Sydney Catchment Authority

[27] Refer to Table 10A of the *2015-16 NSW Water Supply and Sewerage Benchmarking Report*. In addition, results from the Regional NSW Water Loss Management Program (WLMP) are available at http://www.lgnsw.org.au/policy/water.

(page iii)) – The performance indicators for Sydney Water, Hunter Water and Water NSW were obtained from the *National Performance Report 2015-16 for Urban Water Utilities* (www.bom.gov.au).

10. **Bulk storage** – utilities that provide bulk storage dams for their water supply incur significant capital and operating costs for these facilities, resulting in a higher typical residential bill and operating cost per property. The following 43 regional utilities provided such bulk storage: Armidale, Ballina, Bathurst, Bega Valley, Bourke, Brewarrina, Byron (Mullumbimby), Cabonne, Central Coast, Central Tablelands, Clarence Valley, Cobar, Coffs Harbour, Essential Energy, Eurobodalla, Fish River, Glen Innes-Severn, Goulburn Mulwaree, Inverell, Kempsey, Kyogle, Lachlan, Leeton, Lithgow, MidCoast, Mid-Western Regional, Moree Plains, Orange, Parkes, Port Macquarie-Hastings, Queanbeyan-Palerang, Richmond Valley, Rous, Shoalhaven, Tamworth, Tenterfield, Tweed, Upper Hunter, Upper Lachlan, Uralla, Warrumbungle, Wingecarribee, Yass Valley. Details of each utility's major sources of water are shown in Table 5B of the *2015-16 NSW Benchmarking Report*.
11. **Unfiltered** – a utility where over 50% of its supply is an unfiltered surface water supply ie the utility does not have a water treatment works providing filtration and disinfection for >50% of its supply.

    Groundwater – a utility with >50% of its supply comprising good quality unfiltered groundwater.

    Reticulator – a utility that purchases >70% of its source water from a bulk supplier and reticulates water to householders in its area.

    Bulk supplier – a utility that provides a bulk water supply to other utilities, rather than reticulating water to householders.

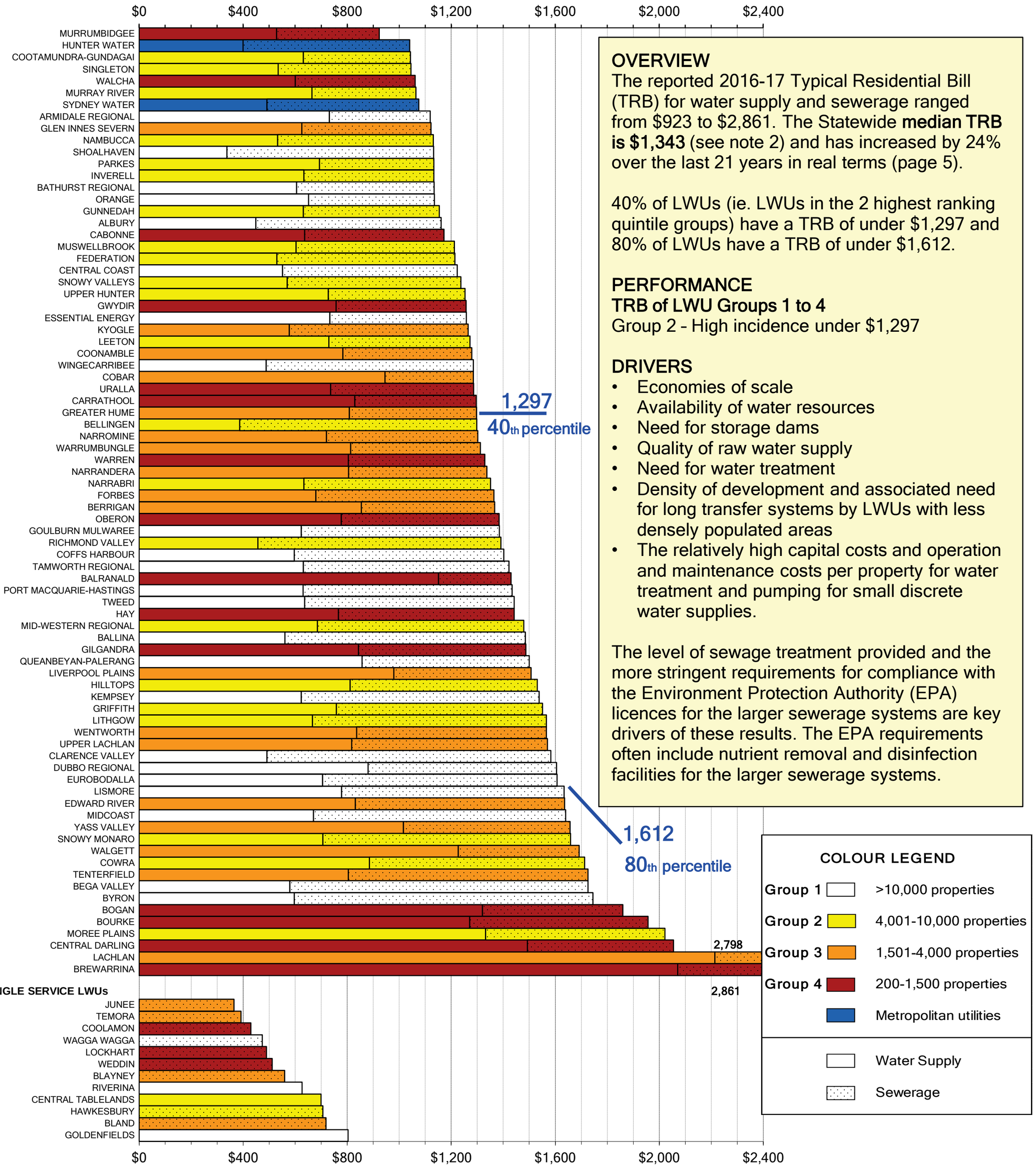
    Dual supply – a utility with a potable reticulated water supply for indoor uses and a separate non-potable supply reticulated for outdoor uses to over 50% of its residential customers.
12. **National Water Initiative (NWI) indicators** – There are 31 NSW water utilities with >10,000 connected properties including 3 metropolitan utilities and 28 regional utilities. These utilities reported their performance in the *National Performance Report 2015-16* based on a nationally agreed framework of indicator definitions.
13. **Appendix D** shows that for 2015-16, the total number of connected properties served in NSW was 2,979,000, the total urban water supplied was 910 GL and total revenue was $4,560M.
14. Appendix I discusses the **characteristics of the Australian urban water sector.**

    NSW vs Australian Totals – Appendix I shows that the total populations receiving water supply and sewerage services in NSW are 33% and 34% respectively of the Australian totals of 22.6 million and 21 million. The volume of urban water supplied in NSW is 33% of the Australian total of 2,790 GL, and the recycled water supplied in NSW is 33% of the Australian total of 253 GL.

    The water and sewerage revenue for NSW is 25% of the Australian total of $18.4 billion, the operating cost is 24% of the Australian total of $8.7 billion and capital expenditure is 31% of the Australian total of $3.8 billion.

    NSW has 29% of the 201,000 km of Australian water mains, 33% of the 153,000 km of Australian sewerage mains and channels, 32% of the 565 Australian water treatment works and 39% of the 878 Australian sewage treatment works.

Figure 1: Typical Residential Bill ($ per assessment) - Water & Sewerage 2016-17 - P8



OVERVIEW

The reported 2016-17 Typical Residential Bill (TRB) for water supply and sewerage ranged from $923 to $2,861. The Statewide **median TRB is $1,343** (see note 2) and has increased by 24% over the last 21 years in real terms (page 5).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a TRB of under $1,297 and 80% of LWUs have a TRB of under $1,612.

PERFORMANCE

TRB of LWU Groups 1 to 4

Group 2 – High incidence under $1,297

DRIVERS

- Economies of scale
- Availability of water resources
- Need for storage dams
- Quality of raw water supply
- Need for water treatment
- Density of development and associated need for long transfer systems by LWUs with less densely populated areas
- The relatively high capital costs and operation and maintenance costs per property for water treatment and pumping for small discrete water supplies.

The level of sewage treatment provided and the more stringent requirements for compliance with the Environment Protection Authority (EPA) licences for the larger sewerage systems are key drivers of these results. The EPA requirements often include nutrient removal and disinfection facilities for the larger sewerage systems.

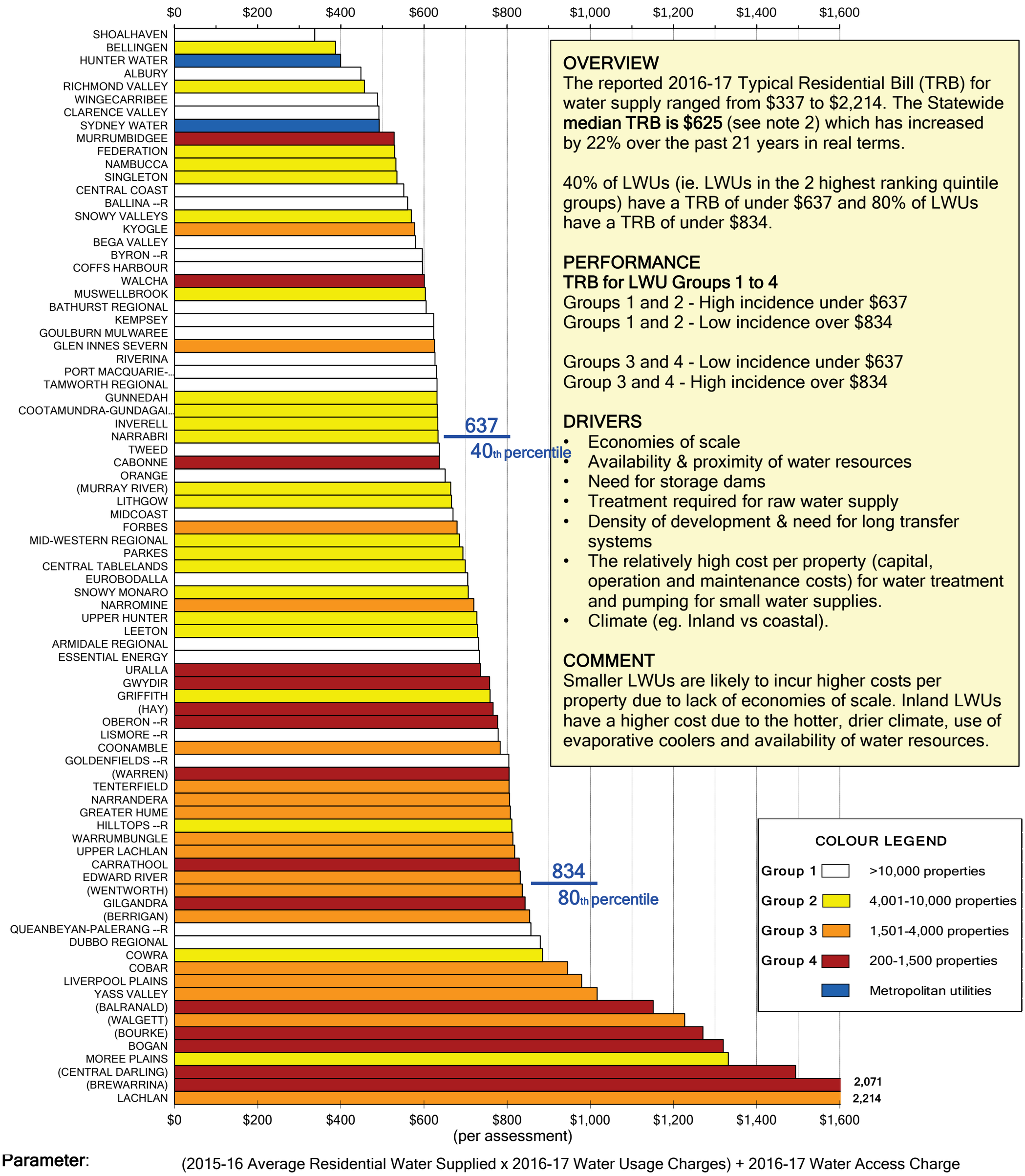
(per assessment)

Parameter: (2015-16 Average Residential Water Supplied x 2016-17 Water Usage Charges) + 2016-17 Water and Sewerage Access Charges

Notes:

1. This figure shows ranked values of the 2016-17 typical residential bill for water supply and sewerage [NWI Indicator P8] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 2: Typical Residential Bill ($ per assessment) - Water Supply 2016-17 - P3



OVERVIEW
The reported 2016-17 Typical Residential Bill (TRB) for water supply ranged from $337 to $2,214. The Statewide **median TRB is $625** (see note 2) which has increased by 22% over the past 21 years in real terms.

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a TRB of under $637 and 80% of LWUs have a TRB of under $834.

PERFORMANCE
TRB for LWU Groups 1 to 4
Groups 1 and 2 - High incidence under $637
Groups 1 and 2 - Low incidence over $834

Groups 3 and 4 - Low incidence under $637
Group 3 and 4 - High incidence over $834

DRIVERS
- Economies of scale
- Availability & proximity of water resources
- Need for storage dams
- Treatment required for raw water supply
- Density of development & need for long transfer systems
- The relatively high cost per property (capital, operation and maintenance costs) for water treatment and pumping for small water supplies.
- Climate (eg. Inland vs coastal).

COMMENT
Smaller LWUs are likely to incur higher costs per property due to lack of economies of scale. Inland LWUs have a higher cost due to the hotter, drier climate, use of evaporative coolers and availability of water resources.

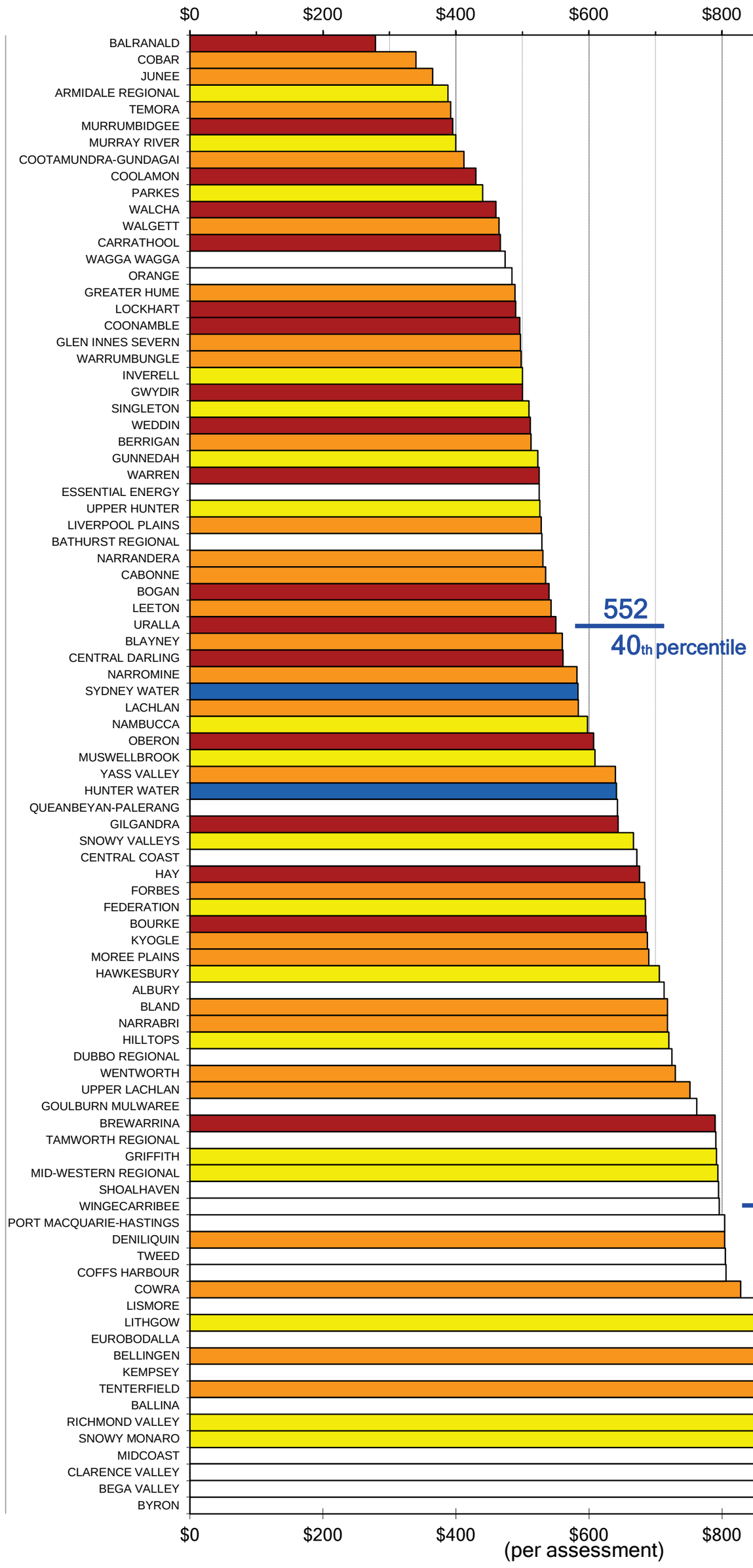
(per assessment)

Parameter: (2015-16 Average Residential Water Supplied x 2016-17 Water Usage Charges) + 2016-17 Water Access Charge

Notes:

1. This figure shows ranked values of the 2016-17 typical residential bill for water supply [NWI Indicator P3] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. The increase in the real water supply Typical Residential Bill (TRB) over the past 21 years has been limited to 22%.
4. For further information, refer to the general notes on page 28 and index on page 116.
5. The 10 LWUs with a dual water supply (ie. a potable supply for indoor use and a non-potable supply for outdoor use) are enclosed in brackets. Reticulators are suffixed by --R. Refer also to Notes 4 and 6 on page 28.

Figure 3: Typical Residential Bill ($ per assessment) - Sewerage 2016-17 - P6



OVERVIEW

The reported 2016-17 Typical Residential Bill (TRB) for sewerage ranged from $279 to $1149. The Statewide **median TRB is $718** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a TRB of under $552 and 80% of LWUs have a TRB of under $799.

PERFORMANCE

TRB for LWU Groups 1 to 4

Groups 3 and 4 – High incidence under $552
Group 4 – No incidence over $799

Group 1 and 2 – Low incidence under $552
Groups 1 – High incidence over $799

DRIVERS

- The level of sewage treatment provided
- More stringent requirements for compliance with the Environment Protection Authority (EPA) licences for larger sewerage systems (EPA requirements often include nutrient removal and disinfection facilities).

COMMENT

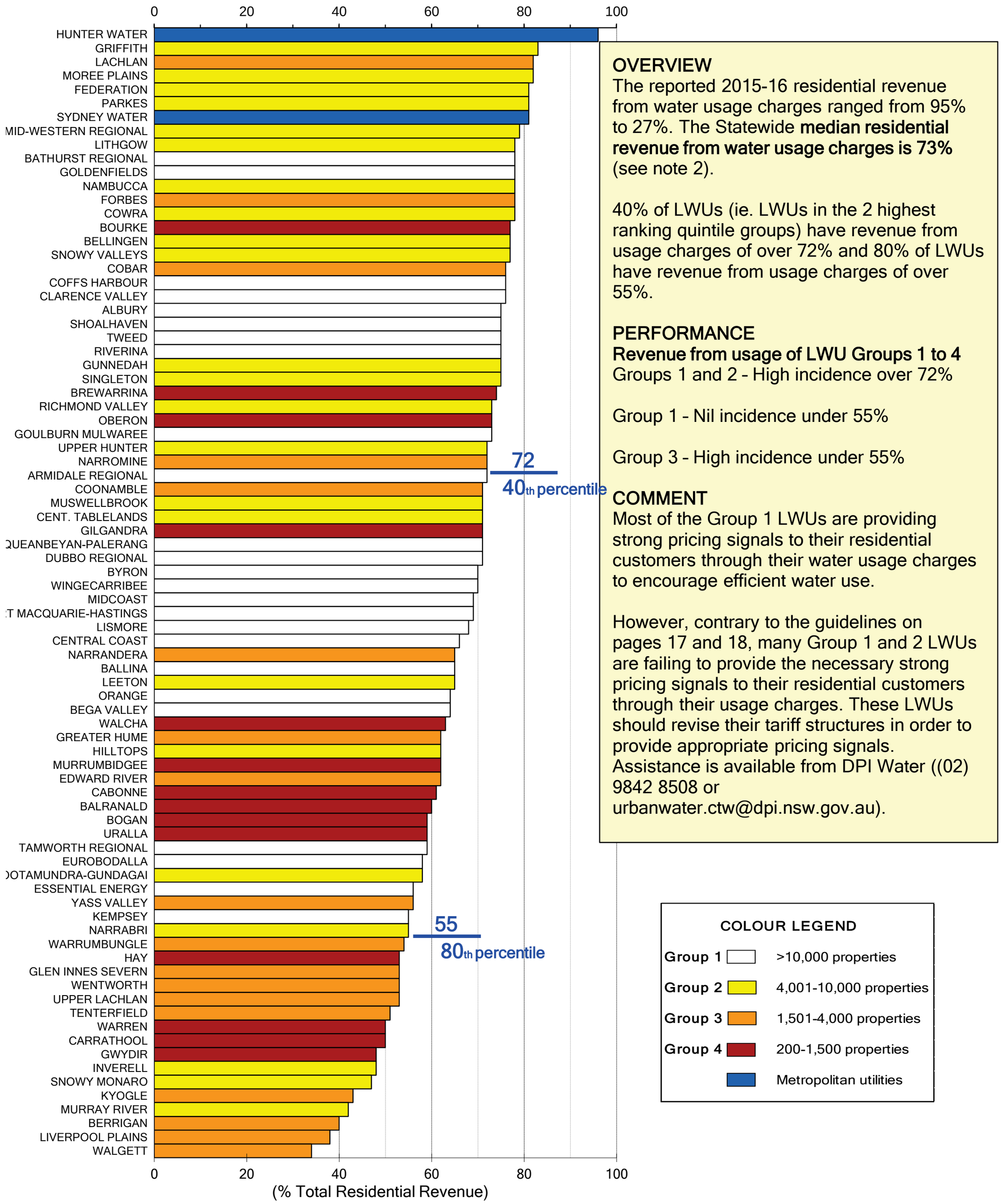
Larger sewerage systems often have more stringent treatment requirements which can result in significantly higher costs per property.

Parameter: Residential Access Charge

Notes:

1. This figure shows ranked values of the 2016-17 typical residential bill for sewerage [NWI Indicator P6] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 4: Residential Revenue from Usage Charges - Water Supply 2015-16 - F4



OVERVIEW
The reported 2015-16 residential revenue from water usage charges ranged from 95% to 27%. The Statewide **median residential revenue from water usage charges is 73%** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have revenue from usage charges of over 72% and 80% of LWUs have revenue from usage charges of over 55%.

PERFORMANCE
Revenue from usage of LWU Groups 1 to 4
Groups 1 and 2 – High incidence over 72%

Group 1 – Nil incidence under 55%

Group 3 – High incidence under 55%

COMMENT
Most of the Group 1 LWUs are providing strong pricing signals to their residential customers through their water usage charges to encourage efficient water use.

However, contrary to the guidelines on pages 17 and 18, many Group 1 and 2 LWUs are failing to provide the necessary strong pricing signals to their residential customers through their usage charges. These LWUs should revise their tariff structures in order to provide appropriate pricing signals. Assistance is available from DPI Water ((02) 9842 8508 or urbanwater.ctw@dpi.nsw.gov.au).

COLOUR LEGEND

Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties
	Metropolitan utilities

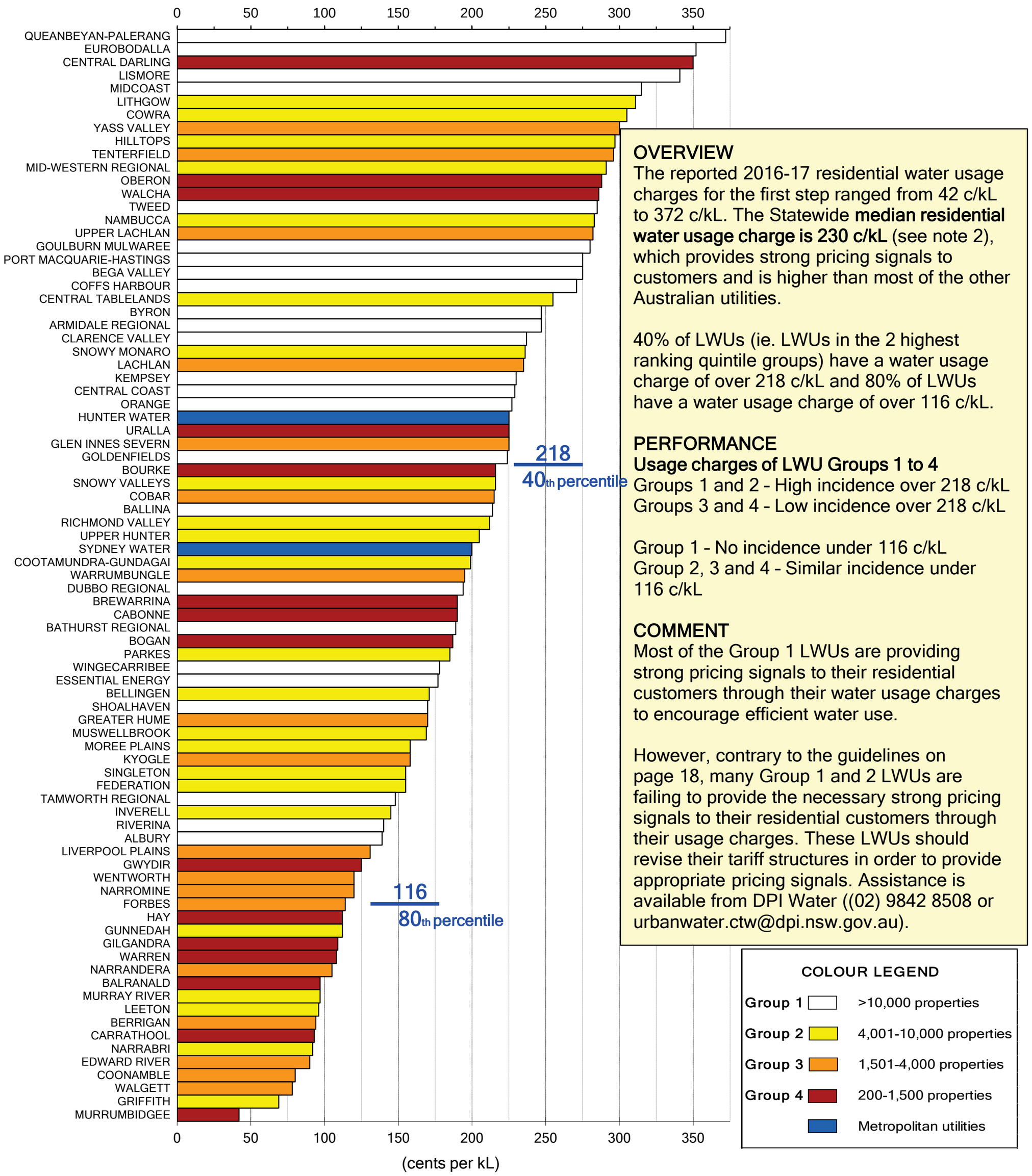
Parameter:

$$\frac{\text{Revenue from Residential Water Usage Charges (W\_7b)} \times 100}{\text{Revenue from Residential Access Charges (W\_7a)} + \text{Revenue from Residential Water Usage Charges (W\_7b)}}$$

Notes:

1. This figure shows ranked values of the 2015-16 percentage revenue from residential water usage charges [NWI Indicator F4] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. The real increase in the statewide median water supply Typical Residential Bill (TRB) over the past 21 years has been limited to 22%.
4. For further information, refer to the general notes on page 28 and index on page 116.

Figure 5: Residential Water Usage Charge 2016-17 - P1.3

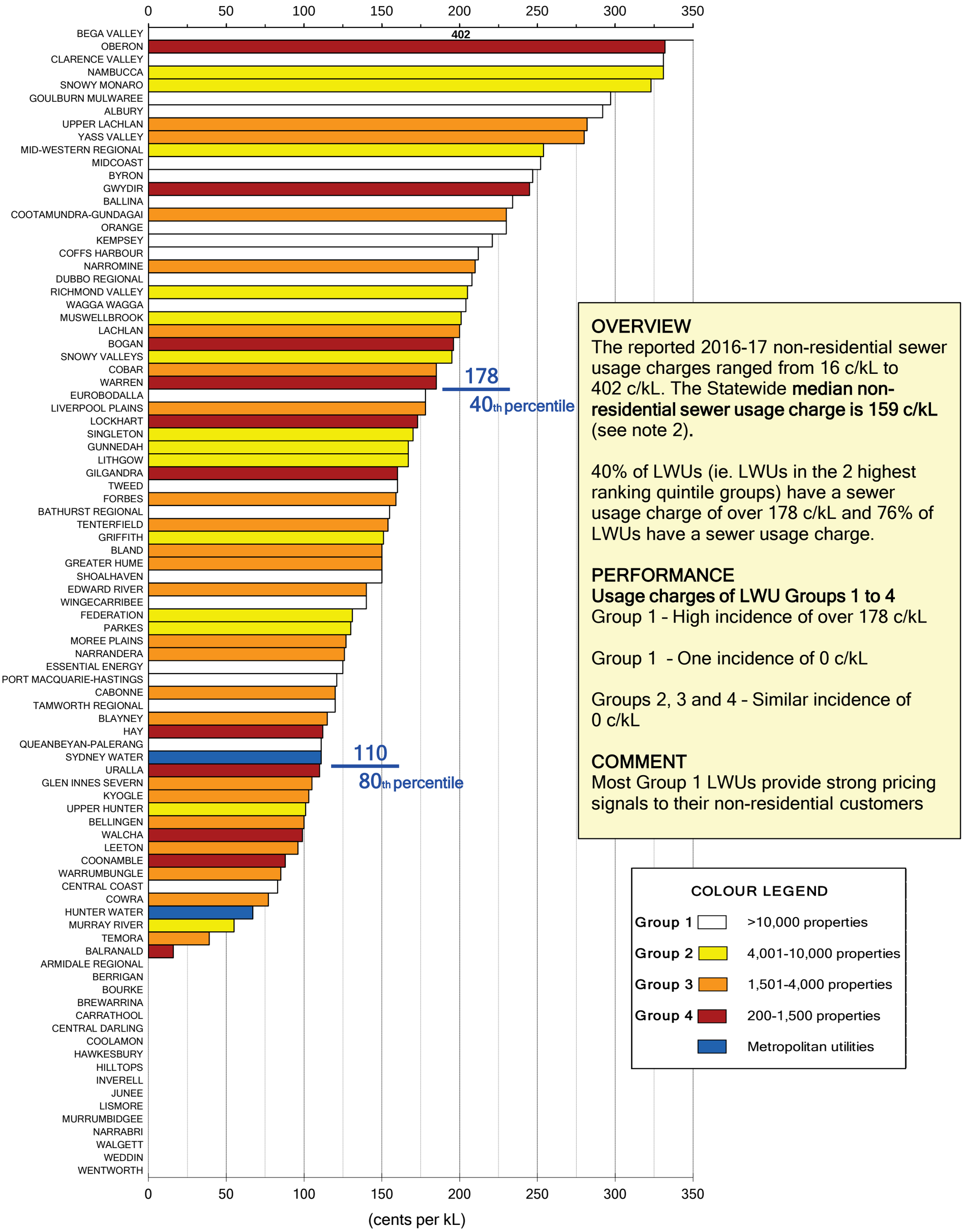


Parameter: Residential Water Usage Charge

Notes:

1. This figure shows ranked values of the 2016-17 residential water usage charge [NWI Indicator P1.3] for the first step for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. The real increase in the Statewide median water supply Typical Residential Bill (TRB) over the past 21 years has been limited to 22%.
4. For further information, refer to the general notes on page 28 and index on page 116.

Figure 6: Non-residential Sewer Usage Charge 2016-17

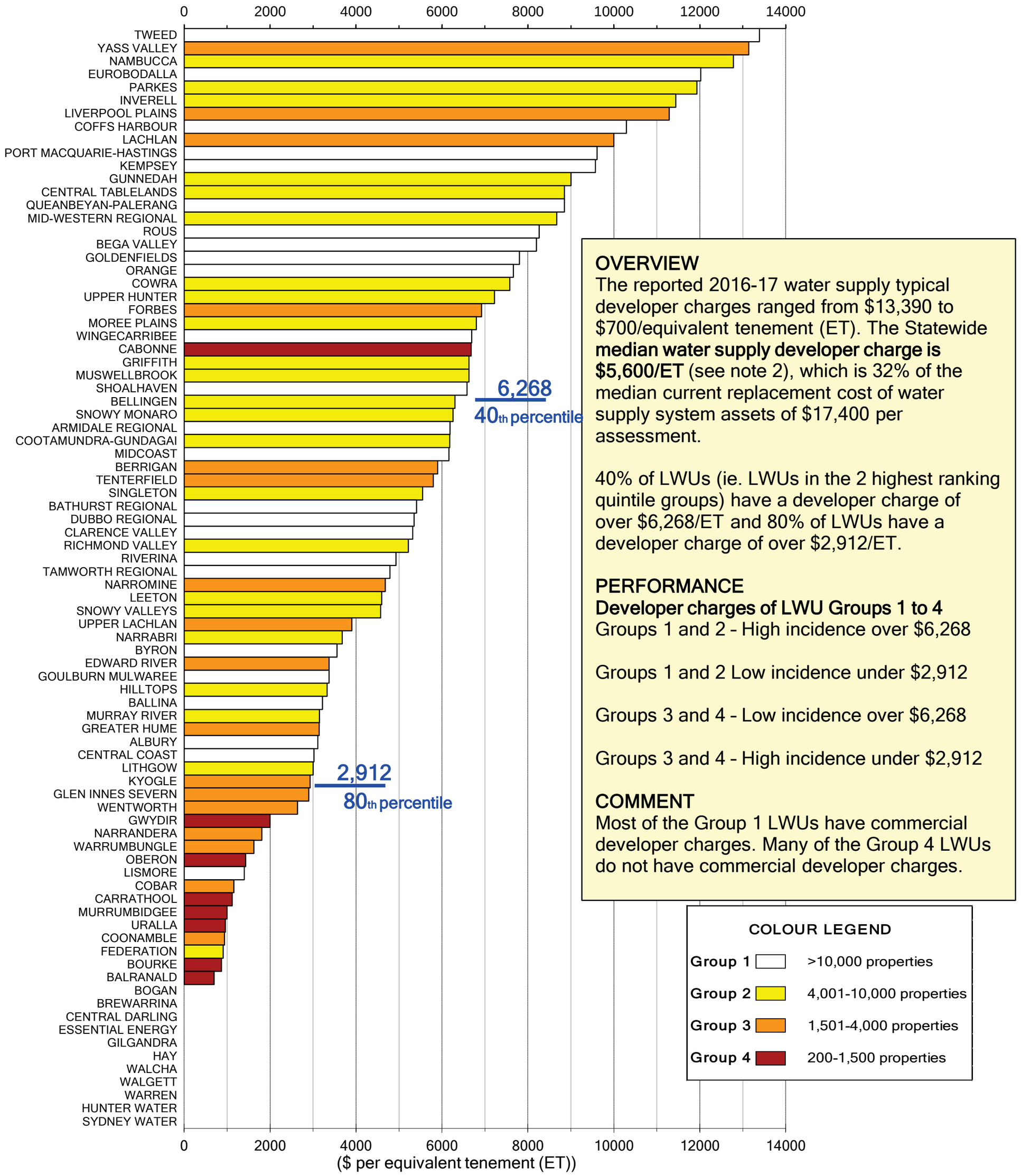


Parameter: Non-residential Sewer Usage Charge

Notes:

1. This figure shows ranked values of the 2016-17 non-residential sewer usage charge for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 7: Typical Developer Charges - Water Supply 2016-17



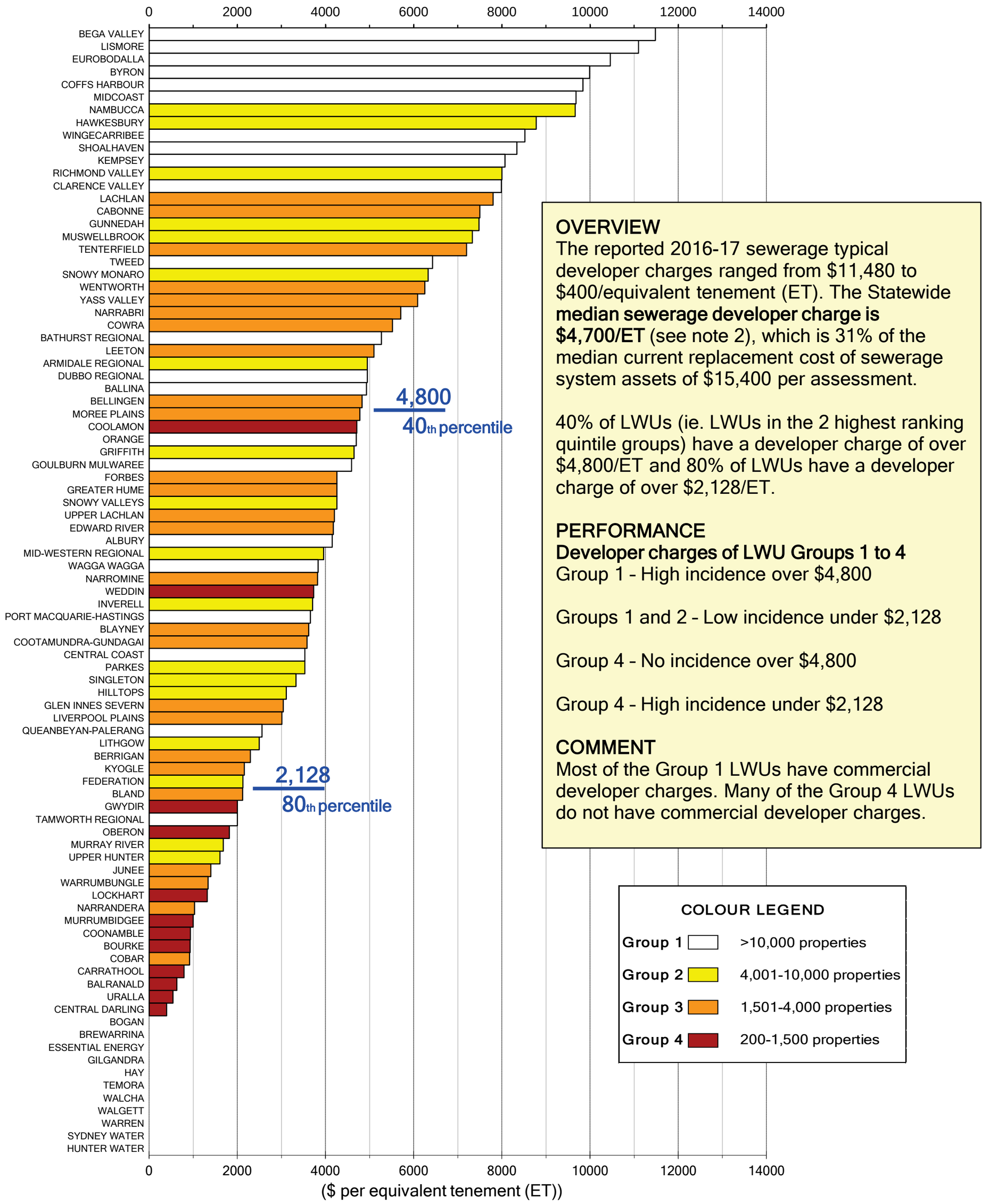
Parameter:

Typical Water Supply Developer Charge (WB36)

Notes:

1. This figure shows ranked values of the 2016-17 typical developer charge for water supply for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 3,001 to 10,000 (Group 2), 1,501 to 3,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. 73 LWUs levied water supply developer charges.
4. 85% of LWUs have an appropriate water supply Development Servicing Plan (DSP) with commercial developer charges. This includes the following 10 utilities which have received an exemption from needing to levy commercial water supply developer charges due to their low growth of under 5 lots/a - Bogan, Bourke, Brewarrina, Central Darling, Coonamble, Essential Energy, Gilgandra, Hay, Kyogle and Warren.
5. For further information, refer to the general notes on page 28 and index on page 116.

Figure 8: Typical Developer Charges - Sewerage 2016-17



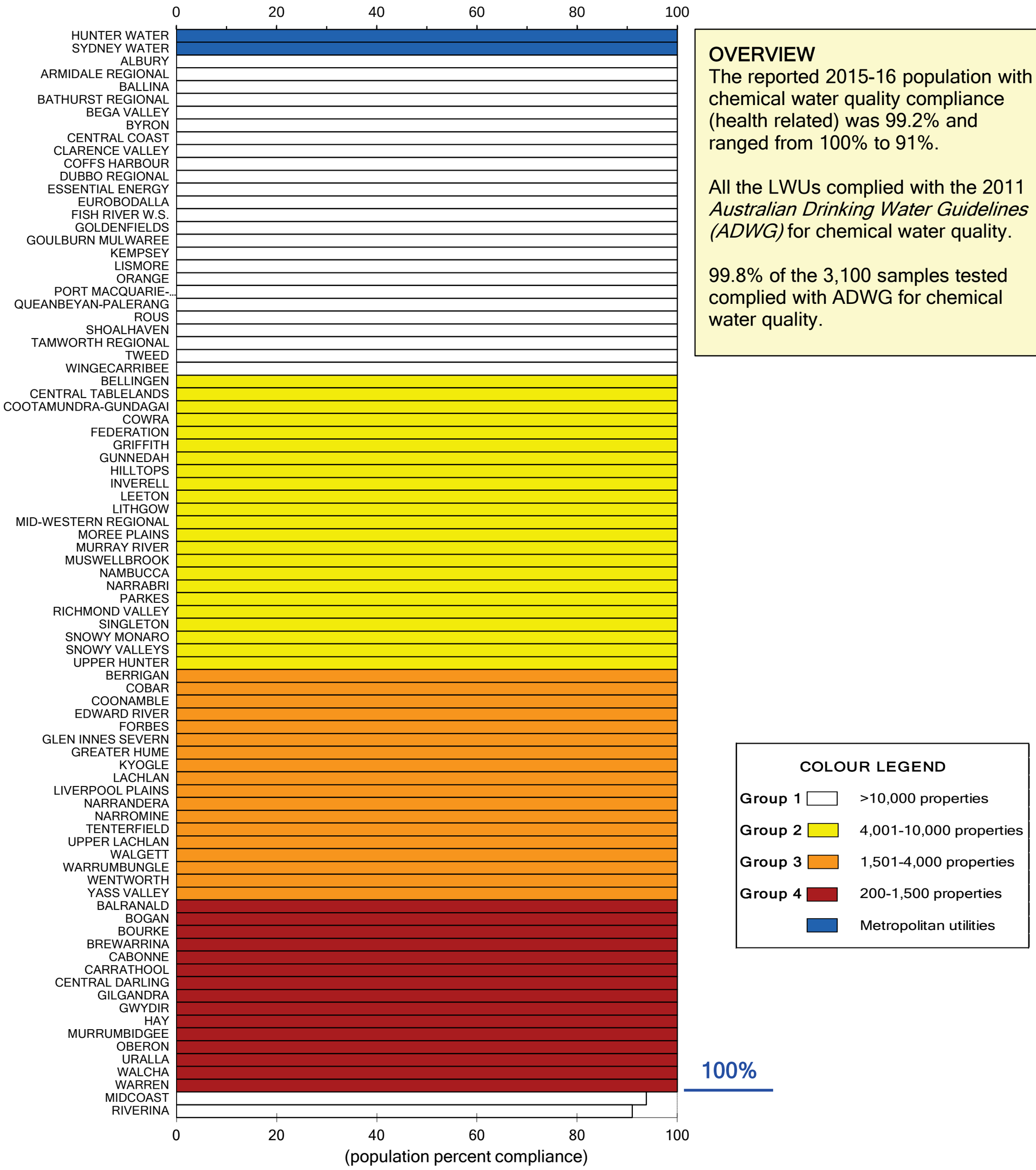
Parameter:

Typical Sewerage Developer Charge (SB36)

Notes:

1. This figure shows ranked values of the 2016-17 typical developer charge for sewerage for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 3,001 to 10,000 (Group 2), 1,501 to 3,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. 78 LWUs levied sewerage developer charges.
4. 85% of LWUs have an appropriate sewerage Development Servicing Plan (DSP) with commercial developer charges. This includes the following 10 utilities which have received an exemption from needing to levy commercial sewerage developer charges due to their low growth of under 5 lots/a - Bogan, Bourke, Brewarrina, Central Darling, Coonamble, Essential Energy, Gilgandra, Hay, Kyogle and Warren.
5. For further information, refer to the general notes on page 28 and index on page 116.

Figure 9: % Population with Chemical Compliance - Water Supply 2015-16 - H4



OVERVIEW

The reported 2015-16 population with chemical water quality compliance (health related) was 99.2% and ranged from 100% to 91%.

All the LWUs complied with the 2011 *Australian Drinking Water Guidelines (ADWG)* for chemical water quality.

99.8% of the 3,100 samples tested complied with ADWG for chemical water quality.

COLOUR LEGEND

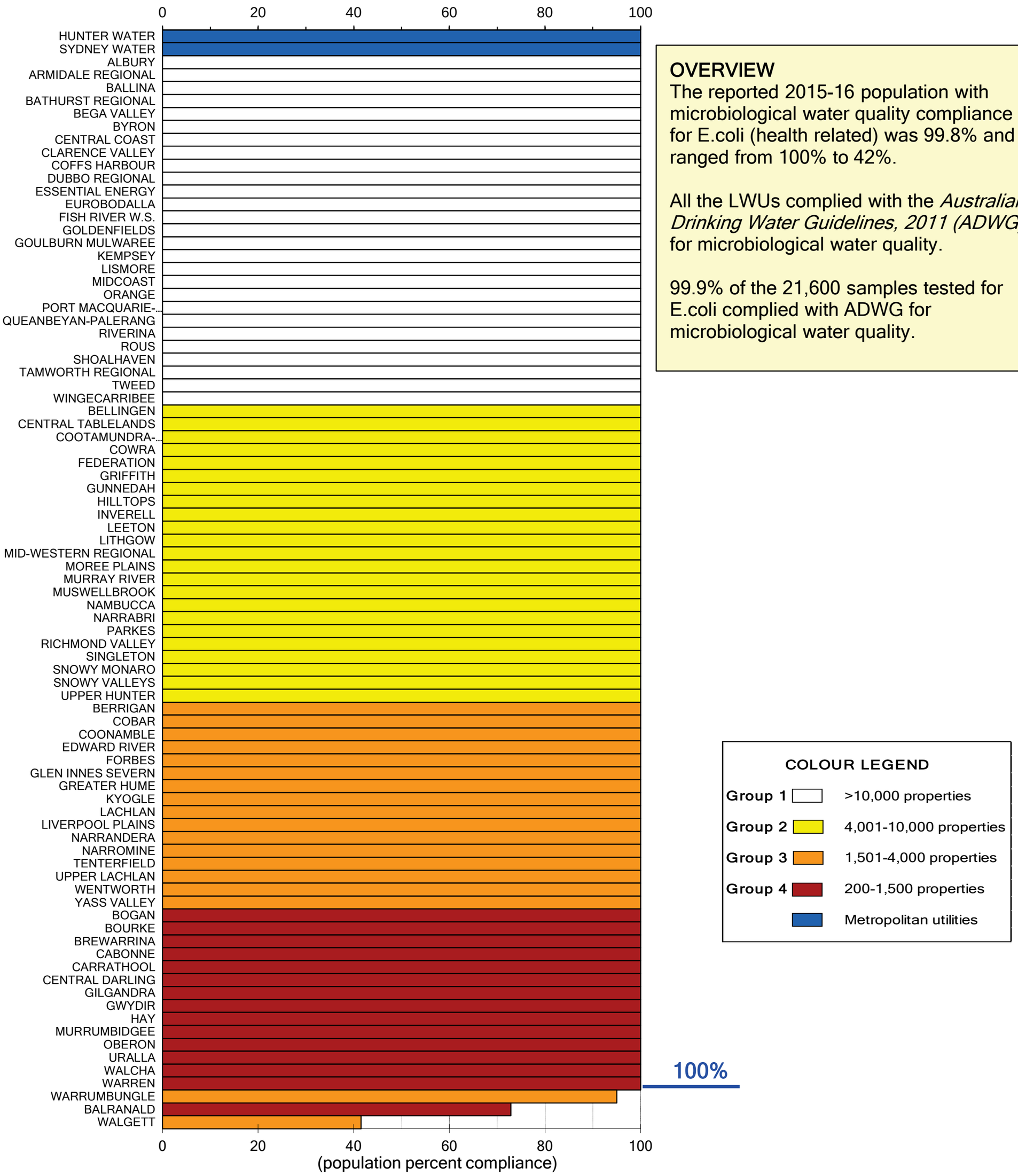
Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties
	Metropolitan utilities

Parameter: Percentage of population complying with the health related chemical criteria of the *2011 NHMRC/NRMMC Australian Drinking Water Guidelines* .

Notes:

1. This figure shows ranked values of the 2015-16 percent population with chemical water quality compliance (health related) [NWI Indicator H4] with the 2011 NHMRC/NRMMC Australian Drinking Water Guidelines (ADWG) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. For a LWU to comply with the 2011 ADWG for chemical water quality (health related), the required number of samples must be tested and the 95th percentile of results must be less than the guideline value for each chemical. Non-potable supplies are excluded.
3. For LWUs with more than one water treatment works, the reported compliance has been pro-rated on the basis of the population serviced by each treatment works.
4. For 2015-16, the public drinking water supply for 99.2% of the urban population in regional NSW complied with 2011 ADWG for chemical water quality (health related), as did all of the regional utilities (column 11 of Appendix D).
5. For further information, refer to the general notes on page 28 and index on page 116.

Figure 10: % Population with Microbiological Compliance - Water Supply 2015-16 - H3



OVERVIEW

The reported 2015-16 population with microbiological water quality compliance for E.coli (health related) was 99.8% and ranged from 100% to 42%.

All the LWUs complied with the *Australian Drinking Water Guidelines, 2011 (ADWG)* for microbiological water quality.

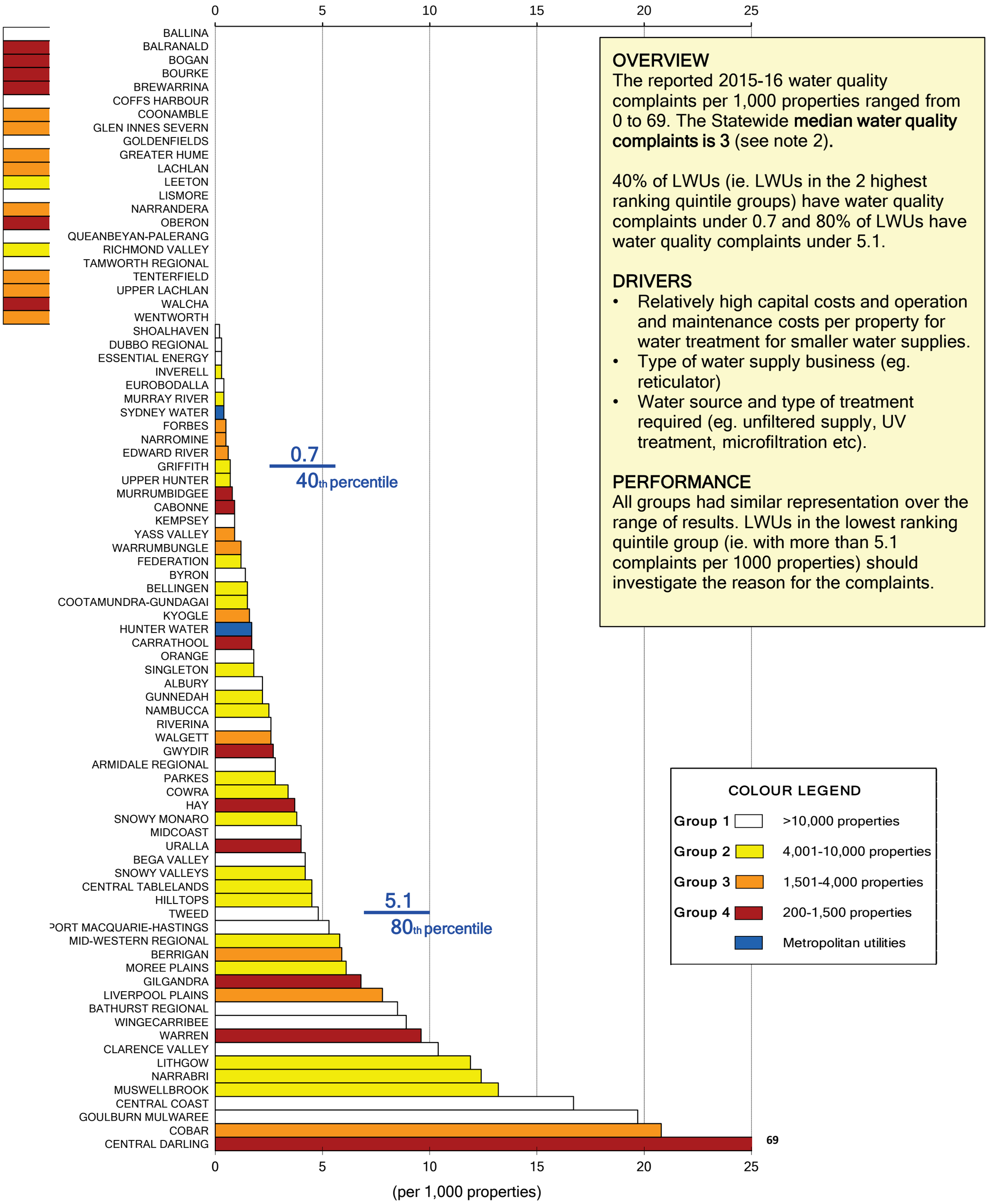
99.9% of the 21,600 samples tested for E.coli complied with ADWG for microbiological water quality.

Parameter: Percentage of population complying with the microbiological criteria of the *2011 NHMRC/NRMMC Australian Drinking Water Guidelines* .

Notes:

1. This figure shows ranked values of the 2015-16 percent population with microbiological water quality compliance (health related) [NWI Indicator H3] with the 2011 NHMRC/NRMMC Australian Drinking Water Guidelines for E. coli for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. For a LWU to comply with the 2011 Australian Drinking Water Guidelines for microbiological water quality (health related), the required number of samples must be tested and at least 98% of the samples must contain no E.coli. Non-potable water supplies are excluded.
3. For LWUs with more than one water treatment works, the reported compliance has been pro-rated on the basis of the population serviced by each treatment works.
4. For 2015-16, the public drinking water supply for 99.8% of the urban population in regional NSW complied with 2011 ADWG for microbiological water quality, as did all of the regional utilities (column 9 of Appendix D).
5. For further information, refer to the general notes on page 28 and index on page 116.

Figure 11: Water Quality Complaints - Water Supply 2015-16 - C9



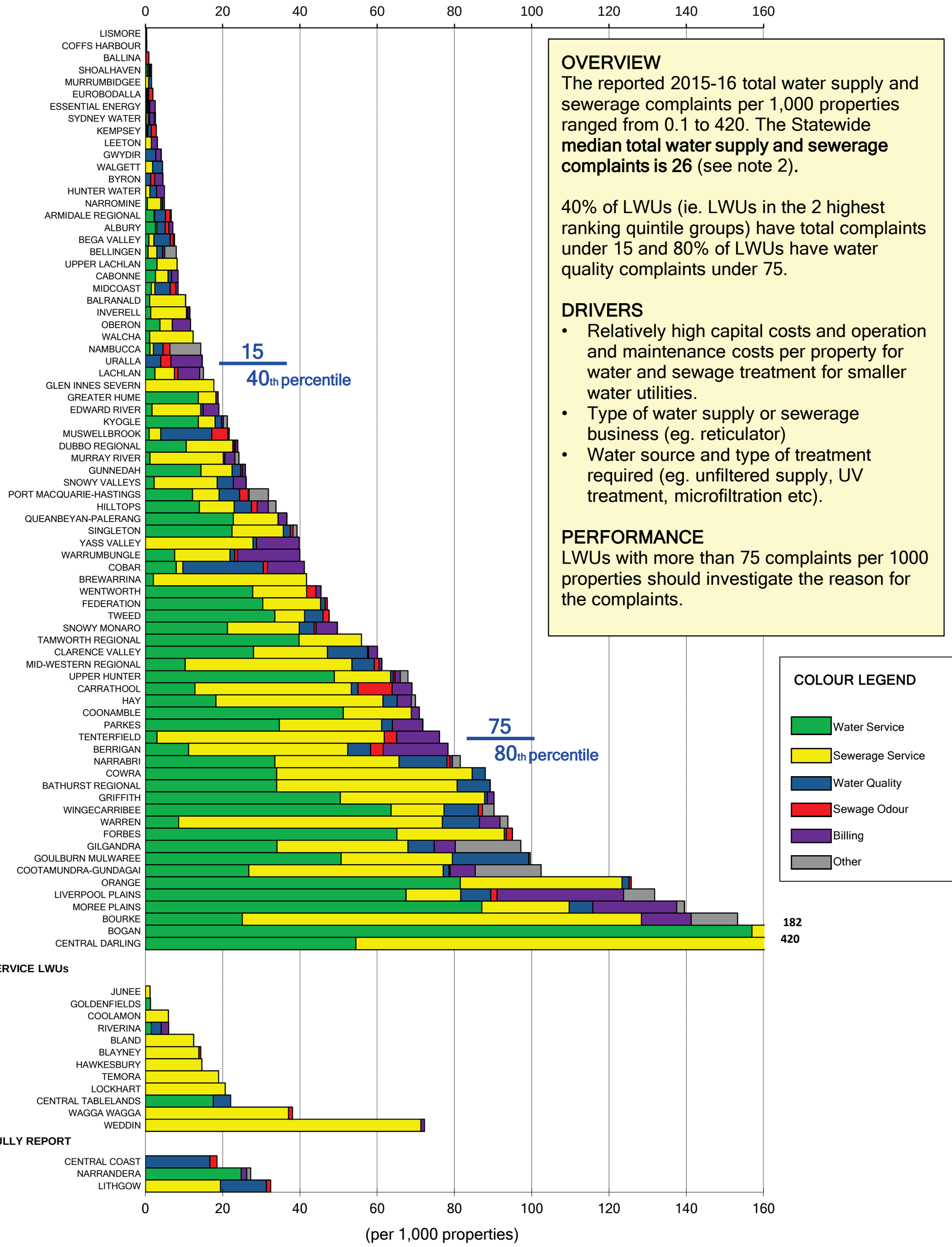
Parameter:

$$\frac{\text{Number of water quality complaints (WB101b)} \times 1{,}000}{\text{No. connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 number of water quality complaints [NWI Indicator C9] per 1000 connected properties for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 12: Total Complaints - Water Supply and Sewerage 2015-16 - C13



OVERVIEW

The reported 2015-16 total water supply and sewerage complaints per 1,000 properties ranged from 0.1 to 420. The Statewide **median total water supply and sewerage complaints is 26** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have total complaints under 15 and 80% of LWUs have water quality complaints under 75.

DRIVERS

- Relatively high capital costs and operation and maintenance costs per property for water and sewage treatment for smaller water utilities.
- Type of water supply or sewerage business (eg. reticulator)
- Water source and type of treatment required (eg. unfiltered supply, UV treatment, microfiltration etc).

PERFORMANCE

LWUs with more than 75 complaints per 1000 properties should investigate the reason for the complaints.

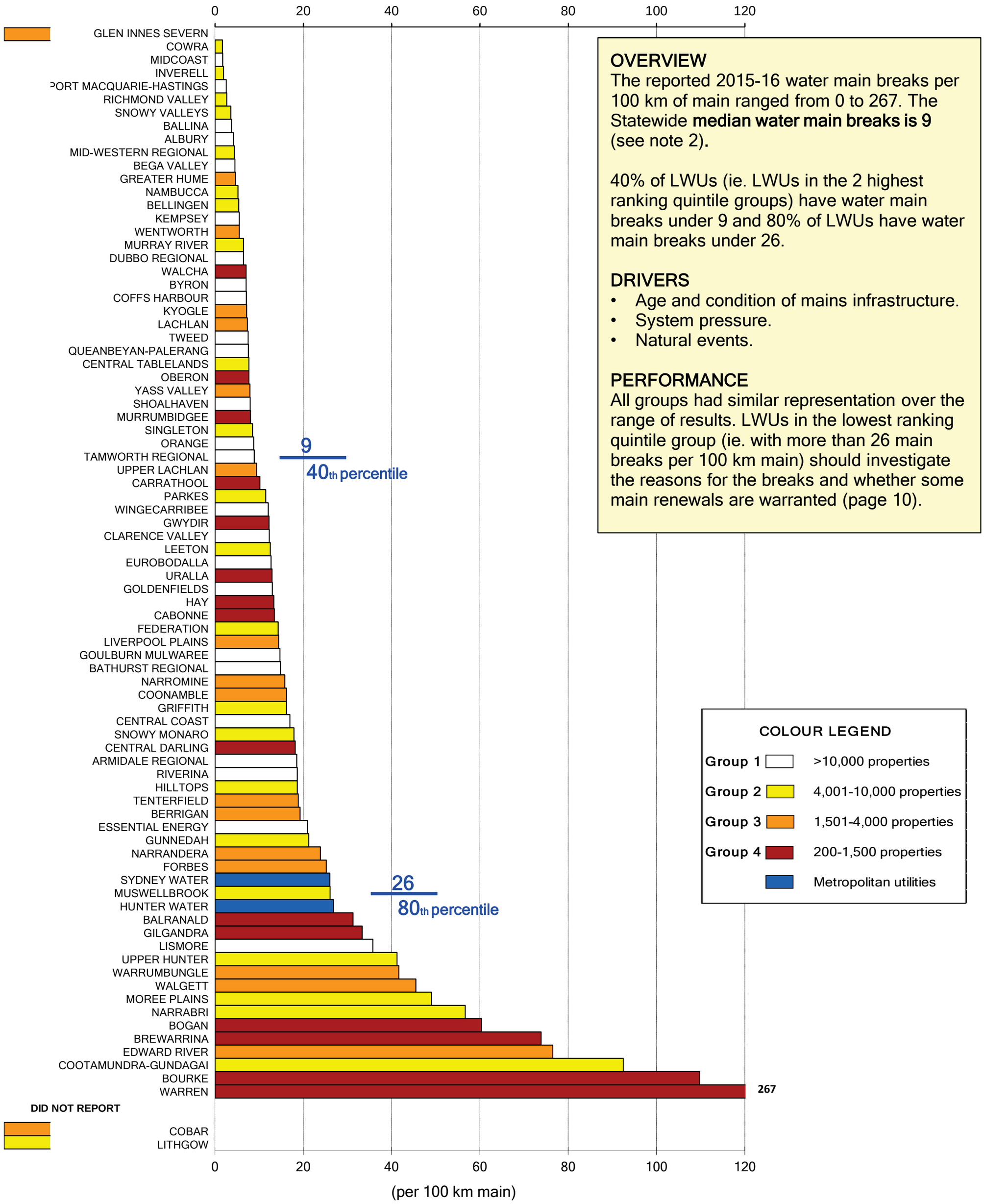
Parameter:

$$\frac{\text{[No. of water complaints (WB102) + No. of sewerage complaints (SB40)]} \times 1{,}000}{\text{No. connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 number of total complaints for water supply and sewerage [NWI Indicator C13] per 1000 connected properties for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 13: Main Breaks - Water Supply 2015-16 - A8



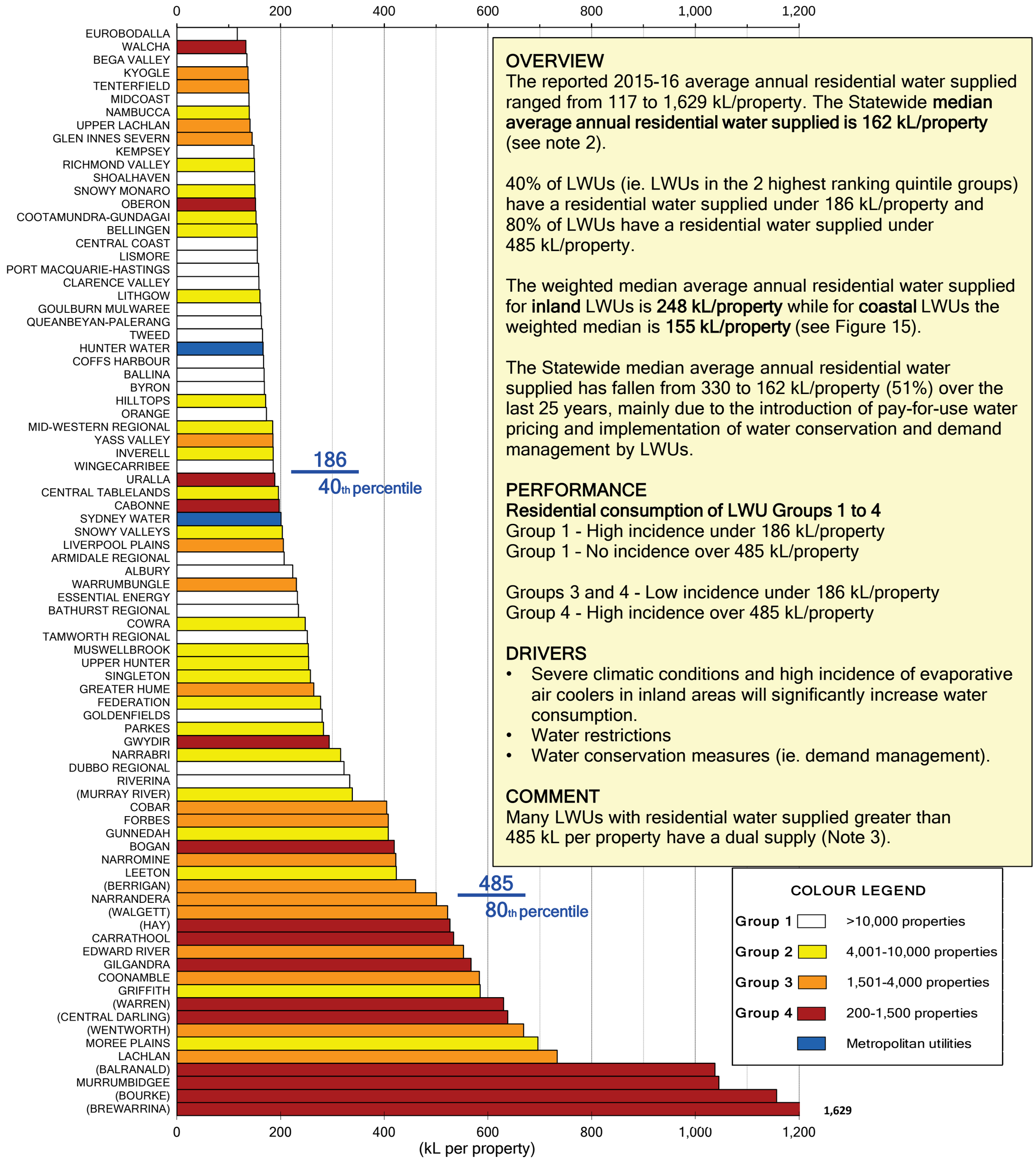
Parameter:

$$\frac{\text{No of pipeline breaks (WB104)} \times 1{,}000}{\text{Length of distribution and trunk mains (WB22)}}$$

Notes:

1. This figure shows ranked values of the 2015-16 number of water main breaks [NWI Indicator A8] per 100 km of main for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 14: Average Annual Residential Water Supplied 2015-16 - W12



OVERVIEW

The reported 2015-16 average annual residential water supplied ranged from 117 to 1,629 kL/property. The Statewide **median average annual residential water supplied is 162 kL/property** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a residential water supplied under 186 kL/property and 80% of LWUs have a residential water supplied under 485 kL/property.

The weighted median average annual residential water supplied for **inland** LWUs is **248 kL/property** while for **coastal** LWUs the weighted median is **155 kL/property** (see Figure 15).

The Statewide median average annual residential water supplied has fallen from 330 to 162 kL/property (51%) over the last 25 years, mainly due to the introduction of pay-for-use water pricing and implementation of water conservation and demand management by LWUs.

PERFORMANCE

Residential consumption of LWU Groups 1 to 4

Group 1 - High incidence under 186 kL/property
Group 1 – No incidence over 485 kL/property

Groups 3 and 4 - Low incidence under 186 kL/property
Group 4 - High incidence over 485 kL/property

DRIVERS

- Severe climatic conditions and high incidence of evaporative air coolers in inland areas will significantly increase water consumption.
- Water restrictions
- Water conservation measures (ie. demand management).

COMMENT

Many LWUs with residential water supplied greater than 485 kL per property have a dual supply (Note 3).

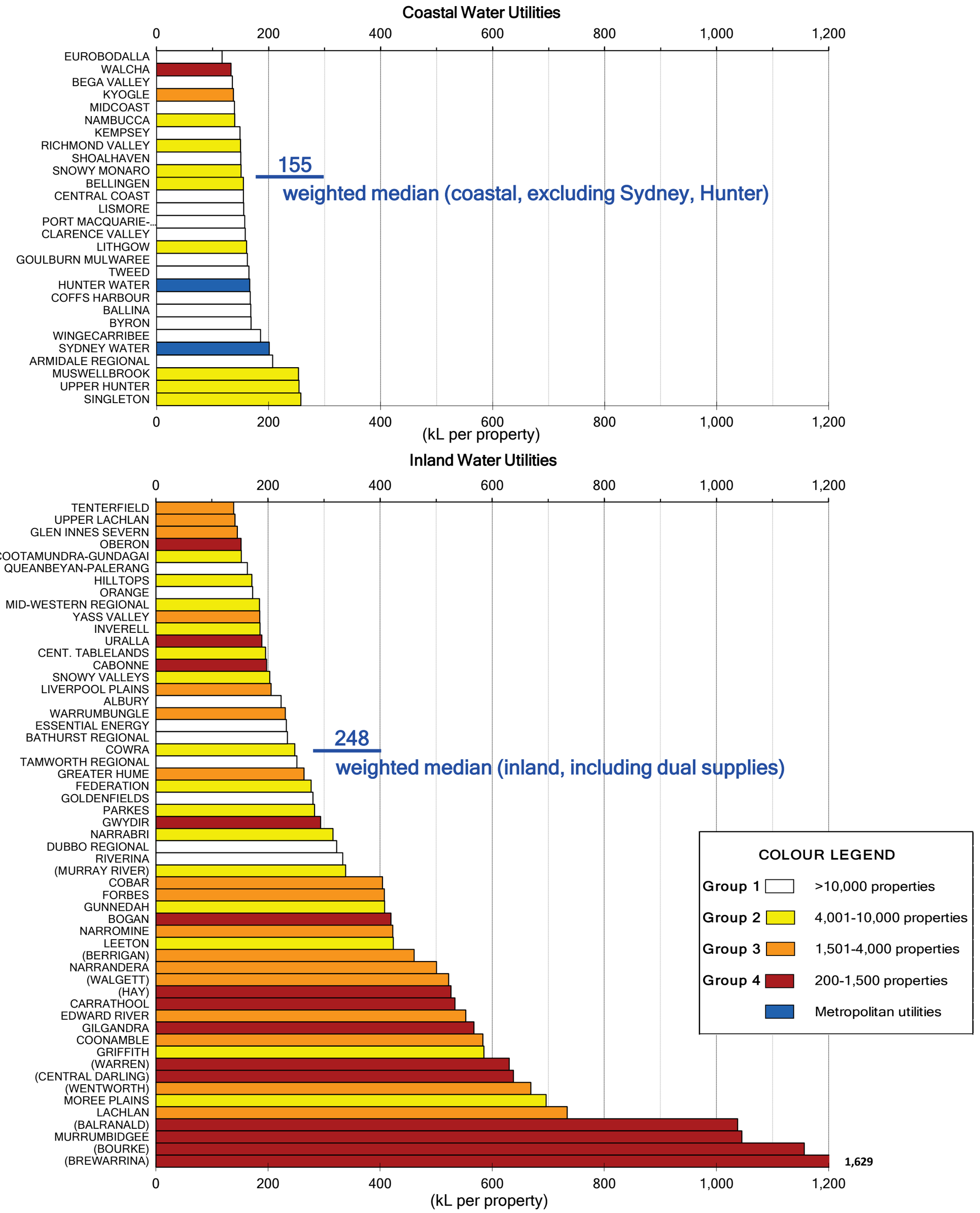
Parameter:

$$\frac{\text{Annual residential water supplied} \times 1{,}000}{\text{No. residential connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 average annual residential water supplied [NWI Indicator W12] per connected property for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. The 10 LWUs with a dual water supply (ie. a potable supply for indoor use and a non-potable supply for outdoor use) are enclosed in brackets. Refer to Note 6 on page 28.
4. For further information, refer to the general notes on page 28 and index on page 116.

Figure 15: Average Annual Residential Water Supplied - Coastal & Inland LWUs 2015-16 - W12



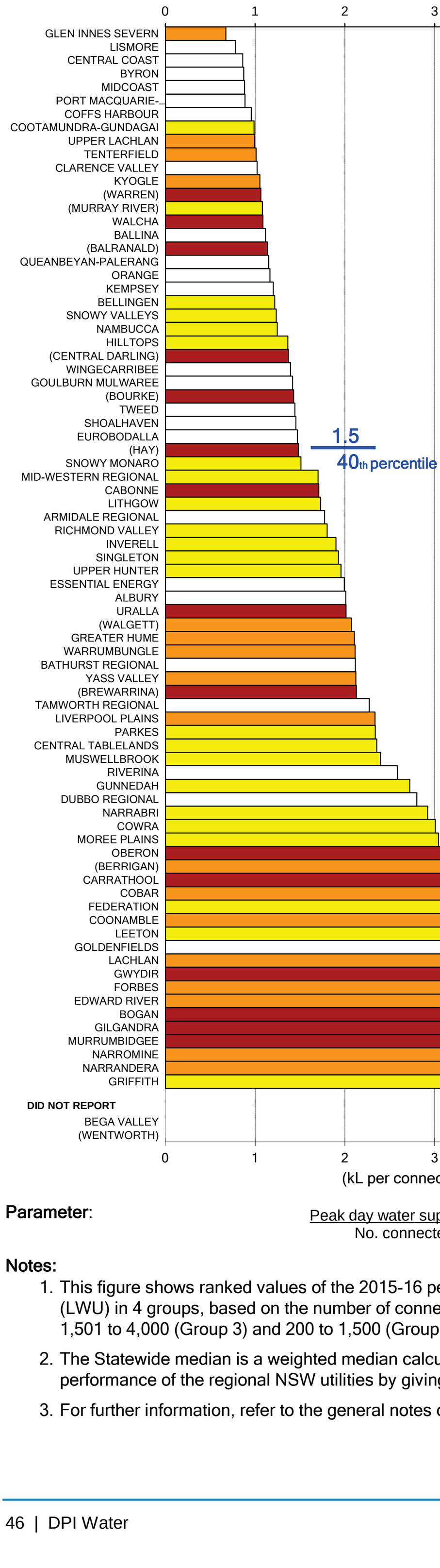
Parameter:

$$\frac{\text{Annual residential water supplied x 1,000}}{\text{No. residential connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 average annual residential water supplied [NWI Indicator W12] per connected property for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The weighted median is calculated on the basis of connected properties.
3. The 10 LWUs with a dual water supply (ie. a potable supply for indoor use and a non-potable supply for outdoor use) are enclosed in brackets. For further information, refer to the general notes on page 28 and index on page 116.

Figure 16: Peak Day Water Supplied 2015-16



OVERVIEW

The reported 2015-16 peak day water supplied ranged from 0.7 to 6.1 kL per connection per day. The Statewide **median peak day water supplied is 1.4 kL per connection per day** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a peak day water supplied under 1.5 kL per connection per day and 80% of LWUs have a peak day water supplied under 3.2 kL per connection per day.

PERFORMANCE

Peak day water supplied of LWU Groups 1 to 4

Group 1 - High incidence under 1.5 kL/connection/d
Groups 2, 3 and 4 - Similar incidence under 1.5 kL/connection/d

Group 1 – One incidence over 3.2 kL/connection/d
Group 3 - High incidence over 3.2 kL/connection/d

DRIVERS

- Severe climatic conditions and high incidence of evaporative air coolers in inland areas will significantly increase peak day water consumption.
- Temporary increases in peak population (holiday crowds, events, etc).

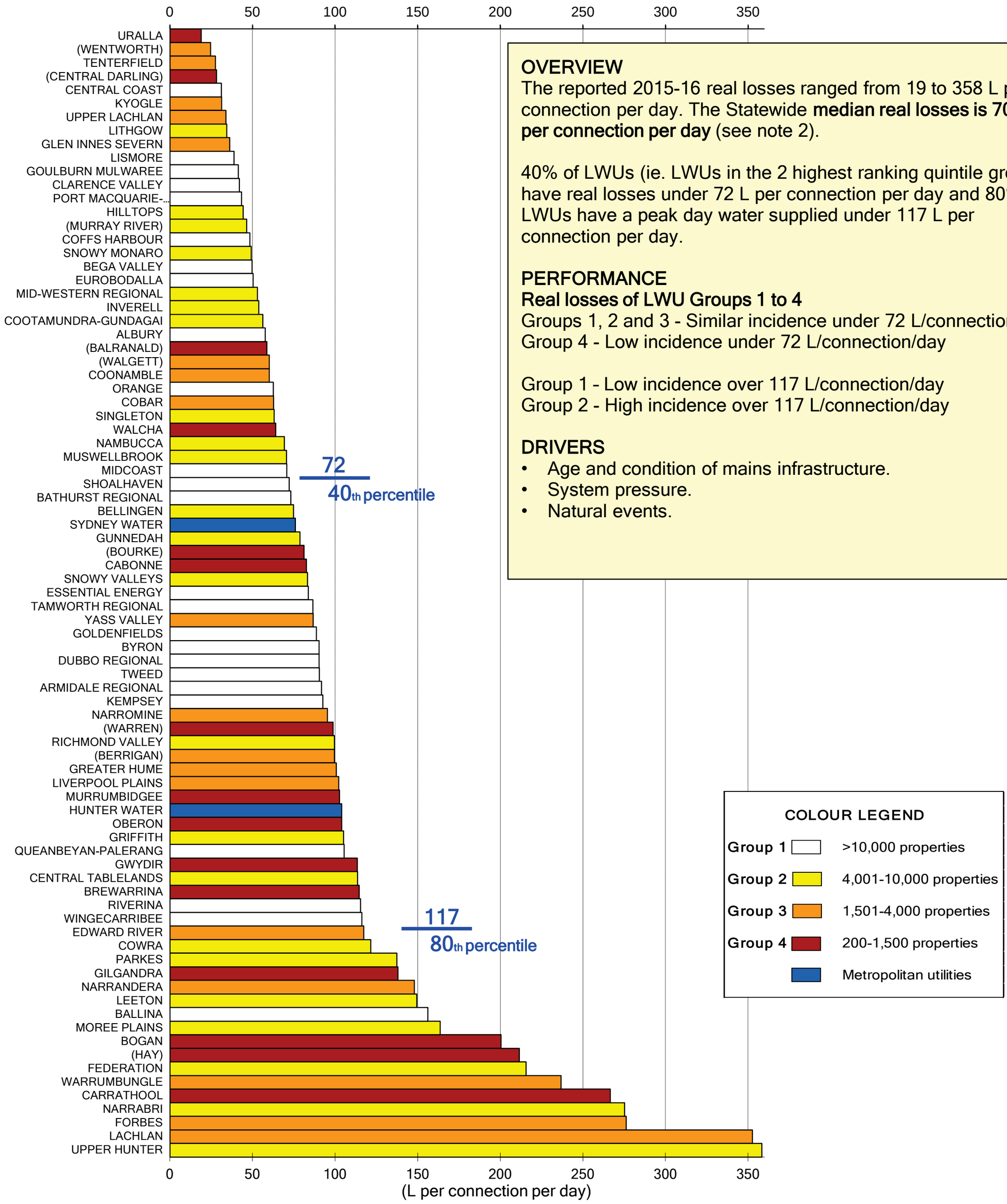
Parameter:

$$\frac{\text{Peak day water supplied (WB82) / 365}}{\text{No. connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 peak day water supplied per connection per day for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 17: Real Losses - Water Supply 2015-16 - A10



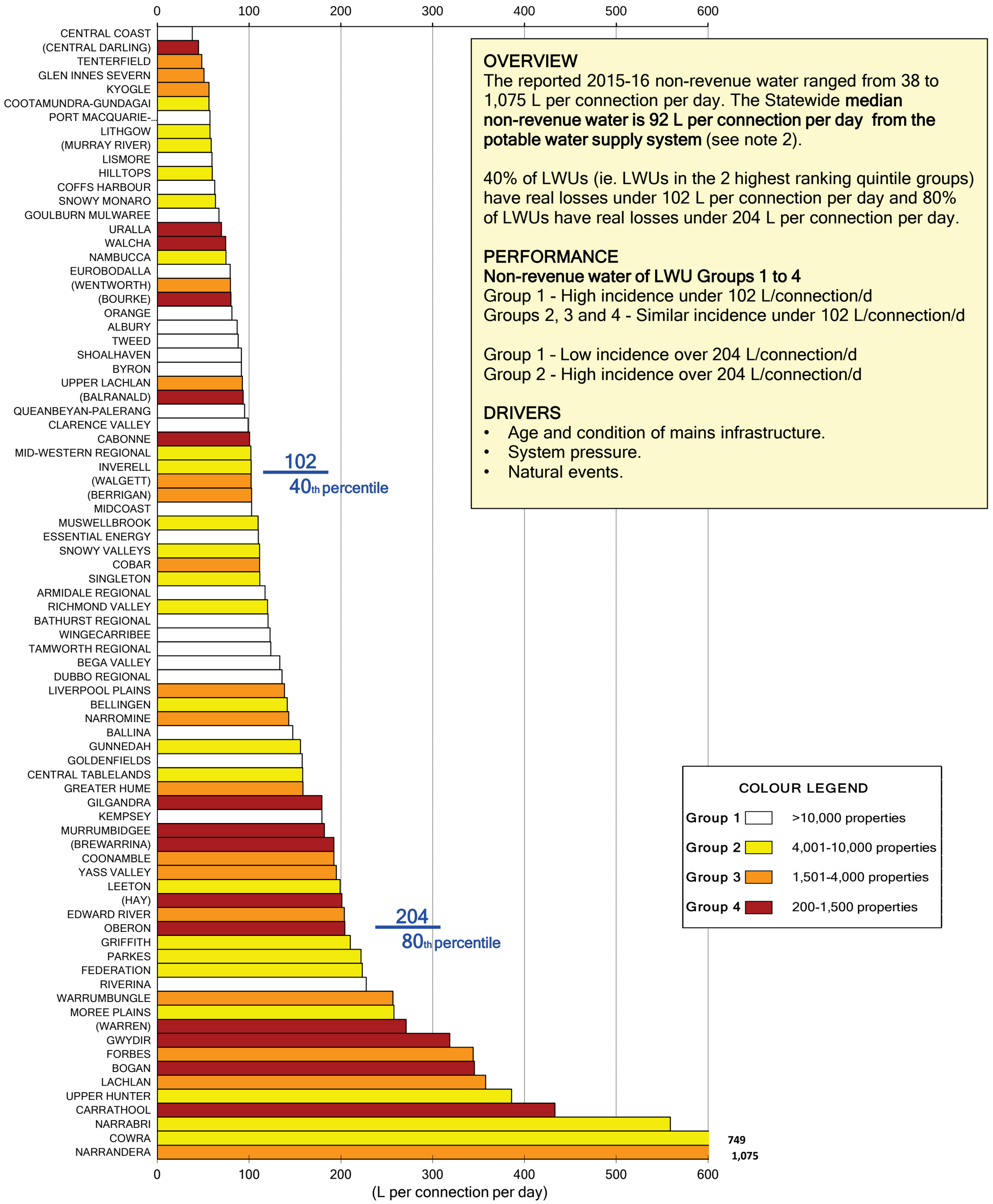
Parameter:

$$\frac{\text{Real losses / 365}}{\text{No. of service connections (WB30)}}$$

Notes:

1. This figure shows ranked values of the 2015-16 real losses from the potable water supply [NWI Indicator A10] per service connection per day for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 18: Non-Revenue Water 2015-16 - W10.1 per connection per day



OVERVIEW

The reported 2015-16 non-revenue water ranged from 38 to 1,075 L per connection per day. The Statewide **median non-revenue water is 92 L per connection per day from the potable water supply system** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have real losses under 102 L per connection per day and 80% of LWUs have real losses under 204 L per connection per day.

PERFORMANCE

Non-revenue water of LWU Groups 1 to 4

Group 1 - High incidence under 102 L/connection/d
Groups 2, 3 and 4 - Similar incidence under 102 L/connection/d

Group 1 – Low incidence over 204 L/connection/d
Group 2 - High incidence over 204 L/connection/d

DRIVERS

- Age and condition of mains infrastructure.
- System pressure.
- Natural events.

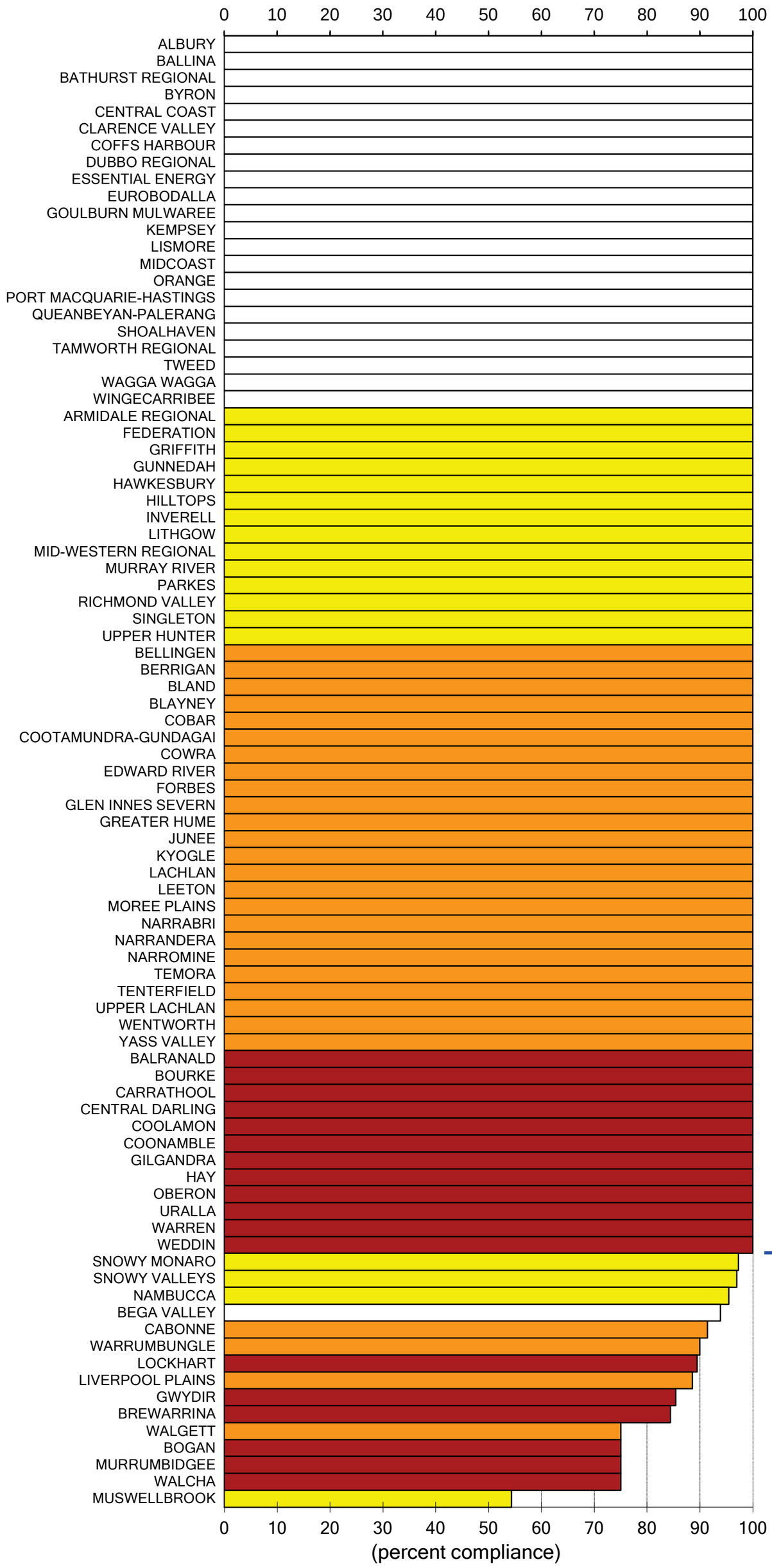
Parameter:

$$\frac{\text{Non-revenue water / 365}}{\text{No. of service connections (WB30)}}$$

Notes:

1. This figure shows ranked values of the 2015-16 non-revenue water [NWI Indicator W10.1 per connection per day] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 19: Compliance with BOD in Licence - Sewerage 2015-16



OVERVIEW
The reported 2015-16 Biochemical Oxygen Demand (BOD) compliance with the 90 percentile limits of the LWU's EPA sewage treatment works licence ranged from 100% to 54%.

90% of the LWUs complied with the 90 percentile limit of their EPA licence for BOD.

PERFORMANCE
BOD compliance of LWU Groups 1 to 4
The non-complying utilities were spread across Groups 2, 3 and 4.

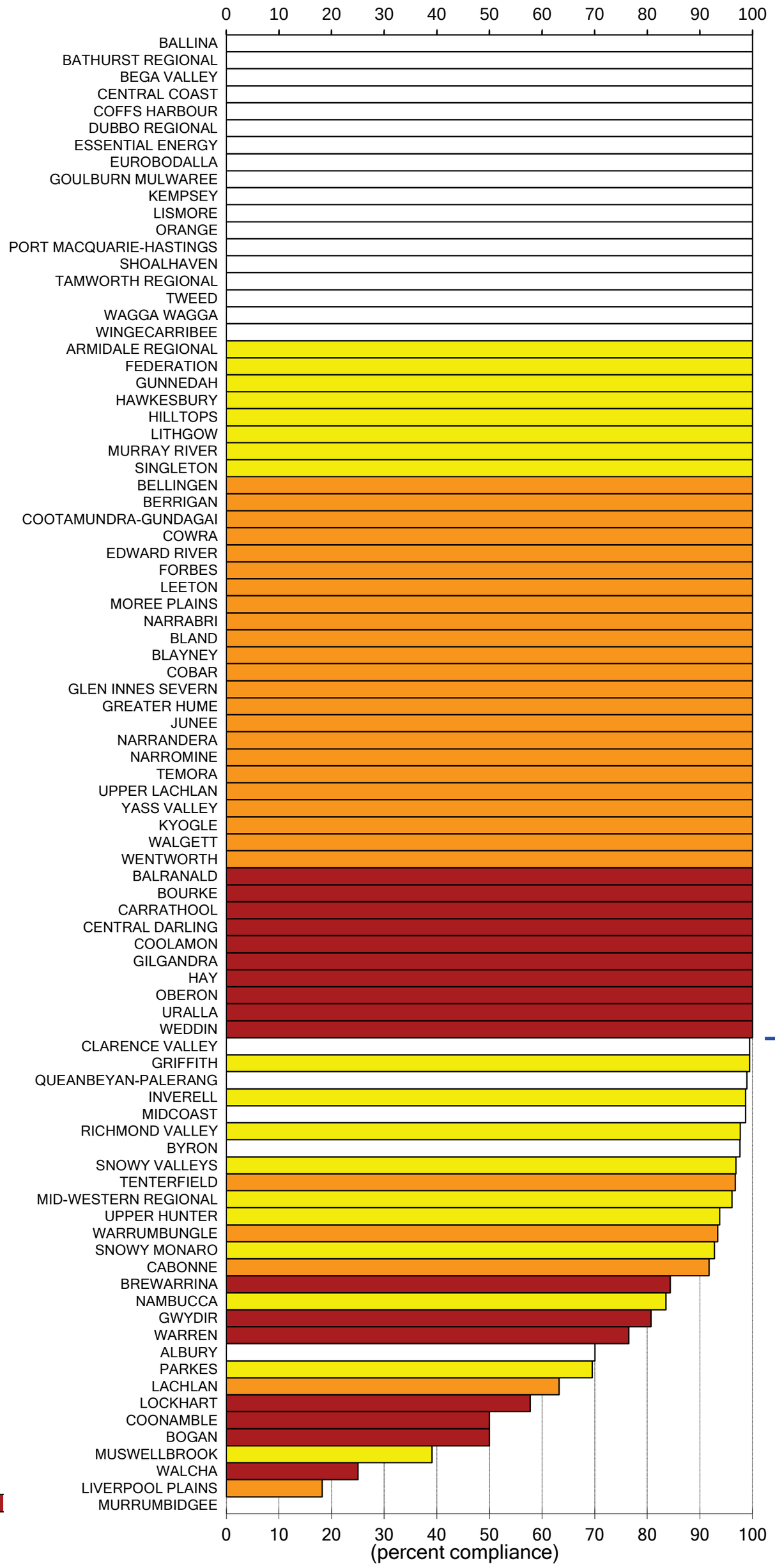
COMMENT
Many of the Groups 3 and 4 LWUs have old trickling filter sewage treatment works which provide a lower level of performance than the newer Intermittent Decanted Extended Aeration (IDEA)

Parameter: Percentage of samples complying with 90 percentile Environment Protection Authority (EPA) licence limits for biochemical oxygen demand (BOD) (STT50)

Notes:

1. This figure shows ranked values of the 2015-16 percent compliance with the 90 percentile Environment Protection Authority (EPA) licence limits for biochemical oxygen demand (BOD) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. For further information, refer to the general notes on page 28 and index on page 116.

Figure 20: Compliance with SS in Licence - Sewerage 2015-16



OVERVIEW
The reported 2015-16 Suspended Solids (SS) compliance with the 90 percentile limits of the LWU's EPA sewage treatment works licence ranged from 100% to 0%.

84% of the LWUs reported that they complied with the 90 percentile limit of their EPA licence for SS.

PERFORMANCE
SS compliance of LWU Groups 1 to 4
Most of the non-complying utilities were Group 4.

COMMENT
The good performance of Group 1 is assisted by additional facilities provided for solids capture including filtration, dissolved air flotation (DAF) and extended aeration treatment works (EAT).

The relatively poor performance of Group 4 LWUs is mostly due to the growth of algae in maturation ponds.

COLOUR LEGEND

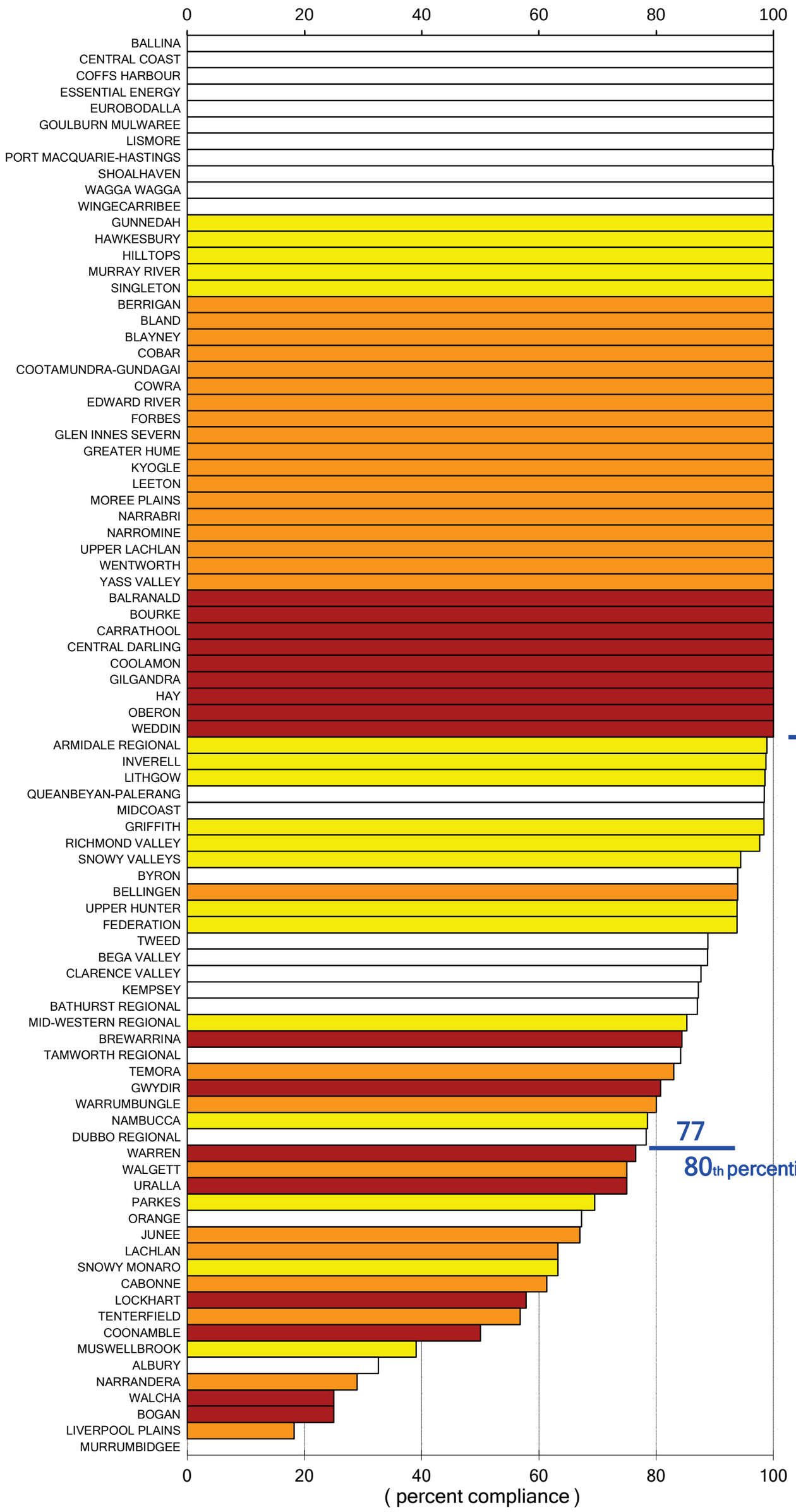
Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties

Parameter: Percentage of samples complying with 90 percentile Environment Protection Authority (EPA) licence limits for suspended solids (SS) (STT52)

Notes:

1. This figure shows ranked values of the 2015-16 percent compliance with the 90 percentile Environment Protection Authority (EPA) licence limits for suspended solids (SS) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. For further information, refer to the general notes on page 28 and index on page 116.

Figure 21: Percent of Sewage Treated that was Compliant 2015-16 - E4



OVERVIEW
The reported 2015-16 percent of sewage treated that was compliant ranged from 100% to 0%. The Statewide **median percent of sewage treated that was compliant is 100%** (see note 2).

49% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) had 100% of sewage treated that was compliant. 80% of LWUs had at least 77% of sewage treated that was compliant.

COLOUR LEGEND

Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties

Parameter:

$$\frac{\text{Volume of Sewage Treated that was Compliant}}{\text{Total Volume of Sewage Treated}}$$

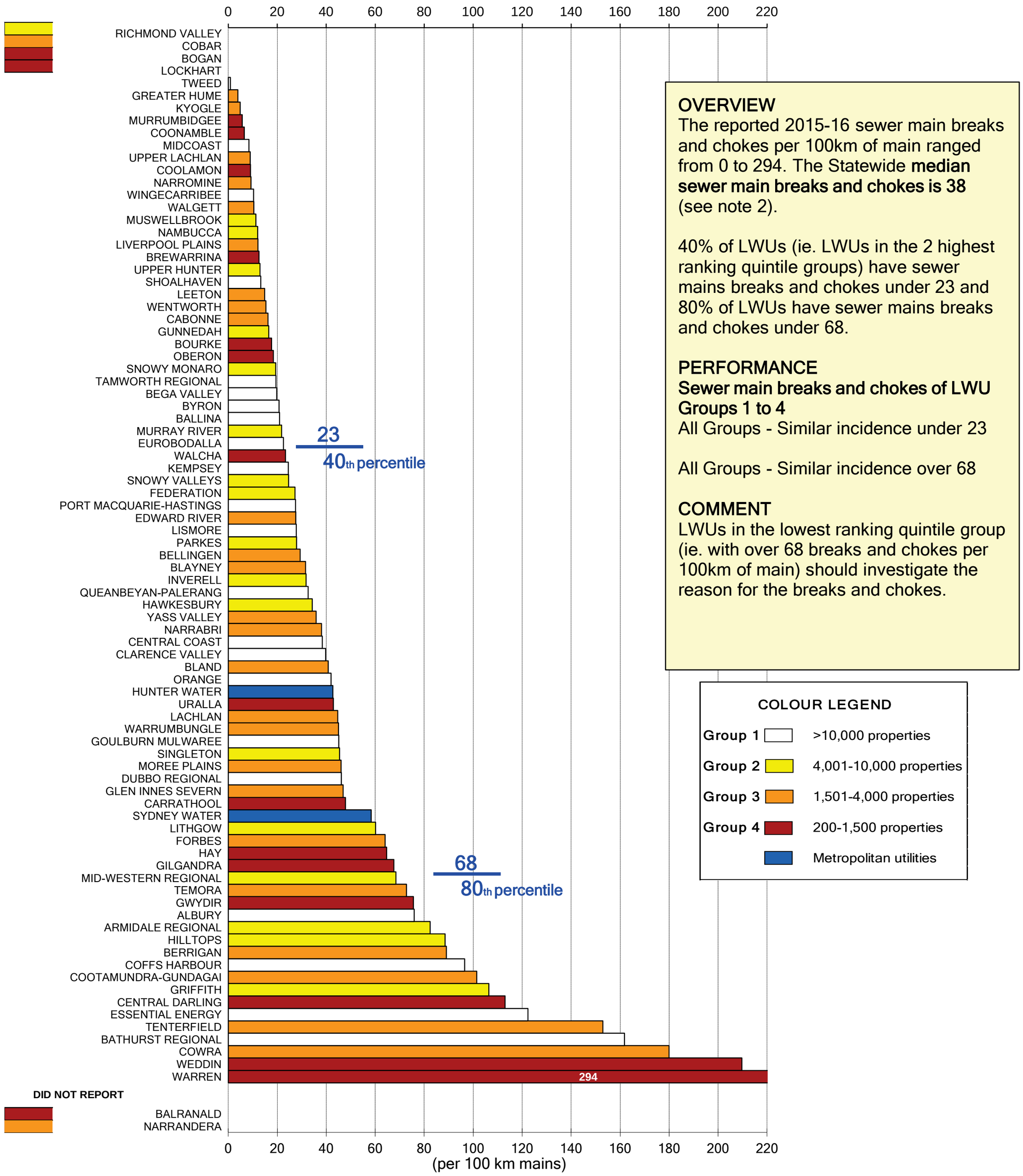
Notes:

1. This figure shows ranked values of the 2015-16 per cent of sewage treated that was compliant [NWI Indicator E4] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).

2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.

3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 22: Sewer Main Breaks and Chokes - Sewerage 2015-16 - A14



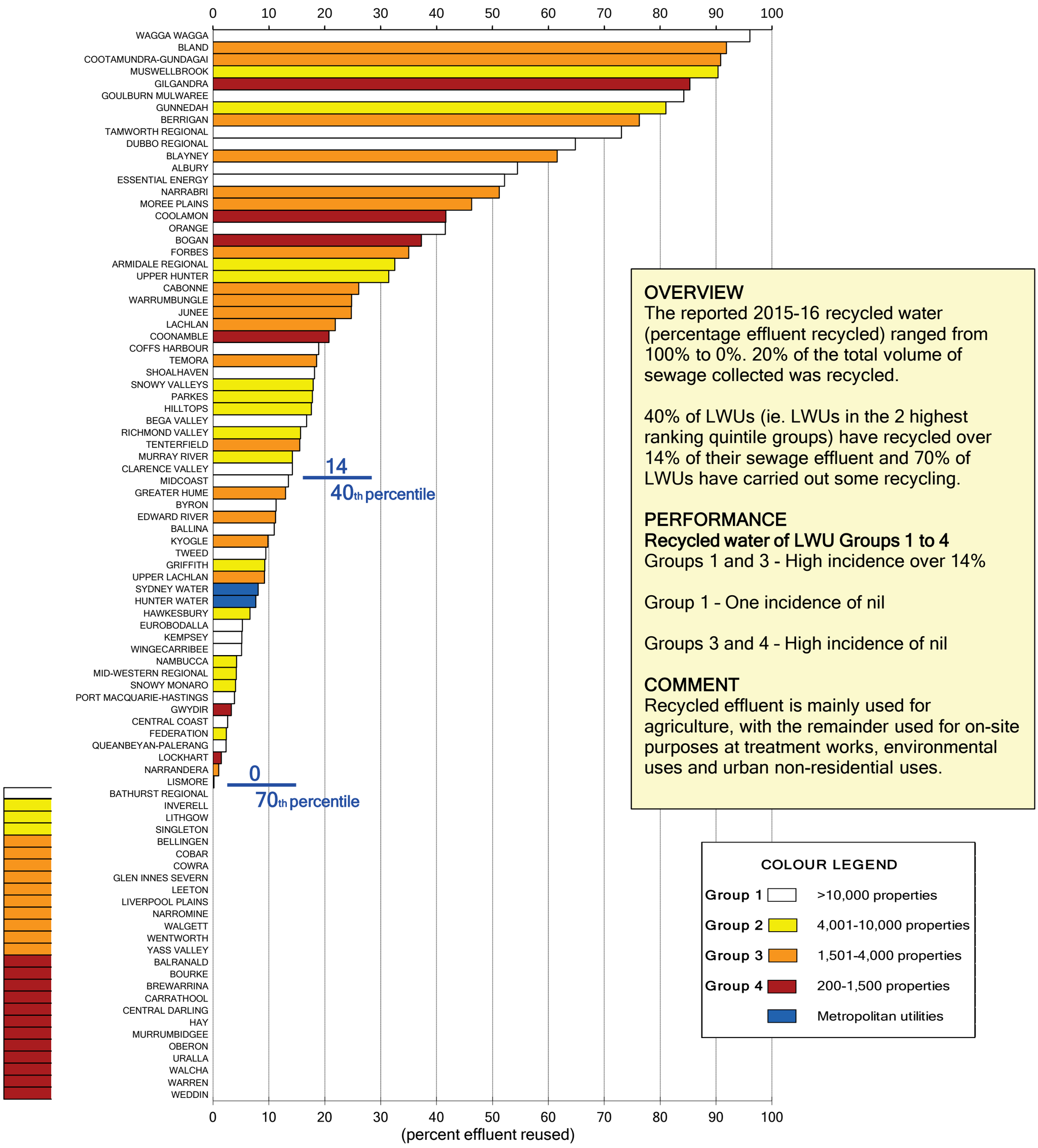
Parameter:

$$\frac{\text{Total number of sewer main breaks and chokes (SB64)} \times 100}{\text{Length of reticulation/gravity mains (SB7)} + \text{Length of rising/pressure mains (SB8)}}$$

Notes:

1. This figure shows ranked values of the 2015-16 sewer main breaks and chokes [NWI Indicator A14] for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 23: Recycled Water (percent effluent recycled) - Sewerage 2015-16 - W27



OVERVIEW

The reported 2015-16 recycled water (percentage effluent recycled) ranged from 100% to 0%. 20% of the total volume of sewage collected was recycled.

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have recycled over 14% of their sewage effluent and 70% of LWUs have carried out some recycling.

PERFORMANCE

Recycled water of LWU Groups 1 to 4

Groups 1 and 3 - High incidence over 14%

Group 1 – One incidence of nil

Groups 3 and 4 – High incidence of nil

COMMENT

Recycled effluent is mainly used for agriculture, with the remainder used for on-site purposes at treatment works, environmental uses and urban non-residential uses.

COLOUR LEGEND

Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties
	Metropolitan utilities

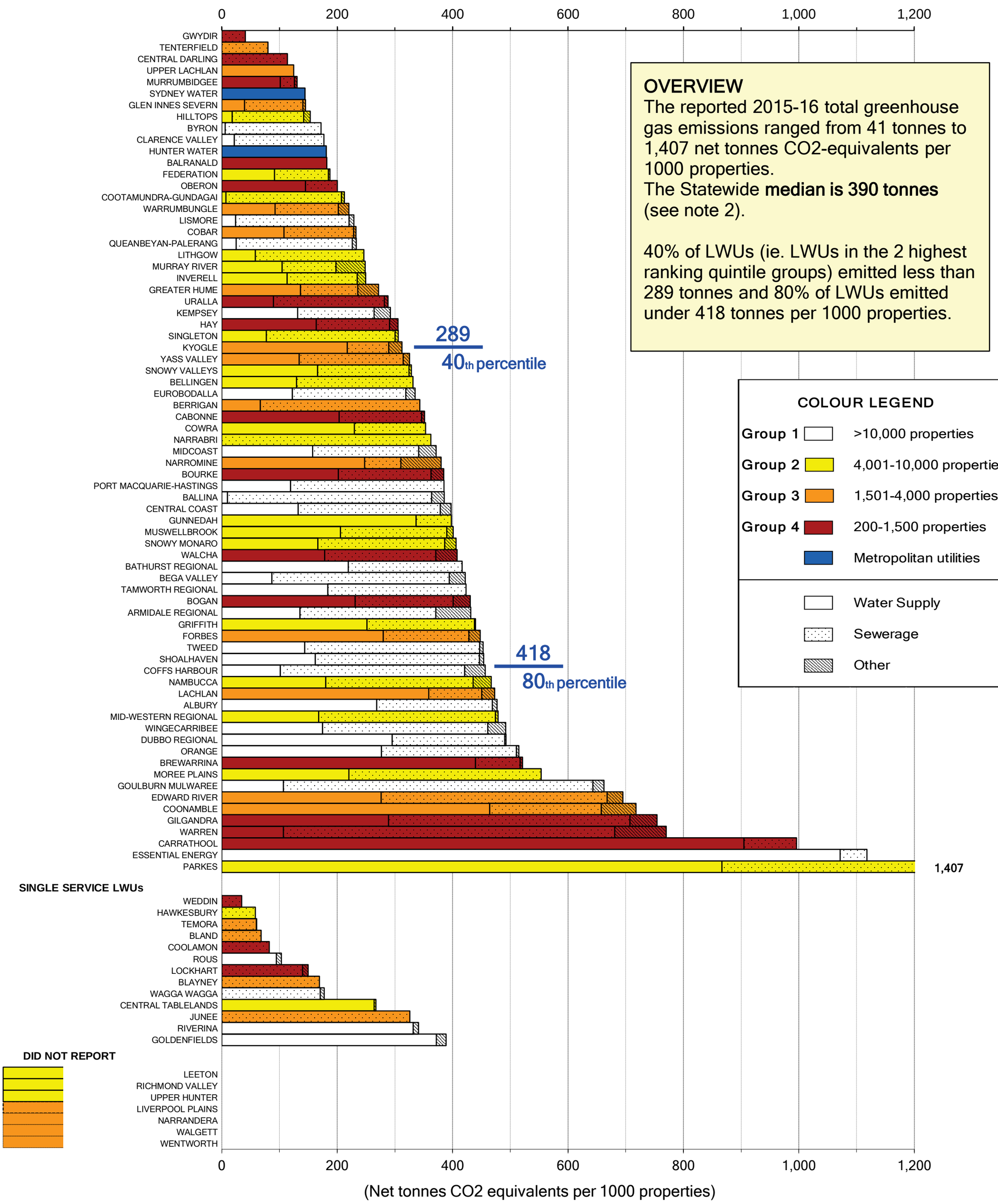
Parameter:

$$\frac{\text{(Total recycled water supplied + bulk recycled exports - bulk recycled imports) x 100}}{\text{Volume of treated sewage effluent}}$$

Notes:

1. This figure shows ranked values of the 2015-16 recycled water (NWI Indicator W27 - % of sewage effluent recycled) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. For LWUs which did not report their 2015-16 volumes recycled, the 2014-15 percentage has been shown. These utilities are shown in italics bold in Column 21 of Appendix D. The volume of water recycled is shown in column 22 of Appendix D.
3. Reuse of recycled water was carried out by 70% of LWUs. Statewide, 20% of the total volume of sewage collected was recycled. The total volume recycled in regional NSW was 35,500ML. 16% of LWUs recycled over 50% of their effluent. The highest volume recycled by a utility was 5,700ML (Wagga Wagga) and a further 4 utilities (Albury, Dubbo, Orange and Tamworth) each recycled over 2,000ML.
4. For further information, refer to the general notes on page 28 and index on page 116.

Figure 24: Total Greenhouse Gas Emissions 2015-16 - E12



(Net tonnes CO2 equivalents per 1000 properties)

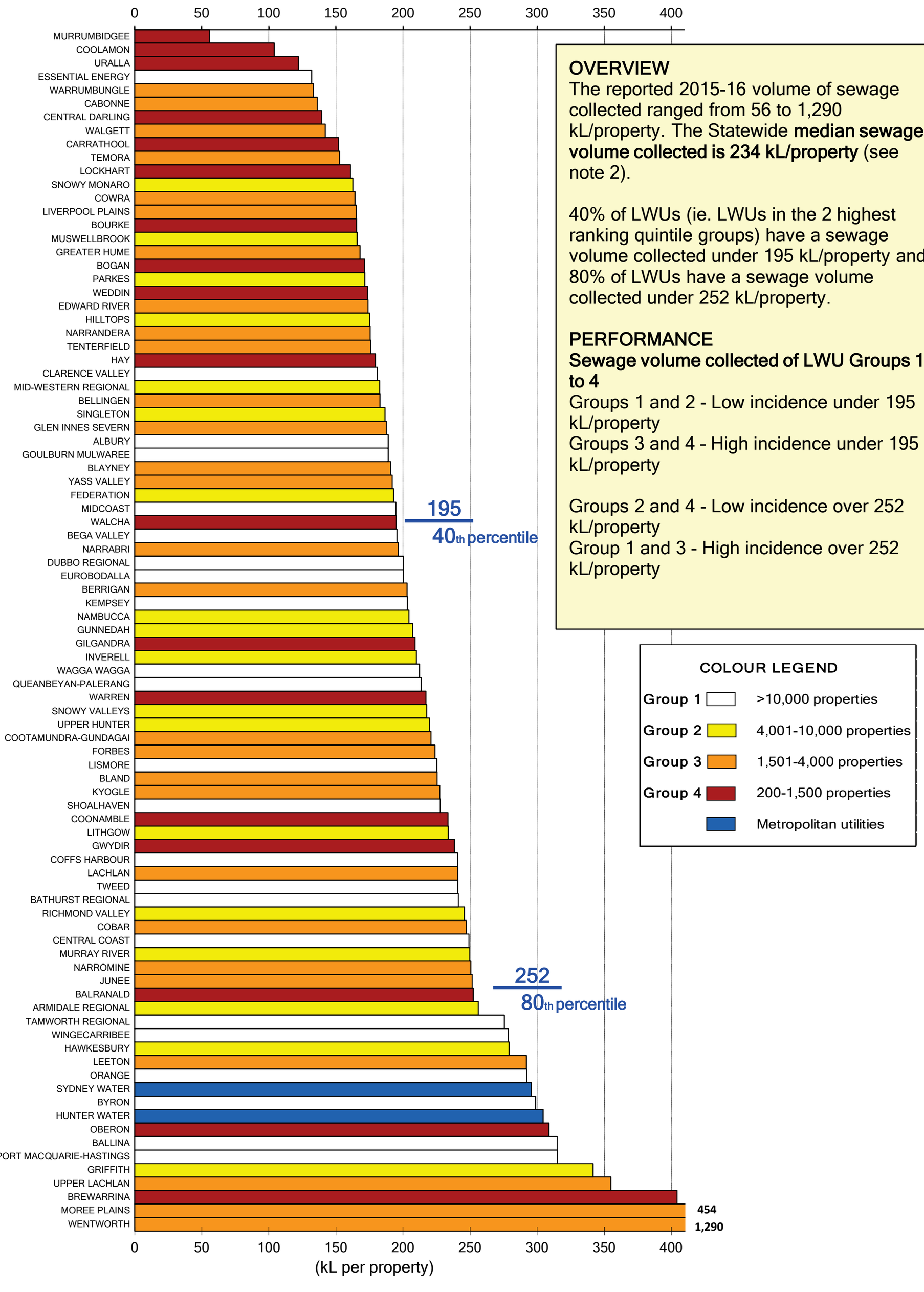
Parameter:

$$\frac{\text{Total Greenhouse gas emissions - water and sewerage (WB148a + WB148b + SB80a + SB80b) x 1,000}}{\text{No. connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 total greenhouse gas emissions [NWI Indicator E12] per 1,000 connected properties for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. The NSW Greenhouse Gas Calculator is available in Appendix G of the 2015-16 NSW Water Supply and Sewerage Benchmarking Report.
4. For further information, refer to the general notes on page 28 and index on page 116.

Figure 25: Sewage volume collected per property 2015-16 - W19



OVERVIEW

The reported 2015-16 volume of sewage collected ranged from 56 to 1,290 kL/property. The Statewide **median sewage volume collected is 234 kL/property** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a sewage volume collected under 195 kL/property and 80% of LWUs have a sewage volume collected under 252 kL/property.

PERFORMANCE

Sewage volume collected of LWU Groups 1 to 4

Groups 1 and 2 - Low incidence under 195 kL/property
Groups 3 and 4 - High incidence under 195 kL/property

Groups 2 and 4 - Low incidence over 252 kL/property
Group 1 and 3 - High incidence over 252 kL/property

COLOUR LEGEND

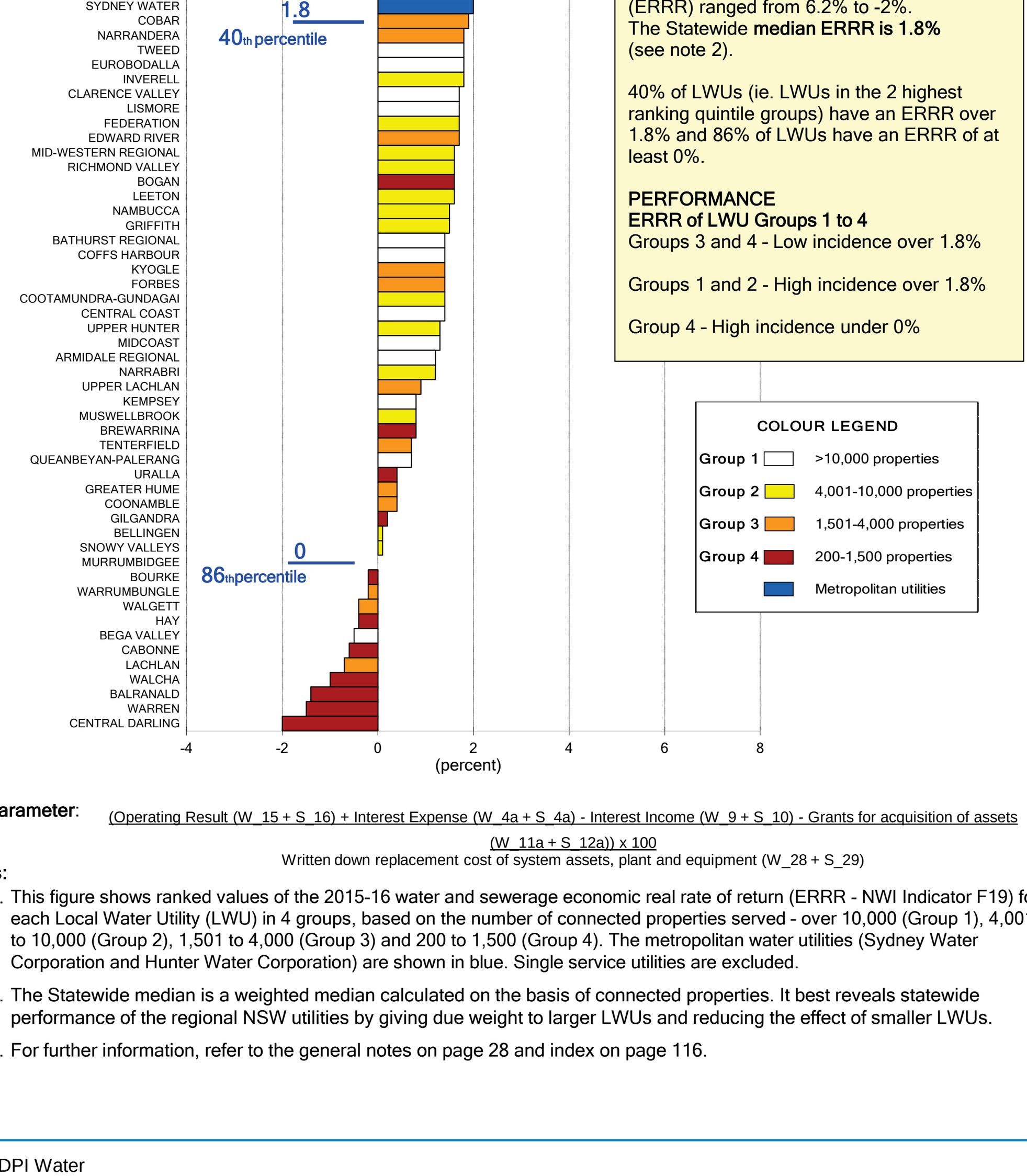
Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties
	Metropolitan utilities

Parameter: $\frac{\text{Volume of sewage collected (STT15)}}{\text{No. connected properties}}$

Notes:

1. This figure shows ranked values of the 2015-16 volume of sewage collected [NWI Indicator W19] per connected property for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 26: Economic Real Rate of Return - Water and Sewerage 2015-16 - F19

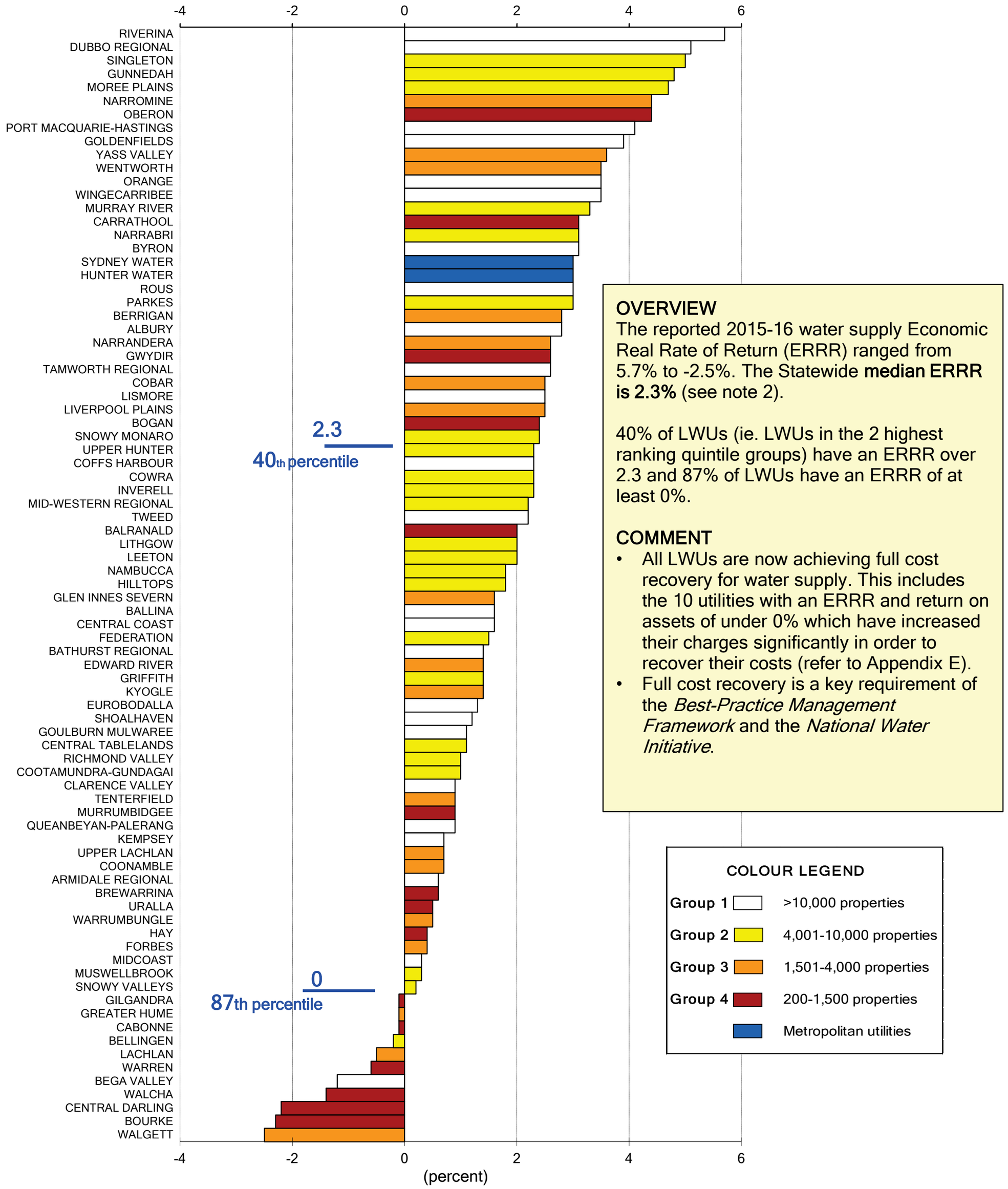


Parameter: $\frac{\text{(Operating Result (W\_15 + S\_16) + Interest Expense (W\_4a + S\_4a) - Interest Income (W\_9 + S\_10) - Grants for acquisition of assets (W\_11a + S\_12a)) x 100}}{\text{Written down replacement cost of system assets, plant and equipment (W\_28 + S\_29)}}$

Notes:

1. This figure shows ranked values of the 2015-16 water and sewerage economic real rate of return (ERRR - NWI Indicator F19) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue. Single service utilities are excluded.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 27: Economic Real Rate of Return - Water Supply 2015-16 - F17

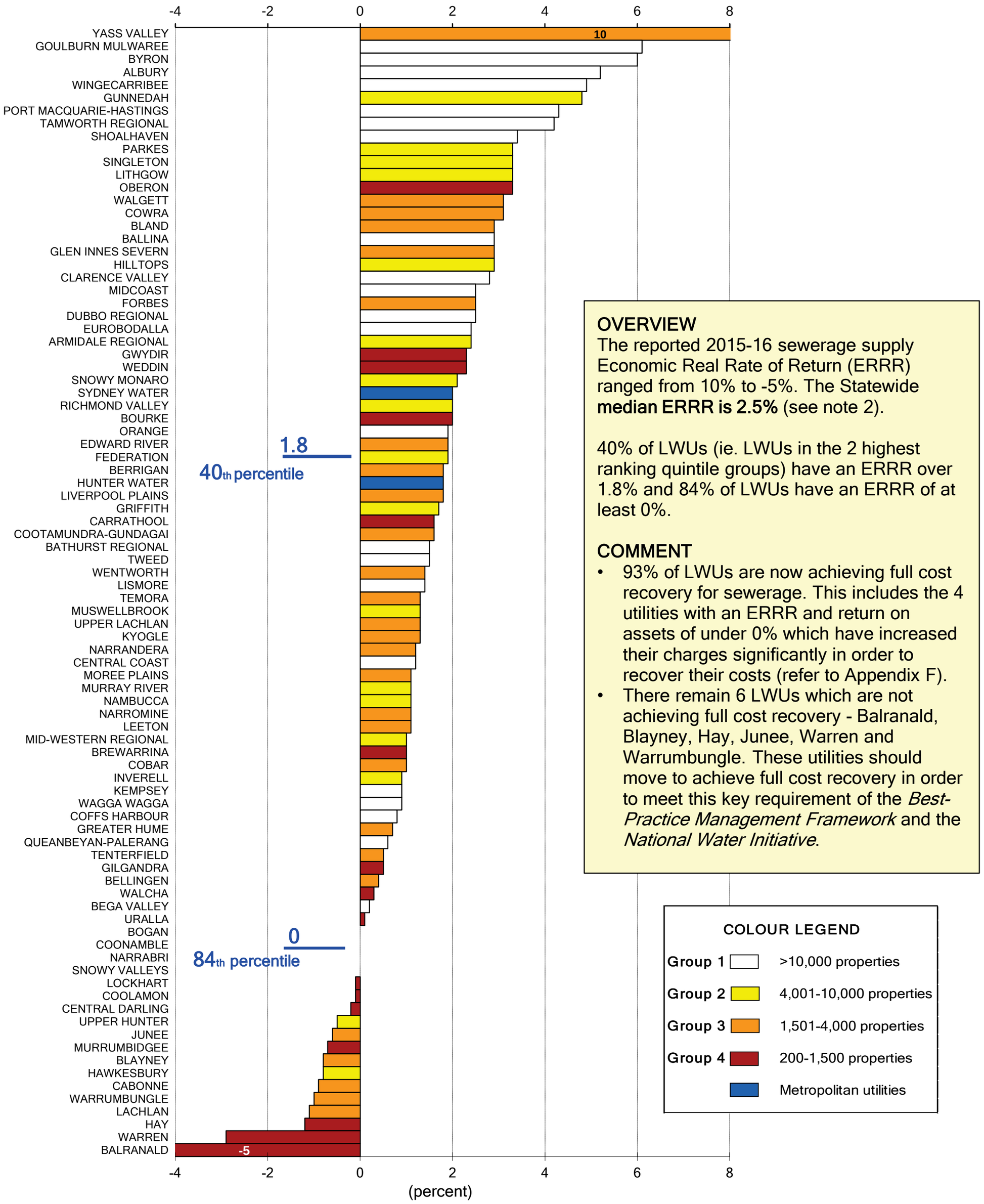


Parameter: $\frac{\text{(Total Income (W\_13) - Interest Income (W\_9) - Grants for acquisition of assets (W\_11a) - Total Expenses (W\_5) + Interest Expenses (W\_4a) + Other Expenses (W\_4b))} \times 100}{\text{Written down replacement cost of system assets, plant and equipment (W\_28)}}$

Notes:

1. This figure shows ranked values of the 2015-16 water supply economic real rate of return (ERRR - NWI Indicator F17) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 28: Economic Real Rate of Return - Sewerage 2015-16 - F18

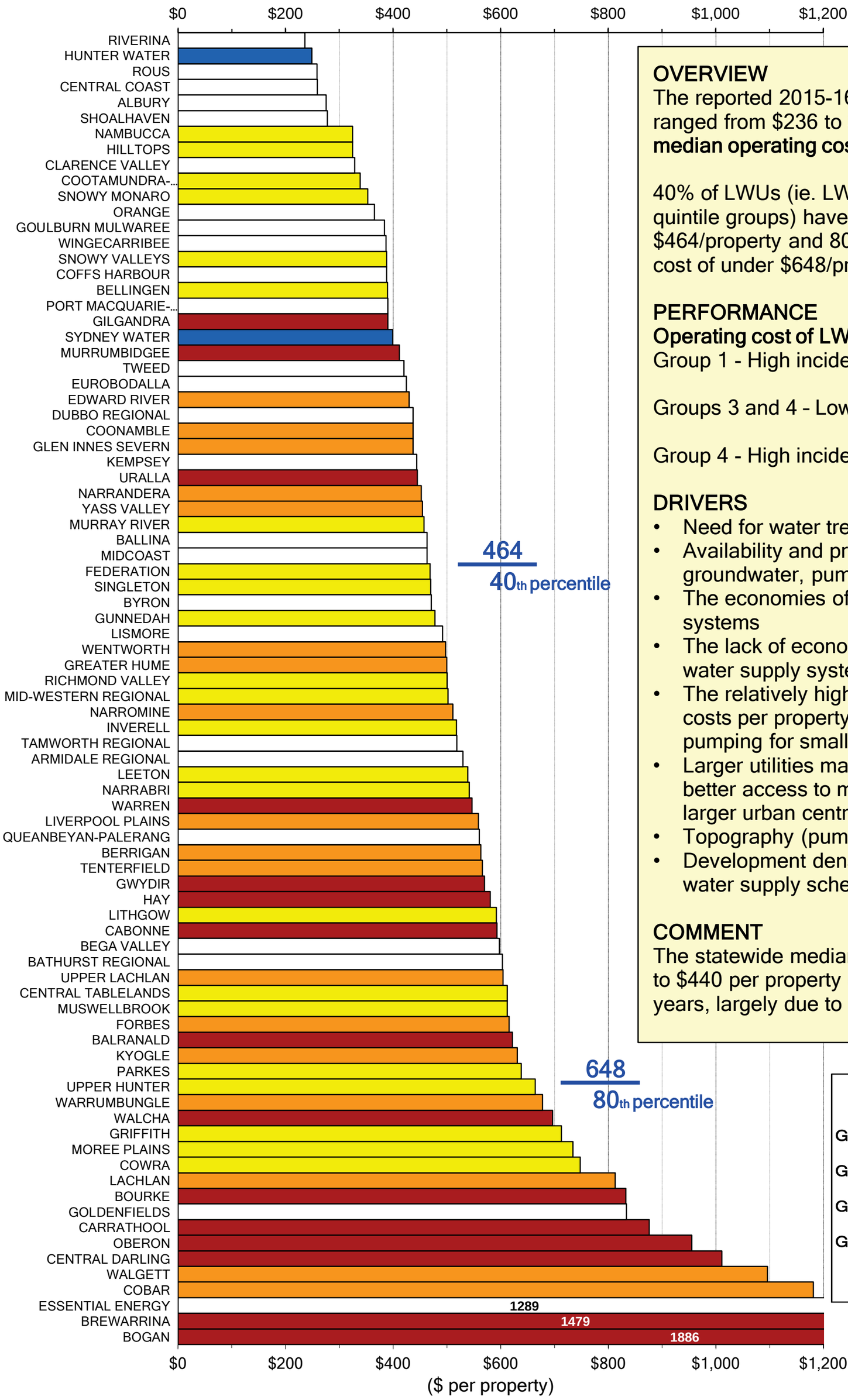


Parameter: $\frac{\text{(Total Income (S\_14) - Interest Income (S\_10) - Grants for acquisition of assets (S\_12a) - Total Expenses (S\_5) + Interest Expenses (S\_4a) + Other Expenses (S\_4b))} \times 100}{\text{Written down replacement cost of system assets, plant and equipment (S\_29)}}$

Notes:

1. This figure shows ranked values of the 2015-16 sewerage economic real rate of return (ERRR - NWI Indicator F18) for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 29: Operating Cost (OMA) per property - Water Supply 2015-16 - F11



OVERVIEW

The reported 2015-16 water supply operating cost ranged from $236 to $1,886/property. The Statewide **median operating cost is $440/property** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have an operating cost of under $464/property and 80% of LWUs have an operating cost of under $648/property.

PERFORMANCE

Operating cost of LWU Groups 1 to 4

Group 1 - High incidence under $464/property

Groups 3 and 4 – Low incidence under $464/property

Group 4 - High incidence over $648/property

DRIVERS

- Need for water treatment
- Availability and proximity of water resources (eg. groundwater, pumped vs gravity supply)
- The economies of scale of the larger water supply systems
- The lack of economies of scale of the smaller water supply systems
- The relatively high operation and maintenance costs per property for water treatment and pumping for small discrete water supplies
- Larger utilities may achieve cost savings through better access to materials and equipment in the larger urban centres.
- Topography (pumping vs gravitational supply)
- Development density and the number of separate water supply schemes.

COMMENT

The statewide median OMA cost has risen from $268 to $440 per property (Jan 2016$) over the past 24 years, largely due to increased management costs.

COLOUR LEGEND

Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties
	Metropolitan utilities

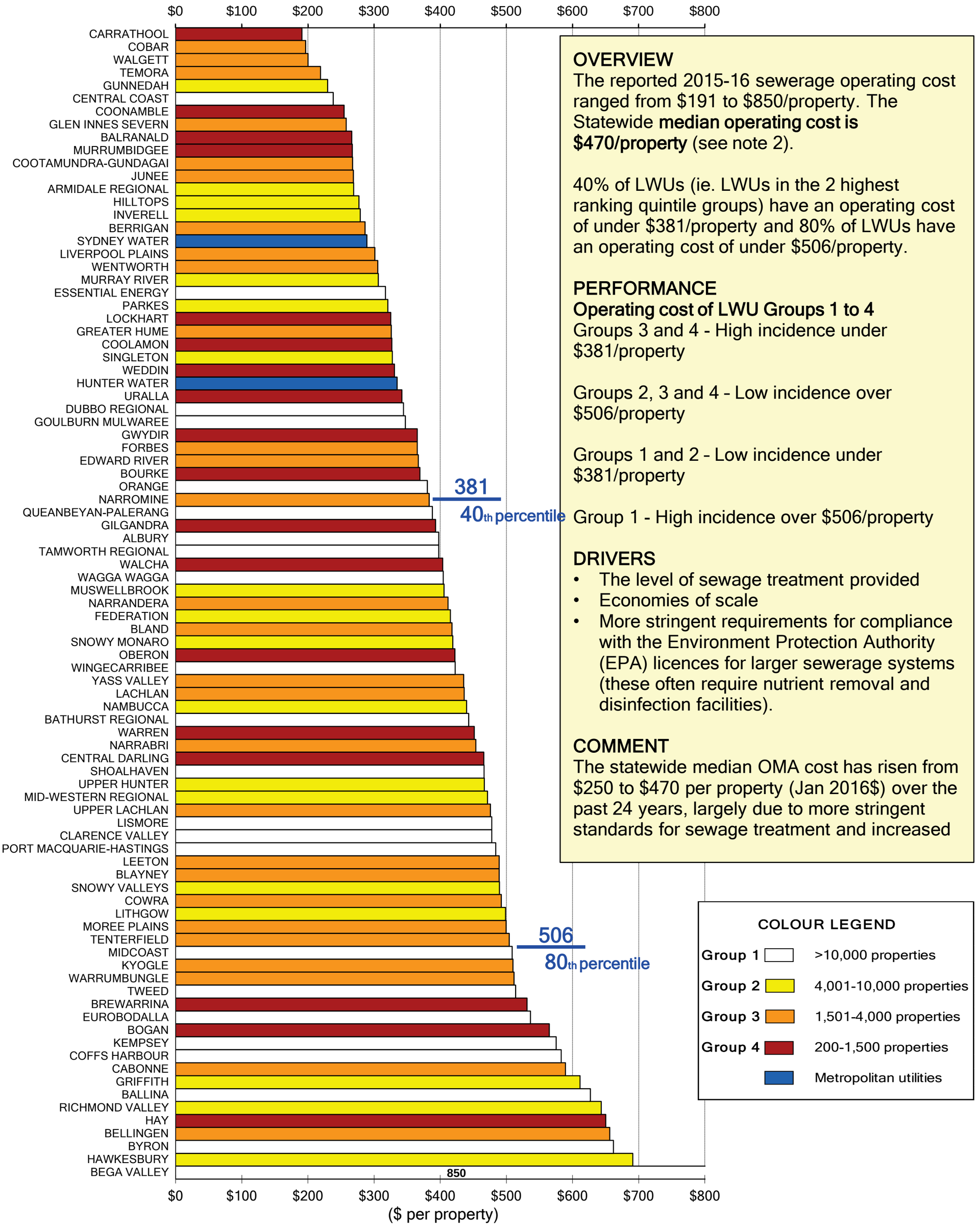
Parameter:

$$\frac{\text{Management expenses (W\_1) + Total operation expenses (W\_2) - Purchase of water + Bulk supplier's OMA}}{\text{No. connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 water supply operating cost (OMA - operation, maintenance and administration - NWI Indicator F11) per property for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 30: Operating Cost (OMA) per property - Sewerage 2015-16 - F12



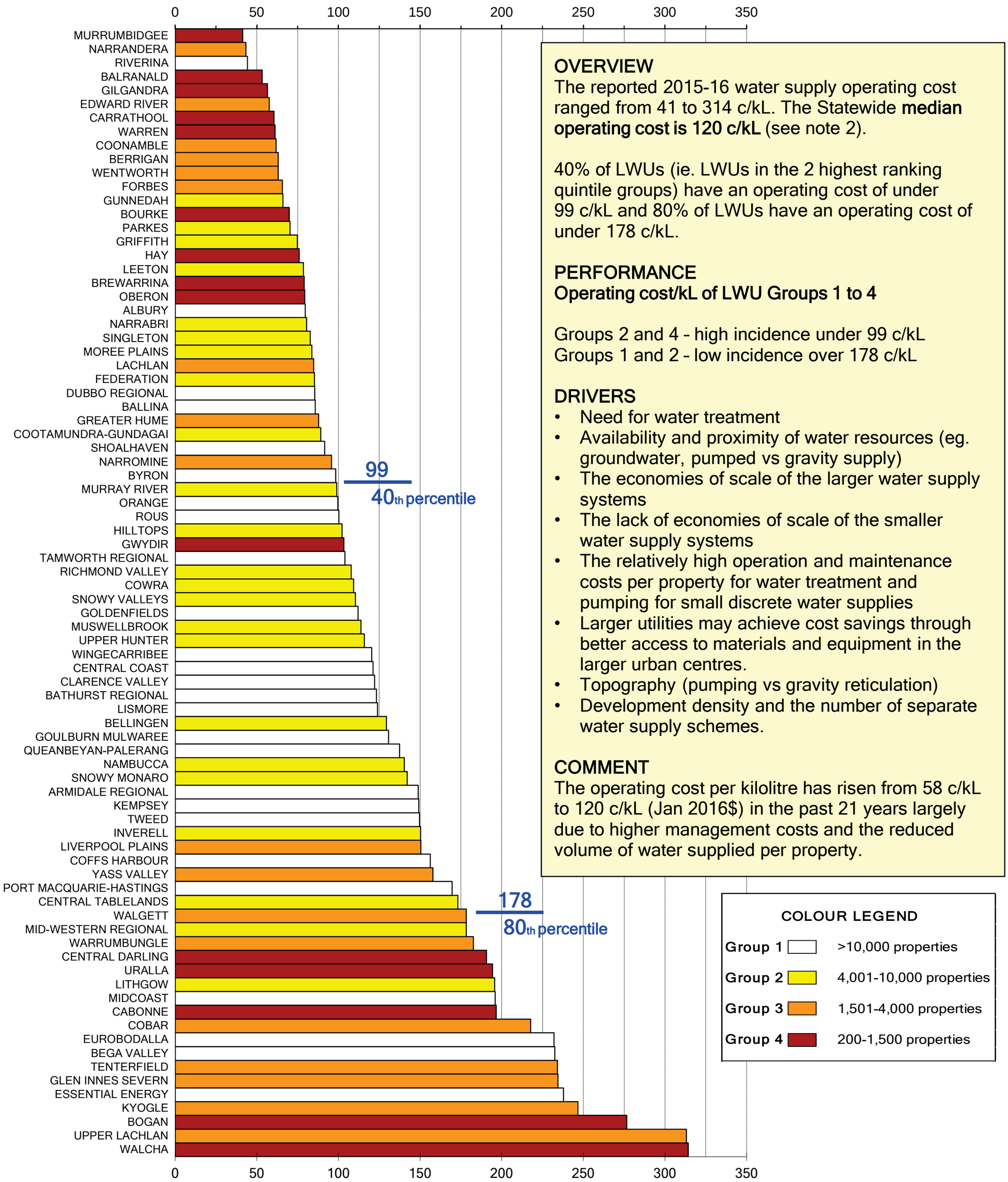
Parameter:

$$\frac{\text{Management expenses (S\_1) + Total operation expenses (S\_2)}}{\text{No. connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 sewerage operating cost (OMA - operation, maintenance and administration - NWI Indicator F12) per property for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4). The metropolitan water utilities (Sydney Water Corporation and Hunter Water Corporation) are shown in blue.
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 31: Operating Cost (OMA) per kilolitre - Water Supply 2015-16



OVERVIEW
The reported 2015-16 water supply operating cost ranged from 41 to 314 c/kL. The Statewide **median operating cost is 120 c/kL** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have an operating cost of under 99 c/kL and 80% of LWUs have an operating cost of under 178 c/kL.

PERFORMANCE
Operating cost/kL of LWU Groups 1 to 4

Groups 2 and 4 – high incidence under 99 c/kL
Groups 1 and 2 – low incidence over 178 c/kL

DRIVERS
- Need for water treatment
- Availability and proximity of water resources (eg. groundwater, pumped vs gravity supply)
- The economies of scale of the larger water supply systems
- The lack of economies of scale of the smaller water supply systems
- The relatively high operation and maintenance costs per property for water treatment and pumping for small discrete water supplies
- Larger utilities may achieve cost savings through better access to materials and equipment in the larger urban centres.
- Topography (pumping vs gravity reticulation)
- Development density and the number of separate water supply schemes.

COMMENT
The operating cost per kilolitre has risen from 58 c/kL to 120 c/kL (Jan 2016$) in the past 21 years largely due to higher management costs and the reduced volume of water supplied per property.

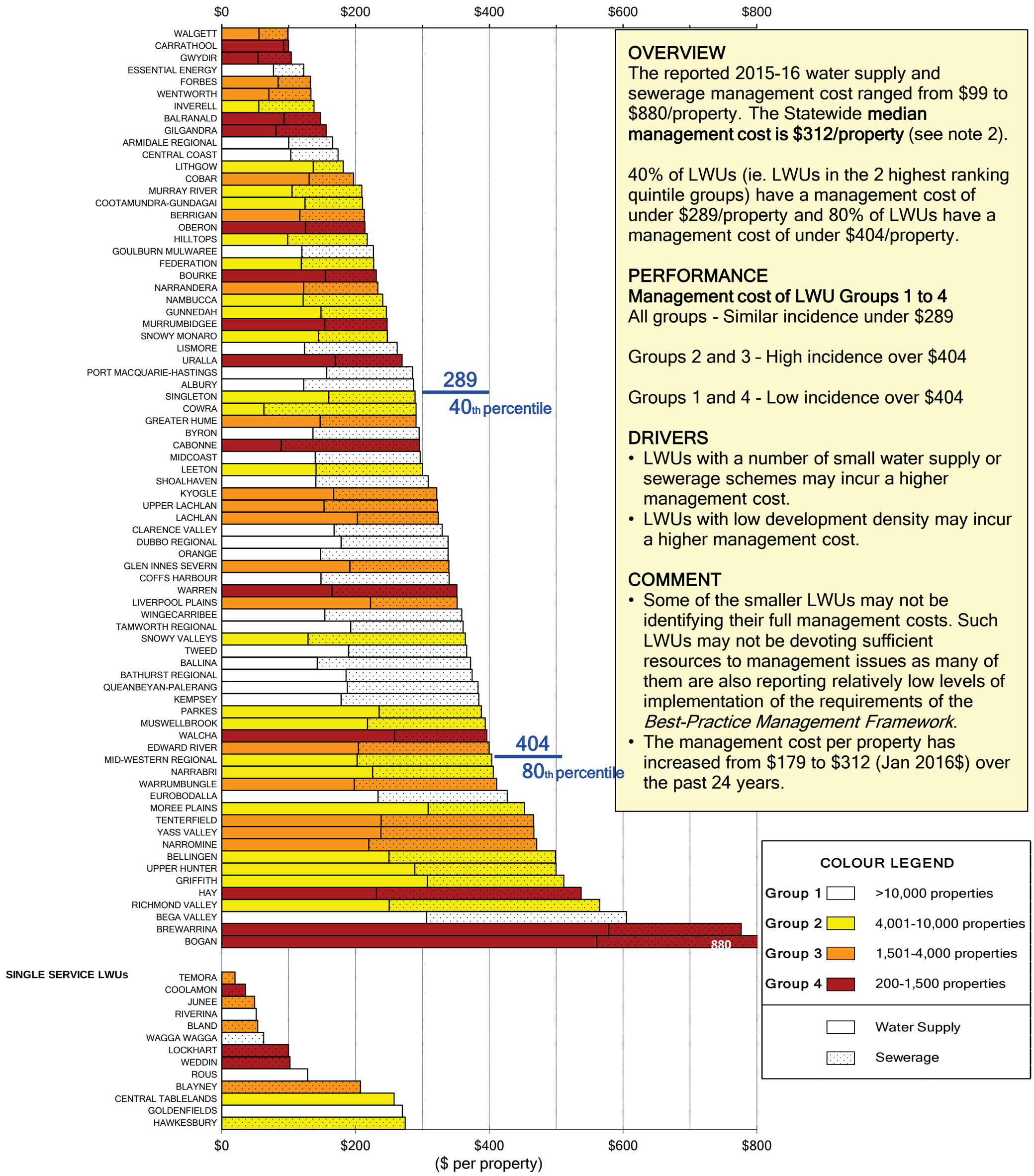
Parameter:

$$\frac{\text{Management expenses (W\_1) + Total operation expenses (W\_2) - Purchase of water (W\_2o) + Bulk Supplier's OMA}}{\text{Total Potable Water Supplied (WB62)}}$$

Notes:

1. This figure shows ranked values of the 2015-16 water supply operating cost (OMA - operation, maintenance and administration) per kL for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 32: Management Cost per property - Water and Sewerage 2015-16



OVERVIEW

The reported 2015-16 water supply and sewerage management cost ranged from $99 to $880/property. The Statewide **median management cost is $312/property** (see note 2).

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have a management cost of under $289/property and 80% of LWUs have a management cost of under $404/property.

PERFORMANCE

Management cost of LWU Groups 1 to 4

All groups - Similar incidence under $289

Groups 2 and 3 – High incidence over $404

Groups 1 and 4 - Low incidence over $404

DRIVERS

- LWUs with a number of small water supply or sewerage schemes may incur a higher management cost.
- LWUs with low development density may incur a higher management cost.

COMMENT

- Some of the smaller LWUs may not be identifying their full management costs. Such LWUs may not be devoting sufficient resources to management issues as many of them are also reporting relatively low levels of implementation of the requirements of the *Best-Practice Management Framework*.
- The management cost per property has increased from $179 to $312 (Jan 2016$) over the past 24 years.

COLOUR LEGEND

Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties
	Water Supply
	Sewerage

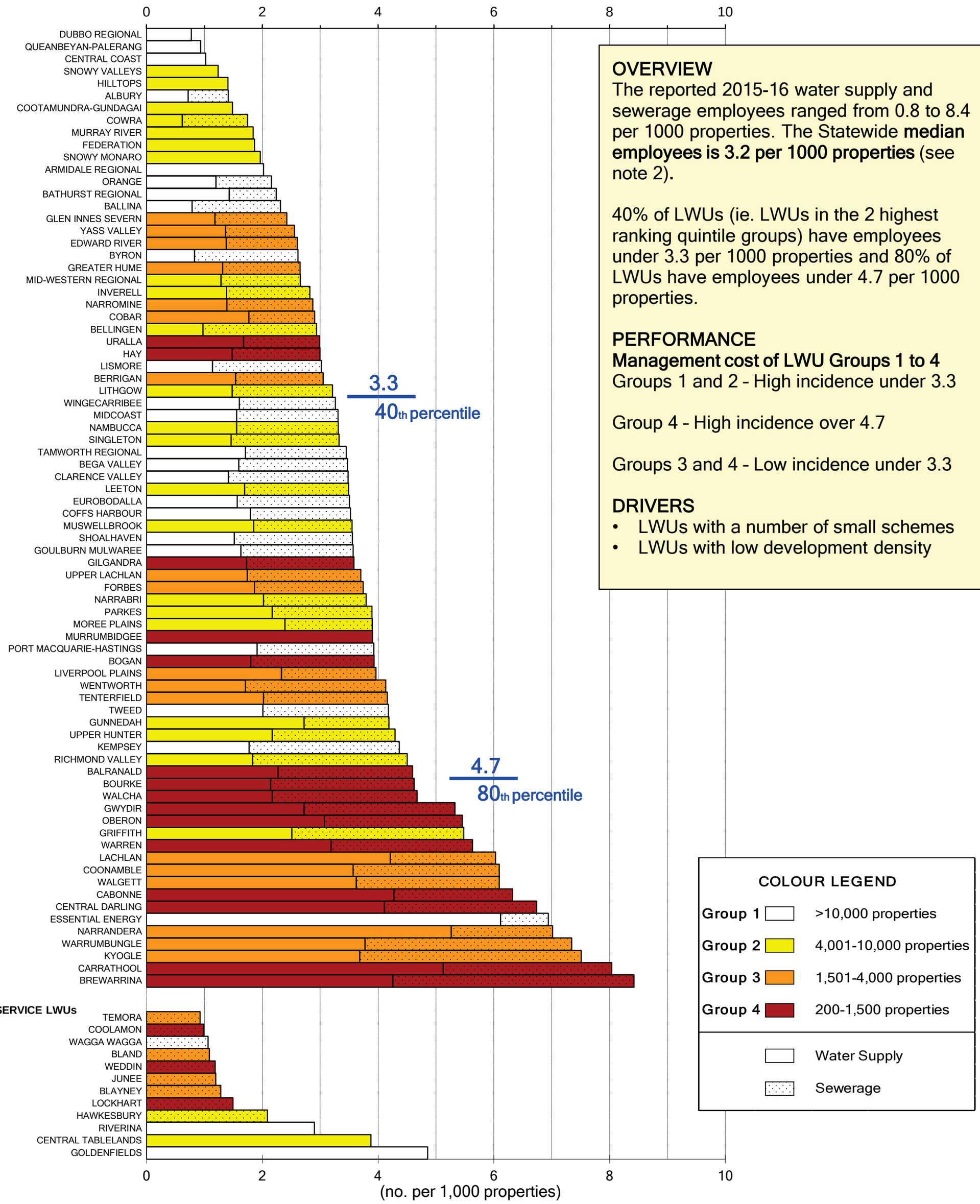
Parameter:

$$\frac{\text{Administration Cost (W\_1a + S\_1a) + Engineering Cost (W\_1b + S\_1b)}}{\text{No. of connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 water supply and sewerage management cost per property for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 33: Employees - Water and Sewerage 2015-16



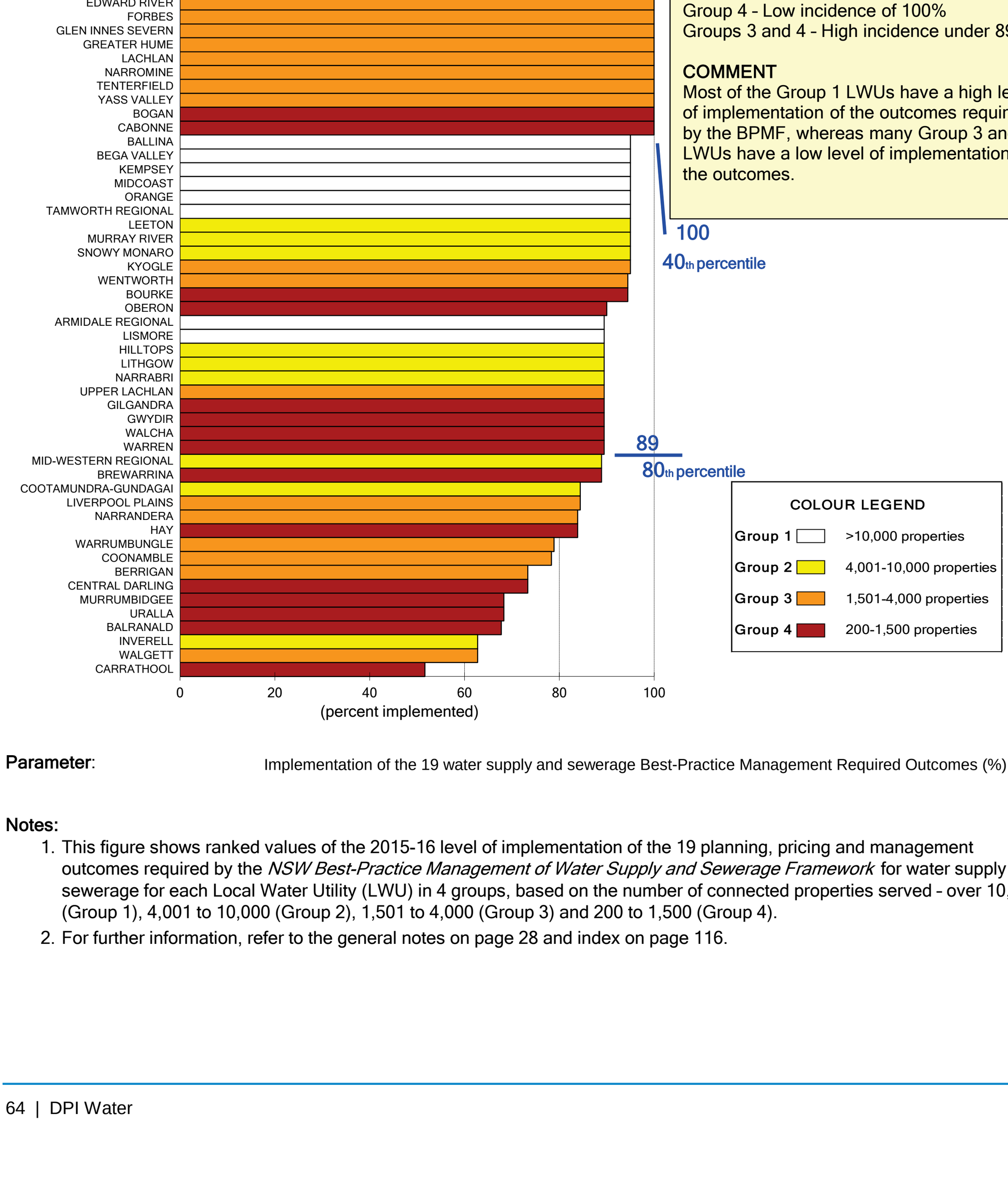
Parameter:

$$\frac{\text{Water Supply Employees (WB120) + Sewerage Employees (SB49)}}{\text{No. of connected properties}}$$

Notes:

1. This figure shows ranked values of the 2015-16 water supply and sewerage employees per 1,000 properties for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The Statewide median is a weighted median calculated on the basis of connected properties. It best reveals statewide performance of the regional NSW utilities by giving due weight to larger LWUs and reducing the effect of smaller LWUs.
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 34: Best-Practice Management Implementation (%) - Water Supply & Sewerage 2015-16



OVERVIEW

The reported 2015-16 implementation by LWUs of the outcomes required by the *Best-Practice Management Framework* (BPMF) for water supply and sewerage ranged from 52% to 100%. The **overall level of implementation for all 10 water supply and 9 sewerage outcomes is 92%**.

40% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have BPMF implementation of 100% and 80% of LWUs have BPMF implementation of over 89%.

PERFORMANCE

BPMF implementation of LWU Groups 1 to 4

Groups 1 and 2 – High incidence of 100%
Groups 1 and 2 – Low incidence under 89%

Group 4 – Low incidence of 100%
Groups 3 and 4 – High incidence under 89%

COMMENT

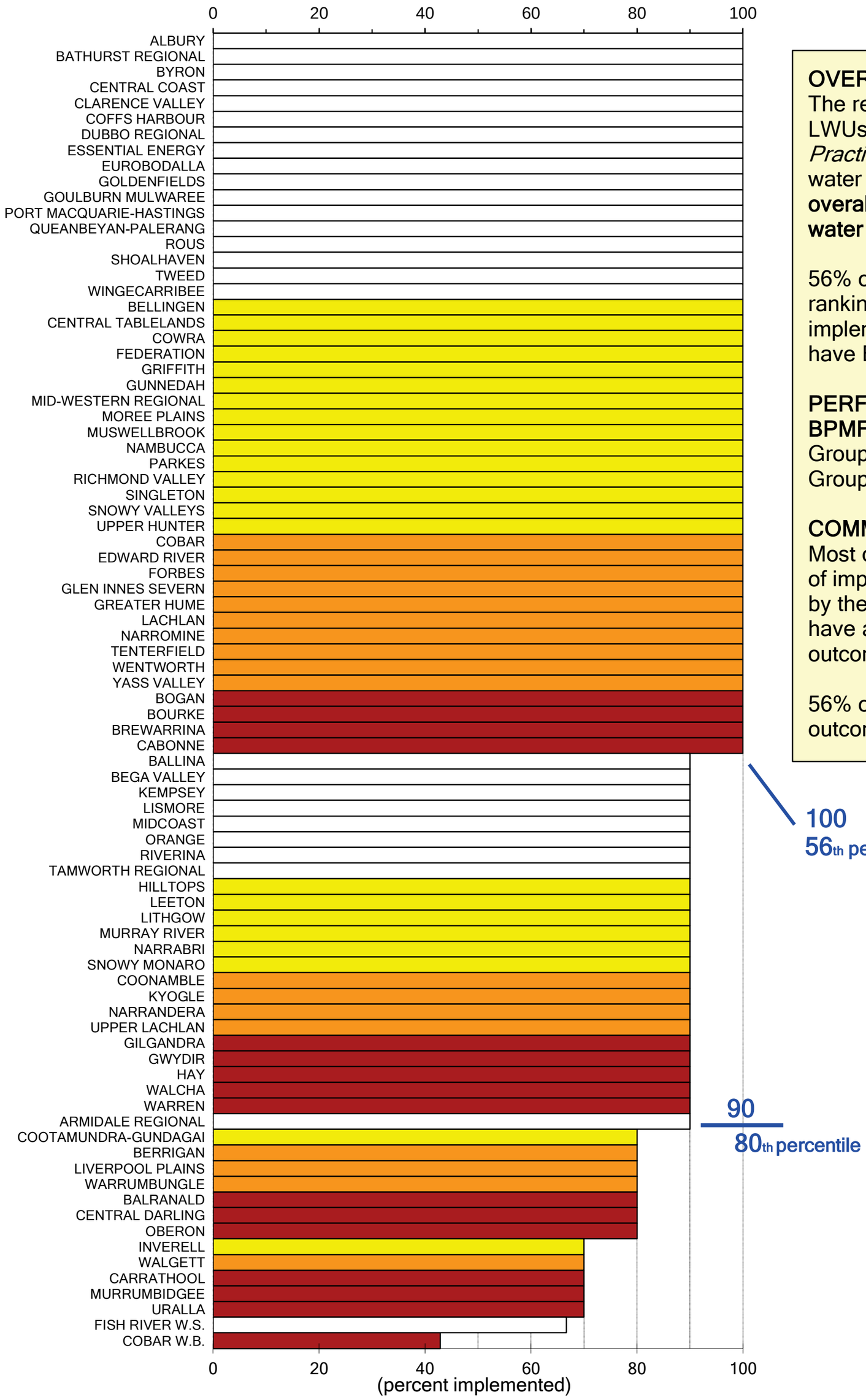
Most of the Group 1 LWUs have a high level of implementation of the outcomes required by the BPMF, whereas many Group 3 and 4 LWUs have a low level of implementation of the outcomes.

Parameter: Implementation of the 19 water supply and sewerage Best-Practice Management Required Outcomes (%)

Notes:

1. This figure shows ranked values of the 2015-16 level of implementation of the 19 planning, pricing and management outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* for water supply and sewerage for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. For further information, refer to the general notes on page 28 and index on page 116.

Figure 35: Best-Practice Management Implementation (%) - Water Supply 2015-16



OVERVIEW

The reported 2015-16 implementation by LWUs of the outcomes required by the *Best-Practice Management Framework* (BPMF) for water supply ranged from 40% to 100%. The **overall level of implementation for the 10 water supply outcomes is 93%**.

56% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have BPMF implementation of 100% and 80% of LWUs have BPMF implementation of over 90%.

PERFORMANCE

BPMF implementation of LWU Groups 1 to 4

Groups 1 and 2 – High incidence of 100%
Group 1 – One incidence under 90%

COMMENT

Most of the Group 1 LWUs have a high level of implementation of the outcomes required by the BPMF, whereas many Group 4 LWUs have a low level of implementation of the outcomes.

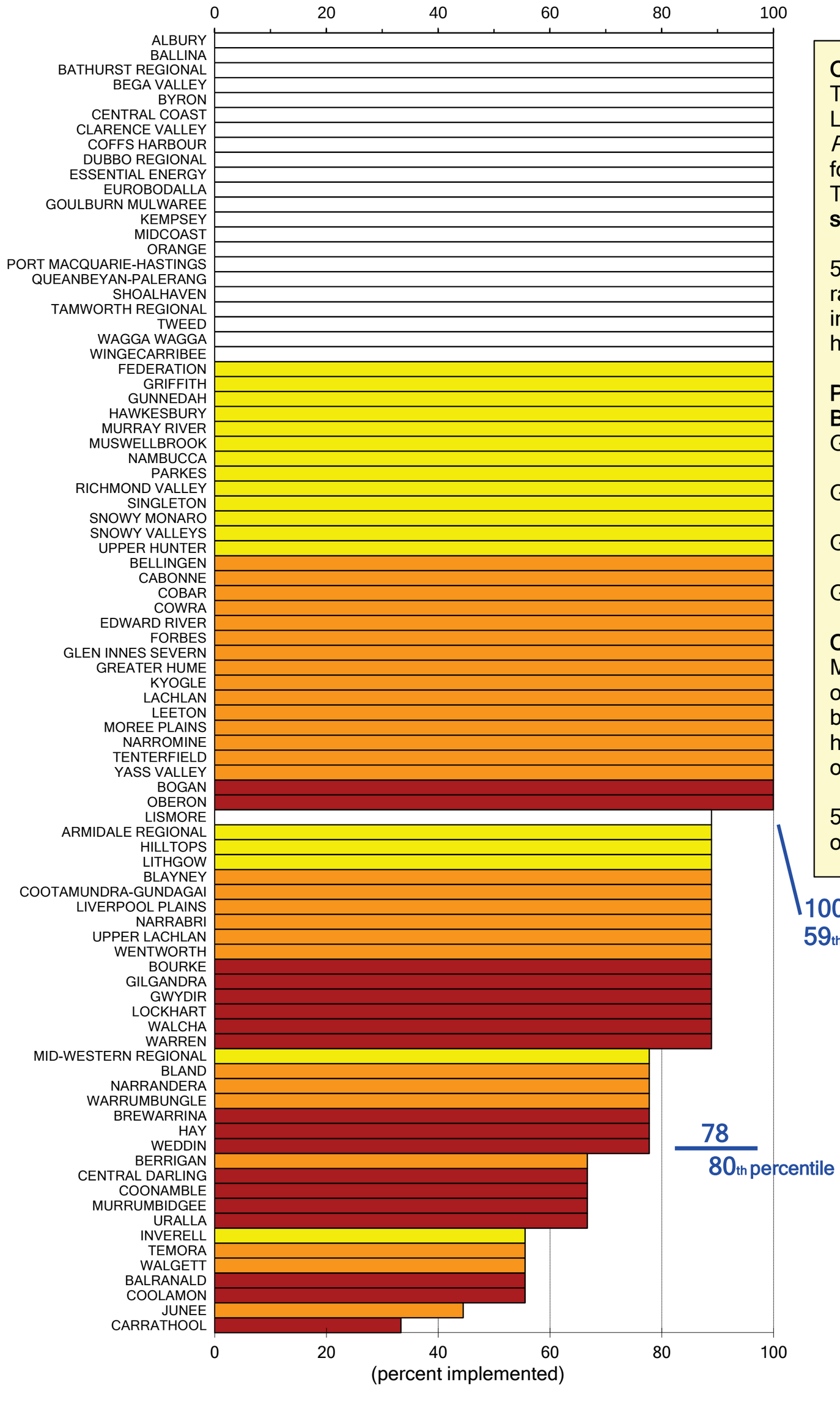
56% of the LWUs have met all the BPMF outcomes.

Parameter: Implementation of the 10 water supply Best-Practice Management Required Outcomes (%)

Notes:

1. This figure shows ranked values of the 2015-16 level of implementation of the outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* for water supply for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The 10 outcomes for implementing best-practice for water supply are: complete sound Strategic Business Plan & Financial Plan; Pricing with full cost-recovery, without significant cross subsidies; appropriate residential charges; required residential revenue from water usage charges; appropriate non-residential charges; sound Water Conservation implemented; sound Drought Management implemented; Development Servicing Plan with commercial developer charges; complete Performance Reporting by 15 September; and Integrated Water Cycle Management strategy commenced (page xiv).
3. For further information, refer to the general notes on page 28 and index on page 116.

Figure 36: Best-Practice Management Implementation (%) - Sewerage 2015-16



OVERVIEW

The reported 2015-16 implementation by LWUs of the outcomes required by the *Best-Practice Management Framework* (BPMF) for sewerage ranged from 33% to 100%. The **overall level of implementation for the 9 sewerage outcomes is 90%**.

59% of LWUs (ie. LWUs in the 2 highest ranking quintile groups) have BPMF implementation of 100% and 80% of LWUs have BPMF implementation of over 78%.

PERFORMANCE

BPMF implementation of LWU Groups 1 to 4

Groups 1, 2 and 3 – High incidence of 100%

Group 1 – Nil incidence under 78%

Group 4 – Low incidence of 100%

Group 4 – High incidence under 78%

COMMENT

Most of the Group 1 LWUs have a high level of implementation of the outcomes required by the BPMF, whereas many Group 4 LWUs have a low level of implementation of the outcomes.

59% of LWUs have met all the BPMF outcomes.

COLOUR LEGEND

Group 1	>10,000 properties
Group 2	4,001-10,000 properties
Group 3	1,501-4,000 properties
Group 4	200-1,500 properties

Parameter: Implementation of the 9 sewerage Best-Practice Management Required Outcomes (%)

Notes:

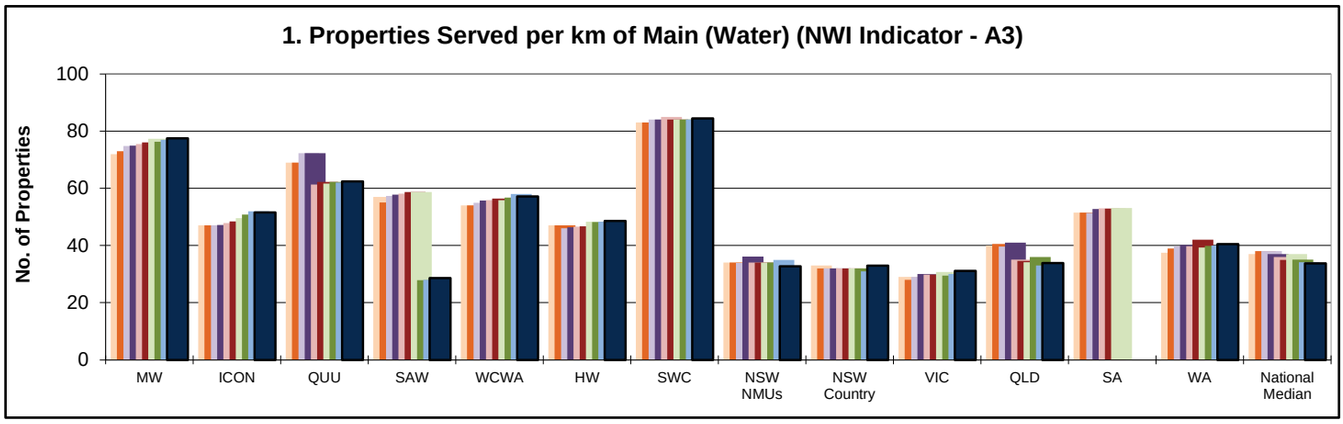
1. This figure shows ranked values of the 2015-16 level of implementation of the outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* for sewerage for each Local Water Utility (LWU) in 4 groups, based on the number of connected properties served – over 10,000 (Group 1), 4,001 to 10,000 (Group 2), 1,501 to 4,000 (Group 3) and 200 to 1,500 (Group 4).
2. The 9 outcomes for implementing best-practice for sewerage are: complete sound Strategic Business Plan & Financial Plan; Pricing with full cost-recovery, without significant cross subsidies; appropriate residential charges; appropriate non-residential charges; appropriate trade waste fees & charges; Development Servicing Plan with commercial developer charges; liquid trade waste approvals & current Trade Waste Policy; complete Performance Reporting by 15 September; and Integrated Water Cycle Management strategy commenced (page xiv).
3. For further information, refer to the general notes on page 28 and index on page 116.

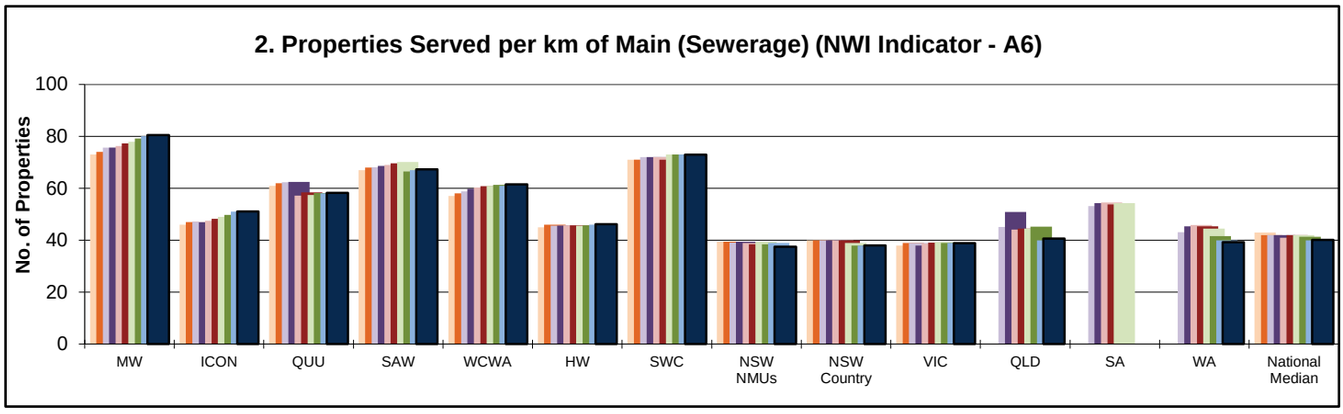
APPENDIX A
NATIONAL PERFORMANCE COMPARISONS 2006-07 TO 2015-16

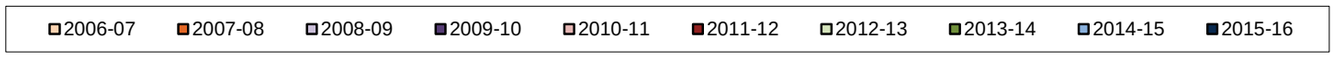
CONTENTS

Refer also to Appendix I.

PERFORMANCE COMPARISONS - Utility Characteristics





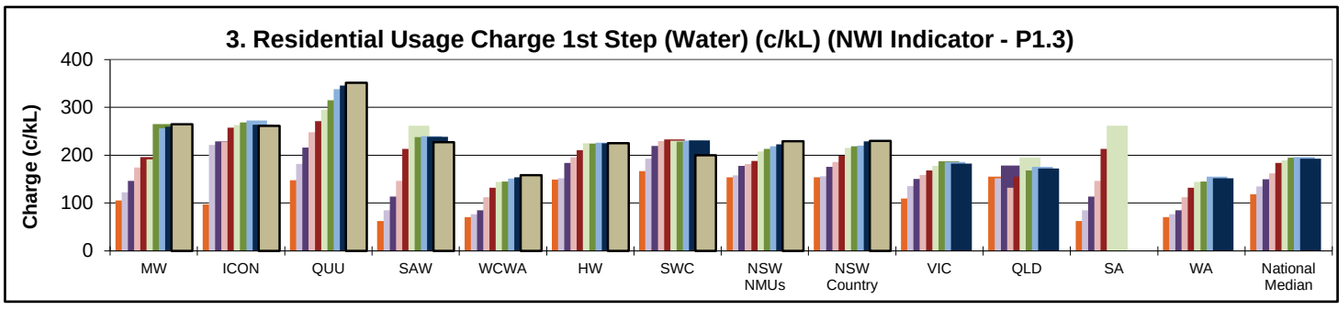


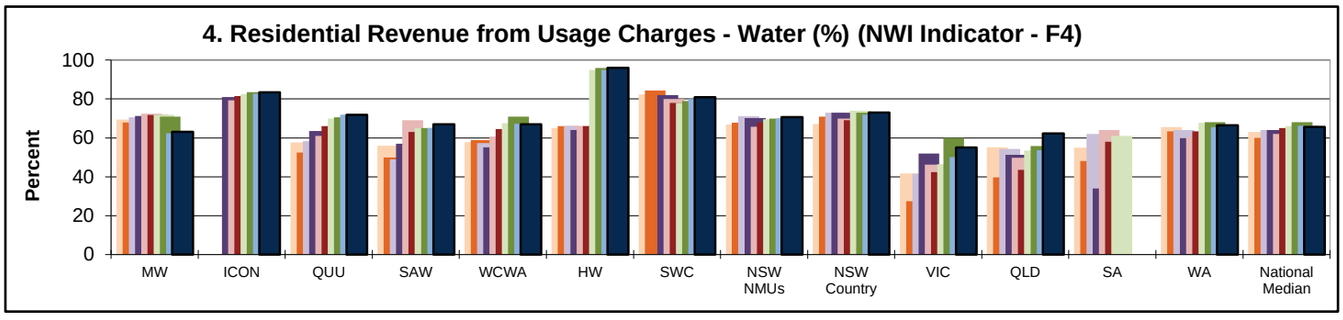
Metropolitan Water Utilities		Country Water Utilities	
MW	Melbourne Water Consolidated (see note 1)	NSW NMUs	Median of NSW regional LWUs with > 10,000 connected properties
ICON	Icon Water (Canberra)		
QUU	Queensland Urban Utilities (Brisbane) (see note 3)	NSW Country	Statewide median for all NSW regional LWUs
SAW	SA Water Corporation (Adelaide)	VIC	VIC Country (see note 4)
WCWA	WA Water Corporation (Perth)	QLD	QLD Country (see note 6)
HW	Hunter Water Corporation	SA	SA Country (see note 5)
SWC	Sydney Water Corporation	WA	WA Country (see note 7)

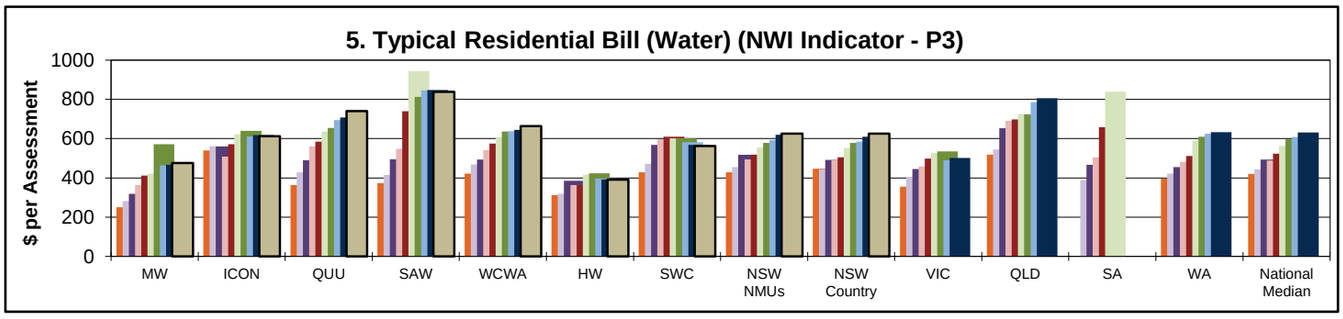
NOTES:

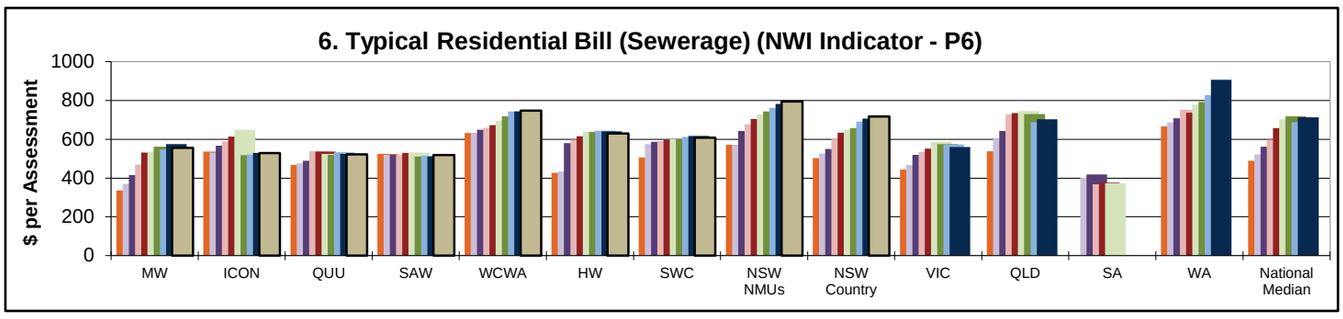
1. Melbourne Water Consolidated results are either aggregated results of the constituent utilities or consolidated results reported in the *2015-16 National Performance Report (NPR)* .
2. Metropolitan Utilities - *NPR* used to obtain results (www.bom.gov.au).
3. Queensland Urban Utilities (QUU) was formed by aggregating Brisbane Water, Ipswich City Council, Scenic Rim Regional Council, Lockyer Valley Regional Council and Somerset Regional Council. QUU commenced operations on 1 July 2010. The results shown for QUU prior to 2010-11 are those reported in the *NPR* for Brisbane Water.
4. VIC Country results obtained from the median of Victorian utilities (excluding Melbourne Water and its constituents) in the *2015-16 NPR.*
5. SA Country - Results from 2006-07 to 2012-13 obtained from median of SA NMUs (Whyalla and Mt Gambier) published in the *2012-13 NPR* . The results shown from 2006-07 do not report the overall performance of SA country utilities. The 2012-13 results are for 2 utilities. Country SA was not reported separately in 2013-14 to 2015-16 and the 2013-14 to 2015-16 results for SAW (Adelaide) include SA Country.
6. QLD Country - Results from 2006-07 to 2013-14 obtained from median of 10 QLD NMUs (Cairns, Mackay, Gold Coast, Gympie, Logan, Rockhampton, Toowoomba, Townsville, Unity Water, Wide Bay Water) published in the *2013-14 NPR.* There is a total of approximately 70 Queensland country utilities. The 2014-15 and 2015-16 results are the median for the 19 QLD country utilities reporting in the *2015-16 NPR* .
   These results are referred to as 'country Queensland' in section 3.
7. WA Country - Results obtained from median of WA NMUs (Albany, Australind/Eaton, Bunbury, Busselton, Geraldton, Kalgoorlie-Boulder, Mandurah) published in the *2015-16 NPR.*
8. Except for Graphs 3 and 5 to 7, which are in 2016-17 dollars, financial data is presented in 2015-16 dollars.
9. The National Median is the median value of the 2015-16 results published in the *2015-16 NPR* .
10. Hobart and Darwin results have not been included in the graphs due to space limitations and the limited data coverage by these utilities. For Darwin, 2015-16 results for NWI indicators W12, P8, A8, C9 and H3 are 405, 1882, 17, 3 and 100% respectively. For the Tasmanian Water and Sewerage Corporation, which includes Hobart, results are available for only 3 of these indicators - W12 (176), F13 (939) and H3 (99%).

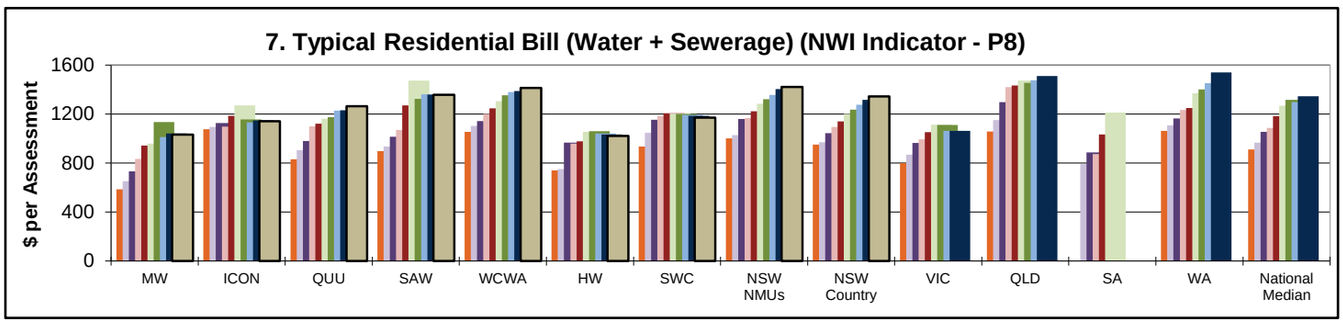
PERFORMANCE COMPARISONS - Social







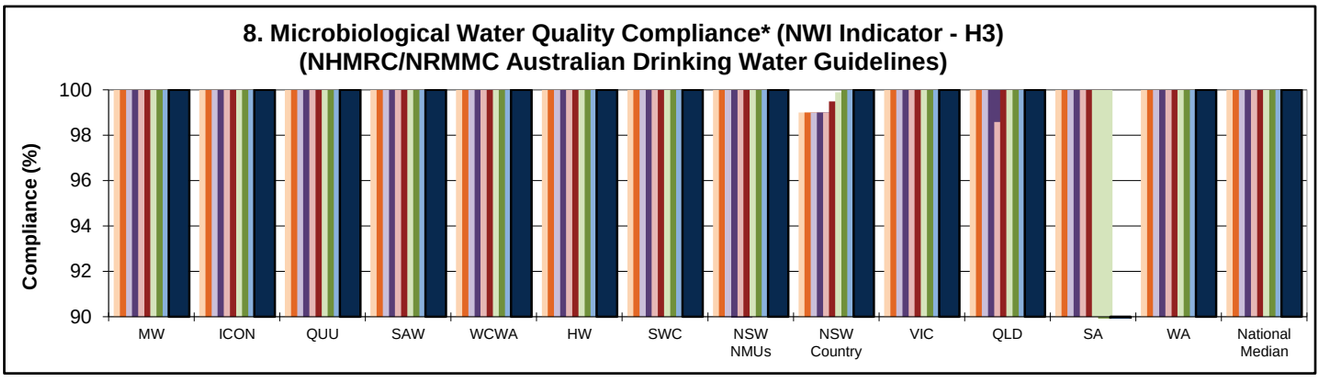


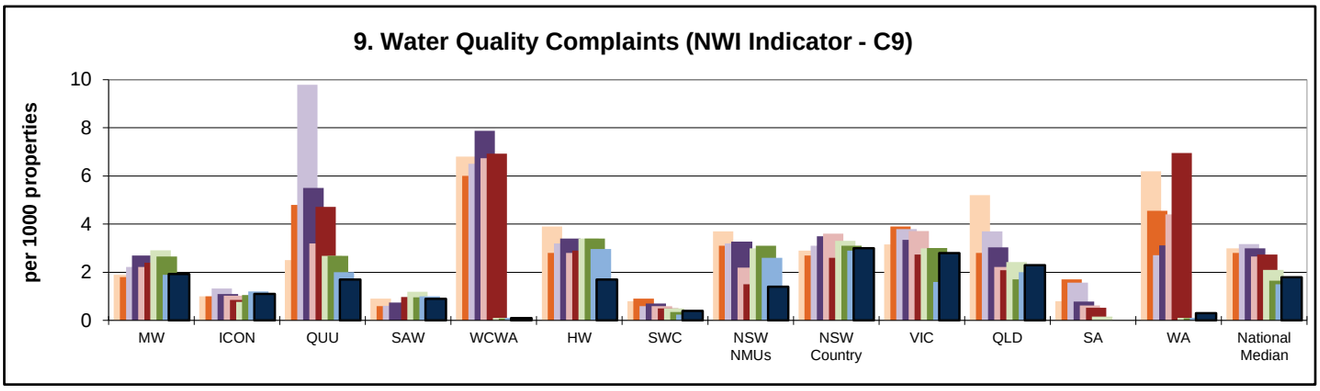


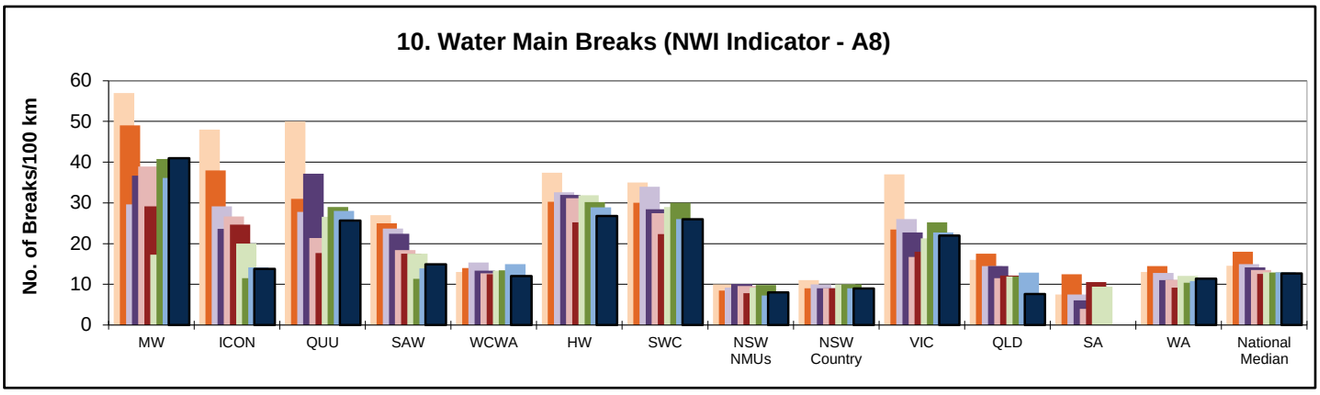
2006-07 2007-08 2008-09 2009-10 2010-11 2011-12 2012-13 2013-14 2014-15 2015-16 2016-17

NOTES
1. The Typical Residential Bill (TRB) is the annual bill paid by a residential customer using the utility's average annual residential water supplied.
2. The TRB is the principal indicator of the overall cost of a water supply or sewerage service.
3. The 2016-17 Usage Charge and TRB (graphs 3 and 5 to 7) for the metropolitan water utilities have been determined from data published on each utility's website.
4. As the 2009-10 to 2015-16 values for Indicator F4 were not reported by ICON Water, they have been conservatively estimated in graph 4 from the utility's reported TRB and fixed charge for these years: (TRB - Fixed Charge)/TRB x 100.

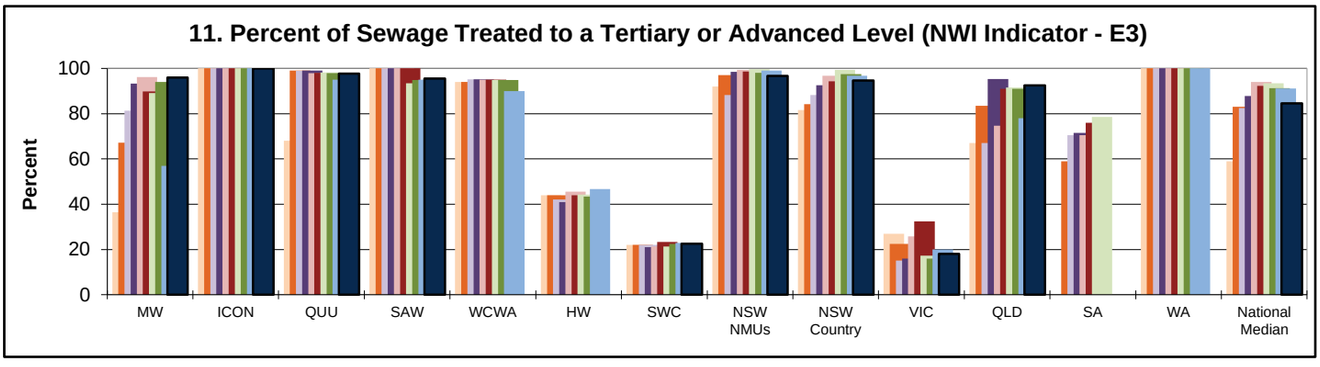
PERFORMANCE COMPARISONS - Social (Water)







PERFORMANCE COMPARISONS - Social (Sewerage)



2006-07 2007-08 2008-09 2009-10 2010-11 2011-12 2012-13 2013-14 2014-15 2015-16

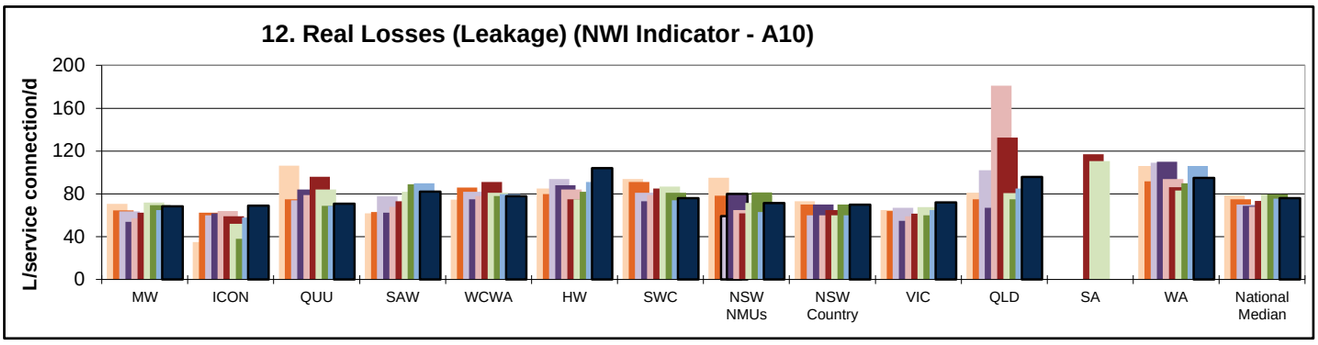
*** Microbiological Water Quality Compliance**

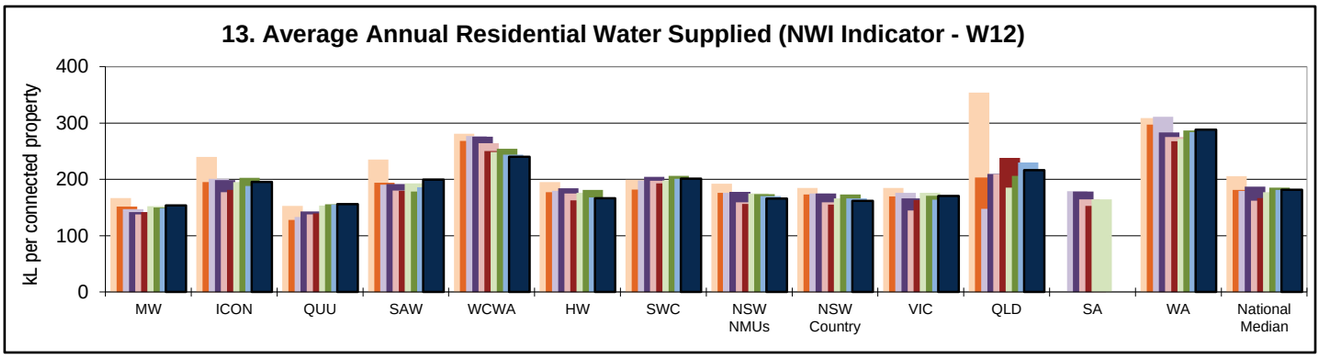
Microbiological water quality compliance up to 2010-11 was generally on the basis of the *2004 NHMRC/NRMMC Australian Drinking Water Guidelines (ADWG),* with subsequent result to 2015-16 on the basis of the 2011 ADWG.

Results shown are for "% of population where microbiological compliance was achieved", in accordance with NWI Indicator H3.

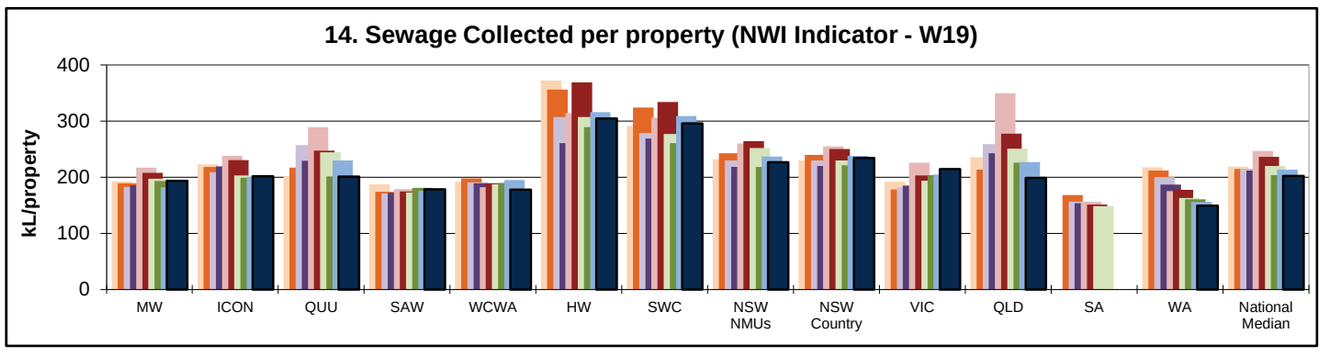
99.8% of the urban population in regional NSW complied with 2011 ADWG for microbiological water quality. In 2015-16 99.9% of the 21,600 samples tested complied for microbiological water quality (health related) and 99.8% of the 3,100 samples tested complied for chemical water quality (health related).

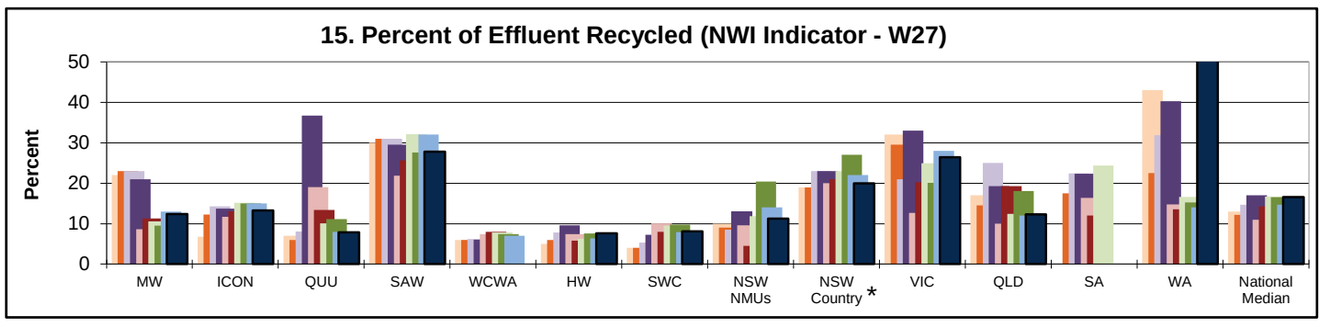
PERFORMANCE COMPARISONS - Environmental (Water)

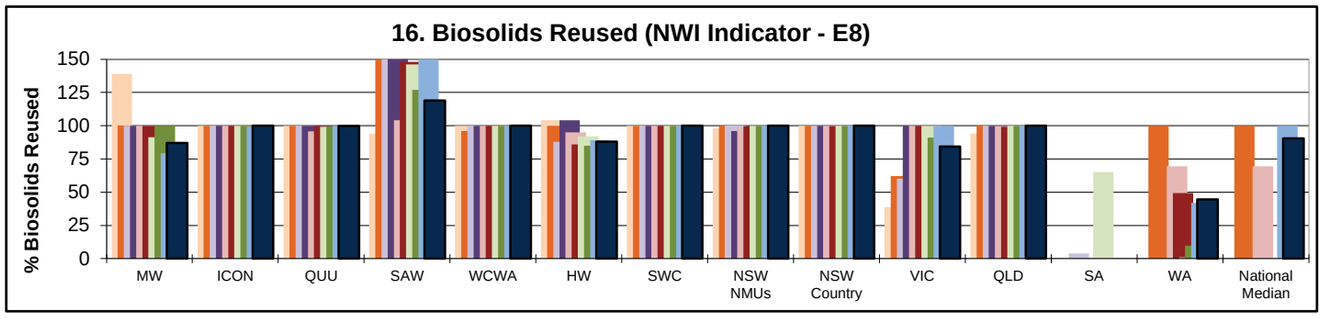




PERFORMANCE COMPARISONS - Environmental (Sewerage)







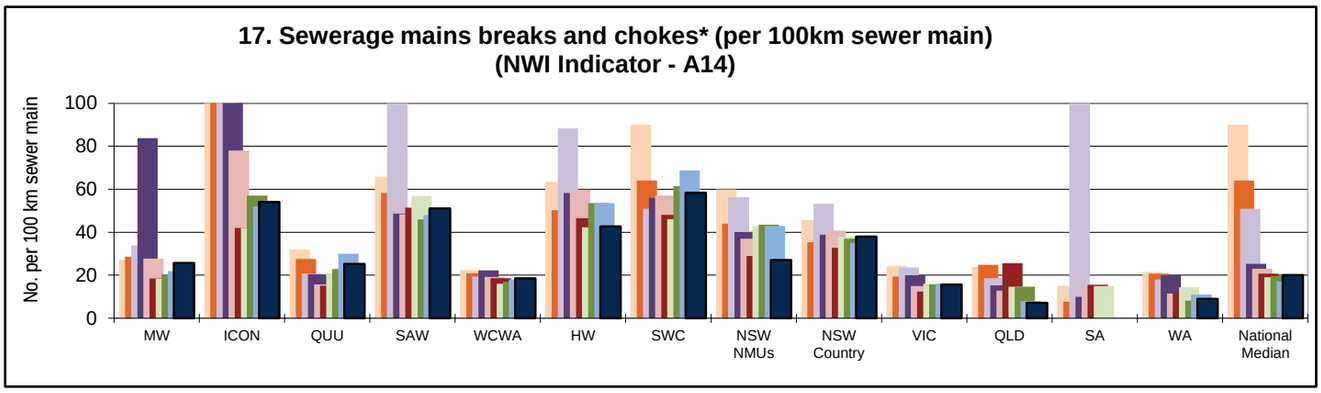
2006-07 2007-08 2008-09 2009-10 2010-11 2011-12 2012-13 2013-14 2014-15 2015-16

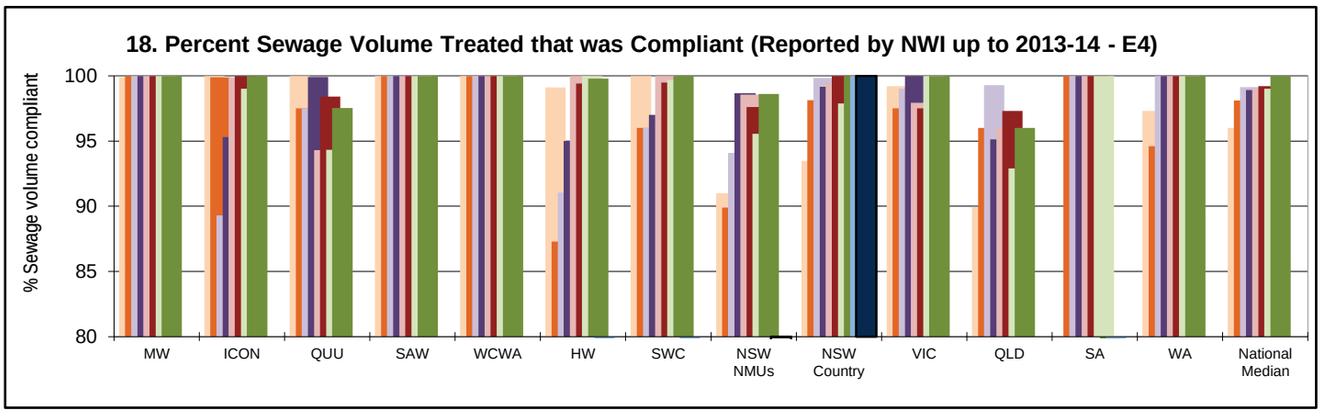
*** NSW Effluent Result**

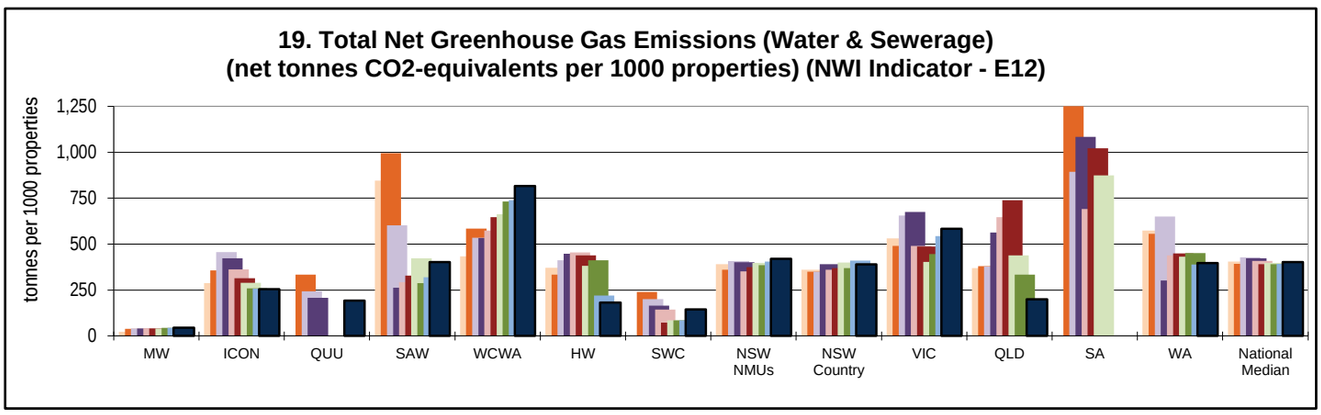
The values shown for country NSW are the percentages of total volume of sewage collected in regional NSW that was recycled.

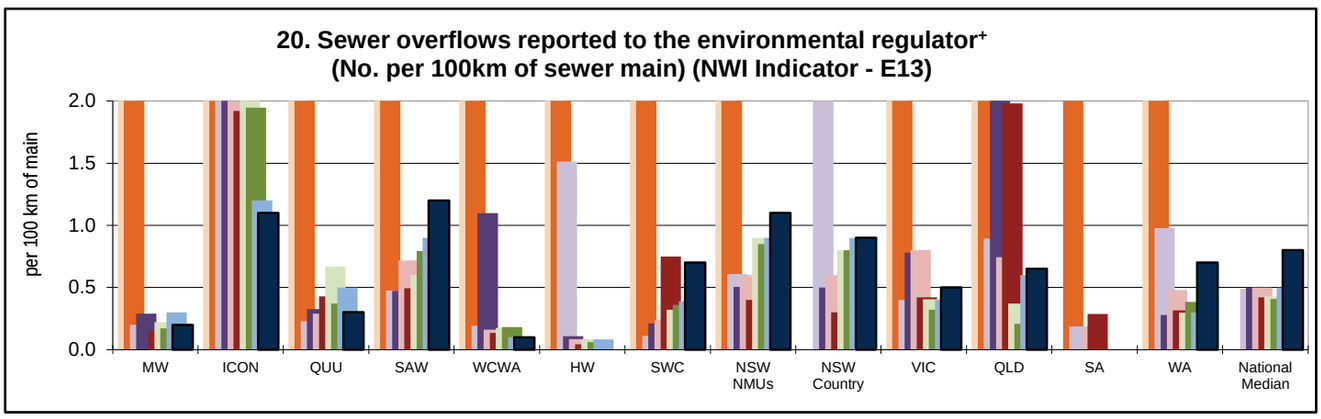
For country NSW, 35,500 ML of wastewater was recycled in 2015-16, which is 20 per cent of the total volume of sewage collected and was carried out by 70 per cent of the utilities, mostly for agricultural purposes.

PERFORMANCE COMPARISONS - Environmental (Sewerage)





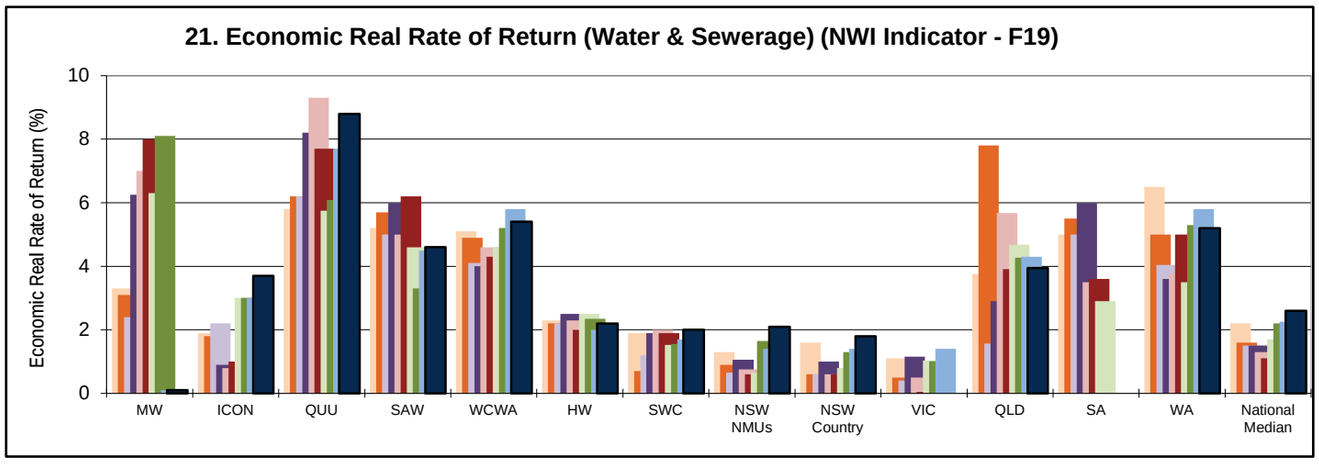


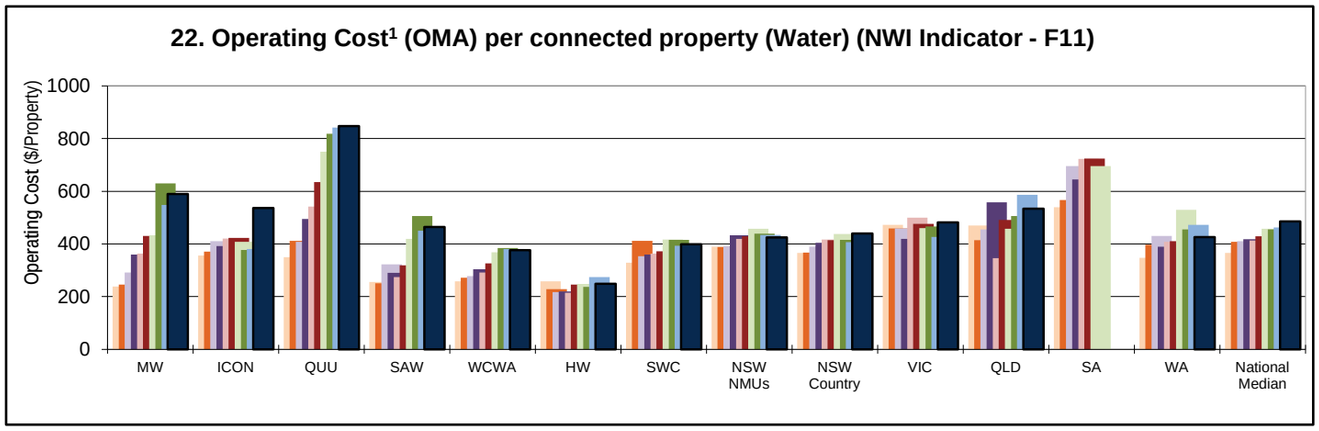


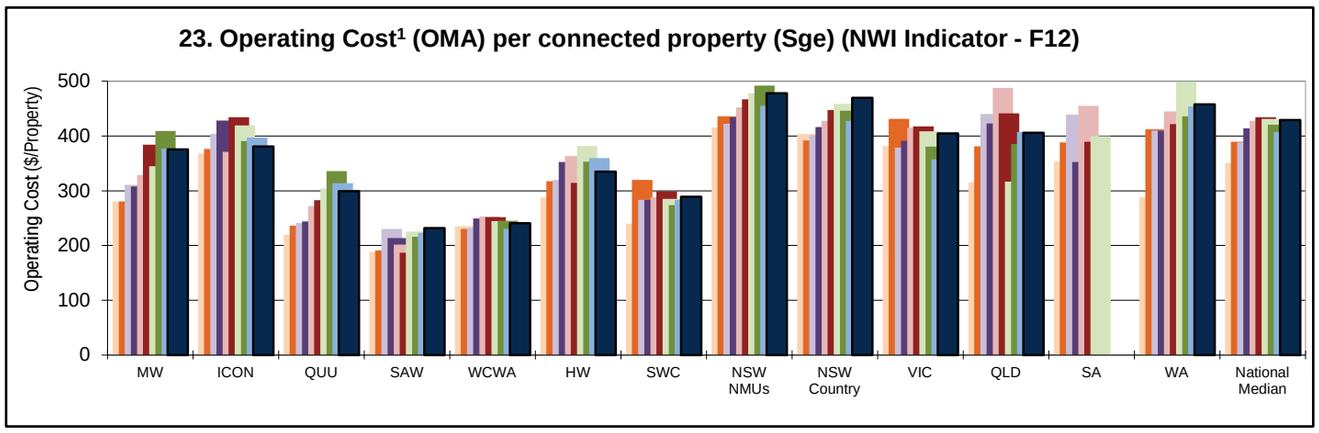
* The values shown prior to 2010-11 are the reported values for sewerage breaks and chokes for indicator A12 in the National Performance Framework 2008-09 Urban Water Performance Indicators and Definitions Handbook.

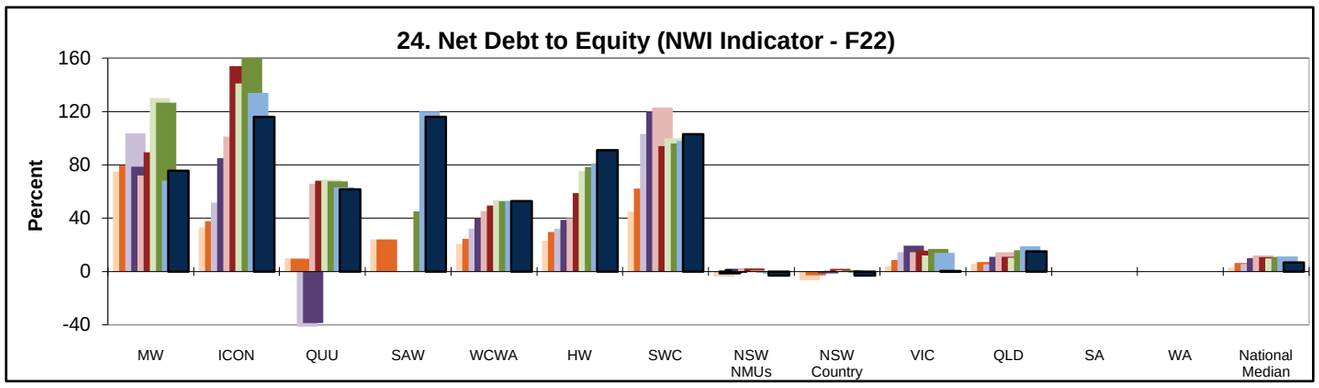
\+ The values shown prior to 2008-09 are all reported sewer overflows in accordance with definition for indicator E13 in the National Performance Framework 2007-08 Urban Water Performance Indicators and Definitions Handbook.

PERFORMANCE COMPARISONS - Economic



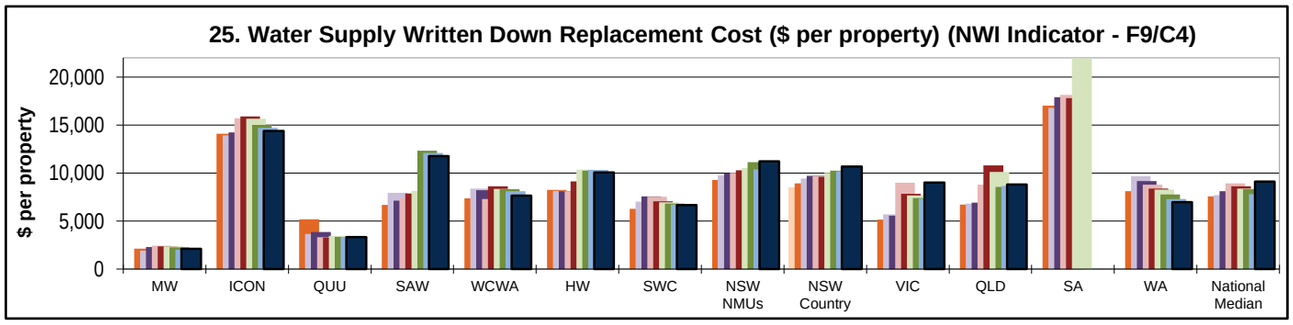


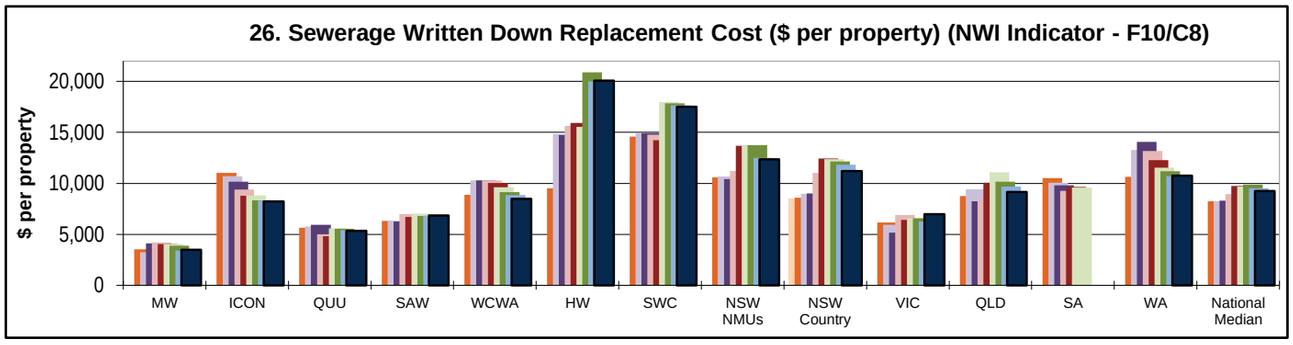


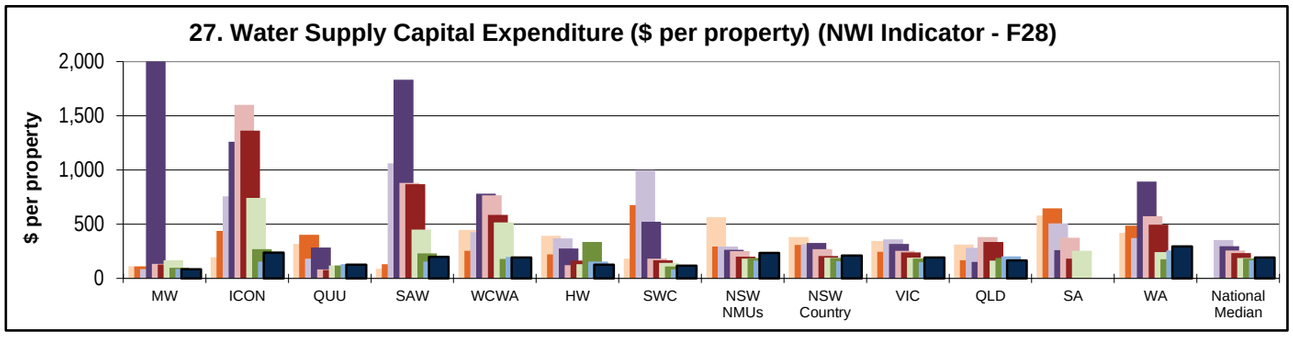


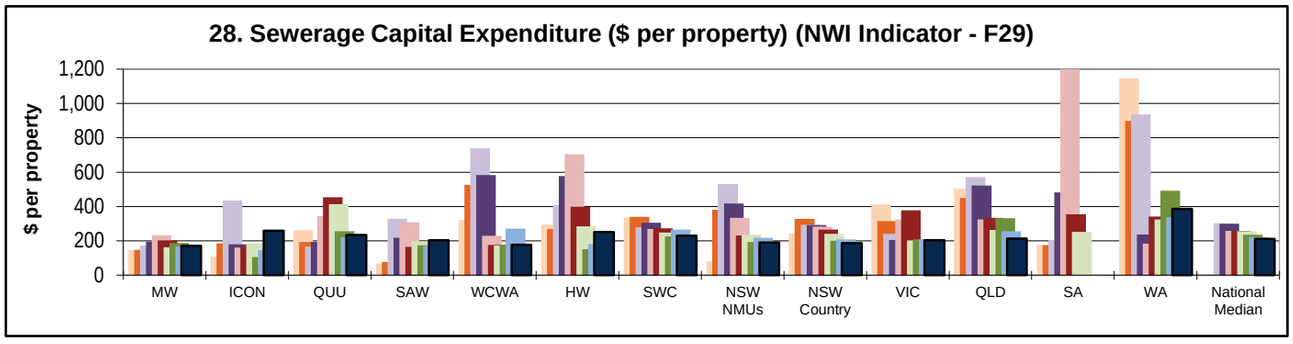
NOTES: 1. Operating Cost (OMA) is the Operation, Maintenance and Administration Cost in 2015-16$.

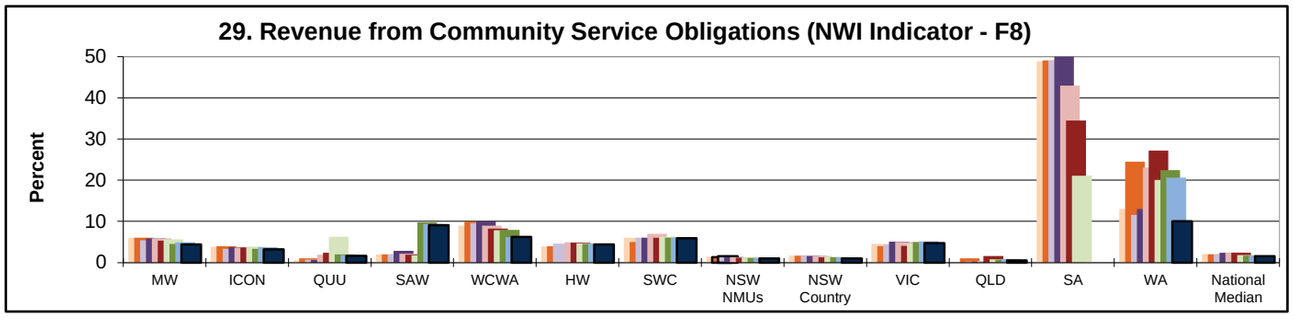
PERFORMANCE COMPARISONS - Economic











NOTES:

1. The Water Supply Capital Expenditure per property shown for Melbourne Water for 2009-10 includes the full $3.5B capital expenditure by a private consortium for the Victorian Desalination Plant project.
2. The Water Supply Capital Expenditure per property shown for Queensland Urban Utilities (QUU) for 2009-10 includes the $230M capital expenditure by SEQ Water and LinkWater.

APPENDIX B
Example TBL Water Supply Performance Report and Action Plan
Coffs Harbour City Council Water Supply TBL Report (Page 1)

Coffs Harbour City Council **TBL Water Supply Performance** **2015-16**

WATER SUPPLY SYSTEM - Coffs Harbour City Council serves a population of 72,300 (25,060 connected properties). Water is sourced from the Nymboida River (part of the Regional Water Supply which includes Shannon Creek Dam) and also from the Orara River. Water is transferred to Karangi Dam where it is treated and supplied to the Coffs Harbour area which stretches from Sawtell to Corindi. Council has 2 storage dams at Karangi and Woolgoolga (total storage capacity 5,870ML), not including the 30,000ML Shannon Creek Dam. Council has 2 smaller systems providing treated water to Coramba and Nana Glen villages.The water supply network comprises a dissolved air flotation treatment works, a conventional water treatment works and a chlorinator, 18 service reservoirs (88 ML), 7 pumping stations, 43 ML/d delivery capacity into the distribution system, 157 km of transfer and trunk mains and 529 km of reticulation. 94% of water supplied is potable and 6% nonpotable (recycled).

BPM IMPLEMENTATION - Coffs Harbour City Council achieved 100% implementation of the outcomes required by the NSW BPM Framework, however, Council needs to prepare a 30-year IWCM Strategy, Financial Plan and Report in accordance with the July 2014 IWCM Check List (www.water.nsw.gov.au) to maintain 100% BPM Implementation.

PERFORMANCE - The 2016-17 typical residential bill was $596 which was close to the statewide median of $625 (Indicator 14). The economic real rate of return was similar to the statewide median (indicator 43). The operating cost (OMA) per property was $388 which was less than the statewide median of $440 (Indicator 49). Water quality complaints were negligible compared to the statewide median of 3 (Indicator 25). Compliance with ADWG was achieved for microbiological water quality (100% of the population, 3 of 3 zones compliant), chemical water quality and physical water quality. The chlorination system failed to operate on 1 day. There were no failures of the treatment system. Coffs Harbour City Council reported no water supply public health incidents. Council has a risk-based Drinking Water Management System (DWMS) and had 0 days of water restrictions. Current replacement cost of system assets was $435M ($16,300 per assessment). Cash and investments were $28.7M, debt was $72M and revenue was $23M (excluding capital works grants).

IMPLEMENTATION OF OUTCOMES REQUIRED BY THE NSW BEST-PRACTICE MANAGEMENT (BPM) FRAMEWORK

(1)	**Complete Current Strategic Business Plan & Financial Plan**	**YES**	**(3)**	**Sound water conservation implemented**	**YES**
(2)	**(2a) Pricing** - Full Cost Recovery, without significant cross subsidies	Yes	**(4)**	**Sound drought management implemented**	**YES**
	(2b,2c) Pricing - Appropriate Residential Charges	Yes	**(5)**	**Complete performance reporting (by 15 September)**	**YES**
	(2d) Pricing - Appropriate Non-residential Charges	Yes	**(6)**	**Integrated water cycle management strategy**	**YES***
	(2e) Pricing - DSP with Commercial Developer Charges	Yes		**IMPLEMENTATION OF ALL OUTCOMES**	**100%**

TRIPLE BOTTOM LINE (TBL) PERFORMANCE INDICATORS

		NWI	No.			LWU RESULT	RANKING >10,000 properties	RANKING All LWUs	MEDIANS Statewide	MEDIANS National
						Col 1	*Col 2*	*Col 3*	*Col 4*	*Col 5*
UTILITY	CHARACTERISTICS	C1	1	**Population served:**	**72300** Number of assessments: 26660					
		C4	2	**Number of connected properties:**	Council is within Size Group 1: (>10,000 properties)	25,060				
			3	**Residential connected properties**	*% of total*	94			91	
			4	**New residences connected to water supply** (%)	*%*	1.7	2	1	1.0	
		A3	5	**Properties served**	*Prop/km*	38			33	**34**
			6	**Rainfall**	*% median annual rainfall*	59	**5**	**5**	104	
		W11	7	**Total urban water supplied at master meters**	*ML*	6,180			6,900	**9,770**
			8	**Peak week to average consumption**	*%*	120	1	1	142	
			9	**Renewals expenditure**	*% CRC*	0.1	**5**	**5**	0.6	
			10	**Employees**	*per 1,000 prop*	1.8	4	3	1.5	
SOCIAL	CHARGES & BILLS	P1		**Residential tariff structure for 2016-17:**	inclining block; independent of land value; access charge $143					
		P1.3	12a	**Residential water usage charge for 2015-16 for usage <365 kL (c/kL)**	*c/kL (2015-16)*	267	2	2	228	**190**
			12	**Residential water usage charge for 2016-17 for usage <365 kL (c/kL)**	*c/kL (2016-17)*	271	2	2	230	
		P3	14a	**Typical residential bill for 2015-16**	*$/assessment (2015-16)*	590	2	2	601	**623**
			14	**Typical residential bill for 2016-17**	*$/assessment (2016-17)*	596	2	2	625	
			15	**Typical developer charge for 2016-17**	*$/ET (2016-17)*	10,300	1	1	5,600	
		F4	16	**Residential revenue from usage charges**	*% residential bills*	76	1	2	73	**66**
		F5	17	**Revenue** - Water	*$/prop*	920	3	3	928	**921**
	HEALTH		18	**Water Supply Coverage** (% of Urban Population with reticulated WS)	*% of population*	99.1	3	2	99.2	
		H4	19b	**% population with chemical compliance**	*% of population*	100	1	1	100	
		H3	20a	**% population with microbiological compliance**	*% of population*	100	1	1	100	**100**
	SERVICE LEVELS	C9	25	**Water quality complaints**	*per 1,000 prop*	0	1	1	3	**2**
		C10	26	**Water service complaints**	*per 1,000 prop*	0	1	1	4	**1**
		C17	27	**Incidence of unplanned interruptions**	*per 1,000 prop*	30	3	4	32	**90**
		A8	30	**Number of water main breaks**	*per 100km main*	7	2	2	9	**13**
			32	**Total days lost**	*%*	4.9	4	4	3.5	
ENVIRON-MENTAL	NATURAL RESOURCE MANAGEMENT	W12	33	**Average annual residential water supplied - STATEWIDE**	*kL/prop*	167	3	2	162	**181**
			33a	**Average annual residential water supplied - COASTAL LWUs**	*kL/prop*	167	4	4	155	
		A10	34	**Real losses** (leakage)	*L/connection/day*	50	2	2	70	**76**
			35	**Energy consumption**	*kWh/ML*	438	2	3	660	
		E12	36a	**Net greenhouse gas emissions - WS & Sge**	*t CO2 eq per 1,000 prop*	460	4	4	390	**402**
ECONOMIC	FINANCE		42	**Current replacement cost**	*$/assessment*	16,300	4	4	17,400	
		F17	43	**Economic real rate of return** - Water	*%*	2.3	3	2	2.3	**2.8**
			44	**Return on assets** - Water	*%*	0.9	4	4	1.7	
		F22	45	**Net Debt to equity** - WS & Sge	*%*	11	1	1	-3	**7**
		F23	46	**Interest cover** - WS & Sge		1	3	3	34	**2**
			47	**Loan payment per property** - Water	*$/prop*	206	1	1	11	
		F24	47b	**Net profit after tax** - WS & Sge	*$'000*	1,260	4	2	3,800	**9,300**
	EFFICIENCY		48	**Operating cost (OMA) per 100km of main**	*$'000*	1,460	4	4	1,120	
		F11	49	**Operating cost (OMA) per property - Note 8**	*$/prop*	388	2	1	440	**485**
			50	**Operating cost (OMA) per kilolitre**	*c/kL*	156	4	4	120	
			51	**Management cost**	*$/prop*	148	3	3	148	
			52	**Treatment cost**	*$/prop*	68	4	2	59	
			53	**Pumping cost**	*$/prop*	8	2	1	28	
			54	**Energy cost**	*$/prop*	5	2	1	17	
			55	**Water main cost**	*$/prop*	105	4	4	71	
		F28	56	**Capital Expenditure**	*$/prop*	48	**5**	**5**	212	**193**

NOTES :

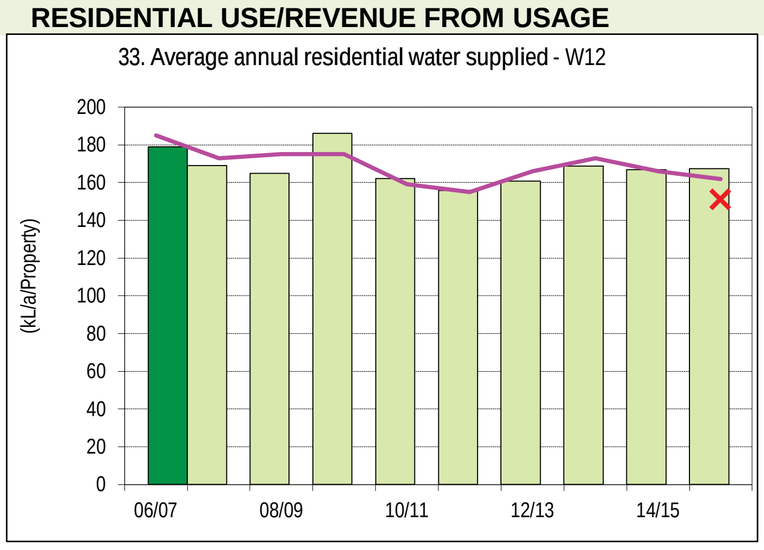
1 Col 2 rankings are on a % of LWUs basis - best reveals performance compared to similar sized LWUs (ie. Col 1 is compared with LWUs with >10,000 properties).
2 Col 3 rankings are on a % of LWUs basis - best reveals performance compared to all LWUs (ie. Col 1 is compared with all LWUs).
3 Col 4 (Statewide Median) is on a % of connected properties basis- best reveals statewide performance (gives due weight to larger LWUs & reduces effect of smaller LWUs).
4 Col 5 (National Median) is the median value for the 75 utilities reporting water supply performance in the National Performance Report 2015-16 (www.bom.gov.au).
5 LWUs are required to annually review key projections & actions in the later of their IWCM Strategy and financial plan and their Strategic Business Plan and to annually 'roll forward', review and update their 30-year total asset management plan (TAMP) and 30-year financial plan.
6 2016-17 Non-res tariff: Access Chg based on Meter Size: 40mm $572, Two Part: Usage Chg 271c/kL.
7 Non-residential water supplied was 25% of potable water supplied (excluding non-revenue water).
Non-residential revenue was 24% of annual rates and charges. This indicates fair pricing of services between the residential and non-residential sectors.
8 Operating cost (OMA/ property) was $388. Components were: management ($148), operation ($102), maintenance ($117), energy ($5) & chemical ($13).
9 Rehabilitations included 0.2% of water mains and 5.1% of water meters. Renewals expenditure was $80,000/100km of main.
10 Coffs Harbour City Council has 3 fully qualified water treatment operators who meet the requirements of the National Certification Framework.

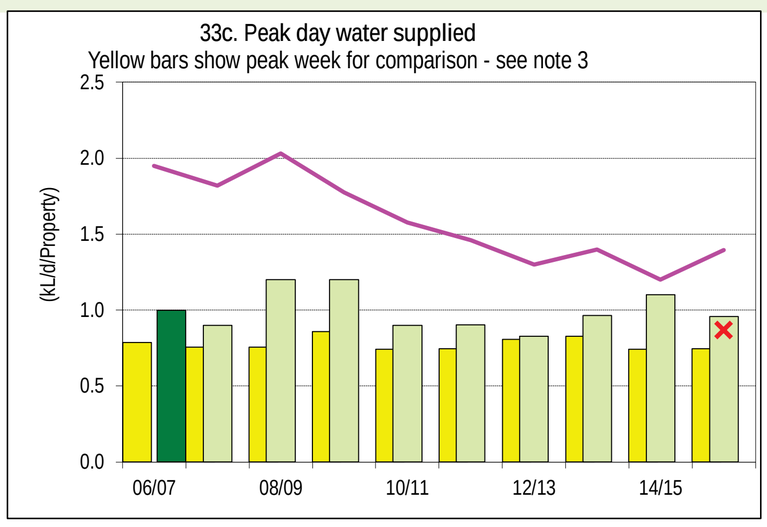
Coffs Harbour City Council Water Supply TBL Report (Page 2)

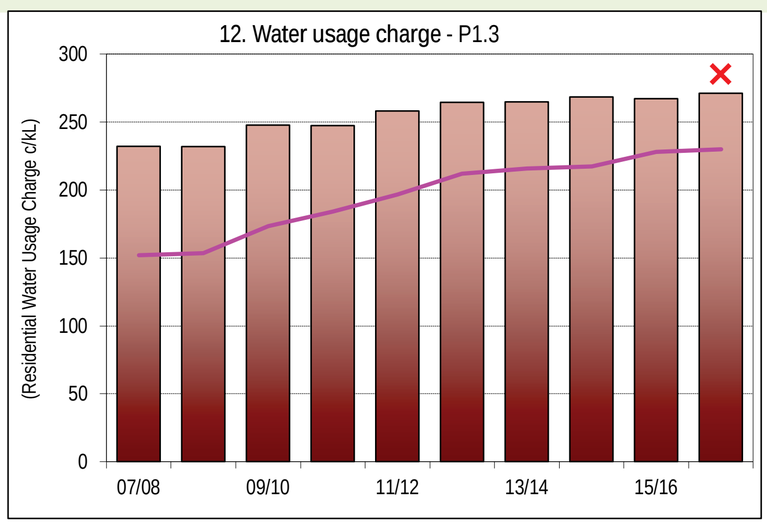
Coffs Harbour City Council — TBL Water Supply Performance (page 2) — 2015-16

(Results shown for 10 years together with Statewide Median and 2015-16 Top 20%)

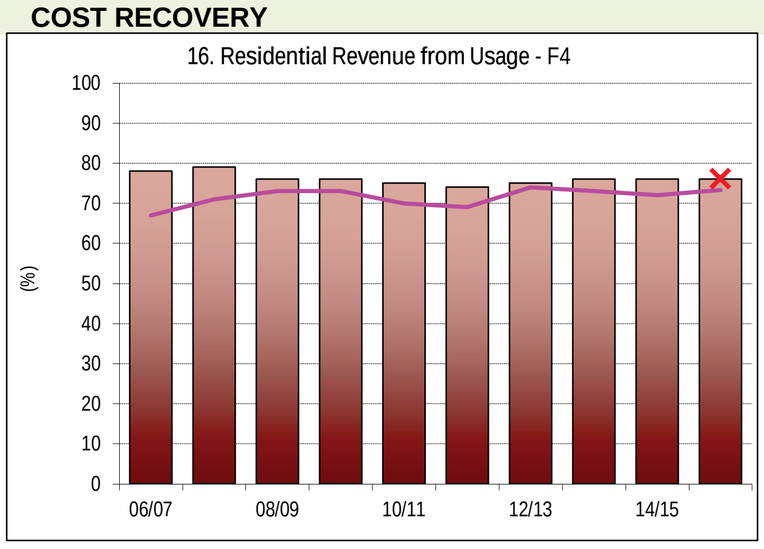
RESIDENTIAL USE/REVENUE FROM USAGE

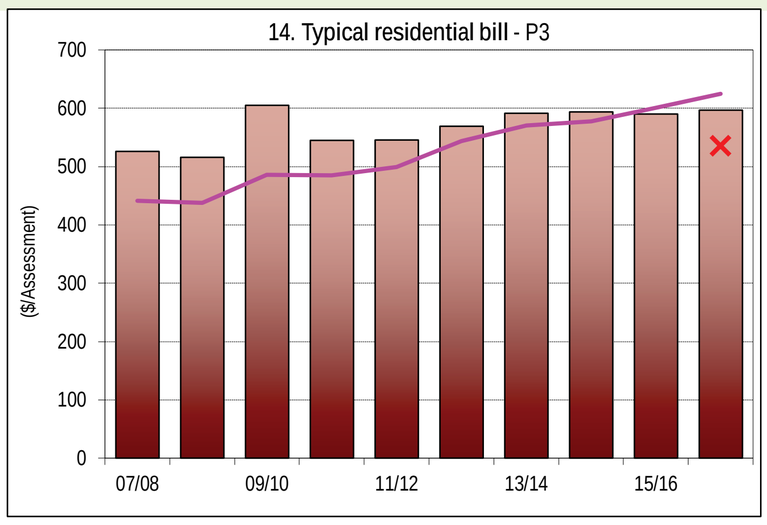


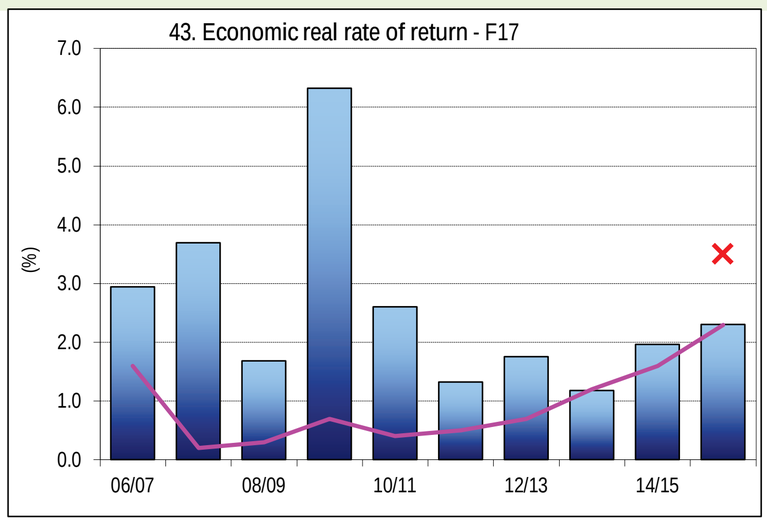




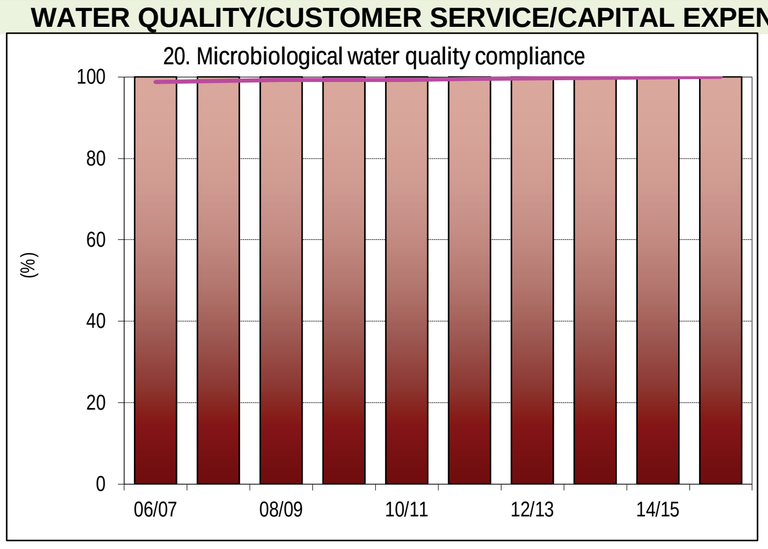
COST RECOVERY

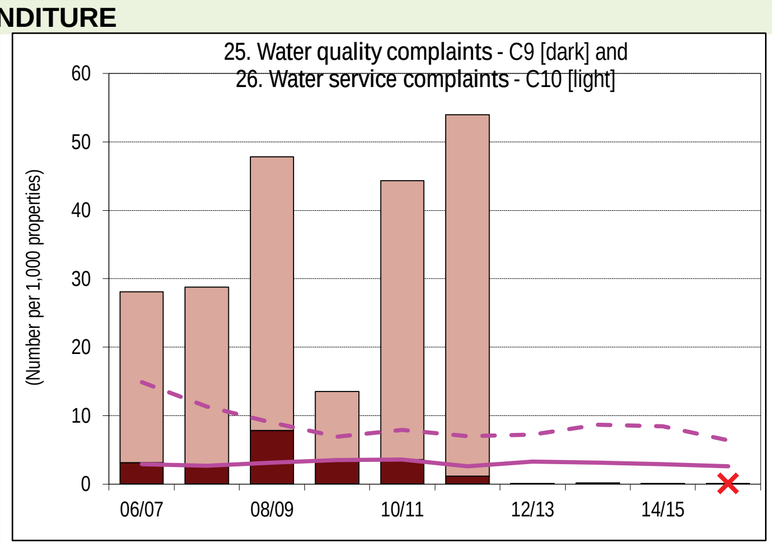


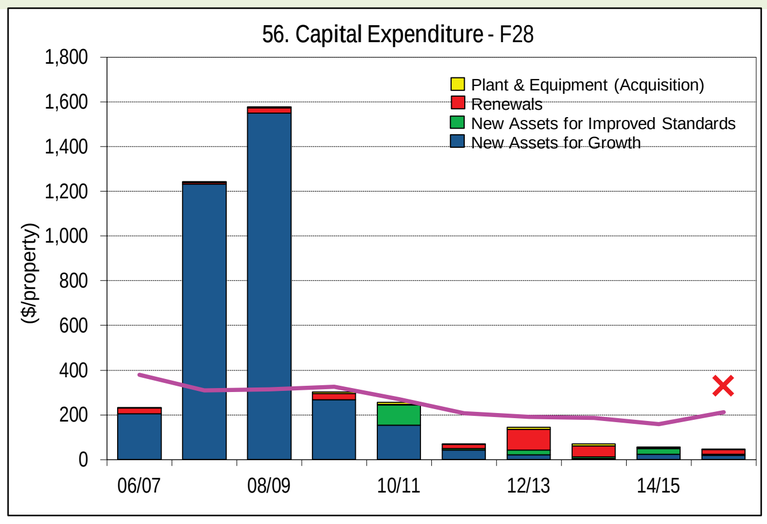




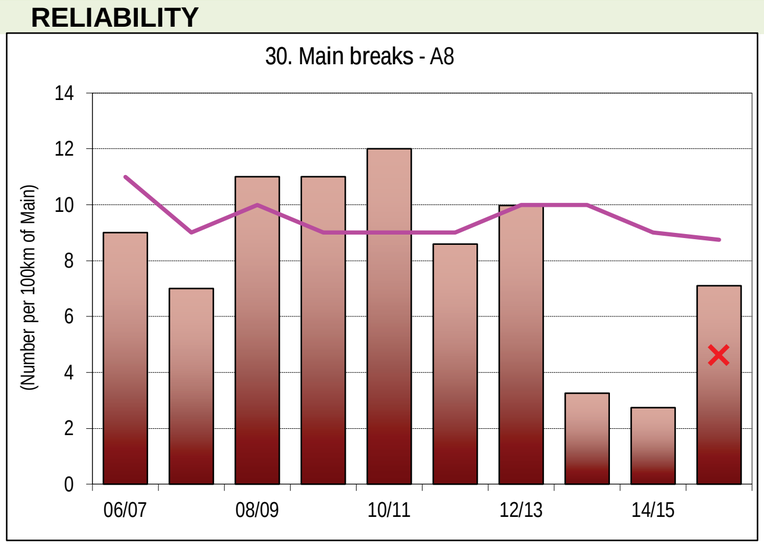
WATER QUALITY/CUSTOMER SERVICE/CAPITAL EXPENDITURE

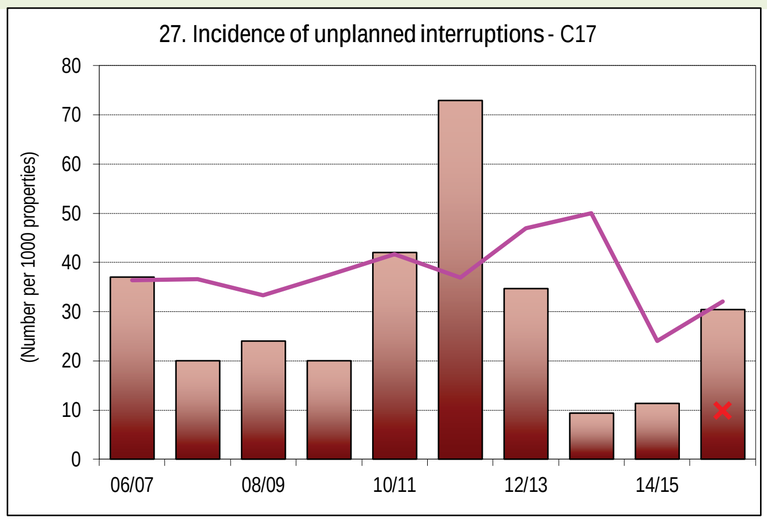


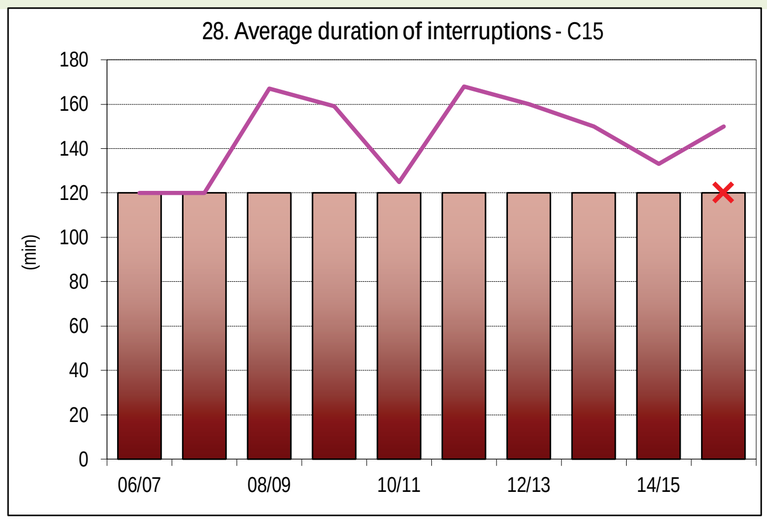




RELIABILITY







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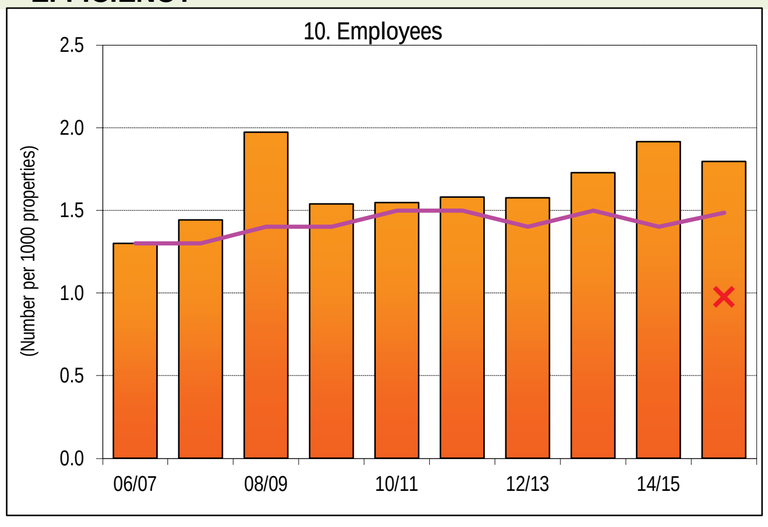

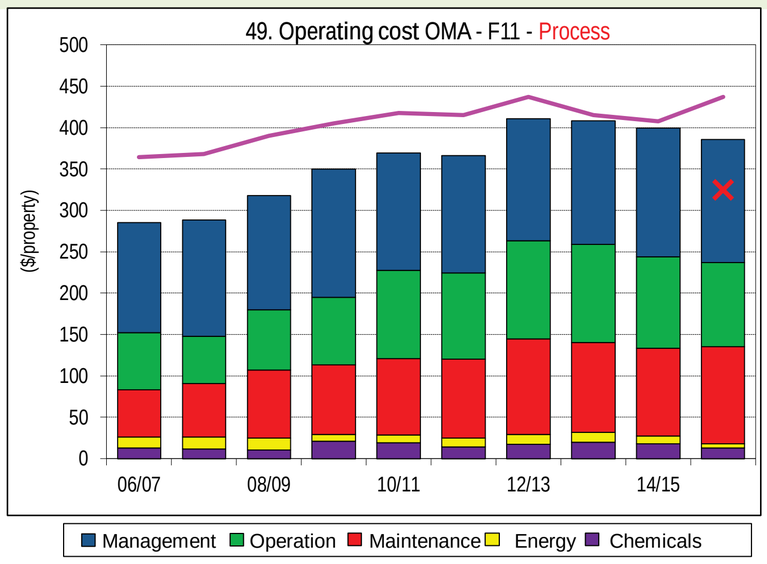

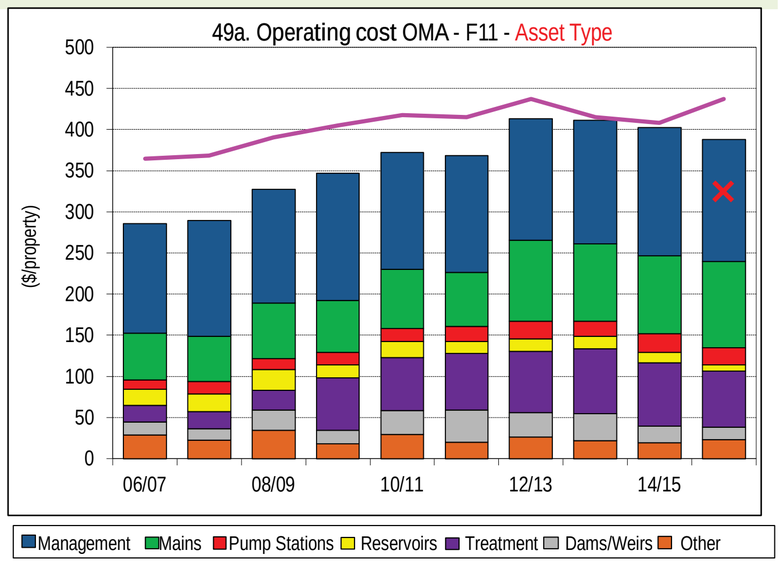

NOTES:

1. Costs are in Jan 2016$ except for graphs 12 and 14, which are in Jan 2017$.
2. Microbiological water quality compliance up to 2010-11 was on the basis of 2004 NHMRC/NRMMC Australian Drinking Water Guidelines (ADWG) and for 2011-12 to 2015-16 compliance was on the basis of the 2011 ADWG.
3. Indicator 33c - Yellow bars show Peak Week Water Supplied for comparison with Peak Day Water Supplied shown in green.
4. Indicators 33 and 33c - Green shading of bars shows % of time Drought Water Restrictions applied in each year: 0 - 30% | 30-50% | >50% of time

LEGEND

State Median for all years

Top 20% for 2015-16

Coffs Harbour City Council Water Supply – Action Plan Page 1

Summary
In 2015-16, Coffs Harbour City Council has implemented all 19 planning, pricing and management outcomes (10 water, 9 sewerage) required by the *NSW Best-Practice Management (BPM) Framework* and its performance has continued to be very good.
The key actions required are shown below for Indicators 20 and 32. Note also Indicators 12 and 14 and that a new IWCM Strategy and financial plan are required in 2017.

Key action from Council's Strategic Business Plan:
- *Strategic business plan and financial plan completed in May 2012 (http://www.coffsharbour.nsw.gov.au/places-for-living/Documents/Strategic-Business-Plans-Water-Supply-Sewerage.pdf).*

	Best-Practice Management (BPM) Framework	*Implemented all the Best-Practice Outcomes*[1]	*Very good*	*Implementation of the required BPM outcomes demonstrates effectiveness and sustainability of water supply business. 100% implementation is required for eligibility to pay an 'efficiency dividend'.*	*Prepare a new 30-year IWCM Strategy, Financial Plan and Report in accordance with the July 2014 IWCM Check List (www.water.nsw.gov.au).*
CHARACTERISTICS					
5	*Connected property density*	*38 per km of main* *High ranking (2, 1)*		*A connected property density below 30 can significantly increase the cost per property of providing services, as will also a high number of small discrete water supply schemes.*	
9	*Renewals expenditure*	*0.1%* *Lowest ranking (5, 5)*	*May require review*	*Adequate funds must be programmed for works outlined in the Asset Management Plan – page 3 of the 2014-15 NSW Performance Monitoring Report.*	*Satisfactory. Appropriate renewals included in capital works program reported in Council's Strategic Business Plan 2012.*
10	*Employees*	*1.8 per 1,000 props* *Low ranking (4, 3)*	*May require review*		*Satisfactory in view of Council's storage dams and water treatment works.*
SOCIAL - CHARGES					
12	*Residential water usage charge*	*271 c/kL* *High ranking (2, 2)*	*Good*	*Benefits of strong pricing signals are shown on page 5 of the 2014-15 NSW Performance Monitoring Report.*	*Good. Consider replacing the existing inclining block tariff with a two-part tariff [refer to Circular LWU11] with a uniform usage charge for all water use, as recommended by the NSW Government and the Productivity Commission.*
13	*Residential access charges*	*$143 per assessment* *Highest ranking (1, 1)*	*Good*		*See 12.*
14	*Typical residential bill*[3] *(TRB)*	*$596 per assessment* *High ranking (2, 2)*	*Good*	*TRB should be consistent with projection in the financial plan. Drivers – OMA Management Cost and Capital Expenditure.*	*The TRB of $596 is satisfactory as it is greater than the projected TRB of $590 (2016/17$) in Council's SBP.* *The 2017-18 tariff will be determined in accordance with Circular LWU11 of March 2011.*
15	*Typical developer charges*	*$10300 per ET* *Highest ranking (1, 1)*	*Good*		
16	*Residential revenue from usage charges*	*76% of residential* *Highest ranking (1, 2)*	*Very good*	*≥ 75% of residential revenue should be generated through usage charges.*	*See 12.*
SOCIAL – HEALTH					
19	*Physical quality compliance*	*Yes* *Highest ranking (1, 1)*	*Very good*		
19a	*Chemical quality compliance*	*Yes* *Highest ranking (1, 1)*	*Very good*		
20	*Microbiological compliance*[4]	*Yes* *Highest ranking (1, 1)*	*Very good*	*Critical indicator. LWUs should annually review their risk based Drinking Water Management System (DWMS)* in accordance with *NSW Guidelines for drinking water management systems*, NSW Health and NSW Office of Water, 2013.	Also address the requirements of Circular LWU 18 of June 2014 and any Section 61 Reports from DPI Water. Include the corrective actions identified in your Action Plan.

1. *Council needs to annually 'roll forward', review and update its 30-year total asset management plan (TAMP) and 30-year financial plan, review Council's TBL Performance Report and prepare an **Action Plan** to Council. The Action Plan is to include any actions identified in Council's annual review of its DWMS (Indicator 20) and any Section 61 Reports from DPI Water. Refer to section 4.8 and Appendices G5 and H2 of the 2015-16 NSW Water Supply and Sewerage Performance Monitoring Report.*
2. *The ranking relative to similar size LWUs is shown first (Col. 2 of TBL Report) followed by the ranking relative to all LWUs (Col. 3 of TBL Report).*
3. *Review and comparison of the 2016-17 **Typical Residential Bill (Indicator 14)** with the projection in the later of your IWCM Strategy and financial plan and your Strategic Business Plan is **mandatory**. Refer to Appendix H2 of the NSW Performance Monitoring Report.*
   In addition, if both indicators 43 and 44 are negative, you must report your proposed 2017-18 typical residential bill to achieve full cost recovery.

Coffs Harbour City Council Water Supply – Action Plan Page 2

INDICATOR		RESULT		COMMENT/DRIVERS	ACTION
SOCIAL – LEVELS OF SERVICE					
25	Water quality complaints	0 per 1,000 props Highest ranking (1, 1)	Very good	Critical indicator of customer service. Can be influenced by the type of business - e.g. unfiltered supply.	
26	Service complaints	0 per 1,000 props Highest ranking (1, 1)	Very good	Key indicator of customer service.	Council's reporting system has been revised to record complaints only, [ie. expressions of dissatisfaction], in accordance with the definition of this indicator.
27	Incidence of unplanned interruptions	30 per 1,000 props Median ranking (3, 4)	Good	Key indicator of customer service, condition of network and effectiveness of operation.	
30	Number of main breaks	7 per 100km of main High ranking (2, 2)	Very good	Drivers – condition and age of water mains, ground conditions.	Good, as result is well below the Statewide Median of 9 breaks per 100 km of main.
32	Total Days Lost	4.9% Low ranking (4, 4)	May require review		Will be reviewed.
ENVIRONMENTAL					
33	Average annual residential water supplied	167 kL per prop Median ranking (3, 2)		Drivers – available water supply, climate, location (Inland or coastal), pricing signals (Indicator 12), restrictions.	
34	Real losses (leakage)	50 L/c/d High ranking (2, 2)	Good	Loss reduction is important where an LWU is facing drought water restrictions or the need to augment its water supply system.	
ECONOMIC					
43	Economic Real Rate of Return (ERRR)	2.3% Median ranking (3, 2)	Good	Reflects the rate of return generated from operating activities (excluding interest income and grants). An ERRR or ROA of ≥ 0% is required for full cost recovery.	Satisfactory. See 14.
44	Return on assets (ROA)	0.9% Low ranking (4, 4)		See 43.	
45	Net debt to equity – water and sewerage	11% Highest ranking (1, 1)	Very good	LWUs facing significant capital investment are encouraged to make greater use of borrowings – page 13 of the 2014-15 NSW Performance Monitoring Report.	
46	Interest cover	1 Median ranking (3, 3)	Satisfactory	Drivers – in general, an interest cover > 2 is satisfactory.	
47	Loan payment	$206 per prop Highest ranking (1, 1)	Very good	The component of TRB required to meet debt payments. Drivers – expenditure on capital works, short term loans.	
49	Operating cost (OMA)	$388 per prop High ranking (2, 1)	Good	Prime indicator of the financial performance of an LWU. Drivers – development density, level of treatment, management cost, topography, number of discrete schemes and economies of scale.	The components below have been carefully reviewed as part of developing Council's strategic business plan.
51	Management cost	$148 per prop Median ranking (3, 3)	Good	Typically about 40% of the OMA. Drivers – No. of employees. No. of small discrete water schemes.	
52	Treatment cost	$68 per prop Low ranking (4, 2)	May require review	Drivers – type and quality of water source. Size of treatment works	Satisfactory, as Council has a dissolved air flotation water treatment works.
53	Pumping cost	$8 per prop High ranking (2, 1)	Good	Drivers – topography, development density and location of water source.	
55	Water main cost	$105 per prop Low ranking (4, 4)	May require review	Drivers – age and condition of mains. Ground conditions. Development density.	
56	Capital expenditure	$48 per prop Lowest ranking (5, 5)		An indicator of the level of investment in the business. Drivers – age and condition of assets, asset life cycle and water source.	

4. ***Microbiological compliance (Indicator 20)*** *is a* ***high priority*** *for each NSW LWU. Corrective action for non-compliance (≤97%), or any 'boil water alerts' must be reported in your Action Plan. Refer to sections 2.3 and 3 of the 2015-16 NSW Water Supply and Sewerage Performance Monitoring Report (www.water.nsw.gov.au).*

APPENDIX C - 2015-16 Best-practice management implementation

	WATER UTILITY (sorted on connected properties)	WATER SUPPLY & SEWERAGE REVENUE ($M)	WATER SUPPLY: IMPLEMENTATION OF BPM OUTCOMES (see Note 1) (1) Strategic Business Plan: Complete Current 20 to 30-year SBP & FP (Yes/No)	(2) Pricing and Developer Charges (Yes/No): (2a) Full cost-recovery, minimal cross subsidies	(2b) Appropriate Residential Charges	(2c) Revenue from Residential Usage Charges >=75% (Note 8)	(2d) Appropriate Non-Residential Charges	(2e) DSP with Commercial Developer Charges	(6) Integrated Water Cycle Management Strategy Commenced (Yes/No)	(7) Overall implementation of all 10 requirements (Note 2) (%)	(8) Proposed Dividend from Surplus $'000
	LWUs with >10,000 Properties										
112	Central Coast	165.0	Yes	Yes*	Yes	Yes*	Yes	Yes	Yes*	100	
3	Shoalhaven	70.2	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	1,443
4	Rous (Bulk Supplier) (NO SGE)	26.6	Yes*	Yes				Yes	Yes*	100	
5	MidCoast	77.2	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
6	Tweed	66.8	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
7	Port Macquarie-Hastings (Unfiltered)	71.2	Yes	Yes	Yes	Yes*	Yes	Yes	Yes*	100	870
8	Riverina (Groundwater) (NO SGE)	32.8	Yes	Yes	Yes	Yes		Yes	Yes*	90	
9	Wagga Wagga (NO WS)	18.6									
11	Albury City	42.4	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
10	Coffs Harbour	53.4	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
13	Tamworth Regional	46.2	Yes*	Yes	Yes		Yes	Yes	Yes*	90	66
14	Clarence Valley	35.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
122	Dubbo Regional	39.2	Yes	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
119	Queanbeyan-Palerang (Reticulator)	33.4	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
15	Eurobodalla	40.2	Yes*	Yes	Yes	Yes**	Yes	Yes	Yes	100	
12	Fish River WS (Bulk Supplier, No Sge)	10.0		Yes*						67	
16	Wingecarribee	38.9	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
19	Orange	30.4	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
21	Bathurst Regional	27.4	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
23	Bega Valley (Unfiltered)	28.7	Yes*	Yes*	Yes		Yes	Yes	Yes*	90	
24	Ballina (Reticulator)	30.1	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
22	Lismore (Reticulator)	25.9	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
25	Kempsey (Groundwater)	21.1	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
27	Byron (Reticulator)	29.0	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
20	Goulburn Mulwaree	22.1	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
26	Essential Energy	31.2	Yes*	Yes*	Yes	Yes*	Yes	Yese	Yes*	100	
28A	Goldenfields (Reticulator) (NO SGE)	15.3	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
28B	Goldenfields (Bulk) (NO SGE)	6.0	Yes*	Yes				Yes	Yes*	100	
	% of LWUs 'Yes' (>10,000 connected properties)		96%	100%	100%	71%	96%	96%	96%	96%	Overall
	LWUs with 4,001 - 10,000 Properties										
111	Armidale Regional	15.1	Yes*	Yes	Yes	Yes*		Yes	Yes*	90	
120	Snowy Monaro Regional (Unfiltered)	15.0	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
30	Griffith	18.3	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
31	Lithgow	14.3	Yes	Yes	Yes	Yes	Yes		Yes*	90	
32	Mid-Western Regional	13.2	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
30A	Hawkesbury (NO WS)	6.8									
116	Hilltops (Reticulator)	11.3	Yes	Yes	Yes		Yes	Yes	Yes*	90	
33	Richmond Valley	13.2	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
35	Singleton	11.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	194
34	Nambucca (Groundwater)	10.4	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	180
36	Parkes	12.2	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
41	Muswellbrook	9.5	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	
37	Inverell	7.3	Yes*	Yes	Yes			Yes		70	
121	Snowy Valleys	7.4	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
114	Federation	8.1	Yes*	Yes	Yes	Yes	Yes	Yes*	Yes*	100	
40	Central Tablelands (NO SGE)	5.7	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes+	100	
39	Cowra	10.5	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
38	Moree Plains (Groundwater)	10.3	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	142
117	Murray River (Dual Supply)	6.5	Yes*	Yes	Yes		Yes	Yes	Yes*	90	
45	Upper Hunter	8.0	Yes*	Yes	Yes	Yes*	Yes	Yes	Yes*	100	15

	SEWERAGE: IMPLEMENTATION OF BPM OUTCOMES (see Note 1) (1) Strategic Business Plan: Complete Current 20 to 30-year SBP & FP (Yes/No)	(2) Pricing and Developer Charges (Yes/No): (2a) Full cost-recovery, minimal cross subsidies	(2b) Appropriate Residential Charges	(2c) Appropriate Non-Residential Charges	(2d) Appropriate Trade Waste Fees & Charges	(2e) DSP with commercial developer charges	(2f) Liquid trade waste regulation policy and approvals implemented	(4) Integrated Water Cycle Management Strategy Commenced (Yes/No)	(7) Overall implementation of all 9 requirements (Note 3) (%)	(8) Proposed Dividend from Surplus $'000
112	Yes	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100	
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	1,276
4										
5	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
6	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
8										
9	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
11	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
10	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	Yes*	100	
13	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	60
14	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
122	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
119	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
15	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100	531
12										
16	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
19	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
21	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
23	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
24	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
22	Yes*	Yes	Yes		Yes	Yes	Yes*	Yes*	89	
25	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
27	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
20	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
26	Yes*	Yes*	Yes	Yes	Yes	Yese	Yes*	Yes*	100	
28A										
28B										
	100%	100%	100%	96%	100%	100%	100%	100%	100%	Overall
111	Yes*	Yes	Yes		Yes	Yes	Yes*	Yes*	89	
120	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
30	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
31	Yes	Yes	Yes	Yes	Yes		Yes	Yes*	89	
32	Yes*	Yes	Yes	Yes		Yes		Yes*	78	
30A	Yes*	Yes*	Yes	Yes*	Yes	Yes*	Yes	Yes*	100	
116	Yes	Yes	Yes		Yes	Yes	Yes	Yes*	89	
33	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
35	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	177
34	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
36	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
41	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
37	Yes*	Yes	Yes			Yes			56	
121	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
114	Yes*	Yes	Yes	Yes	Yes	Yes*	Yes	Yes*	100	
40										
39	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
38	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	102
117	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
45	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	14

APPENDIX C - 2015-16 Best-practice management implementation

	WATER UTILITY (sorted on connected properties)	WATER SUPPLY & SEWERAGE REVENUE ($M)	WATER SUPPLY: IMPLEMENTATION OF BPM OUTCOMES (see Note 1) (1) Strategic Business Plan: Complete Current 20 to 30-year SBP & FP (Yes/No)	(2) Pricing and Developer Charges (Yes/No): (2a) Full cost-recovery, minimal cross subsidies	(2b) Appropriate Residential Charges	(2c) Revenue from Residential Usage Charges >=75% (Note 8)	(2d) Appropriate Non-Residential Charges	(2e) DSP with Commercial Developer Charges	(6) Integrated Water Cycle Management Strategy Commenced (Yes/No)	(7) Overall implementation of all 10 requirements (Note 2) (%)	(8) Proposed Dividend from Surplus $'000	SEWERAGE: IMPLEMENTATION OF BPM OUTCOMES (see Note 1) (1) Strategic Business Plan: Complete Current 20 to 30-year SBP & FP (Yes/No)	(2) Pricing and Developer Charges (Yes/No): (2a) Full cost-recovery, minimal cross subsidies	(2b) Appropriate Residential Charges	(2c) Appropriate Non-Residential Charges	(2d) Appropriate Trade Waste Fees & Charges	(2e) DSP with commercial developer charges	(2f) Liquid trade waste regulation policy and approvals implemented	(4) Integrated Water Cycle Management Strategy Commenced (Yes/No)	(7) Overall implementation of all 9 requirements (Note 3) (%)	(8) Proposed Dividend from Surplus $'000
46	Narrabri (Groundwater)	7.2	Yes*	Yes	Yes		Yes	Yes	Yes*	90		Yes*	Yes	Yes		Yes	Yes	Yes	Yes*	89	
44	Gunnedah (Groundwater)	8.2	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	Yes*	100	
47	Bellingen (Unfiltered)	5.5	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
48	Leeton	6.8	Yes*	Yes	Yes		Yes	Yes	Yes*	90		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
% of LWUs 'Yes' (4,001 - 10,000 connected properties)			100%	100%	100%	74%	91%	96%	96%	96%	Overall	100%	100%	100%	83%	91%	96%	91%	96%	95%	Overall
	LWUs with 1,501 - 4,000 Properties																				
115	Cootamundra-Gundagai (Reticulator)	5.1	Yes*	Yes	Yes		Yes	Yes		80		Yes*	Yes	Yes	Yes	Yes	Yes	Yes		89	
51	Forbes	6.0	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
53	Berrigan (Dual Supply)	5.3	Yes*	Yes	Yes			Yes	Yes*	80		Yes*	Yes	Yes			Yes		Yes*	67	
54	Edward River	5.1	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
55	Warrumbungle	4.6	Yes	Yes	Yes	Yes			Yes*	80		Yes		Yes	Yes	Yes		Yes	Yes*	78	
56	Yass Valley	8.7	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
60	Glen Innes Severn	3.5	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
59	Lachlan	5.0	Yes*	Yes	Yes	Yes	Yes	Yes*	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes*	Yes	Yes*	100	
61	Liverpool Plains	4.4		Yes	Yes		Yes	Yes	Yes*	80			Yes	Yes	Yes	Yes	Yes	Yes	Yes*	89	
74	Wentworth (Dual Supply)	3.9	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes		Yes	Yes	Yes	Yes*	89	
67	Cobar	4.1	Yes*	Yes	Yes	Yes	Yes	Yes	Yes+	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes+	100	
66	Cobar WB	3.3	Yes	Yes*						43											
69	Temora (NO WS)	0.8										Yes*	Yes	Yes	Yes					56	
62	Narromine (Groundwater)	2.9	Yes*	Yes	Yes	Yes	Yes	Yes	Yes+	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes+	100	
63	Narrandera (Groundwater)	3.0	Yes*	Yes	Yes	Yes	Yes		Yes*	90		Yes*	Yes	Yes	Yes			Yes	Yes*	78	
68	Tenterfield	3.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes+	100		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes+	100	
73	Upper Lachlan	3.3	Yes	Yes	Yes	Yes		Yes	Yes*	90		Yes	Yes	Yes	Yes		Yes	Yes	Yes*	89	
78	Blayney (NO WS)	1.3										Yes*		Yes	Yes	Yes	Yes*	Yes	Yes+	89	
79	Walgett (Dual Supply)	2.8		Yes*	Yes		Yes		Yes*	70			Yes	Yes				Yes	Yes*	56	
70	Kyogle	3.0	Yes*	Yes	Yes		Yes	Yes	Yes*	90		Yes*	Yes	Yes	Yes	Yes	Yese	Yes	Yes*	100	
80	Greater Hume	3.5	Yes*	Yes	Yes	Yes	Yes	Yes	Yes*	100		Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
72	Bland (NO WS)	1.3										Yes*	Yes	Yes		Yes	Yes	Yes		78	
75	Coonamble (Groundwater)	2.1	Yes*	Yes	Yes	Yes	Yes	Yese		90		Yes*	Yes	Yes	Yes		Yese			67	
77	Junee (NO WS)	0.7										Yes*		Yes				Yes		44	
% of LWUs 'Yes' (1,501 - 4,000 connected properties)			90%	100%	95%	70%	80%	80%	85%	89%	Overall	91%	87%	100%	78%	70%	78%	87%	78%	86%	Overall
	LWUs with 200 - 1,500 Properties																				
81	Gwydir	2.2	Yes*	Yes	Yes	Yes*	Yes		Yes*	90		Yes*	Yes	Yes	Yes	Yes		Yes	Yes*	89	
85	Uralla	1.6		Yes	Yes	Yes			Yes*	70			Yes	Yes	Yes	Yes			Yes*	67	
87	Bourke (Dual Supply)	2.5	Yes*	Yes*	Yes	Yes	Yes	Yes	Yes+	100		Yes*	Yes	Yes		Yes	Yese	Yes	Yes+	89	
84	Gilgandra (Groundwater)	1.8	Yes*	Yes	Yes	Yes	Yes	Yese		90		Yes*	Yes	Yes	Yes	Yes	Yese	Yes		89	
86	Hay (Dual Supply)	2.0	Yes*	Yes	Yes	Yes		Yese	Yes*	90		Yes*		Yes	Yes		Yese	Yes	Yes*	78	
83	Oberon (Reticulator)	2.8	Yes	Yes	Yes	Yes			Yes*	80		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	100	
118	Murrumbidgee (Groundwater)	1.3	Yes*	Yes	Yes	Yes	Yes			70		Yes*	Yes	Yes		Yes		Yes		67	
92	Carrathool (Groundwater)	2.1		Yes	Yes	Yes	Yes			70			Yes	Yes						33	
89	Bogan	3.5	Yes*	Yes	Yes	Yes	Yes	Yese	Yes+	100		Yes*	Yes	Yes	Yes	Yes	Yese	Yes	Yes+	100	
91	Cabonne	3.0	Yes*	Yes	Yes	Yes	Yes	Yes	Yes+	100		Yes*	Yes*	Yes	Yes	Yes	Yes	Yes	Yes+	100	
99	Coolamon (NO WS)	0.5										Yes*	Yes	Yes			Yes			56	
96	Warren (Dual Supply)	1.2	Yes*	Yes*	Yes	Yes		Yese	Yes+	90		Yes*		Yes	Yes	Yes	Yese	Yes	Yes+	89	
95	Weddin (NO WS)	0.5										Yes*	Yes	Yes			Yes*	Yes*	Yes+	78	
98	Walcha	1.0	Yes*	Yes*	Yes	Yes	Yes		Yes*	90		Yes*	Yes	Yes	Yes	Yes		Yes	Yes*	89	
100	Balranald (Dual Supply)	1.3	Yes*	Yes	Yes	Yes	Yes			80		Yes*		Yes	Yes	Yes				56	
102	Lockhart (NO WS)	0.4										Yes	Yes	Yes	Yes	Yes		Yes	Yes+	89	
103	Central Darling (Dual Supply)	0.9		Yes*	Yes	Yes		Yese	Yes*	80			Yes*	Yes	Yes		Yese		Yes*	67	
105	Brewarrina (Dual Supply)	1.5	Yes*	Yes	Yes	Yes	Yes	Yese	Yes+	100		Yes*	Yes	Yes			Yese	Yes	Yes+	78	
% of LWUs 'Yes' (200 - 1,500 connected properties)			80%	100%	100%	100%	67%	53%	73%	87%	Overall	83%	83%	100%	67%	67%	61%	72%	72%	78%	Overall

APPENDIX C - 2015-16 Best-practice management implementation

WATER UTILITY (sorted on connected properties)	WATER SUPPLY & SEWERAGE REVENUE ($M)	WATER SUPPLY — IMPLEMENTATION OF BPM OUTCOMES (see Note 1)								
		(1) Strategic Business Plan Complete Current 20 to 30-year SBP & FP *(Yes/No)*	(2) Pricing and Developer Charges (Yes/No) (2a) Full cost-recovery, minimal cross subsidies	(2b) Appropriate Residential Charges	(2c) Revenue from Residential Usage Charges >=75% (Note 8)	(2d) Appropriate Non-Residential Charges	(2e) DSP with Commercial Developer Charges	(6) Integrated Water Cycle Management Strategy Commenced *(Yes/No)*	(7) Overall implementation of all 10 requirements (Note 2) *(%)*	(8) Proposed Dividend from Surplus $'000
TOTAL 'YES' for large LWUs (>$10M Revenue)[6]		38	39	37	28	35	37	38	26	
% of Large LWUs (39 WS LWUs and 35 SGE LWUs)		97%	100%	100%	72%	90%	95%	97%	67%	
TOTAL 'YES' for remainder of LWUs (<$10M Revenue)[6]		40	45	44	35	35	34	37	21	
% of Small LWUs (45 WS LWUs and 51 SGE LWUs)		89%	100%	100%	78%	78%	76%	82%	47%	
TOTAL 'YES' for all LWUs		78	84	81	63	70	71	75	47	
% all LWUs		93%	100%	100%	78%	86%	85%	89%	56%	
								Overall Implementation for all WS Businesses		93%

WATER UTILITY (sorted on connected properties)	SEWERAGE — IMPLEMENTATION OF BPM OUTCOMES (see Note 1)									
	(1) Strategic Business Plan Complete Current 20 to 30-year SBP & FP *(Yes/No)*	(2) Pricing and Developer Charges (Yes/No) (2a) Full cost-recovery, minimal cross subsidies	(2b) Appropriate Residential Charges	(2c) Appropriate Non-Residential Charges	(2d) Appropriate Trade Waste Fees & Charges	(2e) DSP with commercial developer charges	(2f) Liquid trade waste regulation policy and approvals implemented	(4) Integrated Water Cycle Management Strategy Commenced *(Yes/No)*	(7) Overall implementation of all 9 requirements (Note 3) *(%)*	(8) Proposed Dividend from Surplus $'000
TOTAL 'YES' for large LWUs (>$10M Revenue)[6]	35	35	35	32	34	34	34	35	30	
% of Large LWUs (39 WS LWUs and 35 SGE LWUs)	100%	100%	100%	91%	97%	97%	97%	100%	86%	
TOTAL 'YES' for remainder of LWUs (<$10M Revenue)[6]	46	45	51	38	37	39	42	40	22	
% of Small LWUs (45 WS LWUs and 51 SGE LWUs)	90%	88%	100%	75%	73%	76%	82%	78%	43%	
TOTAL 'YES' for all LWUs	81	80	86	70	71	73	76	75	52	
% all LWUs	94%	93%	100%	81%	83%	85%	88%	87%	60%	
								Overall Implementation for all SGE Businesses		90%

Notes:

1 The Best-Practice Management outcomes which need to be implemented by LWUs are set out in "*Best-Practice Management of Water Supply and Sewerage Guidelines August 2007*" (BPMG).

2 There are 10 outcomes which must be implemented for water supply: (1), (2a), (2b), (2c), (2d), (2e) and (6) shown in the table above. (3) and (4) are not shown as they form part of the IWCM Strategy. (5) is not shown as all LWUs currently report.

3 There are 9 outcomes which must be implemented for sewerage: (1), (2a), (2b), (2c), (2d), (2e), (2f) and (4) shown in the table above. (3) is not shown as all LWUs currently report.

4 The level of implementation of the 19 planning, pricing and management outcomes of the BPMG shown in the table above is from Notes 2 or 3 of the Special Purpose Financial Statements reported by each LWU in their Annual Financial Statements, supplemented by other data provided to DPI Water by the LWU. Documents which have implemented the required outcomes (including strategic business plans and IWCM evaluations and strategies) provided by LWUs to DPI Water by February 2017 are included in the results reported.

5 As shown above and in Table 8C of the 2015-16 NSW Water Supply and Sewerage Benchmarking Report, 1 LWU has completed their 30-year IWCM Strategy, financial plan and report in accordance with the July 2014 IWCM Check List (shown as 'Yes' in columns (6) and (4) above) for water supply and sewerage respectively. 67 LWUs need to complete their IWCM Strategy and are shown as 'Yes*' above. 12 LWUs need to complete the conditions of approval for their IWCM Strategy. The IWCM Strategies have been reviewed by DPI Water and found to be soundly based. Similarly, the strategic business plans and trade waste policies shown as Yes above have been reviewed by DPI Water and found to be soundly based. However, the water conservation and drought management plans have only been briefly examined to confirm that they address the required issues.

6 The revenue for LWUs with water supply only or sewerage only is shown left justified above. For these LWUs, the relevant revenue to be classified as a "large LWU" is $5M.

7 For requirement (2c) utilities with 4,000 or more connected properties which obtained 70% to 74% of residential revenue from usage charges are shown as Yes*. Yes* is also shown for Central Coast and Essential Energy, whose prices are determined by IPART. Yes** is shown for Eurobodalla which received 'deemed compliance' for its usage charge of $3.52/kL, which is the second highest in NSW. In addition, the Minister has approved replacement of the 75% requirement with 70% for Eurobodalla (due to the high incidence of holiday houses, which are unoccupied for most of the year). Utilities with fewer than 4,000 connected properties serve 8% of the connected properties in regional NSW and are only required to achieve 50% for requirement (2c). Such utilities which have obtained 45% to 49% residential revenue from water usage charges are shown as Yes*. 34 LWUs (72%) with 4,000 or more properties have met this requirement, as have 29 LWUs (85%) with fewer than 4,000 properties. Bulk water suppliers are not required to meet requirements (2b), (2c) or (2d) which refer to residential water tariffs.

8 Yes* for requirement (1) indicates that the strategic business plan and financial plan for these 69 LWUs are now over 4 years old. Most of these LWUs need to prepare a new 30-year IWCM Strategy and financial plan in accordance with the July 2014 IWCM Check List (www.water.nsw.gov.au). Refer to section 4.

9 Yes* for requirement (2a) for water supply or for sewerage indicates that the LWU has significantly increased their 2016/17 charges in order to recover their costs.

10 Yes* for requirement (2e) for water supply or for sewerage indicates that the LWU has commercial developer charges in place but is yet to complete and implement its Development Servicing Plan (DSP).
Yes[e] for these requirements indicates the LWU is exempt from the requirement to prepare a DSP due to low growth (under 5 lots/a).

11 Yes* for requirement (2f) for sewerage indicates that the LWU has adopted a trade waste policy before 2009, which needs significant updating.

12 As shown above, the overall levels of implementation of the outcomes of the Best-Practice Management Guidelines for water supply (for all 10 outcomes) were:
96% for LWUs with >10,000 properties; 96% for LWUs with 4,001 - 10,000 properties; 89% for LWUs with 1,501 - 4,000 properties and 87% for LWUs with 200 - 1,500 properties respectively. The overall level of implementation for water supply for all LWUs was 93%.

13 As shown above, the overall levels of implementation of the outcomes of the Best-Practice Management Guidelines for sewerage (for all 9 outcomes) were:
100% for LWUs with >10,000 properties; 95% for LWUs with 4,001 - 10,000 properties; 86% for LWUs with 1,501 - 4,000 properties and 78% for LWUs with 200 - 1,500 properties respectively. The overall level of implementation for sewerage for all LWUs was 90%.

14 The overall implementation of outcomes for water supply and sewerage was 92%.

APPENDIX D - 2015-16 NSW water utility performance summary

	WATER UTILITY	CHARACTERISTICS		BILLS / PRICING						HEALTH				LEVELS OF SERVICE				ENVIRONMENT						FINANCIAL								EFFICIENCY		BPM
		Water Supply Connected Properties	Total Urban Water Supplied	Residential Revenue from Usage Charges	Typical Residential Bill			Typical Developer Charge	Current Replacement Cost	Water Quality Compliance (2011 ADWG)				Water Quality Complaints	Avge Duration of Unplanned Interruption	Water Main Breaks	Total Complaints	Average Annual Residential Water Supplied	Real Water Loss	Sge Treated that was Compliant	Sge Mains Breaks & Chokes	Effluent Recycled		Total Revenue	Net Debt to Equity	Capital Expenditure		Economic Real Rate of Return		Full Cost Recovery		Operating Cost OMA		Implementation
					WS	SGE	WS & SGE	WS & SGE	WS & SGE	E.coli Compliance		Chemical Compliance		WS	WS	WS	WS & SGE		WS			SGE		WS & SGE	WS & SGE	WS & SGE		WS	SGE	WS	SGE	WS	SGE	WS & SGE
		(No.)[4]	(ML)[2, 3]	(%)	($)	($)	($)	($/ET)	($/assmnt)	Achieved? Note 12	% Pop'n with Compliance	Achieved? Note 11	% Pop'n with Compliance	(per 1000 props)	(mins)	(per 100km of Main)	(No./1000 props)	(kL/connected prop)	(L / connection / d)	(%)	(No. per 100km of main)	(%)	(ML)	($M)[3, 8]	(%)	($/prop) (25)	($M)					($/prop)	($/prop)	(%)
		(1) C4	(2) W11	(3) F4	(4) P3	(5) P6	(6) P8	(7)	(8)	(9)	(10) H3	(11)	(12) H4	(13) C9	(14) C15	(15) A8	(16) C13	(17) W12	(18) A10	(19) E4	(20) A14	(21) W27	(22) W26	(23) F1+F2	(24) F22	(25) F28 + F29	(26) F16	(27) F17	(28) F18	(29)	(30)	(31) F11	(32) F12	(33)
	Sydney Water	1,899,000	538,900	81	560	609	1,169			Yes	100	Yes	100	0.4	136	26	3	201	76		58	8	43,342	2,745	103	347	648	3.0	2.0			399	289	
	Hunter Water	242,000	72,400	96	387	632	1,019			Yes	100	Yes	100	1.7	137	27	5	166	104		43	8	5,373	325	91	377	88	3.0	1.8			249	335	
	Water NSW																										0							
LWUs with > 10,000 Properties																																		
112	Central Coast	137,800	29,000	67	523	641	1,164	6,400	34,000	Yes	100	Yes	100	17	198	17		155	30	100	38	3	895	165.0	8	447	60.6	1.6	1.2	Y*	Y*	259	238	100
3	Shoalhaven	47,480	14,400	76	328	772	1,100	14,900	27,400	Yes	100	Yes	100	0.2	202	8	2	150	70	100	13	18	1,551	70.2	-4	480	21.7	1.2	3.4	Y	Y	278	466	100
4	Rous (BS) (NO SGE)	41,420	1,100					9,250		Yes	100	Yes	100	0.1		8								26.6	2		11.3	3.0		Y		258		100
5	MidCoast	39,740	9,390	69	621	970	1,591	15,800	35,900	Yes	100	Yes	94	4		2	8	139	70	98	8	13	944	77.2	21	379	14.3	0.3	2.5	Y	Y	463	509	95
6	Tweed	32,580	9,100	75	604	782	1,386	19,400	43,200	Yes	100	Yes	100	5	112	8	48	165	90	89	1	9	696	66.8	-2	267	8.5	2.2	1.5	Y	Y	420	514	100
7	Port Macquarie-Hastings (UF)	30,380	6,880	70	619	769	1,388	13,200	32,800	Yes	100	Yes	100	5	121	3	32	158	40	100	27	4	340	71.2	-9	654	18.9	4.1	4.3	Y	Y	390	484	100
8	Riverina (GW) (NO SGE)	31,710	16,860	76	627			5,920	13,700	Yes	100	Yes	91	3	206	19	6	333	120					32.8	-2	1,104	35.0	5.7		Y		236		90
11	Albury	25,360	8,240	76	418	703	1,121	7,120	31,300	Yes	100	Yes	100	2	137	4	7	223	60	33	76	54	2,503	42.4	-9	342	8.4	2.8	5.2	Y	Y	276	398	100
10	Coffs Harbour	25,060	6,180	76*	590	806	1,396	19,800	42,700	Yes	100	Yes	100	0	120	7	0	167	50	100	97	19	1,113	53.4	11	227	5.5	2.3	0.8	Y	Y	388	583	100
13	Tamworth Regional	22,010	10,150	60	619	777	1,396	6,670	32,200	Yes	100	Yes	100	0		9	56	251	90	84	20	73	4,071	46.2	-4	266	5.7	2.6	4.2	Y	Y	518	398	95
14	Clarence Valley	21,530	5,790	76*	480	1,076	1,556	13,000	42,800	Yes	100	Yes	100	10	120	12	60	158	40	88	40	14	385	35.6	12	1,180	18.5	0.9	2.8	Y	Y	329	478	100
122	Dubbo Regional	20,700	10,500	71	866	712	1,578	10,300	31,300	Yes	100	Yes	100	0.3	165	6	24	322	90	78	46	65	2,599	39.2	-4	713	14.3	5.1	2.5	Y	Y	437	344	100
119	Queanbeyan-Palerang (R)	20,820	4,780	71*	901	533	1,434	11,240	24,800	Yes	100	Yes	100	0	180	8	37	163	110	98	33	2	100	33.4	-16	519	10.4	0.9	0.6	Y	Y	560	388	100
15	Eurobodalla	19,720	3,610	58	695	886	1,581	22,000	41,100	Yes	100	Yes	100	0.4	214	13	2	117	50	100	23	5	195	40.2	-3	705	13.2	1.3	2.4	Y	Y	425	536	100
12	Fish River WS (UF,BS) (NO SGE	23,500	3,750							Yes	100	Yes	100	0										*10.0*			0.0			Y*				67
16	Wingecarribee	19,350	5,090	71	489	756	1,245	14,900	29,400	Yes	100	Yes	100	9	117	12	90	186	120	100	10	5	232	38.9	-8	347	6.0	3.5	4.9	Y	Y	387	423	100
19	Orange	18,020	6,610	64	631	452	1,083	12,200	34,400	Yes	100	Yes	100	2	135	9	126	173	60	67	42	42	2,051	30.4	-13	656	11.7	3.5	1.9	Y	Y	365	380	95
21	Bathurst Regional	16,070	7,860	79	576	503	1,079	10,660	33,400	Yes	100	Yes	100	9	120	15	89	235	70	87	162	0	0	27.4	-12	476	7.6	1.4	1.5	Y	Y	603	443	100
23	Bega Valley (UF)	14,420	3,710	64	568	1,136	1,704	19,300	45,800	Yes	100	Yes	100	4	177	5	8	135	50	89	20	17	401	28.7	-3	399	5.4	-1.2	0.2	Y*	Y	598	850	95
24	Ballina (R)	15,240	4,120	65	545	864	1,409	8,000	23,700	Yes	100	Yes	100	0	120	4	1	168	160	100	21	11	500	30.1	15	315	4.6	1.6	2.9	Y	Y	463	627	95
22	Lismore (R)	14,020	3,090	68	735	808	1,543	13,900	36,900	Yes	100	Yes	100	0	214	36	0	155	40	100	28	0	5	25.9	-2	620	8.3	2.5	1.4	Y	Y	492	478	89
25	Kempsey (GW)	12,470	3,690	56	594	850	1,444	17,400	47,700	Yes	100	Yes	100	1	155	5	3	149	90	87	25	5	96	21.1	7	579	6.4	0.7	0.9	Y	Y	444	575	95
27	Byron (R)	11,450	3,040	71	584	1,121	1,705	16,700	26,200	Yes	100	Yes	100	1	120	7	5	169	90	94	21	11	367	29.0	11	355	4.0	3.1	6.0	Y	Y	471	662	100
20	Goulburn Mulwaree	11,290	3,270	73*	663	749	1,412	7,840	43,500	Yes	100	Yes	100	20	180	15	100	162	40	100	45	84	1,730	22.1	-8	490	5.4	1.1	6.1	Y	Y	384	347	100
26	Essential Energy	10,530	5,710	57	722	518	1,240			Yes	100	Yes	100	0.3		21	3	233	80	100	122	52	669	31.2		1,383	14.4			Y*	Y*	1289	317	100
28A	Goldenfields (R) (NO SGE)	10,290	6,050	78	779			7,430	19,900	Yes	100	Yes	100	0	240	13	1	280	90					15.3	-16			3.9		Y		834		100
28B	Goldenfields (BS) (NO SGE)	19,780	440							Yes	100	Yes	100			0								6.0	-15			0.3		Y		151		100
	Totals or Medians (% of LWUs basis excl NO SGE suppliers) for >10,000 Properties	*628,000*	*192,410*		*611*	*775*	*1,402*	*13,000*	*33,700*					*2*	*155*	*8*	*8*	*166*	*70*	*98*	*28*	*12*	*21,440*	*1,116*	*-3*	*478*	*320*	*2.2*	*2.5*	*26*	*22*	*431*	*472*	*100*
LWUs with 4,001 - 10,000 Properties																																		
111	Armidale Regional	10,140	3,610	72	714	379	1,093	9,750	32,800	Yes	100	Yes	100	3	130	19	7	207	90	99	82	33	827	15.1	-9	305	3.1	0.6	2.4	Y	Y	530	269	89
120	Snowy Monaro Regional (UF)	9,930	2,460	47*	689	930	1,619	14,800	38,600	Yes	100	Yes	100	4	120	18	50	151	50	63	19	4	64	15.0	-11	489	4.7	2.4	2.1	Y	Y	353	419	95
30	Griffith	8,360	7,320	83*	734	774	1,508	10,030	40,100	Yes	100	Yes	100	0.7	90	16	90	585	110	98	106	9	247	18.3	0	257	2.0	1.4	1.7	Y	Y	713	611	100
31	Lithgow	8,100	1,700	78	658	878	1,536	4,860	25,300	Yes	100	Yes	100	12				160	*30*	99	60	0	0	14.3	9	274	2.1	2.0	3.3	Y	Y	592	499	89
32	Mid-Western Regional	8,230	2,260	80	663	739	1,402	12,300	28,200	Yes	100	Yes	100	6	210	4	61	185	50	85	68	4	54	13.2	-5	229	1.8	2.2	1.0	Y	Y	502	472	89
116	Hilltops (R)	7,320	1,800	63	738	720	1,458	6,350	30,000	Yes	100	Yes	100	5	120	19	34	171	40	100	89	18	190	11.3	-4	531	3.0	1.8	2.9	Y	Y	325	277	89
33	Richmond Valley	7,210	2,810	74	437	918	1,355	13,100	30,000	Yes	100	Yes	100	0		3	0	150	100	98	-	16	377	13.2	3	537	3.7	1.0	2.0	Y	Y	501	644	100

APPENDIX D - 2015-16 NSW water utility performance summary

	WATER UTILITY	CHARACTERISTICS		BILLS / PRICING						HEALTH				LEVELS OF SERVICE				ENVIRONMENT						FINANCIAL								EFFICIENCY		BPM
		Water Supply Connected Properties	Total Urban Water Supplied	Residential Revenue from Usage Charges	Typical Residential Bill			Typical Developer Charge	Current Replacement Cost	Water Quality Compliance (2011 ADWG)				Water Quality Complaints	Avge Duration of Unplanned Interruption	Water Main Breaks	Total Complaints	Average Annual Residential Water Supplied	Real Water Loss	Sge Treated that was Compliant	Sge Mains Breaks & Chokes	Effluent Recycled		Total Revenue	Net Debt to Equity	Capital Expenditure		Economic Real Rate of Return		Full Cost Recovery		Operating Cost OMA		Implementation
					WS	SGE	WS & SGE			E.coli Compliance		Chemical Compliance		WS	WS	WS	WS & SGE					SGE		WS & SGE										
		(No.)[4]	(ML)[2, 3]	(%)	($)	($)	($)	($/ET)	($/assmnt)	Achieved? Note 12	% Pop'n with Compliance	Achieved? Note 11	% Pop'n with Compliance	(per 1000 props)	(mins)	(per 100km of Main)	(No./1000 props)	(kL/connected prop)	(L / connection / d)	(%)	(No. per 100km of main)	(%)	(ML)	($M)[3, 8]	(%)	($/prop) (25)	($M)	WS	SGE	WS	SGE	($/prop)	($/prop)	(%)
		(1) C4	(2) W11	(3) F4	(4) P3	(5) P6	(6) P8	(7)	(8)	(9)	(10) H3	(11)	(12) H4	(13) C9	(14) C15	(15) A8	(16) C13	(17) W12	(18) A10	(19) E4	(20) A14	(21) W27	(22) W26	(23) F1+F2	(24) F22	F28 + F29	(26) F16	(27) F17	(28) F18	(29)	(30)	(31) F11	(32) F12	(33)
35	Singleton	6,740	3,770	75*	501	495	996	8,620	20,600	Yes	100	Yes	100	2	330	9	39	258	60	100	45	0	0	11.8	-37	890	5.8	5.0	3.3	Y	Y	470	328	100
34	Nambucca (GW)	6,420	1,490	78	533	612	1,145	22,100	37,700	Yes	100	Yes	100	3	120	5	14	139	70	79	12	4	49	10.4	5	152	0.9	1.8	1.1	Y	Y	324	440	100
36	Parkes	5,990	4,990	81	679	436	1,115	15,400	42,800	Yes	100	Yes	100	3	120	11	72	283	140	70	28	18	155	12.2	-26	3,273	18.3	3.0	3.3	Y	Y	638	321	100
41	Muswellbrook	5,840	3,010	71*	581	595	1,176	13,690	29,200	Yes	100	Yes	100	13	299	26	22	254	70	39	11	90	863	9.5	-21	881	5.1	0.3	1.3	Y	Y	612	406	100
37	Inverell	5,790	1,930	48	601	476	1,077	15,000	30,500	Yes	100	Yes	100	0.3	60	2	12	186	50	99	32	0	0	7.3	-7	235	1.3	2.3	0.9	Y	Y	518	279	63
121	Snowy Valleys	5,660	1,990	77*	557	651	1,208	9,000	31,300	Yes	100	Yes	100	4	120	4	26	203	80	94	25	18	213	7.4	1	1,282	6.7	0.2	0.0	Y	Y	388	489	100
114	Federation	5,630	3,100	82	543	685	1,228	3,030	19,900	Yes	100	Yes	100	1	120	14	47	277	220	94	27	2	26	8.1	-11	437	2.4	1.5	1.9	Y	Y	469	415	100
40	Central Tablelands (NO SGE)	5,520	1,890	71*	662			8,700	21,100	Yes	100	Yes	100	5	90	8		196	110					5.7	-8	151	0.8	1.1			Y		612		100
39	Cowra	5,320	3,410	78*	857	804	1,661	13,100	36,300	Yes	100	Yes	100	3	180	2	88	248	120	100	180	0	0	10.5	4	235	1.1	2.3	3.1	Y	Y	748	492	100
38	Moree Plains (GW)	4,600	4,010	82*	1,372	650	2,022	11,600	32,100	Yes	100	Yes	100	6	60	49	140	696	160	100	46	46	655	10.3	2	799	3.3	4.7	1.1	Y	Y	734	499	100
117	Murray River (DS)	4,620	1,980	43	657	397	1,054	4,460	23,500	Yes	100	Yes	100	0.4	90	6	24	338	50	100	22	14	133	*6.5*	-13	253	1.1	3.3	1.1	Y	Y	457	306	95
45	Upper Hunter	4,600	2,640	72*	705	501	1,206	8,680	30,400	Yes	100	Yes	100	0.7	60	41	68	254	360	94	13	31	294	8.0	-11	715	3.2	2.3	-0.5	Y	Y	664	467	100
46	Narrabri (GW)	4,450	3,000	55	617	697	1,314	8,780	36,300	Yes	100	Yes	100	12	120	57	81	316	280	100	38	51	398	7.2	-24	803	3.4	3.1	0.0	Y	Y	542	454	89
44	Gunnedah (GW)	4,040	2,890	75	615	505	1,120	15,900	31,400	Yes	100	Yes	99	2	150	21	26	408	80	100	17	81	542	8.2	-24	497	2.0	4.8	4.8	Y	Y	478	230	100
47	Bellingen (UF)	4,100	1,230	78	370	882	1,252	11,100	33,400	Yes	100	Yes	100	2	120	5	8	155	70	94	29	0	0	5.5	-17	1,085	3.4	-0.2	0.4	Y	Y	390	656	100
48	Leeton	4,130	2,670	66	701	519	1,220	9,700	32,400	Yes	100	Yes	100	0	120	13	3	424	150	100	15	0	0	6.8	-21	289	1.0	2.0	1.1	Y	Y	539	489	95
Totals or Medians (% of LWUs basis) for 4,001 - 10,000 Properties		*143,000*	*65,940*		*658*	*651*	*1,224*	*10,030*	*31,350*					*3*	*120*	*12*	*34*	*248*	*80*	*98*	*29*	*12*	*5,087*	*236*	*-10*	*493*	*80*	*2.0*	*1.5*	*23*	*22*	*518*	*447*	*100*
LWUs with 1,501 - 4,000 Properties																																		
115	Cootamundra-Gundagai (R)	4,040	1,260	59	615	398	1,013	9,450	22,100	Yes	100	Yes	100	2	90	92	102	153	60	100	101	91	742	5.1	-14	300	1.1	1.0	1.6	Y	Y	339	267	84
51	Forbes	3,750	2,680	79	631	660	1,291	11,000	34,600	Yes	100	Yes	100	1	90	25	95	408	280	100	64	35	253	6.0	-18	385	1.4	0.4	2.5	Y	Y	615	365	100
53	Berrigan (DS)	3,570	3,070	41	841	501	1,342	7,850	22,600	Yes	100	Yes	100	6	60	19	78	461	100	100	89	76	629	5.3	-22	102	0.4	2.8	1.8	Y	Y	563	286	73
54	Edward River	3,630	2,700	62	798	789	1,587	7,750	29,200	Yes	100	Yes	100	1	90	77	19	553	120	100	28	11	54	5.1	-11	76	0.3	1.4	1.9	Y	Y	429	367	100
55	Warrumbungle	3,310	1,230	54	791	469	1,260	2,910	33,200	Yes	95	Yes	100	1	115	42	40	231	240	80	45	25	83	4.6	-8	144	0.4	0.5	-1.0	Y	N	678	512	79
56	Yass Valley	3,300	950	57	988	620	1,608	18,800	35,700	Yes	100	Yes	100	1	240	8	40	186	90	100	36	0	0	8.7	26	0		3.6	10.4	Y	Y	455	435	100
60	Glen Innes Severn	2,960	550	53	597	473	1,070	5,860	18,300	Yes	100	Yes	100	0	180	0	18	145	40	100	47	0	0	3.5	6	380	1.1	1.6	2.9	Y	Y	437	258	100
59	Lachlan	2,850	2,630	83	2,069	545	2,614	13,600	54,400	Yes	100	Yes	100	0	100	7	15	734	350	63	45	22	116	5.0	-14	398	1.1	-0.5	-1.1	Y	Y	813	436	100
61	Liverpool Plains	2,570	900	39	953	516	1,469	14,000	38,300	Yes	100	Yes	100	8	30	14	132	205	100	18	12	0	0	4.4	-11	1,503	3.9	2.5	1.8	Y	Y	559	301	84
74	Wentworth (DS)	2,340	1,740	54	826	720	1,546	9,080	38,700	Yes	100	Yes	100	0	35	5	45	669	*20*	100	15	0	0	3.9	-17	427	0.8	3.5	1.4	Y	Y	497	305	94
67	Cobar	2,260	1,230	77	919	330	1,249	2,110	21,000	Yes	100	Yes	100	21			41	405	60	100	0	0	0	4.1	-17	0		2.5	1.0	Y	Y	1181	197	100
66	Cobar Water Board (BS) (NO SGE)		2,290																					3.3				-0.9		Y*				43
62	Narromine (GW)	2,160	1,150	73	689	565	1,254	8,410	22,400	Yes	100	Yes	100	1	60	16	5	423	100	100	9	0	0	2.9	-26	1,219	2.6	4.4	1.1	Y	Y	511	383	100
63	Narrandera (GW)	2,090	2,190	65*	784	518	1,302	2,800	21,600	Yes	100	Yes	100	0	110	24		501	150	29	-	1		3.0	-27	474	0.8	2.6	1.2	Y	Y	452	412	84
68	Tenterfield	1,980	400	51*	754	877	1,631	12,000	38,600	Yes	100	Yes	100	0	180	19	76	139	30	57	153	16	51	3.6	0	580	1.1	0.9	0.5	Y	*Y*	566	*504*	100
73	Upper Lachlan	2,010	390	54	810	752	1,562	7,850	33,300	Yes	100	Yes	100	0	120	9	8	141	30	100	9	9	50	3.3	-11	347	0.6	0.7	1.3	Y	Y	604	476	89
79	Walgett (DS)	1,930	1,190	34*	1,195	454	1,649		26,800	Yes	42	Yes	100	3		45	4	522	*60*	75	10	0	0	2.8	-19	28	0.1	-2.5	3.1	Y*	Y	1096	200	63
70	Kyogle	1,900	430	43	550	662	1,212	5,510	29,400	Yes	100	Yes	100	2	90	7	21	137	30	100	5	10	38	3.0	-1	2,027	3.9	1.4	1.3	Y	Y	631	510	95
80	Greater Hume	1,900	710	62*	813	504	1,317	7,190	34,200	Yes	100	Yes	100	0	90	5	19	264	100	100	4	13	57	3.5	-7	495	1.1	-0.1	0.7	Y	Y	500	326	100
75	Coonamble (GW)	1,680	1,180	71*	704	479	1,183		37,400	Yes	100	Yes	100	0	60	16	71	584	60	50	7	21	54	2.1	-24	270	0.4	0.7	0.0	Y	Y	437	255	78
Totals or Medians (% of LWUs basis excl bulk suppliers) for 1,501 - 4,000 Properties		*50,000*	*28,870*		*798*	*518*	*1,317*	*7,850*	*33,200*					*1*	*90*	*16*	*40*	*405*	*90*	*100*	*21*	*10*	*2,127*	*83.1*	*-14*	*380*	*21*	*1.2*	*1.3*	*20*	*18*	*559*	*365*	*95*

APPENDIX D - 2015-16 NSW water utility performance summary

	WATER UTILITY	CHARACTERISTICS		BILLS / PRICING						HEALTH				LEVELS OF SERVICE				ENVIRONMENT						FINANCIAL								EFFICIENCY		BPM
		Water Supply Connected Properties	Total Urban Water Supplied	Residential Revenue from Usage Charges	Typical Residential Bill			Typical Developer Charge	Current Replacement Cost	Water Quality Compliance (2011 ADWG)				Water Quality Complaints	Avge Duration of Unplanned Interruption	Water Main Breaks	Total Complaints	Average Annual Residential Water Supplied	Real Water Loss	Sge Treated that was Compliant	Sge Mains Breaks & Chokes	Effluent Recycled		Total Revenue	Net Debt to Equity	Capital Expenditure		Economic Real Rate of Return		Full Cost Recovery		Operating Cost OMA		Implementation
					WS	SGE	WS & SGE	WS & SGE	WS & SGE	E.coli Compliance		Chemical Compliance		WS	WS	WS	WS & SGE					SGE		WS & SGE	WS & SGE	WS & SGE		WS	SGE	WS	SGE	WS	SGE	WS & SGE
		(No.)[4]	(ML)[2, 3]	(%)	($)	($)	($)	($/ET)	($/assmnt)	Achieved? Note 12	% Pop'n with Compliance	Achieved? Note 11	% Pop'n with Compliance	(per 1000 props)	(mins)	(per 100km of Main)	(No./1000 props)	(kL/connected prop)	(L / connection / d)	(%)	(No. per 100km of main)	(%)	(ML)	($M)[3, 8]	(%)	($/prop) (25)	($M)					($/prop)	($/prop)	(%)
		(1) C4	(2) W11	(3) F4	(4) P3	(5) P6	(6) P8	(7)	(8)	(9)	(10) H3	(11)	(12) H4	(13) C9	(14) C15	(15) A8	(16) C13	(17) W12	(18) A10	(19) E4	(20) A14	(21) W27	(22) W26	(23) F1+F2	(24) F22	F28 + F29	(26) F16	(27) F17	(28) F18	(29)	(30)	(31) F11	(32) F12	(33)
LWUs with 200 - 1,500 Properties																																		
81	Gwydir	1,470	810	49	757	500	1,257	4,000	24,000	Yes	100	Yes	100	3	180	12	4	294	110	81	76	3	9	2.2	-6	252	0.4	2.6	2.3	Y	Y	570	365	89
85	Uralla	1,490	340	59	721	540	1,261	1,460	17,900	Yes	100	Yes	100	4	120	13	15	189	20	75	43	0	0	1.6	-12	31	0.0	0.5	0.1	Y	Y	445	342	68
87	Bourke (DS)	1,400	1,670	78	1,221	673	1,894	1,760	31,000	Yes	100	Yes	100	0	60	110	153	1,157	80	100	18	0	0	2.5	-14	1,480	1.8	-2.3	2.0	Y*	Y	833	369	94
84	Gilgandra (GW)	1,330	920	71	804	602	1,406		38,000	Yes	100	Yes	100	7	75	33	97	567	140	100	68	85	221	1.8	-9	685	0.9	-0.1	0.5	Y	Y	390	393	89
86	Hay (DS)	1,350	1,010	54	751	664	1,415		34,300	Yes	100	Yes	100	4	120	13	70	527	210	100	65	0	0	2.0	-17	374	0.5	0.4	-1.2	Y	N	581	650	84
83	Oberon (R)	1,300	710	73	755	590	1,345	3,160	25,000	Yes	100	Yes	100	0	120	8	12	152	100	100	18	0	0	2.8	-10	79	0.1	4.4	3.3	Y	Y	955	422	90
118	Murrumbidgee (GW)	1,280	1,240	62*	507	375	882	2,450	28,600	Yes	100	Yes	100	1		8	2	1,045	*100*	0	6	0	0	1.3	-19	749	1.0	0.9	-0.7	Y	Y	412	267	68
92	Carrathool (GW)	1,170	1,320	50*	804	425	1,229	1,790	27,100	Yes	100	Yes	100	2	60	10	69	534	270	100	48	0	0	2.1	2	963	1.1	3.1	1.6	Y	Y	876	191	52
89	Bogan	1,110	730	59	1,320	540	1,860		42,100	Yes	100	Yes	100	0	211	60	182	419	200	25	0	37	60	3.5	-15	426	0.5	2.4	0.0	Y	Y	1886	565	100
91	Cabonne	1,170	350	61	606	487	1,093	13,000	55,500	Yes	100	Yes	100	0.9	120	13	8	197	80	61	16	26	79	3.0	-3	1,206	1.9	-0.1	-0.9	Y	Y*	593	589	100
96	Warren (DS)	940	790	50	766	500	1,266		29,900	Yes	100	Yes	100	10	120	267	94	630	100	77	294	0	0	1.2	-17	705	0.7	-0.6	-2.9	Y*	N	547	451	89
98	Walcha	920	200	63*	572	460	1,032		27,500	Yes	100	Yes	100	0	120	7	12	133	60	25	23	0	0	1.0	-7	163	0.1	-1.4	0.3	Y*	Y	697	404	89
100	Balranald (DS)	880	1,000	60	1,087	269	1,356	1,330	32,300	Yes	73	Yes	100	0	45	31	10	1,038	60	100	-	0	0	1.3	-8	73	0.1	2.0	-5.0	Y	N	622	266	68
103	Central Darling (DS)	730	390	81	1,381	488	1,869		75,300	Yes	100	Yes	100	69	60	18	420	638	30	100	113	0	0	0.9	-4	234	0.2	-2.2	-0.2	Y*	Y*	1011	466	73
105	Brewarrina (DS)	470	880	74	2,055	774	2,829		49,100	Yes	100	Yes	100	0	15	74	42	1,629	*110*	84	13	0	0	1.5	-17	1,393	0.7	0.6	1.0	Y	Y	1479	531	89
	Totals or Medians (% of LWUs basis) for 200 - 1,500 Properties	*17,000*	*12,360*		*766*	*500*	*1,345*	*2,120*	*31,000*					*1*	*120*	*13*	*42*	*534*	*100*	*84*	*33*	*0*	*369*	*28.7*	*-10*	*426*	*9.8*	*0.5*	*0.1*	*15*	*12*	*622*	*404*	*89*
LWUs without Water Supply																																		
9	Wagga Wagga	27,710	250			454		3,760	13,500								38			100	72	96	5,679	18.6	5	146	4.1		0.9		Y		405	100
30A	Hawkesbury	7,660	7			666		8,610	21,500								15			100	34	7	142	6.8	-1	80	0.6		-0.8		Y*		691	100
69	Temora	2,160	61			326			9,100								19			83	73	19	61	0.8	-5	325	0.7		1.3		Y		219	56
72	Bland	1,840	270			685		2,120	11,800								13			100	41	92	270	1.3	-3	44	0.1		2.9		Y		418	78
77	Junee	1,670	100			365		1,350	12,000								1			67	56	25	104	0.7	-13	0	0.0		-0.6		N		269	44
78	Blayney	1,950	300			545		3,950	15,700								14			100	32	62	301	1.3	-18	175			-0.8		N		489	89
95	Weddin	1,010				512		3,730	11,900								72			100	210	0	0	0.5	-11	63	0.1		2.3		Y		331	78
99	Coolamon	1,010				410		4,500	17,000								6			100	9	42	75	0.5	-11	128	0.1		-0.1		Y		327	56
102	Lockhart	870	2			490		1,320	13,800								21			58	0	1	2	0.4	-27	0			-0.1		Y		325	89
	Totals or Medians (% of LWUs basis) for LWUs without WS	*38,000*	*990*			*490*		*3,745*	*13,500*								*15*			*100*	*41*	*25*	*6,634*	*31.1*	*-11*	*80*	*5.6*		*-0.1*		*6*		*331*	*78*
	Statewide Totals & Medians	Total 838,000 WS Connected Properties	Total 300,000 ML (notes 6 and 15)	Median 73% (notes 7 and 10)	Median $601 per assmnt (note 7)	Median $697 per assmnt (note 7)	Median $1,298 per assmnt (note 7)	Median $10,400 per ET (note 7)	Total $28,100M Median $32,800 per assmnt (note 6)	100% of LWUs (82 of 82 LWUs) complied with E.coli guidelines. (note 12)		100% of LWUs (82 of 82 LWUs) complied with chemical guidelines (note 11)		Median 3 Quality Complaints per 1000 props	Median 150 (mins) (note 7)	Median 9 Breaks per 100km (note 7)	Median 26 no. per 1000 props	Median 162kL /connected prop (notes 7 and 15)	Median 70L /connctn / day	Median 100% of Sge treated was compliant (note 13)	Median 38 Breaks & chokes / 100km	70% of LWUs reused effluent 20% of effluent was recycled	Total 35,500 ML (note 16)	Total $1,490 million (note 6)	Median -3% (note 8)	Median $398 per property (note 8)	Total $440 million (note 8)	Median 2.3% (note 8)	Median 2.5% (note 8)	100% of WS LWUs had full cost recovery (note 8)	93% of SGE LWUs had full cost recovery (note 8)	Median $440 per property (note 8)	Median $470 per property (note 8)	92% Overall implementation of BPM (note 14)

Notes

1. This table shows the key 2015-16 performance indicators for NSW water utilities. More detailed indicators are shown in Tables 6 to 18 and Figures 1 to 68 of the 2015-16 NSW Water Supply and Sewerage Benchmarking Report.
2. No WS = not responsible for water supply; No SGE = not responsible for sewerage;
   BS = bulk supplier; DS = dual supply; GW = groundwater; UF = unfiltered; R = reticulator.
   For LWUs with No WS or No SGE, results are shown left justified and are not included in the median calculation for water supply and sewerage.
   NWI indicator numbers are shown in bold below the column number (eg. column (1), NWI indicator C4).
3. Where an LWU has not reported an item for 2015-16, the value previously reported has been used where available.
   Such values are shown in this table in ***italics bold*** .
4. The number of connected properties shown in column (1) for LWUs with "No WS" is the number of sewerage connected properties.
5. NSW Water Utilities
   In NSW there are 96 water utilities comprising:
   - 4 metropolitan water utilities (Sydney and Hunter Water Corporations, Water NSW (from 1 January 2015, formerly Sydney Catchment Authority (SCA)) and Hawkesbury Council), and
   - 92 regional Local Water Utilities (LWUs).

   The 92 LWUs comprise:
   - 88 local government councils (under *Local Government Act 1993*),
   - 4 LWUs (Central Coast Council, Cobar WB, Fish River WS, Essential Energy) under the *Water Management Act 2000* .

   Of the 92 LWUs,
   - 84 were responsible for water supply (including 3 for bulk supply - Cobar WB, Fish River WS and Rous Water)
   - 86 were responsible for sewerage.
   - 78 were responsible for both water supply and sewerage, 6 for water supply only and 8 for sewerage only.
6. Totals for Regional NSW
   The totals shown below are for regional NSW and therefore exclude Sydney and Hunter Water Corporations, Water NSW and Hawkesbury Council. The totals exclude double-counting where bulk water suppliers are involved.
   - *Number of water supply connected properties* in regional NSW was 838,000 (col (1)).
   - *Total annual urban water supplied* was 300,000 ML (column (2)).
   - *Total revenue* for water supply and sewerage was $1,490M (column (23)).
   - *Total current replacement cost (CRC)* of WS and SGE assets was $28,100M, with a median of $32,800 per assessment (column (8)).
7. Statewide medians (regional LWUs):
   - *Residential revenue from water usage charges* - Median is 73% (column (3)), which has increased from 20% to 73% over the past 21 years due to LWU tariff reform and strong pricing signals to encourage efficient water use.
   - *Typical residential bill (TRB)* for water and sewerage - $1,298/assessment for 2015-16 (column (6)).
     The water supply TRB was $601 (column (4)) and the sewerage TRB was $697 (column (5)).
   - *Typical developer charge* for water and sewerage - $10,400/ET for 2015-16 (column (7) and Appendices E and F).
   - *Water quality complaints* - 3 per 1000 properties (column (13)).
   - *Average duration of unplanned interruptions* for water supply - 150 minutes (column (14)).
   - *Water main breaks* - 9 breaks per 100km of main (column (15)).
   - *Total water supply and sewerage complaints* - 26 per 1000 properties (column (16)).
   - *Average annual residential water supplied* - 162 kL/connected property (col (17)). This has decreased by 51% since 1991.
   - *Real water loss* - 70 L/connection/day (column (18)).
   - *Median sewage volume that was compliant* - 100% (column (19)).
   - *Median sewerage main breaks and chokes* - 38 per 100km of main (column (20)).
8. Statewide medians (financial):
   The financial results for the amalgamated LWUs are for the period 1 July 2015 to 12 May 2016 and have been excluded from median calculations.
   The Gosford component of Central Coast Council's financial results are from the draft 2015-16 Gosford City Council financial statements.
   The Palerang component of Queanbeyan-Palerang Regional Council's financial results are from the 2014-15 Palerang Council financial statements.
8. Statewide medians (financial) continued from left:
   - *Economic real rate of return (ERRR)* for water supply and sewerage was 1.8%.
     The water supply ERRR was 2.3% and the sewerage ERRR was 2.5% (columns (27) and (28)).
     All LWUs are achieving full cost recovery for water supply and 93% for sewerage (columns (29) and (30)).
     The remaining 6 sewerage utilities which are not achieving full cost recovery need to do so. Refer also to Appendices E and F.
   - *Net debt/equity* for water and sewerage was -3% (column (24)).
   - *Operation, maintenance & administration cost (OMA)* for water supply was $440 and sewerage was $470 (cols (31) & (32)).
     OMA includes part of the OMA cost of the bulk water supplier but excludes the purchase cost of water. However, NWI indicator F11 includes the purchase cost of water and therefore may differ from column (31). Refer to Appendix G.
   - *Management cost* for water supply and sewerage - $312/connected property.
     Water supply management cost was $148 and sewerage management cost was $164 per connected property.
   - *Capital expenditure* for water supply and sewerage - $398/property (column (25)).
     The total capital expenditure for water supply and sewerage was $440M (column (26)).
9. Category 1 Businesses - 63 LWUs are Category 1 businesses (ie. with an annual revenue of over $2M) as defined in the *NSW Government's Policy Statement on Application of National Competition Policy to Local Government, June 1996* .
   62 such LWUs are responsible for water supply and 49 such LWUs are responsible for sewerage.
10. Pay-for-use water supply tariff - All of the 81 LWUs providing a reticulated water supply have a pay-for-use water supply tariff (Appendix E) (ie. a two-part tariff or an inclining block tariff). Such tariffs comply with IPART recommendations and the *COAG Strategic Framework for Water Reform* .
11. Physical and chemical water quality - 99% of the 3,700 physical samples and 99.8% of the 3,100 chemical samples tested for NSW LWUs achieved 100% compliance with the *2011 Australian Drinking Water Guidelines (ADWG)* .
    All LWUs complied with chemical quality (health related) and are shown as 'Yes' in column (11).
    All LWUs complied with physical quality. The results shown for H4 in column 12 are based on population.
12. Microbiological water quality - E.coli contamination is the primary health-related indicator.
    - *E.coli* - 99.9% of the 21,600 samples tested for NSW LWUs achieved 100% compliance with the *2011 ADWG.*
      All LWUs complied with these guidelines and are shown as 'Yes' in column (9).
      The public drinking water supply for 99.8% and 99.2% of the urban population in regional NSW complied with the microbiological and chemical requirements of the *2011 ADWG respectively* (columns (10) and (12)).
13. Compliance with EPA Discharge Licence for Sewerage
    - *BOD* - 99% of the 4,290 sampling days for NSW LWUs achieved 100% compliance with the 90-percentile limit of their EPA licence for BOD (Biochemical Oxygen Demand). 90% of LWUs complied with the EPA licence for BOD.
    - *SS* - 96% of the 4,290 sampling days for NSW LWUs achieved 100% compliance with the 90-percentile limit of their EPA licence for SS (Suspended Solids). 84% of LWUs complied with their EPA licence for SS.
      14 LWUs had no EPA discharge licence limit.
14. Best-Practice implementation - overall the LWUs have implemented 92% of the outcomes required by the NSW Best-Practice Management Framework (column (33)).
15. Total Urban Water Supplied of 300,000 ML (column (2)) comprises 270,000 ML potable water, 19,800 ML non-potable water and 11,700 ML recycled water. Similarly, the average annual residential water supplied (column (17)) includes non-potable & recycled water.
16. Reuse of recycled water comprised 35,500 ML which is 20% of the volume of sewage collected and was carried out by 70% of utilities, mostly for agricultural purposes (columns (21) and (22)).
17. National Water Initiative (NWI) Indicators - The 31 NSW water utilities with over 10,000 connected properties (3 metropolitan utilities and 28 regional utilities) are required to report their performance under the NWI. The results that have met the rigorous NWI auditing requirements have been published in the *National Performance Report 2015-16.* Refer also to Note 12 on page 30.
18. The performance indicators for Sydney and Hunter Water Corporations and Water NSW were obtained from the *National Performance Report 2015-16 for Urban Water Utilities* (www.bom.gov.au).

APPENDIX E - Water supply - residential charges, bills & cost recovery

RESIDENTIAL CHARGES

No.	WATER UTILITY	Type of Tariff (1) P1 15/16	Type of Tariff (1) P1 16/17	Fixed Charge (or Minimum) ($) (2) P1.2 14/15	Fixed Charge 15/16	Fixed Charge 16/17	Usage Charge Step 1 Step (kL) (5a) P1.3 14/15	Step 1 Step (kL) 15/16	Step 1 Step (kL) 16/17	Step 1 Charges (c/kL) (5b) P1.3 14/15	Step 1 Charges 15/16	Step 1 Charges 16/17	Step 2 Step (kL) (5c) P1.4 14/15	Step 2 Step (kL) 15/16	Step 2 Step (kL) 16/17	Step 2 Charges (c/kL) (5d) P1.4 14/15	Step 2 Charges 15/16	Step 2 Charges 16/17	Billing (2006 National Guidelines) (% Implementation) (5e) 14/15	Billing 15/16
	Sydney Water	Two Part	Two Part	116	103	90	All	All	All	230	228	200							100	100
	Hunter Water	Two Part	Two Part	18	18	26	All	All	All	220	222	225							100	100
	LWUs with > 10,000 Properties																			
112	Central Coast	Two Part	Two Part	150	174	198	All	All	All	223	226	229							100	100
3	Shoalhaven	Two Part	Two Part	81	80	82	All	All	All	160	165	170							100	100
4	Rous (Bulk Supplier) (No Sge)																			
5	MidCoast	Inclining Block	Inclining Block	205	215	232	<200	<200	<200	270	292	315	>200	>200	>200	302	326	352	97	97
6	Tweed	Inclining Block	Inclining Block	148	159	166	<300	<300	<300	245	270	285	>300	>300	>300	370	405	425	100	100
7	Port Macquarie-Hastings (Unfiltere	Inclining Block	Inclining Block	183	194	197	<270	<270	<270	255	270	275	>270	>270	>270	510	540	550	33	33
8	Riverina (Groundwater) (No Sge)	Inclining Block	Inclining Block	160	160	160	<500	<500	<500	133	140	140	>500	>500	>500	200	210	210	100	100
11	Albury City	Inclining Block	Inclining Block	113	128	138	<225	<225	<225	118	130	139	>225	>225	>225	216	227	234	100	100
10	Coffs Harbour	Inclining Block	Inclining Block	143	143	143	<365	<365	<365	263	267	271	>365	>365	>365	395	401	407	100	100
13	Tamworth Regional	Inclining Block	Inclining Block	248	254	259	<400	<400	<400	142	145	148	400-800	400-800	400-800	213	218	222	80	80
14	Clarence Valley	Inclining Block	Inclining Block	149	177	116	<450	<450	<450	179	191	237	>450	>450	>450	268	287	356	95	95
122	Dubbo Regional	Two Part	Two Part	242	250	255	All	All	All	185	191	194							100	100
119	Queanbeyan-Palerang (Reticulato	Inclining Block	Two Part	381	417	251	<160	<176	<176	274	297	372	>160	>176	>176	402	456		100	100
15	Eurobodalla	Two Part	Two Part	282	289	294	All	All	All	340	348	352							98	98
12	Fish River WS (Bulk Supplier) (No																			
16	Wingecarribee	Inclining Block	Inclining Block	154	158	158	<225	<225	<225	174	178	178	>225	>225	>225	261	267	267	80	80
19	Orange	Inclining Block	Inclining Block	222	252	259	<450	<450	<450	202	220	227	>450	>450	>450	303	330	340		
21	Bathurst Regional	Inclining Block	Inclining Block	121	156	164	<250	<250	<250	180	180	189	>250	>250	>250	270	270	284		
23	Bega Valley (Unfiltered)	Two Part	Two Part	198	203	207	All	All	All	250	270	275							99	99
24	Ballina (Reticulator)	Inclining Block	Inclining Block	189	195	200	<350	<350	<350	202	208	214	>350	>350	>350	304	313	322	100	100
22	Lismore (Reticulator)	Two Part	Two Part	204	234	248	All	All	All	299	322	341							75	75
25	Kempsey (Groundwater)	Inclining Block	Inclining Block	255	268	281	<250	<250	<250	209	219	230	>250	>250	>250	301	316	332	95	95
27	Byron (Reticulator)	Inclining Block	Inclining Block	155	175	179	<450	<450	<450	232	242	247	>450	>450	>450	348	363	370	90	90
20	Goulburn Mulwaree	Inclining Block	Inclining Block	165	170	170	<292	<292	<292	280	280	280	>292	>292	>292	378	378	378	25	25
26	Essential Energy	Two Part	Two Part	313	317	321	All	All	All	172	174	177							100	100
28A	Goldenfields (Reticulator) (No Sge	Two Part	Two Part	174	178	183	All	All	All	212	217	224							100	100
28B	Goldenfields (Bulk Supplier) (No S																			
	Medians (% of LWUs basis excl bulk suppliers) for >10,000 Properties			*178*	*186*	*197*				*211*	*220*	*230*				*303*	*321*	*340*		
	LWUs with 4,001 - 10,000 Properties																			
111	Armidale Regional	Inclining Block	Inclining Block	215	215	220	<400	<400	<400	241	241	247	400-1000	400-1000	400-1000	320	320	328	10	10
120	Snowy Monaro (Unfiltered)	Inclining Block	Inclining Block	360	363	372	<300	<300	<300	210	230	236	>300	>300	>300	330	350	359	99	99
30	Griffith	Inclining Block	Inclining Block	129	129	132	<200	<200	<200	65	67	69	>200	>200	>200	125	130	135	15	15
31	Lithgow	Inclining Block	Inclining Block	150	160	168	<250	<250	<250	296	311	311	>250	>250	>250	445	467	467	40	40
32	Mid Western Regional	Two Part	Two Part	140	144	148	All	All	All	275	281	291							30	30
116	Hilltops (Reticulator)	Two Part	Two Part	250	275	303	<480	All	All	246	270	297	>480			369			50	50
33	Richmond Valley	Inclining Block	Inclining Block	127	133	139	<200	<200	<200	194	203	212	>200	>200	>200	292	307	322		
35	Singleton	Inclining Block	Inclining Block	149	154	136	<450	<450	<450	122	135	155	>450	>450	>450	226	245	265	100	100
34	Nambucca (Groundwater)	Two Part	Two Part	128	128	138	All	All	All	290	290	283								

OPERATING COST, DEVELOPER CHARGE, TYPICAL BILL & COST RECOVERY

No.	WATER UTILITY	Operating Cost (OMA) (c/kL) (6) 13/14	OMA 14/15	OMA 15/16	Typical Developer Charge ($/ET) (7) 14/15	Developer Charge 15/16	Developer Charge 16/17	Typical Residential Bill based on Col(14b) (Includes Special Levies) (8) P3 14/15	Bill 15/16	Bill 16/17	Return on Assets (%) (11) 13/14	Return on Assets 14/15	Return on Assets 15/16	ERRR (Water Supply) (%) (12) F17 13/14	ERRR 14/15	ERRR 15/16	Residential Revenue from Usage Charges (% of residential bills) (13) F4 14/15	Residential Revenue 15/16	Avge Annual Residential Water Supplied[3] Potable kL/prop (14a) 14/15	Potable kL/prop 15/16	Potable + Non Potable kL/prop (14b) W12 14/15	Potable + Non Potable kL/prop 15/16	L/c/d (14c) 15/16	Full Cost Recovery? (FCR) (Y/Y*/N) (14d) 15/16	Total Connected Properties (15) C4 15/16
	Sydney Water							571	560	492				1.9	2.3	3.0	80	81	201	201	201	201		Y	1,899,000
	Hunter Water							390	387	399				3.5	2.5	3.0	95	96	168	166	168	166		Y	242,000
	LWUs with > 10,000 Properties																								
112	Central Coast	145	147	121	2,906	2,956	3,020	496	523	551	0.0	0.4	0.8	1.2	1.5	1.6	73	67	155	154	155	155	172	Y*	137,800
3	Shoalhaven	87	92	92	6,580	6,580	6,580	309	328	337	1.6	2.3	1.7	0.9	1.7	1.2	75*	76	142	150	143	150	204	Y	47,480
4	Rous (Bulk Supplier) (No Sge)	96	99	100	9,090	9,250	8,260				1.2	1.3	2.5	1.7	1.8	3.0		0						Y	41,420
5	MidCoast	166	202	196	5,980	6,160	6,160	587	621	670	-0.7	-0.9	-1.2	0.7	0.7	0.3	72	69	142	139	142	139	170	Y	39,740
6	Tweed	138	147	150	12,910	13,130	13,390	584	604	637	1.7	0.9	1.5	2.4	1.6	2.2	75*	75	178	165	178	165	179	Y	32,580
7	Port Macquarie-Hastings (Unfiltere	172	181	170	9,800	9,550	9,610	568	619	630	1.8	1.6	4.6	1.7	1.2	4.1	68	70	151	158	151	158	147	Y	30,380
8	Riverina (Groundwater) (No Sge)	63	52	44	4,930	5,920	4,930	574	627	627	5.6	7.9	5.9	5.3	7.5	5.7	74	76	311	333	311	333	343	Y	31,710
11	Albury City	86	87	80	3,000	3,050	3,110	354	418	448	1.9	2.2	3.2	1.7	1.9	2.8	75	76	205	223	205	223	279	Y	25,360
10	Coffs Harbour	149	161	156	9,940	10,130	10,290	582	590	596	-0.2	0.6	0.9	1.2	2.0	2.3	76*	76*	167	167	167	167	149	Y	25,060
13	Tamworth Regional	105	131	104	4,630	4,710	4,790	515	619	631	3.6	2.3	2.9	3.3	2.0	2.6	55	60	188	251	188	251	300	Y	22,010
14	Clarence Valley	121	133	122	5,120	5,210	5,320	413	480	491	0.2	-0.1	0.5	0.7	0.4	0.9	66	76*	147	158	147	158	180	Y	21,530
122	Dubbo Regional	103	100	86	5,329	5,349	5,350	817	866	880	2.7	4.5	4.7	3.4	5.1	5.1	74	71	311	322	311	322	386	Y	20,700
119	Queanbeyan-Palerang (Reticulato	134	145	137	8,595	8,732	8,850	864	901	857	1.0	0.9	1.1	0.9	0.7	0.9	61	71*	171	163	171	163	194	Y	20,820
15	Eurobodalla	229	225	232	11,590	11,780	12,020	668	695	705	0.3	1.0	1.4	0.4	1.1	1.3	58	58	114	117	114	117	190	Y	19,720
12	Fish River WS (Bulk Supplier) (No										15.6			15.6										Y*	23,500
16	Wingecarribee	108	130	120	6,480	6,540	6,690	463	489	489	2.1	1.8	3.8	1.8	1.5	3.5	68	71	178	186	178	186	218	Y	19,350
19	Orange	92	81	100	7,490	7,560	7,660	564	631	651	3.3	4.4	4.0	2.9	4.0	3.5	70	64	170	173	170	173	185	Y	18,020
21	Bathurst Regional	118	122	123	5,100	5,400	5,410	522	576	605	2.0	1.7	1.5	1.8	1.6	1.4	82	79	223	233	225	235	274	Y	16,070
23	Bega Valley (Unfiltered)	193	225	233	7,910	8,040	8,200	541	568	579	-0.3	-0.5	-1.0	-0.6	-0.8	-1.2	65*	64	137	135	137	135	199	Y*	14,420
24	Ballina (Reticulator)	89	84	86	3,540	3,160	3,220	555	545	560	0.7	1.8	2.1	0.3	1.2	1.6	66	65	181	168	181	168	165	Y	15,240
22	Lismore (Reticulator)	124	122	124	2,910	3,050	1,400	666	735	778	-0.1	1.3	2.3	0.2	1.6	2.5	70	68	155	155	155	155	167	Y	14,020
25	Kempsey (Groundwater)	157	157	149	9,300	9,450	9,570	580	594	623	-0.8	0.7	0.0	0.0	1.3	0.7	59	56	156	149	156	149	172	Y	12,470
27	Byron (Reticulator)	93	91	98	3,440	3,500	3,560	574	584	596	2.1	2.1	3.6	1.6	1.6	3.1	73	71	180	169	180	169	222	Y	11,450
20	Goulburn Mulwaree	143	174	131	3,370	3,370	3,370	624	663	623	0.7	0.4	0.7	1.0	0.8	1.1	65*	73*	139	162	139	162	202	Y	11,290
26	Essential Energy	197	170	238				755	722	733							59	57	257	233	257	233	324	Y*	10,530
28A	Goldenfields (Reticulator) (No Sge	105	109	112	7,080	7,430	7,800	750	779	804	2.7	4.0	4.5	2.3	3.6	3.9	78	78	272	277	275	280	240	Y	10,290
28B	Goldenfields (Bulk Supplier) (No S	31	31	31							1.3	0.5	0.8	0.9	0.0	0.3								Y	19,780
	Medians (% of LWUs basis excl bulk suppliers) for >10,000 Properties	*123*	*132*	*123*	*5,980*	*6,160*	*6,160*	*574*	*611*	*625*	*1.6*	*1.6*	*1.7*	*1.2*	*1.6*	*2.2*	*70*	*69*	*171*	*166*	*171*	*166*	*197*	*0 LWU without FCR*	
	LWUs with 4,001 - 10,000 Properties																								
111	Armidale Regional	150	138	149	4,916	5,112	6,190	685	714	732	0.9	1.7	0.9	0.9	1.6	0.6	79	72	195	207	195	207	222	Y	10,140
120	Snowy Monaro (Unfiltered)	201	167	142	6,181	7,859	6,260	755	689	706	0.6	0.9	2.7	0.3	0.6	2.4	41	47*	188	142	198	151	274	Y	9,930
30	Griffith	70	76	75	5,160	5,900	6,630	690	734	759	1.0	0.9	1.7	0.7	0.7	1.4	82*	83*	545	562	567	585	434	Y	8,360
31	Lithgow	162	232	196	2,700	2,700	3,000	540	658	666	3.5	0.0	1.8	2.0	0.4	2.0	83	78	132	160	132	160	200	Y	8,100
32	Mid Western Regional	148	165	178	8,250	8,460	8,670	649	663	685	2.5	2.8	2.3	2.6	2.8	2.2	80	80	185	185	185	185	219	Y	8,230
116	Hilltops (Reticulator)	58	81	102	1,730	3,263	3,330	671	738	811	-0.4	-0.3	2.2	-0.6	-0.7	1.8	69	63	171	171	171	171	187	Y	7,320
33	Richmond Valley	113	114	108	5,040	5,130	5,220	460	437	457	0.3	1.0	1.1	0.3	0.9	1.0	75	74	172	150	172	150	155	Y	7,210
35	Singleton	107	87	83	5,230	5,390	5,550	455	501	535	3.7	1.7	6.9	1.3	-0.5	5.0	69*	75*	251	258	251	258	219	Y	6,740
34	Nambucca (Groundwater)	143	152	140	12,360	12,570	12,780	517	533	533	1.3	1.2	0.6	2.1	2.2	1.8	77	78	134	139	134	139	156	Y	6,420

APPENDIX E - Water supply - residential charges, bills & cost recovery

RESIDENTIAL CHARGES

WATER UTILITY		Type of Tariff (1) P1		Fixed Charge (or Minimum) ($) (2) P1.2			Usage Charge Step 1 – Step (kL) (5a) P1.3			Step 1 – Charges (c/kL) (5b) P1.3			Step 2 – Step (kL) (5c) P1.4			Step 2 – Charges (c/kL) (5d) P1.4			Billing (2006 National Guidelines) (% Implementation) (5e)	
		15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16
36	Parkes	Inclining Block	Inclining Block	215	180	180	<400	<400	<400	165	180	185	>400	>400	>400	310	320	325	70	100
41	Muswellbrook	Inclining Block	Inclining Block	175	175	175	<350	<350	<350	152	160	169	>350	>350	>350	228	240	253	100	100
37	Inverell	Inclining Block	Inclining Block	330	347	364	<500	<600	<600	130	137	145	>500	>600	>600	150	160	170		
121	Snowy Valleys	Two Part	Two Part	227	130	133	<300	All	All	126	211	216	>300			252			100	100
114	Federation	Inclining Block	Inclining Block	100	100	100	<450	<450	<450	160	160	155	>450	>450	>450	240	240	240	100	100
40	Central Tablelands (No Sge)	Two Part	Two Part	200	200	200	All	All	All	225	236	255							80	80
39	Cowra	Two Part	Two Part	186	192	198	All	All	All	286	295	305								
38	Moree Plains (Groundwater)	Inclining Block	Inclining Block	270	280	240	<750	<750	<750	144	158	158	>750	>750	>750	186	205	205	60	60
117	Murray River (Dual Supply)	Two Part	Two Part	262	276	278	All	All	All	91	96	97								
117	Murray River (Non Potable)	Two Part	Two Part	97	102	103	All	All	All	69	72	73								
45	Upper Hunter	Inclining Block	Inclining Block	258	217	206	<300	<300	<300	175	192	205	>300	>300	>300	262	307	328	100	100
46	Narrabri (Groundwater)	Two Part	Two Part	323	333	343	All	All	All	87	90	92								
44	Gunnedah (Groundwater)	Inclining Block	Inclining Block	170	170	170	<400	<400	<400	104	108	112	>400	>400	>400	156	162	168		
47	Bellingen (Unfiltered)	Inclining Block	Inclining Block	112	117	122	<365	<365	<365	152	163	171	>365	>365	>365	228	245	257	85	90
48	Leeton	Inclining Block	Inclining Block	252	264	268	<300	<300	<300	86	91	96	300-600	300-600	300-600	126	133	140		
Medians (% of LWUs basis) for 4,000 to 10,000 Properties				*200*	*180*	*180*				*160*	*180*	*185*				*240*	*245*	*257*		
	LWUs with 1,501 - 4,000 Properties																			
115	Cootamundra-Gundagai (Reticula	Two Part	Two Part	312	320	328	All	All	All	184	193	199							30	30
51	Forbes	Two Part	Two Part	206	211	215	All	All	All	90	103	114							50	55
53	Berrigan (Dual Supply)	Two Part	Two Part	474	497	510	All	All	All	94	94	94							30	30
53	Berrigan (Non Potable)	Two Part	Two Part				All	All	All	47	47	47								
54	Edward River	Inclining Block	Inclining Block	320	328	334	<800	<800	<800	80	85	90	>800	>800	>800	120	125	130	100	100
55	Warrumbungle	Two Part	Two Part	360	364	375	All	All	All	180	190	195								
56	Yass Valley	Two Part	Two Part	450	450	460	All	All	All	280	290	300							50	50
60	Glen Innes Severn	Inclining Block	Inclining Block	270	284	298	<450	<450	<450	205	215	225	>450	>450	>450	308	323	340		
59	Lachlan	Inclining Block	Inclining Block	308	355	380	<450	<600	<600	203	220	235	>450	>600	>600	305	330	355	100	100
61	Liverpool Plains	Inclining Block	Inclining Block	575	690	710	<300	<300	<300	125	128	131	>300	>300	>300	203	208	213	50	50
74	Wentworth (Dual Supply)	Inclining Block	Inclining Block	265	270	275	<250	<250	<250	120	120	120	>250	>250	>250	280	280	280		
74	Wentworth (Non Potable)	Inclining Block	Inclining Block	140	145	150	<700	<700	<700	40	40	40	>700	>700	>700	110	110	110		
67	Cobar	Inclining Block	Inclining Block	233	240	250	<450	<450	<450	205	210	215	450-550	450-550	450-550	300	310	320		
66	Cobar WB																			
62	Narromine (Groundwater)	Two Part	Two Part	193	203	213	All	All	All	110	115	120							93	96
63	Narrandera (Groundwater)	Two Part	Two Part	266	273	280	All	All	All	102	102	105								
68	Tenterfield	Inclining Block	Inclining Block	398	438	394	<450	<450	<450	207	228	296	>450	>450	>450	238	262	444		
73	Upper Lachlan	Inclining Block	Inclining Block	413	430	420	<200	<200	<200	256	269	282	>200	>200	>200	339	356	374	90	90
79	Walgett (Dual Supply)	Inclining Block	Inclining Block	423	455	467	<500	<500	<500	36	76	78	>500	>500	>500	50	106	109		
79	Walgett (Non Potable)	Inclining Block	Inclining Block	423	455	467	<600	<600	<600	12	25	26	>600	>600	>600	17	36	36		
70	Kyogle	Inclining Block	Inclining Block	340	344	361	<200	<200	<200	130	150	158	>200	>200	>200	180	190	200	90	92
80	Greater Hume	Inclining Block	Inclining Block	308	339	304	<200	<200	<200	140	160	170	>200	>200	>200	220	240	255	75	75
75	Coonamble (Groundwater)	Inclining Block	Inclining Block	170	210	231	<370	<370	<370	55	70	80	>370	>370	>370	90	110	120		
Medians (% of LWUs basis) for 1,500 to 4,000 Properties				*312*	*339*	*334*				*130*	*150*	*158*				*229*	*251*	*268*		

COST RECOVERY

WATER UTILITY		Operating Cost (OMA) (c/kL) (6)			Typical Developer Charge ($/ET) (7)			Typical Residential Bill based on Col(14b) (Includes Special Levies) (8) P3			Return on Assets (%) (11)			ERRR (Water Supply) (%) (12) F17			Residential Revenue from Usage Charges (% of residential bills) (13) F4		Avge Annual Residential Water Supplied[3] – Potable kL/prop (14a)		Potable + Non Potable kL/prop (14b) W12		L/c/d (14c)	Full Cost Recovery? (FCR) (Y/Y*/N) (14d)	Total Connected Properties (15) C4
		13/14	14/15	15/16	14/15	15/16	16/17	14/15	15/16	16/17	13/14	14/15	15/16	13/14	14/15	15/16	14/15	15/16	14/15	15/16	14/15	15/16	15/16	15/16	15/16
36	Parkes	75	77	70	11,300	11,990	11,930	670	679	693	3.5	3.1	4.2	0.9	1.4	3.0	76	81	276	277	280	283	309	Y	5,990
41	Muswellbrook	123	118	114	6,350	6,500	6,630	547	581	603	1.9	0.8	1.8	0.1	-0.5	0.3	69*	71*	245	254	245	254	277	Y	5,840
37	Inverell	165	163	150	11,150	11,320	11,440	564	601	633	1.3	0.9	1.8	1.0	0.8	2.3	45	48	180	186	180	186	228	Y	5,790
121	Snowy Valleys	122	146	110	4,579	4,698	4,570	483	557	570	-0.5	-0.1	-0.1	0.8	0.3	0.2	78*	77*	203	202	203	203	268	Y	5,660
114	Federation	64	82	85	910	910	910	560	543	529	2.3	4.2	1.9	1.7	3.6	1.5	82	82	287	277	287	277	398	Y	5,630
40	Central Tablelands (No Sge)	160	185	173	8,560	8,700	8,850	620	662	699	0.9	0.1	1.1	1.0	0.1	1.1	69*	71*	187	196	187	196	152	Y	5,520
39	Cowra	122	120	109	7,360	7,580	7,580	875	857	885	-0.4	1.2	1.6	0.1	2.0	2.3	79	78*	241	225	268	248	339	Y	5,320
38	Moree Plains (Groundwater)	98	82	84	4,000	6,800	6,800	1045	1372	1332	3.0	3.1	3.7	3.9	4.1	4.7	75*	82*	538	691	548	696	710	Y	4,600
117	Murray River (Dual Supply)	110	114	99	2,810	2,864	3,150	590	657	664	2.1	2.3	3.5	1.9	2.1	3.3	51	43	160	152	351	338	390	Y	4,620
117	Murray River (Non Potable)																				191	186			4,620
45	Upper Hunter	123	107	116	6,920	7,100	7,220	798	705	727	2.0	5.1	2.3	2.0	5.1	2.3	73*	72*	306	254	306	254	286	Y	4,600
46	Narrabri (Groundwater)	71	81	80	3,460	3,500	3,680	591	617	634	8.7	4.2	4.6	6.8	2.6	3.1	56	55	308	316	308	316	262	Y	4,450
44	Gunnedah (Groundwater)	64	66	66	8,490	8,700	9,000	628	615	631	4.4	4.1	5.5	3.6	3.3	4.8	74*	75	427	408	427	408	406	Y	4,040
47	Bellingen (Unfiltered)	109	140	129	6,300	6,300	6,300	343	370	387	2.3	0.9	0.9	1.4	-0.3	-0.2	77	78	152	155	152	155	157	Y	4,100
48	Leeton	89	83	79	4,600	4,600	4,600	675	701	729	0.3	1.1	3.0	-0.4	0.4	2.0	66	66	431	424	431	424	461	Y	4,130
Medians (% of LWUs basis) for 4,000 to 10,000 Properties		*113*	*114*	*109*	*5,230*	*6,300*	*6,300*	*620*	*658*	*666*	*1.9*	*1.2*	*1.9*	*1.0*	*0.9*	*2.0*	*76*	*74*	*203*	*207*	*245*	*248*	*268*	*0 LWU without FCR*	
	LWUs with 1,501 - 4,000 Properties																								
115	Cootamundra-Gundagai (Reticula	57	85	89	5,690	5,931	6,180	755	615	632	2.1	-0.1	1.4	1.8	-0.3	1.0	53*	59	241	153	241	153	186	Y	4,040
51	Forbes	75	79	66	6,620	6,780	6,920	523	631	680	-1.0	-0.8	1.2	-1.7	-1.6	0.4	66	79	352	408	352	408	470	Y	3,750
53	Berrigan (Dual Supply)	63	65	63	5,600	5,750	5,900	775	841	854	2.9	3.6	3.5	2.6	3.2	2.8	40	41	241	272	399	461	556	Y	3,570
53	Berrigan (Non Potable)																				157	189			3,570
54	Edward River	100	98	58	3,950	3,250	3,370	699	798	832	0.4	1.1	2.0	-0.4	0.4	1.4	55*	62	474	553	474	553	726	Y	3,630
55	Warrumbungle	173	220	183	1,560	1,590	1,620	715	791	814	0.1	-1.1	0.7	-0.2	-1.2	0.5	51*	54	197	225	201	231	295	Y	3,310
56	Yass Valley	163	168	158	12,500	12,820	13,140	902	988	1017	0.9	1.7	1.6		3.8	3.6	53	57	161	186	161	186	226	Y	3,300
60	Glen Innes Severn	220	233	234	2,790	2,860	2,900	539	597	625	0.3	0.3	0.7	1.2	1.2	1.6	52	53	131	145	131	145	166	Y	2,960
59	Lachlan	115	111	85	5,800	5,800	10,000	1427	2069	2214	-0.7	-0.7	0.1	-1.2	-1.0	-0.5	78	83	517	719	531	734	809	Y	2,850
61	Liverpool Plains	193	176	151	10,690	10,990	11,290	812	953	979	1.3	0.5	2.5	1.3	0.5	2.5	41	39	190	205	190	205	238	Y	2,570
74	Wentworth (Dual Supply)	105	80	63	2,520	2,520	2,640	686	826	836	4.6	4.2	3.5	4.7	4.6	3.5	48	54	99	180	504	669	1044	Y	2,340
74	Wentworth (Non Potable)																				405	489			2,340
67	Cobar	224	242	218	1,160	1,160	1,160	935	919	946	-0.1	14.8	3.1	-0.2	14.7	2.5	77	77	342	324	342	405	395	Y	2,260
66	Cobar WB	69	713	58							-0.6	-0.4	-0.8	-0.6	-0.5	-0.9								Y*	
62	Narromine (Groundwater)	77	99	96	4,500	4,590	4,680	690	689	720	6.5	4.4	5.4	4.8	2.8	4.4	74	73	452	423	452	423	429	Y	2,160
63	Narrandera (Groundwater)	44	53	43	1,750	1,800	1,810	957	784	806	8.4	6.3	4.9	5.5	3.9	2.6	72	65*	678	501	678	501	545	Y	2,090
68	Tenterfield	213	229	234	5,000	5,400	5,800	695	754	805	1.8	0.2	1.1	1.8	0.1	0.9	44	51*	143	139	143	139	178	Y	1,980
73	Upper Lachlan	269	297	313	3,700	3,800	3,900	779	810	818	1.7	-0.8	0.7	1.7	-0.7	0.7	47*	54	143	141	143	141	236	Y	2,010
79	Walgett (Dual Supply)	99	30	178				1212	1195	1227	-13	5.1	-4.4	-12	5.1	-2.5	57*	34*	720	302	1341	522	339	Y*	1,930
79	Walgett (Non Potable)																				621	220			1,930
70	Kyogle	197	209	247	2,850	3,170	2,930	528	550	578	-1.6	0.4	0.9	-1.4	0.6	1.4	41	43	145	137	145	137	168	Y	1,900
80	Greater Hume	90	92	88	2,960	3,050	3,140	685	813	808	-0.5	-0.2	0.2	-0.8	-0.5	-0.1	59	62*	244	264	244	264	230	Y	1,900
75	Coonamble (Groundwater)	52	58	62	880	900	940	583	704	783	0.3	-1.1	1.1	-0.8	-1.7	0.7	71*	71*	603	584	603	584	586	Y	1,680
Medians (% of LWUs basis) for 1,500 to 4,000 Properties		*105*	*99*	*96*	*3,825*	*3,525*	*3,635*	*715*	*798*	*814*	*0.4*	*0.4*	*1.2*	*0.5*	*0.5*	*1.4*	*53*	*55*	*241*	*264*	*342*	*405*	*339*	*0 LWU without FCR*	

APPENDIX E - Water supply - residential charges, bills & cost recovery

	WATER UTILITY	RESIDENTIAL CHARGES: Type of Tariff (1) P1 15/16		RESIDENTIAL CHARGES: Type of Tariff (1) P1 16/17	Fixed Charge (or Minimum) ($) (2) P1.2 14/15	Fixed Charge (or Minimum) ($) (2) P1.2 15/16	Fixed Charge (or Minimum) ($) (2) P1.2 16/17	Usage Charge (for Step 1 and Step 2) Step 1 Step (kL) (5a) P1.3 14/15	Step 1 Step (kL) (5a) P1.3 15/16	Step 1 Step (kL) (5a) P1.3 16/17	Step 1 Charges (c/kL) (5b) P1.3 14/15	Step 1 Charges (c/kL) (5b) P1.3 15/16	Step 1 Charges (c/kL) (5b) P1.3 16/17	Step 2 Step (kL) (5c) P1.4 14/15	Step 2 Step (kL) (5c) P1.4 15/16	Step 2 Step (kL) (5c) P1.4 16/17	Step 2 Charges (c/kL) (5d) P1.4 14/15	Step 2 Charges (c/kL) (5d) P1.4 15/16	Step 2 Charges (c/kL) (5d) P1.4 16/17	Billing (2006 National Guidelines) (% Imple-mentation) (5e) 14/15	Billing (2006 National Guidelines) (% Imple-mentation) (5e) 15/16	Operating Cost (OMA) (c/kL) (6) 13/14	Operating Cost (OMA) (c/kL) (6) 14/15	Operating Cost (OMA) (c/kL) (6) 15/16	Typical Developer Charge ($/ET) (7) 14/15	Typical Developer Charge ($/ET) (7) 15/16	Typical Developer Charge ($/ET) (7) 16/17	Typical Residential Bill based on Col(14b) (Includes Special Levies) (8) P3 14/15	Typical Residential Bill based on Col(14b) (Includes Special Levies) (8) P3 15/16	Typical Residential Bill based on Col(14b) (Includes Special Levies) (8) P3 16/17	COST RECOVERY: Return on Assets (%) (11) 13/14	Return on Assets (%) (11) 14/15	Return on Assets (%) (11) 15/16	ERRR (Water Supply) (%) (12) F17 13/14	ERRR (Water Supply) (%) (12) F17 14/15	ERRR (Water Supply) (%) (12) F17 15/16	Residential Revenue from Usage Charges (% of residential bills) (13) F4 14/15	Residential Revenue from Usage Charges (% of residential bills) (13) F4 15/16	Avge Annual Residential Water Supplied[3] Potable kL/prop (14a) 14/15	Avge Annual Residential Water Supplied[3] Potable kL/prop (14a) 15/16	Avge Annual Residential Water Supplied[3] Potable + Non Potable kL/prop (14b) W12 14/15	Avge Annual Residential Water Supplied[3] Potable + Non Potable kL/prop (14b) W12 15/16	Avge Annual Residential Water Supplied[3] Potable + Non Potable L/c/d (14c) 15/16	Full Cost Recovery? (FCR) (Y/Y*/N) (14d) 15/16	Total Connected Properties (15) C4 15/16
	LWUs with 200 - 1,500 Properties																																												
81	Gwydir	Inclining Block	Inclining Block		390	390	390	<600	<600	<600	125	125	125	>600	>600	>600	195	195	195	25	25	66	97	103	2,000	2,000	2,000	790	757	757	4.5	1.3	1.7	6.0	3.0	2.6	76	49	320	294	320	294	395	Y	1,470
85	Uralla	Two Part	Two Part		295	305	311	All	All	All	210	220	225							100	100	199	174	194	910	930	960	684	721	736	0.4	1.1	0.8	0.1	0.8	0.5	57*	59	185	189	185	189	248	Y	1,490
87	Bourke (Dual Supply)	Two Part	Two Part		168	176	185	All	All	All	216	216	216							100	100	91	80	70	830	830	870	1200	1221	1271	-0.2	2.1	-1.5	-0.9	1.5	-2.3	79	78	284	281	1243	1157	1743	Y*	1,400
87	Bourke (Non Potable)	Unmetered	Unmetered		418	437	478	All	All	All																															959	875			1,400
84	Gilgandra (Groundwater)	Two Part	Two Part		219	233	245	All	All	All	98	104	109							10	10	69	62	57				730	804	843	1.4	1.0	0.2	0.8	0.4	-0.1	70	71	521	549	525	567	544	Y	1,330
86	Hay (Dual Supply)	Inclining Block	Inclining Block		129	132	134	<300	<300	<300	108	110	112	>300	>300	>300	164	165	168			59	53	76				921	751	766	-0.5	1.0	0.6	-0.7	0.8	0.4	57	54	159	139	1048	527	722	Y	1,350
86	Hay (Non Potable)	Two Part	Two Part		327	335	341	All	All	All	33	34	35																											889	388			1,350
83	Oberon (Reticulator)	Two Part	Two Part		292	330	340	All	All	All	213	280	288									86	60	79	1,350	1,390	1,430	606	755	777	-0.8	2.1	4.4	-0.5	2.2	4.4	75	73	148	152	148	152	143	Y	1,300
118	Murrumbidgee (Groundwater)	Inclining Block	Inclining Block		185	195	200	<500	<500	<500	36	40	42	500-800	>500	>500	42	60	63			51	48	41	1,479	1,479	1,000	422	507	528	-0.2	0.2	1.4	-0.9	-0.5	0.9	63	62*	476	687	867	1045	1274	Y	1,280
92	Carrathool (Groundwater)	Two Part	Two Part		390	402	414	All	All	All	87	90	93							100	100	106	86	61	1,050	1,080	1,120	615	804	829	1.0	3.1	2.8	0.9	3.2	3.1	62	50*	488	446	611	534	593	Y	1,170
89	Bogan	Two Part	Two Part		510	536	536	All	All	All	178	187	187							100	100	158	261	277				1113	1320	1320	-0.3	-0.3	2.6	-0.6	-0.6	2.4	57	59	339	419	339	419	416	Y	1,110
91	Cabonne	Inclining Block	Inclining Block		283	312	343	<300	<300	<300	175	190	190	300-500	300-500	300-500	407	450	450	100	100	191	239	197	6,680	6,680	6,680	546	606	637	-0.3	-0.4	0.2	-0.8	-0.8	-0.1	56	61	150	155	187	197	297	Y	1,170
96	Warren (Dual Supply)	Inclining Block	Inclining Block		320	330	347	<450	<450	<450	100	103	108	>450	>450	>450	151	155	163	100	100	64	53	61				805	766	805	-0.7	0.5	-0.4	-1.0	0.3	-0.6	52	50	328	302	752	630	734	Y*	940
96	Warren (Non Potable)	Inclining Block	Inclining Block					<450	<450	<450	37	38	40	>450	>450	>450	64	66	69																					424	328			940
98	Walcha	Inclining Block	Inclining Block		190	210	221	<300	<300	<300	272	272	286	>300	>300	>300	396	396	416			307	362	314				528	572	601	-0.8	-1.6	-1.3	-0.9	-1.7	-1.4	64	63*	124	133	124	133	163	Y*	920
100	Balranald (Dual Supply)	Inclining Block	Inclining Block		187	187	194	<600	<600	<600	94	94	97	>600	>600	>600	141	141	160			89	62	53	700	700	700	798	1087	1151	1.1	1.6	1.4	2.2	2.1	2.0	47	60	167	304	660	1038	1332	Y	880
100	Balranald (Non Potable))	Inclining Block	Inclining Block		198	198	205	<600	<600	<600	52	52	57	>600	>600	>600	78	78	86																					493	734			880
103	Central Darling (Dual Supply)	Two Part	Two Part		120	150	173	All	All	All	350	350	350							15	15	275	193	191				1046	1381	1493	4.4	2.3	-2.1	4.4	2.2	-2.2	79	81	128	181	581	638	918	Y*	730
103	(Non Potable-Wilcannia)	Unmetered	Unmetered		478	598	687	All	All	All																															453	457			730
105	Brewarrina (Dual Supply)	Two Part	Two Part		421	431	440	All	All	All	190	190	190							100	100	90	61	79				1953	2055	2071	0.1	-0.5	0.6	6.4	-0.2	0.6	73	74	614	658	1391	1629	1149	Y	470
105	Brewarrina (Non Potable)	Unmetered	Unmetered		365	374	381	All	All	All																															777	971			470
	Medians (% of LWUs basis) for 200 to 1,500 Properties				*283*	*305*	*311*				*175*	*187*	*187*				*164*	*165*	*168*			*90*	*80*	*79*	*1,200*	*1,235*	*1,060*	*790*	*766*	*805*	*-0.2*	*1.0*	*0.6*	*-0.5*	*0.8*	*0.5*	*64*	*61*	*284*	*294*	*581*	*534*	*593*	*0 LWU without FCR*	
	Median All LWUs (% of LWUs basis)				*Fixed Charge*	*$232*		*Usage Charge for Step 1*	*190 c/kL*					*Usage Charge for Step 2*	*280 c/kL*						*OMA (c/kL)*	*112*		*Developer Charge*	*$5400*		*TRB*	*$705*		*ROA*	*1.6%*		*ERRR*	*1.8%*		*71%*		*AARW*	*230 kL/prop*		*84 LWUs achieved FCR (74 with 'Y' and 10 with Y*)*		
	Median All LWUs (Statewide basis)					*$197*			*230 c/kL*													*120*			*$5600*			*$625*			*1.7%*			*2.3%*			*73%*			*162 kL/prop*		*0 LWU did not achieve FCR*		

NOTES:

1. **Residential Revenue from Usage Charges**: Where this is marked *, it has been calculated from the projected typical residential bill for the 2016/17 financial year as this provides a higher value than the result for the 2015/16 financial year. 34 LWUs with 4,000 or more properties (72%) obtained at least 70% of residential revenue from water usage charges (column 13). This includes Central Coast and Essential Energy, who have been granted a deemed compliance as their prices are regulated by IPART. 29 LWUs (85%) with fewer than 4,000 properties obtained at least 45% of their residential revenue from usage charges.
2. **The charges, bills and costs** shown for each financial year are those applicable at that time and involve no CPI adjustment. Column (5e) shows that 44% of LWUs now have residential water billing in accordance with the National Guidelines for Residential Customers' Water Accounts. A further 12% of LWUs have made significant progress towards such billing.
3. **Dual Water Supplies:** 10 LWUs had a dual water supply to over 50% of their residential customers with a potable supply for indoor use and a non-potable supply for outdoor use (refer to General Notes - Note 6 on page 28).
4. **Average Annual Residential Water Supplied (Dual Supplies):** The 10 Dual Supply LWUs are shown on two rows. The first row is labelled Dual Supply while the second row is labelled Non-Potable.
   The first row in column (14a) shows the **potable** average Annual Residential Water Supplied while the second row in column (14b) shows the **non-potable** Average Annual Residential Water Supplied (see also Note 6 on page 28).
   The total potable plus non-potable Average Annual Residential Water Supplied is shown in the first row in column (14b) and column (14c).
5. **Median Annual Residential Water Supplied:** The median Average Annual Residential Water Supplied (potable plus non-potable) has fallen by 51% over the last 24 years to 162 kL/property (190 L/person/day).
6. **Full Cost Recovery** has been achieved by all 84 LWUs. These comprise 74 utilities which had either an Economic Real Rate of Return or Return on Assets of >=0 for the 2015/16 financial year (shown as "Y" in col (14d)).
   They also include 10 utilities which have significantly increased their 2016/17 charges in order to recover their costs (shown as "Y*").
7. As of 2016-17, no utilities have special levies for water supply. Goulburn Mulwaree's special levy was $40 in 2015-16.

APPENDIX F - Sewerage - residential charges & bills, cost recovery

	WATER UTILITY	RESIDENTIAL CHARGES						NON-RESIDENTIAL CHARGES										Typical Residential Bill			COST RECOVERY									
		Fixed Charge ($) (or Minimum)			Operating Cost (OMA)			Non-Res Sewer Usage Charge		Liquid Trade Waste Charges				Non-Res & Trade Waste		Typical Developer Charge					Return on Assets			Economic Real Rate of Return (Sewerage)			Full Cost Recovery?	Recycled Water Usage Charge	Sewage Collected	Connected Properties
		($)			(c/kL)			(Not including SDF) (c/kL) (3a)		Usage Charge (c/kL) (3b)		Appropriate TW Charges ? (4)		Charges (% of Annual Charges) (5)	Volume (% of sge collected) (6)	($/Equivalent Tenement [ET]) (7)			($/assessment) (8) P6			(%) (9)			(%) (11) F18			(FCR) (Y/Y*/N) (11a)	(c/kL) (11b)	(kL/prop) (11c) W19	(No.) (12) C8
		14/15	15/16	16/17	13/14	14/15	15/16	15/16	16/17	15/16	16/17	15/16	16/17	15/16	15/16	14/15	15/16	16/17	14/15	15/16	16/17	13/14	14/15	15/16	13/14	14/15	15/16	15/16	15/16	15/16	15/16
	Sydney Water	601	609	584				110	111	213	220	Y	Y						552	609	584				1.4	1.4	2.0	Y	178	296	1,852,000
	Hunter Water	594	594	604				67	67			Y	Y						632	632	641				1.8	1.7	1.8	Y	190	304	231,000
	LWUs with > 10,000 Properties																														
112	Central Coast	612	641	672	163	133	96	92	83	168	171	Y	Y	17	20	3,370	3,440	3,530	612	641	672	-0.3	0.2	1.1	-0.2	0.3	1.2	Y*	170	249	134,160
3	Shoalhaven	750	772	795	239	223	205	140	150	168	171	Y	Y	15	15	8,340	8,340	8,340	750	772	795	1.6	3.4	3.1	2.2	3.9	3.4	Y		228	42,150
5	MidCoast (Combined)	948	970	970	304	279	261	252	252	263	263	Y	Y	9	20	9,400	9,680	9,680	948	970	970	1.3	1.3	1.2	2.8	2.6	2.5	Y		195	35,460
6	Tweed	732	782	805	229	199	213	150	160	210	220	Y	Y	17	29	6,200	6,310	6,430	732	782	805	1.5	1.0	1.4	1.7	1.1	1.5	Y		241	31,110
7	Port Macquarie-Hastings	736	769	804	160	170	154	116	121	158	161	Y	Y	6	5	3,530	3,620	3,660	736	769	804	2.6	1.3	3.5	2.9	1.5	4.3	Y	132	315	28,230
9	Wagga Wagga	434	454	474	191	195	191	200	204	180	184	Y	Y	32	37	3,730	3,760	3,830	434	454	474	-0.5	0.5	0.1	0.3	1.3	0.9	Y	93	212	27,710
11	Albury City	639	703	713	210	212	211	292	292	175	184	Y	Y	22	28	4,000	4,070	4,150	639	703	713	3.9	4.0	5.3	4.2	4.1	5.2	Y		189	24,330
10	Coffs Harbour	806	806	806	267	199	242	209	212	166	170	Y	Y	21		9,940	9,690	9,840	806	806	806	-0.4	-0.8	-0.1	0.5	0.1	0.8	Y		241	23,710
13	Tamworth Regional	758	777	791	192	160	144	118	120	176	179	Y	Y	26	54	1,930	1,960	2,000	758	777	791	1.6	2.4	3.6	2.5	3.2	4.2	Y	7	276	20,000
119	Queanbeyan-Palerang	470	533	643	181	188	182	107	111	232	232	Y	Y	17	14	2,459	2,504	2,560	470	533	643	3.0	2.2	1.1	2.4	1.6	0.6	Y	150	214	19,800
122	Dubbo Regional	690	712	725	201	203	172	204	208	183	187	Y	Y	6	30	4,922	4,956	4,950	690	712	725	2.9	4.0	2.7	2.3	3.6	2.5	Y		200	19,420
15	Eurobodalla	865	886	902	324	260	268	175	178	140	142	Y	Y	13	12	10,080	10,250	10,460	865	886	902	0.6	1.3	2.1	1.0	1.7	2.4	Y		200	18,400
19	Orange	423	452	484	163	172	130	216	230	216	227	Y	Y	24	16	4,600	4,640	4,700	423	452	484	2.7	3.7	2.5	1.7	2.7	1.9	Y		292	16,890
21	Bathurst Regional	479	503	529	139	168	184	145	155	230	250	Y	Y	36	47	4,970	5,260	5,270	479	503	529	2.2	3.0	1.8	1.8	2.7	1.5	Y		241	16,070
16	Wingecarribee	739	756	796	237	133	152	133	140	182	200	Y	Y	17	21	8,250	8,330	8,520	739	756	796	0.6	2.4	4.6	1.1	3.0	4.9	Y		278	16,260
14	Clarence Valley	988	1076	1092	287	238	264	326	331	260	265	Y	Y	18	10	7,670	7,810	7,990	988	1076	1092	0.6	0.9	1.2	2.3	2.5	2.8	Y		181	14,750
24	Ballina	807	864	925	306	169	199	219	234	167	172	Y	Y	18		7,700	4,880	4,930	807	864	925	-0.2	0.5	0.8	1.4	2.7	2.9	Y	166	315	14,400
22	Lismore	772	808	855	159	145	212			106	110	Y	Y	20	26	10,330	10,810	11,100	772	808	855	0.3	0.6	1.5	0.2	0.5	1.4	Y		225	12,790
23	Bega Valley	1109	1136	1147	425	402	435	378	402	100	120	Y	Y	18	30	11,070	11,260	11,480	1109	1136	1147	-0.1	0.3	-0.2	0.4	0.7	0.2	Y		196	12,240
20	Goulburn Mulwaree	724	749	762	211	183	184	292	297	259	267	Y	Y	30	40	4,470	4,470	4,590	724	749	762	5.6	6.2	6.0	5.6	6.2	6.1	Y		189	10,870
27	Byron*	780	802	819	217	234	221	236	247	220	224	Y	Y	25	25	18,810	13,150	9,990	1093	1121	1149	1.3	1.6	3.6	3.9	4.0	6.0	Y	1	299	10,920
25	Kempsey	791	850	914	275	241	283	206	221	206	222	Y	Y	24	24	7,840	7,970	8,070	791	850	914	-1.1	-0.2	0.3	-0.4	0.4	0.9	Y	98	203	9,130
26	Essential Energy	511	518	525	225	238	240	124	125	199	201	Y	Y	20	40				511	518	525							Y*	18	132	9,720
	Medians (% of LWUs basis) for >10,000 Properties	*739*	*772*	*796*	*217*	*199*	*205*	*22 out of 23 have non-res sewer usage charges*		*187*		*23 out of 23 have trade waste charges*				*6,935*	*5,785*	*5,850*	*739*	*772*	*796*	*1.3*	*1.3*	*1.7*	*1.8*	*2.6*	*2.5*	*0 LWUs did not achieve FCR*		*225*	
	LWUs with 4,001 - 10,000 Properties																														
111	Armidale Regional	379	379	388	130	95	105			145	148	Y	Y	30	21	4,457	4,637	4,950	379	379	388	1.8	2.7	2.7	1.4	2.1	2.4	Y	11	256	9,830
120	Snowy Monaro Regional	900	930	953	328	257	258	315	323	180	200	Y	Y	26	10	5,651	6,904	6,330	900	930	953	1.0	1.9	2.3	0.8	1.6	2.1	Y	110	163	8,740
30A	Hawkesbury	602	666	706	204	182	248			131	137	Y	Y	32	22	8,460	8,610	8,780	602	666	706	-0.2	-0.3	-0.8	-0.4	-0.3	-0.8	Y*	171	279	7,660
31	Lithgow	836	878	900	222	198	213	163	167	170	180	Y	Y	8		2,160	2,160	2,500	836	878	900	1.8	0.6	2.5	1.7	1.8	3.3	Y		234	7,510
32	Mid Western Regional	697	739	794	258	222	258	236	254					16	21	3,770	3,860	3,960	697	739	794	1.1	1.5	0.4	1.8	2.1	1.0	Y		183	7,440
30	Griffith	750	774	792	209	196	179	148	151	122	124	Y	Y	22	14	3,620	4,130	4,650	750	774	792	0.3	0.4	0.7	1.3	1.4	1.7	Y		342	7,070
33	Richmond Valley	896	918	934	230	217	262	202	205	162	170	Y	Y	16		8,000	8,000	8,000	896	918	934	0.9	1.5	1.1	2.5	2.4	2.0	Y		246	6,730
41	Muswellbrook	581	595	609	233	224	245	201	201	131	134	Y	Y	15		7,030	7,190	7,330	581	595	609	6.0	2.2	2.1	5.0	1.4	1.3	Y		166	5,760
34	Nambucca	580	612	598	214	163	215	331	331	177	180	Y	Y	28	9	9,340	9,490	9,660	580	612	598	0.0	0.7	0.7	0.4	1.2	1.1	Y		204	5,690
35	Singleton	480	495	510	161	150	176	166	170	152	160	Y	Y	27		3,140	3,230	3,330	480	495	510	5.6	4.8	5.4	2.9	2.2	3.3	Y		187	5,710
114	Federation	668	685	685	220	243	215	131	131	170	173	Y	Y	12	16	2,122	2,122	2,130	668	685	685	2.8	2.8	1.9	2.8	2.9	1.9	Y		193	5,490

APPENDIX F - Sewerage - residential charges & bills, cost recovery

	WATER UTILITY	RESIDENTIAL CHARGES						NON-RESIDENTIAL CHARGES										Typical Residential Bill			COST RECOVERY									
		Fixed Charge ($) (or Minimum)			Operating Cost (OMA)			Non-Res Sewer Usage Charge		Liquid Trade Waste Charges				Non-Res & Trade Waste		Typical Developer Charge					Return on Assets			Economic Real Rate of Return (Sewerage)			Full Cost Recovery?	Recycled Water Usage Charge	Sewage Collected	Connected Properties
		($)			(c/kL)			(Not including SDF) (c/kL) (3a)		Usage Charge (c/kL) (3b)		Appropriate TW Charges ? (4)		Charges (% of Annual Charges) (5)	Volume (% of sge collected) (6)	($/Equivalent Tenement [ET]) (7)			($/assessment) (8) P6			(%) (9)			(%) (11) F18			(FCR) (Y/Y*/N) (11a)	(c/kL) (11b)	(kL/prop) (11c) W19	(No.) (12) C8
		14/15	15/16	16/17	13/14	14/15	15/16	15/16	16/17	15/16	16/17	15/16	16/17	15/16	15/16	14/15	15/16	16/17	14/15	15/16	16/17	13/14	14/15	15/16	13/14	14/15	15/16	15/16	15/16	15/16	15/16
116	Hilltops	720	720	720	138	160	158			156	156	Y	Y	18	22	1,159	3,085	3,110	720	720	720	1.4	0.4	2.2	2.3	1.8	2.9	Y		175	5,360
121	Snowy Valleys	635	651	667	198	295	225	190	195			Y	Y	25	6	4,232	4,337	4,260	635	651	667	2.1	0.3	0.0	1.4	0.1	0.0	Y		218	5,220
36	Parkes	424	436	440	149	183	187	125	130	185	190	Y	Y	32	26	3,250	3,450	3,530	424	436	440	3.2	3.8	4.0	1.4	2.7	3.3	Y		172	5,100
37	Inverell	454	476	500	111	151	133							9	10	3,610	3,670	3,710	454	476	500	1.3	0.7	2.5	0.6	0.8	0.9	Y		210	4,860
45	Upper Hunter	477	501	526	185	216	213	96	101			Y	Y	22	8	1,540	1,580	1,610	477	501	526	-1.0	1.0	0.2	-1.9	0.2	-0.5	Y		220	4,250
117	Murray River	389	397	400	140	153	123	54	55	169	171	Y	Y	28	23	1,584	1,599	1,680	389	397	400	1.2	1.4	1.5	1.0	1.1	*1.1*	Y	40	250	4,210
Medians (% of LWUs basis) for 4,000 to 10,000 Properties		*608*	*632*	*638*	*204*	*197*	*213*	*13 out of 16 have non-res sewer usage charges*		*170*		*14 out of 16 have trade waste charges*				*3,615*	*3,765*	*3,835*	*608*	*632*	*638*	*1.4*	*1.5*	*2.0*	*1.4*	*1.7*	*1.8*	*0 LWUs did not achieve FCR*		*207*	
	LWUs with 1,501 - 4,000 Properties																														
44	Gunnedah	492	505	523	133	150	111	156	167	150	155	Y	Y	25	22	7,050	7,230	7,480	492	505	523	3.5	5.8	5.6	2.7	4.9	4.8	Y	10	207	4,100
46	Narrabri	677	697	718	223	226	231			200	200	Y	Y	11	30	5,210	5,280	5,710	677	697	718	1.5	0.5	0.5	1.0	0.0	*0.0*	Y		196	3,950
38	Moree Plains	630	650	690	137	126	110	120	127	200	200	Y	Y	37	11	4,700	4,780	4,780	630	650	690	0.2	4.0	1.1	0.3	4.1	1.1	Y	25	454	3,980
115	Cootamundra-Gundagai	388	398	412	141	146	121	222	230	200	300	Y	Y	30	17	3,429	3,514	3,580	388	398	412	2.5	2.8	1.7	1.7	1.8	1.6	Y		221	3,700
53	Berrigan	477	501	513	170	161	141							10	11	1,850	2,100	2,300	477	501	513	1.9	1.3	3.0	0.8	0.4	1.8	Y	27	203	3,640
39	Cowra	781	804	828	262	284	300	75	77	161	165	Y	Y	22		5,360	5,520	5,520	781	804	828	1.5	1.5	1.5	3.1	3.1	*3.1*	Y		164	3,560
48	Leeton	492	519	543	231	187	168	87	96	183	188	Y	Y	42	19	5,100	5,100	5,100	492	519	543	0.4	0.2	2.3	-0.7	-0.6	1.1	Y		292	3,340
54	Edward River	770	789	804	236	246	211	135	140	170	170	Y	Y	23	7	4,650	4,500	4,180	770	789	804	4.7	2.0	2.1	5.0	2.1	1.9	Y		174	3,250
51	Forbes	644	660	684	219	225	163	153	159	70	75	Y	Y	24	35	4,080	4,170	4,260	644	660	684	0.9	1.0	2.6	0.8	0.9	2.5	Y		224	3,200
47	Bellingen	842	882	911	313	264	359	97	100	142	147	Y	Y	6	14	4,680	4,810	4,830	842	882	911	0.9	0.9	0.7	0.3	0.3	0.4	Y		183	3,060
60	Glen Innes Severn	450	473	497	129	151	137	103	105	169	172	Y	Y	6	9	2,930	3,000	3,040	450	473	497	1.7	1.8	2.7	1.9	1.8	2.9	Y		188	2,820
80	Greater Hume	489	504	489	185	226	194	136	150	160	160	Y	Y	27	14	4,020	4,140	4,260	489	504	489	0.4	0.5	1.0	0.1	0.3	0.7	Y	60	168	2,620
55	Warrumbungle	458	469	498	358	309	384	79	85	160	200		Y	30	29	1,300	1,320	1,340	458	469	498	0.0	-0.3	-0.4	-1.1	-1.0	*-1.0*	N		133	2,520
56	Yass Valley	595	620	640	220	226	227	230	280	170	180	Y	Y		26	5,790	5,940	6,090	595	620	640	1.7	3.2	10.5		2.9	10.4	Y		192	2,510
59	Lachlan	458	545	584	199	205	181	125	200	145	150	Y	Y		21	7,750	7,750	7,800	458	545	584	-0.7	-1.7	0.2	-2.1	-2.6	-1.1	Y		241	2,200
69	Temora	311	326	392	147	119	143	36	39					22	17				311	326	392	0.1	1.7	1.6	0.0	1.5	1.3	Y	80	153	2,160
61	Liverpool Plains	504	516	528	171	242	182	174	178	300	350	Y	Y	15	28	2,910	2,960	3,010	504	516	528	2.2	1.9	2.6	1.8	1.2	1.8	Y		165	1,840
62	Narromine	548	565	582	298	257	153	205	210	205	210	Y	Y	23		3,670	3,820	3,820	548	565	582	1.3	0.4	1.6	0.7	-0.2	1.1	Y		250	2,020
78	Blayney	529	545	560	248	229	256	115	115	160	175	Y	Y	20	4	3,850	3,950	3,620	529	545	560	1.8	0.4	-0.2	1.2	-0.2	-0.8	N		191	1,950
91	Cabonne	475	487	535	361	471	433	120	120	160	160	Y	Y	19	32	6,280	6,350	7,500	475	487	535	-0.5	-1.0	-0.7	-0.7	-1.2	-0.9	Y*		136	2,440
72	Bland	669	685	718	183	184	185	35	150	156	160	Y	Y	6	13	2,120	2,120	2,120	669	685	718	2.7	3.4	3.0	2.6	3.3	2.9	Y		225	1,840
67	Cobar	320	330	340	118	103	80	180	185	175	180	Y	Y	21	7	920	950	920	320	330	340	-1.3	-1.1	1.4	-1.7	-1.5	1.0	Y	35	247	1,760
63	Narrandera	505	518	531	224	248	235	123	126					19		650	1,000	1,030	505	518	531	2.8	1.7	1.6	2.1	1.2	*1.2*	Y	20	175	1,710
68	Tenterfield	851	877	921	299	327	287	107	154	149	156	Y	Y	21	6	6,000	6,600	7,200	851	877	921	0.8	0.6	-0.1	1.5	1.2	0.5	Y		176	1,870
70	Kyogle	643	662	688	284	225	224	103	103	103	103	Y	Y	19	28	2,130	2,340	2,160	643	662	688	0.1	-0.1	1.0	0.4	0.2	1.3	Y		227	1,830
77	Junee	365	365	365	125	112	107							12	18	1,300	1,350	1,400	365	365	365	-0.1	0.3	-0.1	-0.8	-0.2	-0.6	N	50	251	1,670
74	Wentworth	705	720	730	23	25	24			173	182	Y	Y	13		6,250	6,560	6,250	705	720	730	2.4	2.7	1.8	2.1	2.4	1.4	Y		1,290	1,650
79	Walgett	443	454	465	107	92	141							12					443	454	465	2.4	4.5	4.1	2.4	3.5	3.1	Y		142	1,620
73	Upper Lachlan	737	752	752	116	134	134	269	282					19	6	3,970	4,050	4,200	737	752	752	2.5	1.5	1.8	1.9	1.0	1.3	Y		355	1,530
Medians (% of LWUs basis) for 1,500 to 4,000 Properties		*505*	*545*	*560*	*199*	*225*	*181*	*24 out of 29 have non-res sewer usage charges*		*172*		*23 out of 29 have trade waste charges*				*4,020*	*4,140*	*4,200*	*505*	*545*	*560*	*1.5*	*1.3*	*1.6*	*0.9*	*1.0*	*1.3*	*3 LWUs did not achieve FCR*		*196*	

APPENDIX F - Sewerage - residential charges & bills, cost recovery

	WATER UTILITY	RESIDENTIAL CHARGES						NON-RESIDENTIAL CHARGES									Typical Residential Bill			COST RECOVERY								
		Fixed Charge ($) (or Minimum)			Operating Cost (OMA)			Non-Res Sewer Usage Charge		Liquid Trade Waste Charges				Non-Res & Trade Waste		Typical Developer Charge				Return on Assets			Economic Real Rate of Return (Sewerage)			Full Cost Recovery?	Recycled Water Usage Charge	Sewage Collected	Connected Properties
		($)			(c/kL)			(Not including SDF) (c/kL) (3a)		Usage Charge (c/kL) (3b)		Appropriate TW Charges ? (4)		Charges (% of Annual Charges) (5)	Volume (% of sge collected) (6)	($/Equivalent Tenement [ET]) (7)			($/assessment) (8) P6			(%) (9)			(%) (11) F18			(FCR) (Y/Y*/N) (11a)	(c/kL) (11b)	(kL/prop) (11c) W19	(No.) (12) C8
		14/15	15/16	16/17	13/14	14/15	15/16	15/16	16/17	15/16	16/17	15/16	16/17	15/16	15/16	14/15	15/16	16/17	14/15	15/16	16/17	13/14	14/15	15/16	13/14	14/15	15/16	15/16	15/16	15/16	15/16
	LWUs with 200 - 1,500 Properties																														
86	Hay	649	664	676	205	219	362	110	112					15	4				649	664	676	1.3	1.5	-0.9	0.9	1.1	-1.2	N		180	1,320
83	Oberon	513	590	607	218	141	137	225	332		185		Y	43	6	1,710	1,770	1,820	513	590	607	-0.9	2.0	3.4	-1.3	1.7	3.3	Y		309	1,260
84	Gilgandra	557	602	644	176	189	188	150	160	237	254	Y	Y	21	27				557	602	644	0.8	-0.2	0.6	0.6	-0.5	0.5	Y		209	1,240
118	Murrumbidgee	309	375	395	163	165	479			169	172	Y	Y	15		975	975	1,000	309	375	395	0.1	0.0	0.1	-1.2	-1.1	-0.7	Y		56	1,220
87	Bourke	632	673	686	252	276	224			177	177	Y	Y	11	3	930	930	930	632	673	686	2.0	1.1	2.2	1.1	0.3	2.0	Y		165	1,210
75	Coonamble	465	479	496	132	103	109	88	88					19	12			940	465	479	496	0.5	1.0	0.6	-0.3	0.1	0.0	Y		234	1,190
81	Gwydir	500	500	500	104	149	153	245	245	130	130	Y	Y	26	16	2,000	2,000	2,000	500	500	500	7.0	3.4	3.0	5.7	2.9	2.3	Y	12	238	1,150
85	Uralla	520	540	550	341	311	281	105	110	125	130	Y	Y		5	510	530	540	520	540	550	-0.7	0.3	0.8	-1.4	-0.4	0.1	Y		122	1,140
99	Coolamon	380	410	430	303	263	314								4	4,500	4,500	4,710	380	410	430	-0.3	0.6	0.3	-0.7	0.2	-0.1	Y	23	104	1,010
89	Bogan	540	540	540	221	243	330	196	196	161	161	Y	Y	30	37				540	540	540	3.4	4.7	0.9	2.5	3.7	0.0	Y		171	940
95	Weddin	427	512	512	146	190	191							4	9	3,730	3,730	3,730	427	512	512	1.9	2.0	2.4	1.8	1.9	2.3	Y		173	1,010
102	Lockhart	490	490	490	228	150	202	191	173	75	75	Y	Y			1,290	1,320	1,320	490	490	490	0.4	1.5	0.3	-0.2	1.0	-0.1	Y	62	161	870
100	Balranald	269	269	279	127	125	106	15	16	130	200	Y	Y	4		630	630	630	269	269	279	-1.0	-2.2	-4.4	-1.8	-2.3	-5.0	N		252	860
92	Carrathool	405	425	467	89	151	126									680	710	790	405	425	467	0.6	0.6	1.0	0.6	0.9	1.6	Y		152	790
96	Warren	485	500	525	243	227	208	180	185	178	173	Y	Y	22	18				485	500	525	-1.6	-1.8	-1.4	-3.6	-3.4	-2.9	N		217	820
98	Walcha	440	460	460	220	190	207	97	99	150	150	Y	Y	22	10				440	460	460	1.8	1.4	1.1	0.9	0.6	0.3	Y		195	800
105	Brewarrina	756	774	790	145	154	131							10	8				756	774	790	-0.1	0.2	1.1	6.0	0.1	1.0	Y		404	480
103	Central Darling	390	488	561	211	93	334									400	400	400	390	488	561	1.4	4.0	-0.1	2.0	6.6	-0.2	Y*		140	380
	Medians (% of LWUs basis) for 200 to 1,500 Properties	*488*	*500*	*519*	*208*	*177*	*205*	*11 out of 18 have non-res sewer usage charges*		*172*		*11 out of 18 have trade waste charges*				*975*	*975*	*970*	*488*	*500*	*519*	*0.6*	*1.1*	*0.7*	*0.6*	*0.5*	*0.1*	*3 LWUs did not achieve FCR*		*176*	
	Median All LWUs (% of LWUs basis)	*Access Charge*		*$609*	*OMA (c/kL)*		*200*	*Non-Res Usage Charge*	*160*							*Developer Charge*		*$4200*	*TRB*		*$600*	*ROA*		*1.4%*	*ERRR*		*1.3%*	*80 LWUs had 'FCR' (76 'Y', 4 Y*)*			
	Median All LWUs (Statewide basis)			*$718*			*208*		*159*									*$4700*			*$718*			*1.8%*			*2.5%*	*6 LWUs did not achieve FCR*			
	70 out of 86 LWUs have non-residential usage charges and 71 out of 86 have appropriate trade waste charges																														

NOTES:

1. 70 LWUs have non-residential sewerage charges which substantially meet the requirements of the Best-Practice Management Guidelines (Appendix C) and 71 LWUs have appropriate trade waste fees and charges.
2. **The charges, bills and costs** shown for each financial year are those applicable at that time and involve no CPI adjustment.
3. **Full Cost Recovery for sewerage** has been achieved by 80 utilities. These comprised 76 utilities which had either an Economic Real Rate of Return or Return on Assets of >=0 for the 2015/16 financial year, shown as 'Y" in col (11a). In addition they include 4 utilities which have significantly increased their 2016/17 charges in order to recover all their costs which are shown as "Y*". A total of 6 LWUs did not achieve full cost recovery. These are shown as "N".
4. Byron also has a residential sewer usage charge of 185c/kL.

APPENDIX G – Data validation processes for the NSW performance monitoring system

G1 Introduction

The NSW Performance Monitoring System is a **'one stop shop'** that minimises red tape, avoids duplication in reporting, and enables DPI Water to annually provide the required regional NSW local water utility (LWU) data to the Australian Bureau of Meteorology (BOM) - for the annual National Performance Report for Urban Water Utilities (www.bom.gov.au) and the Australian Bureau of Statistics.

A prime objective of the NSW Performance Monitoring System is to reliably determine the statewide performance of the regional NSW local water utilities. This requires analysis of statewide medians and totals for key performance indicators in order to reveal historical trends and enable interstate performance comparisons[28]. A further objective is to publish performance data which is accurate and which is not misleading, both for individual LWUs and for statewide indicators. The achievement of these objectives is contingent on obtaining a full and accurate data set.

To this end, DPI Water annually critically reviews all reported data to identify any anomalies or inconsistencies and undertakes actions where appropriate to validate and/or correct such anomalous data. In addition, in order to obtain a fully representative data set for six of the more critical performance indicators, DPI Water adopts the previous year's reported data for those few LWUs that omitted to report such data for the current year. Such data is shown in italics bold in Appendices C, D, E and F.

In addition to the extensive independent auditing of the reported NSW data, this appendix outlines the data validation processes undertaken by DPI Water to identify and address apparent anomalies in the reported data and to develop a full data set, which assures ongoing data reliability for the NSW Performance Monitoring System.

DPI Water is responsible for managing implementation of Goal 21 of the State Plan, NSW 2021 for regional NSW, the NSW Government's *Country Towns Water Supply and Sewerage (CTWSS) Program* (www.water.nsw.gov.au), which is a major reform program and the Regional Water and Waste Water Backlog (RWWWB) program. DPI Water oversees and monitors utility performance, provides leadership, guidance, software and training to the utilities and is the primary regulator for the 92 regional LWUs.

G2 Anomalous data

The quality and consistency of data reported by LWUs in the NSW Performance Monitoring Database varies significantly. To assist LWUs in reporting their data, the database includes a facility that screens the data and provides an alert to notify the user where data is inconsistent, out of range or incomplete. Most LWUs accurately report their performance data. However, review by DPI Water of the full data set from all LWUs consistently reveals a small but significant percentage of anomalous data. This may arise due to misinterpretation of an indicator definition, errors in data handling (input or misreading), inconsistencies in the data stream, or errors/omissions in the data itself.

Data that is inconsistent or anomalous includes:

- **Incomplete data** - data that is not reported or left blank in the current year's reported data.
- **Inconsistent data** - reported data that is inconsistent with historic values or out of expected range.
- **Errors in data** - reported data that is in error (eg text instead of numerals, percentage greater than 100, data where the summation does not agree etc).
- **Unsubstantiated data** - reported data that is out of expected range with no substantiating evidence (eg leakage less than 6% of the total water supplied or a reported number of assessments which differs significantly from historical trends or from that reported in the utility's annual financial statements).

[28] Refer to section 3 and Appendices A and I. Such performance comparisons may provide valuable insights on opportunities for continuing to improve performance and to provide better value for money to residents.

- **Data that conflicts with data from other sources** - reported data that differs significantly from data available elsewhere (eg drinking water quality compliance results from NSW Health, data from the LWU's annual financial statements, IWCM strategies etc.).

Anomalous data must be reviewed and either validated or rejected. The procedures undertaken by DPI Water to validate data are outlined in the following sections.

G3 Validation of data

DPI Water undertakes various broad screening procedures as well as intensive manual and computerised validation procedures. The criteria used in the validation process for the more critical indicators are shown in section G4. Following screening and validation, DPI Water reviews all anomalous reported values and anomalies are either:

- referred to the LWU for confirmation
- adjusted where relevant data from other sources is available
- rejected and left as blank, or
- adjusted where the reported value is unsubstantiated or does not meet adopted criteria.

In addition, in order to enable reporting of statewide totals and medians for six of the more critical indicators (total urban water supplied, operating cost, management cost, current replacement cost, total volume of sewage collected and volume of effluent recycled), where a LWU has not reported current data, the data reported for the previous year has been adopted and is shown in italics bold in Appendices C, D, E and F of this report and Tables 3 to 18 of the *2015-16 NSW Water Supply and Sewerage Benchmarking Report*.

It is noted that the 92 NSW LWUs each report more than 180 water supply indicators and a similar number of sewerage indicators together with their financial indicators (from the LWUs' annual financial statements). Of these indicators, approximately 50 for each of water supply and sewerage are key indicators, which are shown on each LWU's annual TBL performance report. Of these 50 key indicators, 20 are considered to be critical indicators to determine a LWU's performance and the criteria for validating these critical indicators are described in section G4.

Screening and validation procedures identify the more significant anomalies, and anomalies occurring in key indicators will be followed up with the LWU. However, there may be instances where an error is not identified. To allow for this, DPI Water also provides a draft copy of tables of performance indicators to each LWU for its review prior to finalisation of the annual report.

DPI Water procedures for validation and adjustment of selected data are detailed below.

Incomplete data - Where a LWU has not reported data, the validation process is as follows:

- For critical indicators, refer to the criteria outlined in section G4.
- For other key indicators, DPI Water will contact the LWU to obtain such data, unless the reported value can be adjusted in accordance with data obtained from an alternative source.
- For less significant indicators, the field will be left blank.

Inconsistent data - Where the reported value is inconsistent with historic values, out of expected range or otherwise inconsistent, the validation process is as follows:

- For critical indicators, refer to the criteria outlined in section G4.
- For other key indicators, DPI Water will contact the LWU to review the reported data, unless the reported value can be adjusted in accordance with data from an alternative source.
- For less significant indicators, the reported value will be deleted and the field left blank.

Errors in data - Where a reported value is obviously in error (eg numbers reported as text, values reported as $M instead of $'000 etc.), DPI Water will correct the error. Where there is some doubt, if it is a key indicator the LWU will be requested to review the reported value, otherwise it will be deleted and the field left blank.

Unsubstantiated data - Where the reported value is out of the expected range and is unsubstantiated, the validation process is as follows:

- For critical indicators, refer to the criteria outlined in section G4.

- For other key indicators, DPI Water will contact the LWU to review the reported data, unless the reported value can be adjusted in accordance with data from an alternative source.
- For less significant indicators, the reported value will be deleted and the field left blank.

Data that conflicts with data from other sources - Where reported data conflicts with data obtained from alternative sources (eg the utility's strategic business plan or IWCM strategy, NSW Health, Environment Protection Authority, Special Schedules etc), DPI Water will review the data and will either adjust the data to agree with the alternative source or request confirmation of the data from the LWU.

Audited data - The NWI requires an independent audit to be undertaken every 3 years[29] of the water supply and sewerage performance reporting for those LWUs with over 10,000 connected properties. DPI Water approves each LWU's proposed auditor, after confirming that the auditor has met the NWI auditing requirements and reviews the audit findings for the non-financial data and requests confirmation or follow up by the LWU's auditor for indicators that fail the audit.

Financial data – DPI Water reviews the financial data and any omissions or inconsistencies are referred to the LWU for confirmation. Independent audits are conducted annually for all of the 30 NWI financial performance indicators, which are reported in Notes 2 and 3 of the special purpose financial statements to each LWU's annual financial statements.

LWUs are required to annually report the fair value[30] and the current replacement cost depreciation of their water supply and sewerage assets in their audited annual financial statements

G4 Criteria for adjustment of critical indicators

DPI Water takes care to ensure that the critical indicators are consistent and accurate. The criteria adopted by DPI Water to review and where necessary adjust anomalous data for critical indicators are outlined below.

G4.1 Aggregated businesses

The performance indicators in the NSW Performance Monitoring System are determined for each LWU's aggregated water supply or sewerage businesses rather than for individual water supply or sewerage systems. This is done to align with national performance reporting and to facilitate comparisons. In addition, detailed data showing the performance of each of the 543 LWU water and sewerage treatment works is published in Appendices D1 and D2 of the annual *NSW Water Supply and Sewerage Benchmarking Report* (www.water.nsw.gov.au). Refer also to section G4.6.

G4.2 Connected properties

Performance indicators are determined on a 'per connected property' basis for consistency with the National Performance Framework. A connected property is one that is connected to the water supply or sewerage system, as opposed to an assessment, which is a bill issued by a water utility.

Determination of number of assessments – The number of assessments is determined by a review of the data reported by the LWU in the NSW Performance Monitoring Database and the number of assessments reported by the LWU in its annual financial statements (Special Schedule Nos 3 and 5) together with the historic data. The number of assessments adopted must be consistent with historic data.

Calculation of connected properties – The number of connected properties is calculated as the product of the number of assessments times the ratio of the number of connected properties per assessment for each of water supply and sewerage (Tables 9 and 14 of the *NSW Benchmarking Report*). DPI Water has worked with LWUs to establish these ratios, which do not change significantly from year to year.

[29] Independent audits of the auditable indicators in the *National Performance Framework 2013-14* for the 28 LWUs required to report nationally were undertaken in 2006-07, 2009-10, 2012-13 and 2015-16. Indicators which met the rigorous national auditing requirements have been published in the *National Performance Report 2015-16*. These LWUs serve 75% of the connected properties in regional NSW. In addition the reported values for the 30 NWI financial performance indicators have been independently audited annually since 2006-07 for all of the LWUs.

[30] In accordance with the Australian Accounting Standards Board's AASB116 Property Plant and Equipment. The *NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets*, NSW Office of Water 2014 provides current unit rates and guidance on the valuation and depreciation of such assets. Available at www.water.nsw.gov.au.

G4.3 Charges and bills

Charges – water supply and sewerage charges (access charges and usage charges) are shown in Appendices E and F for a LWU's principal water supply or sewerage system (charges are also shown for the non-potable supply component in dual supply systems). LWUs with multiple residential tariffs (ie those with different charges for separate water supply or sewerage systems) are shown in Tables 6A and 7A of the *NSW Benchmarking Report*. The charges shown in Appendices E and F include the charges for the current reporting year (2015-16) and also for the forthcoming year (2016-17) and are obtained by DPI Water from each LWU's website.

Typical residential bill (TRB) – the TRB is calculated for each LWU's principal water supply system. The TRB is calculated from the utility's average annual volume of residential water supplied per connected property multiplied by the usage charge and added to the access charge. If the LWU has a dual supply system, the above calculation is repeated to obtain the non-potable water component, which is added to the potable component to obtain the total TRB.

The current TRB is calculated from the current charges and the current residential water supplied. The TRB for the forthcoming reporting year is estimated from the forthcoming year's charges applied to the current residential water supplied. In the following year, the TRB will be recalculated using the actual volume of residential water supplied in that year. Therefore the current TRB shown in column 8 of Appendix E may differ from the corresponding TRB shown in the previous year's reports.

G4.4 Urban water supplied

Total potable urban water supplied – Where a LWU has not reported its total potable urban water supplied, the data reported for the previous year has been adopted (shown in italics bold in the tables).

Residential water supplied – Where a LWU has reported residential water use but not commercial or industrial use, the reported residential use has been reduced and a commercial component has been included. Similarly, where a LWU has not reported residential water use, a residential component has been included. The residential component in each case has been calculated on the basis of the statewide average percentage of 58% of the LWU's total potable urban water supplied (NWI Indicator W11.1).

Real Losses (mostly leakage) - Where a LWU has reported a real loss of less than 6% of the total potable urban water supplied and has not provided evidence to substantiate such a low value of leakage, the reported real loss has been increased to 6%. In this case, the total potable urban water supplied has also been increased to include the additional leakage component. These adjusted values of real losses are shown in italics bold in Table 8 of the *2015-16 Benchmarking Report*.

Non Revenue Water (NRW) (real losses (mostly leakage), apparent losses (under-registration of customer meters and illegal use) plus unbilled water supplied (eg mains flushing and fire fighting)) – Where a LWU has reported NRW of less than 10% of the total potable urban water supplied (W11.1), the reported NRW has been increased to 10%, unless the LWU has provided evidence of a Real Loss of less than 6%. In such cases, the adopted value for NRW has been determined as the Real Loss plus 4%. The adjusted values of NRW and total potable urban water supplied (W11.1) are shown in italics bold in columns 9 and 10 of Table 8 of the *Benchmarking Report*.

G4.5 Efficiency

Operating Cost (OMA) – NWI indicators F11 and F13 (water supply operating cost per property and water and sewerage operating cost per property respectively) are calculated in accordance with the NWI definitions and reported accordingly in the *National Performance Report* and in Appendix F of the *NSW Benchmarking Report*.

However in this *Performance Monitoring Report* and in Tables 5 and 11 and Figures 31 to 33 of the *NSW Benchmarking Report*, where a LWU purchases water from a bulk water provider, the operating cost calculated for the LWU excludes the purchase cost of the bulk water but includes an appropriate proportion of the operating cost of the bulk water provider. The cost allocated to the LWU is calculated by multiplying the operating cost of the bulk provider by the ratio of the water purchased by the LWU to the total water supplied by the bulk provider to all customers. This is done in order to provide a 'level playing field' comparison of operating costs by not penalising reticulators through inclusion of the capital cost component of providing the bulk supply, which is included in the purchase price of the water.

Where a LWU has not reported its operating cost, the previous year's operating cost per property has been adopted (shown in italics bold in the tables).

Management Cost – Where a LWU has not reported its management cost, the previous year's management cost per property has been adopted (shown in italics bold in the tables).

G4.6 Drinking water quality compliance

Drinking Water Quality Compliance for each LWU is based on the number of samples tested as part of the *NSW Health Drinking Water Monitoring Program* supplemented with samples reported by the LWU in the *NSW Performance Monitoring Database*. A LWU has complied with the 2011 NHMRC/NRMMC Australian Drinking Water Guidelines (2011 ADWG) for microbiological water quality (ie it is shown as 'Yes' in column (9) of Appendix D) if the required number of samples has been tested and at least 98% of samples had no E.coli[31]. Where E. coli is detected in a microbiological sample, further investigation is needed to determine whether there is a real problem with drinking water quality in accordance with the NSW Health protocol: (www.health.nsw.gov.au/environment/water/Pages/nswhrp-microbiological.aspx).

Similarly, chemical water quality (health related[32]) is satisfactory (shown as 'Yes' in column (11) of Appendix D) if the required number of samples has been tested and the 95th percentile of results does not exceed the guideline value for each chemical. Non-potable supplies are excluded.

Physical (aesthetic) water quality is satisfactory if the required number of samples has been tested and the mean of results does not exceed the guideline value for each characteristic.

Where a LWU has more than one treatment works, the reported compliance has been pro-rated on the basis of the number of samples tested at each treatment works. Where a LWU has not reported the number of samples tested or the compliance of samples from a particular treatment works and no details are available from NSW Health, the percentage of complying samples for that treatment works is deemed to be zero.

Annual review of your Drinking Water Management System (DWMS) is required and any corrective action needs to be included in your annual action plan to council. Refer also to Circular LWU 18.

It is important that specialist LWU infrastructure, such as water and sewage treatment works, dams and recycling projects, is fit for purpose, robust, cost-effective and without wasteful '**gold plating**', which penalises residents with an **unwarranted increase** to their typical residential bill (**TRB**). In this regard, any LWU proposals for the construction or modification of a dam, a water or sewage treatment works or a recycling project require DPI Water approval under section 60 of the *Local Government Act, 1993* (www.water.nsw.gov.au). Similarly, acceptance of a high or medium risk trade waste discharge to a LWU sewerage system requires a DPI Water Section 90(1) concurrence.

The section 60 approval involves an independent and objective review that allows DPI Water to share its insights and expertise in overseeing the 543 LWU water and sewage treatment works and 104 LWU dams. The section 60 review provides assurance to the community that the proposed key specialist barrier works are fit for purpose and provide a robust, safe, cost-effective and soundly based solution, without wasteful 'gold plating'. These works protect public health and safety and minimise adverse environmental and social impacts.

In addition, under section 61 of the Local Government Act, 1993, DPI Water carries out regular inspections of the 543 LWU water and sewage treatment works and provides feedback and mentoring to the LWU operators.

Each operator in charge of a water or sewage treatment works in regional NSW is required to have appropriate qualifications and experience. DPI Water conducts comprehensive operator training courses for LWU water and sewage treatment works operators (www.water.nsw.gov.au and urbanwater.ctw@dpi.nsw.gov.au). The detailed performance of each of these treatment works is publicly disclosed annually in Appendices D1 and D2 of the *NSW Benchmarking Report*.

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[31] This value (98%) has been determined by NSW Health in accordance with section 10.3.1 on page 10-11 of 2011 ADWG and is the same value as applied for the 2004 ADWG.

Where a LWU has not complied with 2011 ADWG, the percentage of samples which complied is shown in columns (9) and (11) of Appendix D for microbiological and chemical compliance respectively.

[32] The 2011 ADWG specify guideline limits for chemical water quality (health related). Aesthetic parameters such as aluminium, calcium, chloride, iodine, iron, magnesium, sodium, total dissolved solids (TDS) and zinc are excluded.

Similarly, under the Aboriginal Communities Water and Sewerage Program (www.water.nsw.gov.au), DPI Water carries out regular inspections of the water and sewerage infrastructure for 62 discrete Aboriginal Communities in NSW. The 2015-16 drinking water quality results for these communities are disclosed in Appendix D3 of the *2015-16 NSW Benchmarking Report* (www.water.nsw.gov.au).

G4.7 Sewerage

Sewage Collected – Where a LWU did not report the current year's volume of sewage collected, either the previous year's value or the current year's volume of sewage treated has been adopted, whichever is the larger (shown in italics bold in the tables).

Effluent Recycled – Where a LWU has not reported a value for effluent recycled but has reported greater than 10% recycling in previous years, the percentage recycled for the current reporting year is assumed to be the same as that for the previous year (shown in italics bold in the tables).

Compliance with Licence for Prescribed Indicators – LWU Licence limits are generally 90 percentile limits. A LWU is deemed to comply with its licence for each prescribed indicator (ie compliance is 100%) if it achieves>= 90% compliance. Where there is no licence limit for a prescribed indicator, compliance is shown as 100%. Where a LWU has not reported the compliance for a sewage treatment works, compliance for that treatment works is deemed to be zero.

Sewage Treatment Works (STW) Compliance - A STW is fully compliant if it meets its licence conditions for all prescribed indicators. If any indicator that is prescribed in the licence fails to meet the licence conditions (ie BOD, Suspended Solids, Total Nitrogen, Oil and Grease, Phosphorous, Faecal Coliforms, Ammonia, pH), then the STW is deemed not to comply with its licence.

G5 Implementation of the best-practice management framework

LWUs must implement the 19 planning, pricing and management outcomes required by the *NSW Best-Practice Management Framework*. LWUs will thus achieve appropriate, affordable, cost-effective and sustainable piped water supply and sewerage services and comply with National Competition Policy and with the *National Water Initiative*. Meeting the outcomes required by the Framework is a pre-requisite for payment of a dividend from the surplus of the water supply or sewerage businesses to the council's general revenue and for financial assistance towards the capital cost of backlog infrastructure (as at 1996) under the CTWSS Program.

Each LWU reports its implementation of the outcomes of the *Best-Practice Management Framework* in Notes 2 and 3 of the special purpose financial statements to its annual financial statements. DPI Water assesses this reported implementation against the 19 outcomes set out in Table 1 of the *Best-Practice Management Guidelines, 2007* (10 for water supply and 9 for sewerage). The assessment procedure for each outcome is shown below. Where a LWU has not reported its implementation against one or more of the outcomes, DPI Water will assess the LWU's implementation from other available data (eg annual financial statements, Strategic Business Plans submitted previously and completion of performance reporting via the *NSW Performance Monitoring Database*). Otherwise, the LWU will be deemed not to have implemented that particular outcome. Each LWU's implementation results are shown in Appendix C.

A LWU's **peak planning document** for water supply and sewerage is the **later of** its **IWCM strategy and financial plan** and **SBP and financial plan**.

Integrated water cycle management strategy and financial plan – A utility's IWCM strategy needs to 'right size' any necessary infrastructure projects and identify a 30-year strategy for water supply, sewerage and stormwater which provides the best value for money on the triple bottom line (TBL) basis of social, environmental and economic considerations. DPI Water reviews each LWU's IWCM strategy to ensure it is soundly based. The IWCM strategy needs to identify the best mix of capital works, non-build solutions, policies and operation and maintenance activities in accordance with the July 2014 IWCM check list (www.water.nsw.gov.au) and be made available on the utility's website. Note that the 19 outcomes required by the BPM framework aid the development of such a strategy through the required sound planning, pricing and management of services.

The required outcome is met if the LWU has commenced an integrated water cycle management (IWCM) study. Refer to Appendix C.

Following the 2014 streamlining of the NSW BPM framework (Appendix H), a LWU that prepares a 30-year IWCM strategy and financial plan in accordance with the July 2014 IWCM check list

(www.water.nsw.gov.au) will meet 6 of the 19 BPM outcomes (IWCM (W, S), strategic business planning (W, S), water conservation and drought management).

Water conservation and demand management are essential for ensuring efficient use of our valuable water resources and to improve environmental outcomes. These are undertaken as part of the IWCM strategy (July 2014 check list) (www.water.nsw.gov.au).

Each LWU should develop and implement **cost-effective water conservation measures**, which consider:

- active intervention – eg retrofit programs, rebates for water efficient appliances or rainwater tanks, and building code programs (including BASIX); and
- water pricing reform, community education, and cost-effective water loss (ie leakage) reduction programs (page 8).

Drought management is a fundamental responsibility of the LWU to ensure continuity of supply. This needs to be documented in a drought management plan with an adopted schedule of trigger points for timely implementation of appropriate drought water restrictions and supplementary water sources. The implemented schedule of triggers and management measures are reported as part of the IWCM and strategic business plan (July 2014 check list) (www.water.nsw.gov.au).

Strategic Business Plan and Financial Plan – The community and governments are demanding increased accountability, increased levels of service and increased efficiency from water utilities. In addition, regulatory authorities are imposing more stringent environmental and health regulations. The LWU's 30-year strategic business plan facilitates sound asset management by addressing these issues and providing a framework for the utility to negotiate appropriate levels of service with the community and develop its 30-year total asset management plan (TAMP). This involves a cost-effective capital works program[33] that discloses each of the growth, improved standards and renewals components, together with a sound operation plan, which includes cost-effective non-build solutions, and a maintenance plan.

The SBP and financial plan need to be prepared in accordance with the July 2014 strategic business planning check list (www.water.nsw.gov.au) and be made available on the utility's website. Guidance for LWUs is available in the *NSW Water and Sewerage Strategic Business Planning Guidelines*, NSW Office of Water, July 2011 (www.water.nsw.gov.au).

The strategic business plan must include the utility's proposed levels of service, 30-year TAMP, and a sound 30-year financial plan that identifies the resulting TRB (in current dollars) over this period.

The Integrated Planning and Reporting (IPR) Framework for local government in NSW, March 2013 has been designed to complement and avoid duplication with the *Best-Practice Management (BPM) of Water Supply and Sewerage Guidelines*. Appendix H2 highlights that under IPR, each **council is required to implement the outcomes required by the BPM Framework** for water supply and sewerage. The inputs to the IPR framework from the BPM framework for water and sewerage are discussed in Appendix H2 and illustrated in figure H4 of Appendix H.

DPI Water reviews LWU strategic business plans and financial plans in order to ensure they are soundly based. A LWU has met the required outcome if it has prepared a sound 30-year water and/or sewerage strategic business plan and financial plan in accordance with the above Check List. Such a plan must include a sound 30-year TAMP and demonstrate the long-term financial sustainability of the LWU's water and/or sewerage businesses and compliance with National Competition Policy. Where a LWU has a strategic business plan but the plan is more than 4 years old, it is deemed to have provisionally met the outcome, and is shown as Yes* in Appendix C and Appendix D.

Such a LWU now needs to prepare a 30-year IWCM strategy and 30-year financial plan in accordance with the July 2014 IWCM check list (www.water.nsw.gov.au).

Each LWU needs to annually 'roll forward', review and update its 30-year total asset management plan for projects completed, modified or deferred and to prepare an updated 30-year financial plan. A brief report to council should be provided on the updated financial plan, including any necessary corrective action (An example report to council is provided in the *NSW Strategic Business Planning Guidelines*).

[33] I.e. fit for purpose and without wasteful 'gold plating'. Refer also to section 4.6 of Appendix G.

Pricing and regulation of water supply, sewerage and trade waste – Best-practice pricing and regulation are fundamental to the effective delivery of water supply, sewerage and trade waste services, resulting in fair pricing of services, removal of significant cross-subsidies, and protection of our valuable water resources and the environment.

The strong pricing signals encourage efficient water use by all users and compliance with discharge limits and waste minimisation by commercial and industrial dischargers.

The 11 pricing outcomes required by the NSW Best-Practice Management Framework (page xiv) are outlined below. These incorporate implementation of the NSW Framework for Regulation of Sewerage and Trade Waste[34], which includes implementation of appropriate sewerage and trade waste charges and developer charges, as well as a sound trade waste regulation policy and an approval for each trade waste discharger. The required pricing outcomes include a non-residential sewer usage charge/kL and non-compliance trade waste usage and excess mass charges. In addition, the framework for regulation of sewerage and trade waste also involves mentoring and coaching of dischargers and enforcement measures which include financial penalties and finally, disconnection of a trade waste discharger in the event of persistent failure to comply with approval conditions.

Full cost recovery – Full cost recovery (lower bound pricing) is achieved if either the economic real rate of return or the return on assets is >=0 (shown as 'Y' in Appendix E and Appendix F). Assets must be valued at fair value and current replacement cost depreciation must be applied.

Alternatively, if a LWU has significantly increased its charges in order to recover its costs, it is also deemed to have full cost recovery (shown as 'Y*' in Appendix E and Appendix F). Refer also to Appendix G of the *2010-11 NSW Water Supply and Sewerage Performance Monitoring Report* (www.water.nsw.gov.au).

Pay-for-use-pricing – For water supply, this requires pay-for-use pricing, with the residential tariff independent of land value and no free water allowance. Refer to Appendix C and Appendix E. All the NSW utilities have met this outcome.

Residential revenue from water usage charges > 75% – In order to provide strong pricing signals to residents and encourage efficient water use, the water supply tariff for LWUs with 4,000 or more connected properties must be such that at least 75% of residential revenue is obtained through water usage charges. At least 50% of residential revenue from usage charges is required for LWUs with fewer than 4,000 properties. Where a LWU has not met the above outcome but has obtained at least 70% (or 45% for fewer than 4,000 properties) of residential revenue from usage charges, it is deemed to have provisionally met the outcome and is shown as Yes*.

Appropriate non-residential water supply charges – Appropriate water usage charge per kL and access charge relative to customer's capacity requirements.

Residential sewerage charges – Residential tariff is independent of land value.

Non-residential sewerage charges – This requires a two part tariff, with an appropriate sewer usage charge/kL and an access charge that is reflective of the peak load the customer may place on the sewerage system.

Liquid trade waste fees and charges – This requires appropriate trade waste fees and charges to be applied to all liquid trade waste dischargers[35]. These include non-compliance trade waste usage and excess mass charges.

A sound liquid **trade waste regulation policy** (endorsed by DPI Water) and an appropriate approval for each trade waste discharger is a further required outcome. Refer to Appendix C.

In view of the potential risks to sewerage infrastructure, public health and safety and the environment, from uncontrolled trade waste discharges, the acceptance of trade waste discharges

[34] The NSW Framework for Regulation of Sewerage and Trade Waste is a preventative risk management approach for achieving effective and efficient use of the sewerage system, which is a common pool resource.

[35] Liquid Trade Waste Regulation Guidelines, 2009 (www.water.nsw.gov.au).

to the sewerage system requires DPI Water's concurrence under section 90(1) of the *Local Government Act, 1993* (www.water.nsw.gov.au).

DPI Water has published comprehensive *Water Supply, Sewerage and Trade Waste Pricing Guidelines 2002 and Liquid Trade Waste Regulation Guidelines 2009* (http://www.water.nsw.gov.au/__data/assets/pdf_file/0008/549602/town-planning-water-utilities-liquid-trade-waste-guidelines.pdf).

Developer charges – The required outcome is met if an appropriate development servicing plan (DSP) with commercial developer charges is implemented. Utilities that have commercial developer charges but have not completed a DSP are assigned provisional implementation and are shown as Yes*. In addition utilities with growth of under 5 lots/a are granted an exemption and are shown as Yes[e]. Refer Appendix C, Appendix E (water supply) and Appendix F (sewerage).

The Minister for Regional Water has approved the *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* pursuant to section 306 (3)(C) of the *Water Management Act 2000*. These guidelines modify and supersede the *Water Supply, Sewerage and Stormwater Developer Charges Guidelines, 2002* in accordance with the recommendations of the *IPART Review Report* and stakeholder feedback on a consultation draft of the new guidelines (http://www.water.nsw.gov.au/__data/assets/pdf_file/0011/663698/2016-Developer-Charges-Guidelines.pdf).

These documents provide guidance for best-practice pricing and regulation by LWUs. Such pricing meets the key national requirements (page xiv). The comprehensive software and guidance provided for LWUs are noted in section 4.6.

Complete performance report by due date – Annual performance monitoring is required under National Competition Policy and the National Water Initiative and is essential for monitoring and improving productivity and performance and for public accountability.

Each LWU needs to continue to lodge its data on the NSW Performance Monitoring database by 15 September each year.

Each LWU also needs to annually 'roll forward', review and update its 30-year TAMP and 30-year financial plan and review its DWMS and the TBL Performance reports and the Section 61 Reports provided by DPI Water to prepare and implement a sound action plan to council, which addresses any emerging issues or areas of underperformance.

Guidance for councillors on understanding and using your TBL performance report and action plan is provided in Appendix G of the *NSW Water and Sewerage Strategic Business Planning Guidelines, July 2011* (www.water.nsw.gov.au). This appendix will also assist the water and sewerage manager to prepare a sound action plan to council. An updated version of this appendix is provided annually to each LWU with its TBL performance reports.

A LWU meets the required outcome if it completes its performance reporting for water and/or sewerage by the due date and prepares and implements a sound annual action plan to council. Refer to Appendix C.

APPENDIX H – Streamlining of the NSW best-practice management framework

H1 Overview

The *NSW Best-Practice Management (BPM) of Water Supply and Sewerage Framework* (page xiv) has been streamlined with the introduction of the July 2014 Integrated Water Cycle Management (IWCM) check list and the strategic business planning (SBP) check list (www.water.nsw.gov.au), which has eliminated nine documents. This minimises the regulatory burden and cost to LWUs, without diminishing any effectiveness or efficiency in achieving the outcomes of the BPM framework (Figure H2).

A LWU's **peak planning document** for water supply and sewerage is the **later of** its 30-year **IWCM Strategy and financial plan** (on the basis of the July 2014 IWCM Check List) and its **SBP and financial plan** (FP) (on the basis of the July 2014 SBP Check List). The IWCM Strategy and SBP are required every 8 years on a rotation of every 4 years (Figures H1 and H3). The key **outputs** of the IWCM strategy or SBP are the **30-year total asset management plan (TAMP)**[36] and **30-year financial plan** and an affordable required typical residential bill (**TRB**) on the basis of meeting regulatory requirements, the agreed levels of service (LOS) and the projected demographic growth[37].

The focus of an **IWCM strategy** is evaluating the merits of the available scenarios (a combination of options) for cost-effectively addressing any current and future deficiencies in meeting regulatory requirements and the agreed levels of service (LOS) with respect to water security, water quality, water distribution system and sewage management system. The LWU's analysis will enable it to 'right size' any required infrastructure and identify the IWCM scenario which provides the best value for money on the triple bottom line (TBL) basis of social, environmental and economic considerations (Figure H3).

The **SBP**, which is a mid-term review of the IWCM strategy, involves 'rolling forward', reviewing and updating the TAMP from the IWCM Strategy and analysing the renewals component of the TAMP to develop a sound 30 year renewals plan.

The annual **Action Plan** provided to Council for endorsement and implementation closes the LWU's 'planning loop' by annually updating the progress/achievements against the adopted 30 year TAMP and FP after 'rolling forward', reviewing and updating the TAMP and FP and reviewing its Drinking Water Management System (DWMS) and TBL Performance Report from DPI Water (Figure H1).

All the regional NSW urban water utilities need to implement the 19 planning, pricing and management outcomes required by the BPM framework. These outcomes aid the development of a robust IWCM strategy and SBP through sound planning, pricing and management of services.

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[36] A 30-year **TAMP** is required as part of the utility's IWCM strategy or SBP and provides a framework for the utility to negotiate appropriate levels of service with the community and develop its 30-year TAMP. This involves a cost-effective capital works program, which discloses each of the growth, improved standards and renewals components, together with a sound operation plan, which involves cost-effective non-build solutions, and a maintenance plan. As noted above, the IWCM strategy and financial plan needs to be in accordance with the July 2014 IWCM check list and the SBP and financial plan need to be in accordance with the July 2014 strategic business planning check list.

[37] Care is required to ensure that the projected demographic growth is realistic and that **sensitivity analysis** (Item 17 of the strategic business planning check list) is carried out to ensure that the adopted financial plan is robust, with an affordable required typical residential bill (TRB).

A **high** level of **demographic growth** will require significant investment in water supply and sewerage infrastructure, which a LWU may plan to largely fund by projected future developer charges and annual charges from the new development. However, if the infrastructure required for such demographic growth is constructed by the LWU and the growth fails to materialise, the LWU will face shortfalls in revenue from both future developer charges and annual charges from the new development. Meeting the LWU's loan obligations for this infrastructure may therefore require a significant increase to the LWU's projected TRB. However, sensitivity analysis on the above basis would enable the LWU to make prudent investment decisions based on **realistic** demographic projections and to prepare a robust financial plan and required TRB which can cope with likely future movements in inflation and borrowing and investment rates.

H2 The streamlined BPM framework

Figures H1 to H6 highlight the key characteristics of the streamlined BPM framework, financial planning considerations, and associated infrastructure technology and operation strategies:

- Figure H1 shows the **streamlined BPM framework**, which requires the preparation of a 30 year IWCM strategy, financial plan and report[38] and a strategic business plan (SBP), financial plan and report every 8 years, on a rotation of every 4 years. As noted on in section H1, the 30-year IWCM strategy 'right sizes' any required infrastructure and identifies the scenario which provides the best value for money on the above TBL basis.

  Figure H1 also shows each LWU needs to continue to prepare and implement an annual action plan to council after 'rolling forward', reviewing and updating its 30-year TAMP (capital works plan, operation plan, maintenance plan and non-build solutions), updating its 30-year financial plan, reviewing its DWMS and annual TBL performance reports and section 61 inspection reports provided by DPI Water and addressing any emerging issues or areas of underperformance. The LWU's annual action plan thus continues to close the LWU's 'planning loop' with the later of its IWCM strategy and SBP and to highlight any corrective action the LWU needs to carry out.

  The required TRB depends on the quantum of works in the TAMP, which in turn is dependent on the agreed LOS and the projected demographic growth[34]. For instance adopting a higher LOS and higher demographic growth would generally result in a large quantum of works in the TAMP resulting in a higher required TRB. Therefore it is imperative that the community and the LWU carefully consider and regularly review the LOS and demographic growth when developing the IWCM strategy and SBP.

  Figure H1 shows that rather than placing its completed IWCM Strategy or SBP on a shelf to gather dust, each LWU needs to annually 'roll forward' the 30-year TAMP in its IWCM strategy and to review and update the TAMP for projects completed, modified or deferred. The LWU needs to update its 30-year financial plan using the updated TAMP and the LWU's latest annual financial statements (Special Schedules 3 and 4 for water supply and 5 and 6 for sewerage) in order to **determine**:

  - **whether** the **required TRB** (in the current year's dollars) in its IWCM strategy or SBP remains **satisfactory**
  - **whether** the **actual TRB** in its annual TBL performance report is **consistent with** the above **required TRB**[39]. Where the above analysis identifies the need for corrective action, the LWU must implement the necessary changes to the next year's annual charges to ensure the LWU continues to achieve full cost recovery and to provide the necessary strong pricing signals, which encourage efficient use of water and sewerage infrastructure.

  The annual **action plan** to council, which is the key water and sewerage working document provided to council for endorsement and implementation each year, highlights the LWU's **achievements** to date and any **corrective actions** needed to address emerging issues or areas of under-performance.

  The action plan to council must report whether the LWU's water and sewerage systems are performing in accordance with its adopted peak planning document (the later of the SBP and financial plan and the IWCM strategy and financial plan) and whether corrective action is needed to achieve the required BPM outcomes eg:

  - Full cost recovery
  - Strong pricing signals
  - Drinking water management system review
  - Rectify areas of under-performance.

  Refer also to Figure H5.

[38] An example 30-year financial plan and report to assist LWUs is available from DPI Water on request (urbanwater.ctw@dpi.nsw.gov.au).

[39] Appendix H of the *NSW Water and Sewerage Strategic Business Planning Guidelines* (www.water.nsw.gov.au) provides an example and guidance on the annual updating of the financial plan, assessing the adequacy of the actual TRB and preparing a brief report to council on the updated financial plan.

- Figure H2 compares the 2013 requirements with the streamlined 2014 requirements and shows the deleted documents over the 8 year planning cycle, as a result of the streamlined BPM framework (the **9 deleted documents** are: 4 x water conservation plans, 2 x IWCM evaluation studies, 1 x IWCM strategy, 1 x SBP, 1 x drought management plan).
- A LWU's **peak planning document** for water supply and sewerage is the **later of** its 30-year **IWCM strategy and financial plan** and 30-year **SBP and financial plan**.

  DPI Water has compiled a 21-year water supply and sewerage planning data set of 170 performance indicators to help each LWU prepare an IWCM strategy or SBP. The data set is based on the LWU data reported in the NSW Performance Monitoring System since 1994/95. An example data set based on the data reported by Coffs Harbour City Council (PDF 1.1 MB) can be downloaded. Such data sets are available to each LWU on request from DPI Water by contacting an urban water officer (performance monitoring).

  Figure H3 shows the key characteristics of a LWU's **IWCM strategy** and financial plan and the **SBP** and financial plan. The focus of the IWCM strategy is evaluating alternative options/scenarios to cost effectively address current and future issues/deficiencies in meeting the regulatory requirements and agreed levels of service with respect to water security, water quality, water distribution system and sewage management system to 'right size' any required infrastructure and identify the best-value IWCM scenario and strategy on a triple bottom line basis. However the focus of the SBP is on 'rolling forward', reviewing and updating the TAMP from the IWCM strategy and analysing the renewals component of the TAMP to develop a sound **30-year renewals plan**[40], the first 5 years of which include only proven evidence based renewals that provide value for money. Refer also to Tables 5C and 5D of the *2015-16 NSW Benchmarking Report*.

  Preparation of an **IWCM strategy**, financial plan and report in accordance with the July 2014 IWCM check list will address **6** of the 19 **BPM outcomes** (2 x IWCM strategy, 2 x SBP, water conservation plan, drought management plan). After 4 years the LWU will need to prepare a SBP, financial plan and report in accordance with the July 2014 SBP check list.

  Preparation of an annual **action plan** to council for each of water supply and sewerage will address another **5 BPM outcomes** (2 x performance monitoring, 2 x full cost recovery and 1 x strong pricing signals (NWI Indicator F4)).

  The remaining **8 pricing outcomes**[41] required by the BPM framework are addressed through:

  - Commercial developer charges (x 2)
  - Sound residential pricing (x 2)
  - Sound non-residential pricing (x 2)
  - Sound trade waste regulation policy and approval conditions
  - Appropriate trade waste fees and charges.
- Figure H4 shows the **water** supply and sewerage **inputs to** each council's Integrated Planning and Reporting (**IPR**) from its IWCM strategy and financial plan or its SBP and financial plan. The adopted 30-year **TAMP** and **financial plan** from the later of a council's IWCM strategy and SBP is the **Resourcing Strategy** of the IPR for water supply and sewerage. The Delivery Program and Operation Plan comprise the first four years of the TAMP and financial plan. The annual action plan to council provides the key information for the Annual Report of the IPR. The water supply and sewerage LOS from the IWCM strategy or SBP are also a key input to the Community Strategic Plan.

  It is important to note that under IPR[42], each **council is required to implement** the outcomes required by the **BPM framework** for water supply and sewerage infrastructure. Importantly as

[40] DPI Water will be preparing tools and guidance materials on identifying and implementing a cost-effective and robust 30-year renewals plan. Refer also to Item 7F of the July 2014 strategic business planning check list (www.water.nsw.gov.au).

[41] Refer to section G5 for further information on all **11 pricing outcomes** required by the BPM framework.

[42] Page 20 of the *Integrated Planning and Reporting Manual for local government in NSW, March 2013* (www.olg.nsw.gov.au) highlights the following more stringent requirements which apply for water supply and sewerage:

shown on page xiv, the BPM framework addresses the **10 key national requirements** for water supply and sewerage, including National Competition Policy, the National Water Initiative (NWI), the National Urban Water Planning Principles 2008, the NWI Pricing Principles 2010, the National Sewage Quality Management Framework 2012, the Australian Drinking Water Guidelines (updated 2015), and the National Performance Framework 2014.

- Figure H5 shows the **interaction** between the **BPM framework**, **S60**, **S61** and **LWU operations**. Section 60 of the *Local Government Act 1993* assures the use of **'right infrastructure technology'** for the key specialist barrier works of water and sewage treatment works, dams and water recycling projects. These works protect public health and safety and minimise adverse environmental and social impacts. The section 61 inspections assure **effective**, efficient and safe **operation and maintenance** for this infrastructure. **Nationally certificated training** in water and wastewater treatment, fluoridation, dam safety inspection and liquid trade waste regulation enables LWU operators to acquire the necessary knowledge and skills to effectively and efficiently operate and maintain this infrastructure. Significantly, 429 LWU operators have met the requirements of the National Certification Framework for Water Treatment Operators (www.water.nsw.gov.au) and 445 LWU operators are fully qualified wastewater treatment operators.

  Implementation of the 19 outcomes required by the BPM Framework by each LWU ensures sound planning, pricing, management and operation and maintenance of their urban water services. This includes maintaining a current 30-year TAMP, 30-year financial plan, full cost recovery and strong pricing signals to encourage efficient use of the LWU's water infrastructure.

  Each utility annually reports in the **'one stop shop'** NSW Performance Monitoring System and DPI Water provides each utility with its annual TBL performance report in March[43] each year following release of the national performance report by the Bureau of Meteorology (BOM).

- Figure H6 provides an overview of the **BPM framework planning process** and its timeline for the IWCM strategy, the strategic business plan, and the annual update of the financial plan for the annual action plan to council.

  Figure H6 shows that through the **IWCM strategy**, a new 30-year TAMP is determined on the triple bottom line basis of social, environmental and economic considerations. Approximate TRBs are satisfactory for comparing the IWCM scenarios on a triple bottom line basis. The preferred IWCM scenario with its 30-year TAMP is then 'fine-tuned' as the LWU prepares its 30-year financial plan and report. This includes sensitivity analysis to ensure the LWU's financial plan is robust and the projected TRB remains affordable.

  Figure H6 also shows that the **SBP** and the **annual financial plan** for the annual **action plan** 'roll forward', review and update the TAMP from the preferred IWCM scenario to prepare a 30-year financial plan. The plan uses the LWU's latest Special Schedules 3 to 6 and the IWCM strategy, the financial plan and report for the SBP include appropriate sensitivity analysis to ensure the projected TRB remains affordable.

In regard to existing water supply or water and sewerage **county councils**, Page 19 of the *IPR Manual for local government in NSW, March 2013* indicates:

'Requirements for county councils

"Councils responsible for water supply and sewerage infrastructure

Councils with responsibility for water supply and sewerage infrastructure need to comply with the requirements and timeframes of the NSW Government's Best-Practice Management of Water Supply and Sewerage Guidelines, 2007. These requirements include:

- Preparing and implementing a 30-year integrated water cycle management (IWCM) strategy
- Preparing and implementing a 20-30 year strategic business plan, financial plan and associated asset management plans
- Annual performance monitoring, including preparing an annual action plan to review the council's performance and to identify and address any areas of under-performance. The review also includes whether the current typical residential bill is in accordance with the projection in the strategic business plan and any proposed corrective action.

The development of both the IWCM strategy and the strategic business plan require significant community involvement. Further information on these requirements is available from the DPI Water website www.water.nsw.gov.au."

[43] To assist LWU planning, a **draft** of each LWU's TBL reports is made available by DPI Water in February each year.

It is not expected that County Councils will prepare a Community Strategic Plan, because this work will be undertaken by their constituent councils.

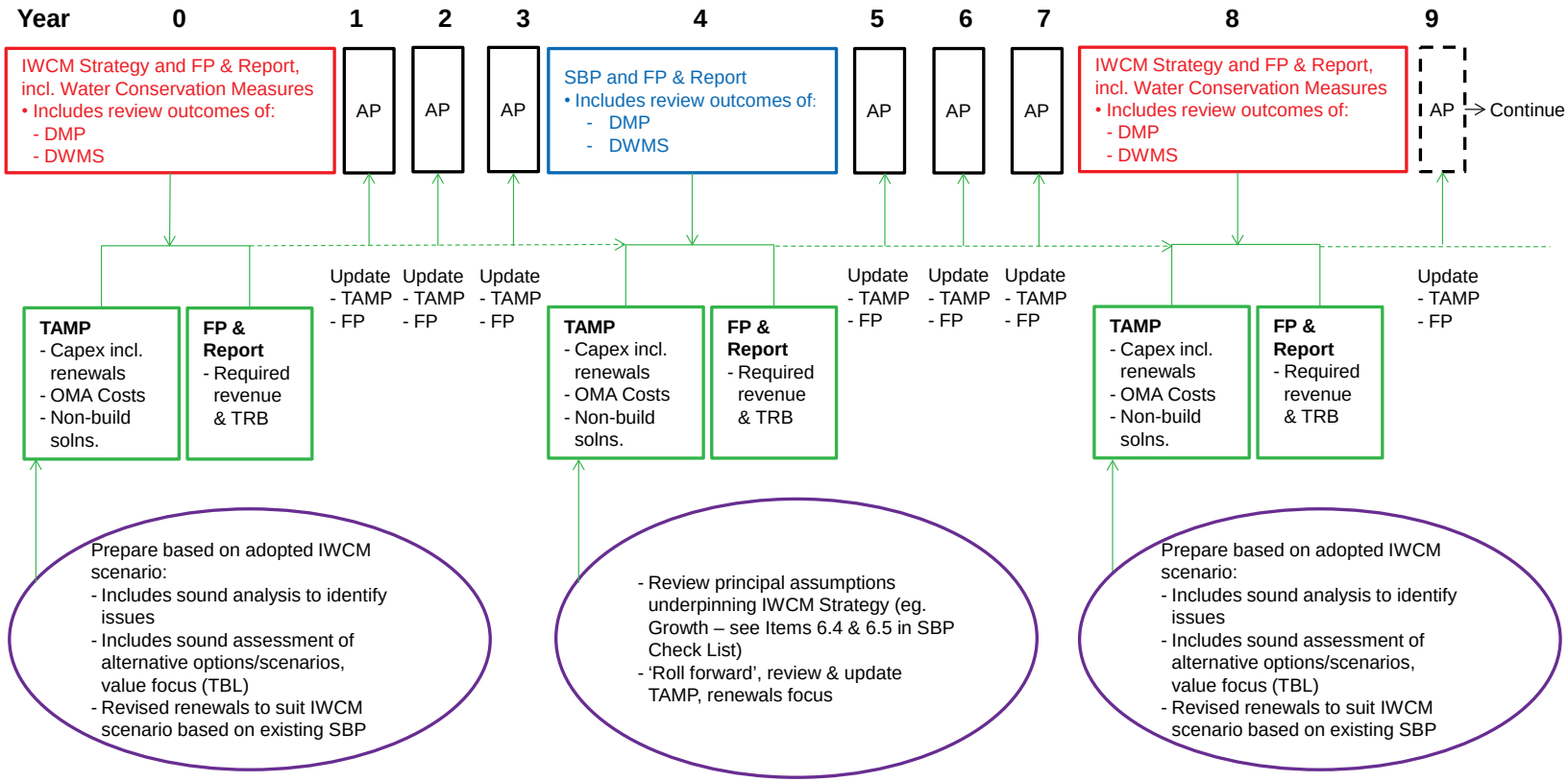
However, County Councils will be required to prepare a minimum 10 year strategic plan for the activities undertaken by their organisation. This plan must give due regard to the Community Strategic Plan/s of the constituent councils and be developed in consultation with the constituent councils. Community engagement will also be required on the issues specific to the County Council's plan.'

All **councils** responsible for water supply or sewerage, including county councils, **need to implement** the outcomes required by the **BPM framework**. As a '10 year business activity strategic plan' does not meet the BPM framework outcomes, each **county council must prepare a 30-year** water supply and sewerage **IWCM strategy and financial plan**[44], which also needs to address relevant considerations in the Community Strategic Plans of its constituent councils.

[44] The IWCM strategy and financial plan need to be prepared in accordance with the July 2014 check list (www.water.nsw.gov.au). As noted above and in figure H4, the adopted 30-year **TAMP** and financial plan from the later of a council's IWCM strategy and strategic business plan is its **Resourcing Strategy** of the IPR for water supply and sewerage.

Figure H1 - The Streamlined BPM Framework

2 Documents Required Every 8 Years (IWCM Strategy and SBP)



IWCM - Integrated Water Cycle Management
SBP - Strategic Business Plan (Water & Sewerage)
FP - Financial Plan
TAMP - Total Asset Management Plan – Capex, OMA plans, Non-build solutions
OMA - Operation, Maintenance & Administration costs
DMP - Drought Management Plan
DWMS - Drinking Water Management System – incl. Circular LWU 18, Section 61 Reports
TRB - Typical Residential Bill
TBL - Triple Bottom Line
AP - Annual Action Plan to Council – after 'roll forward', review & update TAMP, FP & review of TBL Performance Report, DWMS

Figure H2 - Comparison: 2013 Requirements and the 2014 Streamlined Requirements

9 Documents Deleted

2013 Requirements (11 Documents)

Year	0	1	2	3	4	5	6	7	8
SBP	SBP & FP				SBP & FP				SBP & FP
IWCM	Evaluation Study Strategy						Evaluation Study Strategy		
Water Cons. Plan (WCP)	WCP		WCP		WCP		WCP		WCP
Drought Mgt. Plan (DMP)	DMP								
Development Servicing Plan (DSP)	DSP					DSP			
Drinking Water Mgt. System (DWMS)	DWMS	Review	Review	Review	Full Review	Review	Review	Review	Full Review

2014 Streamlined Requirements (9 Documents Deleted)

Year	0	1	2	3	4	5	6	7	8
SBP	~~SBP & FP~~				SBP & FP				~~SBP & FP~~
IWCM	~~Evaluation Study~~ Strategy & FP						~~Evaluation Study~~ ~~Strategy~~		Strategy & FP
Water Cons. Plan (WCP)	~~WCP~~		WCP		~~WCP~~		~~WCP~~		~~WCP~~
Drought Mgt. Plan (DMP)	~~DMP~~								
Development Servicing Plan (DSP)	DSP					DSP			
Drinking Water Mgt. System (DWMS)	DWMS	Review	Review	Review	Full Review	Review	Review	Review	Full Review

Note:

In addition to the peak planning documents of IWCM Strategy & Financial Plan and Strategic Business Plan & Financial Plan, each LWU needs to continue to prepare an annual **Action Plan to Council** (Section H2 and Figure H1).

FP - Financial Plan
IWCM - Integrated Water Cycle Management
SBP - Strategic Business Plan (Water & Sewerage)
DMP - Drought Management Plan
WCP - Water Conservation Plan
DWMS - Drinking Water Management System – incl. Circular LWU 18, Section 61 Reports

Figure H3 - The Peak Planning Documents – IWCM Strategy & FP and SBP & FP

2014 Streamlined Requirements - 2 Documents Required Every 8 Years (IWCM Strategy & FP and SBP & FP)

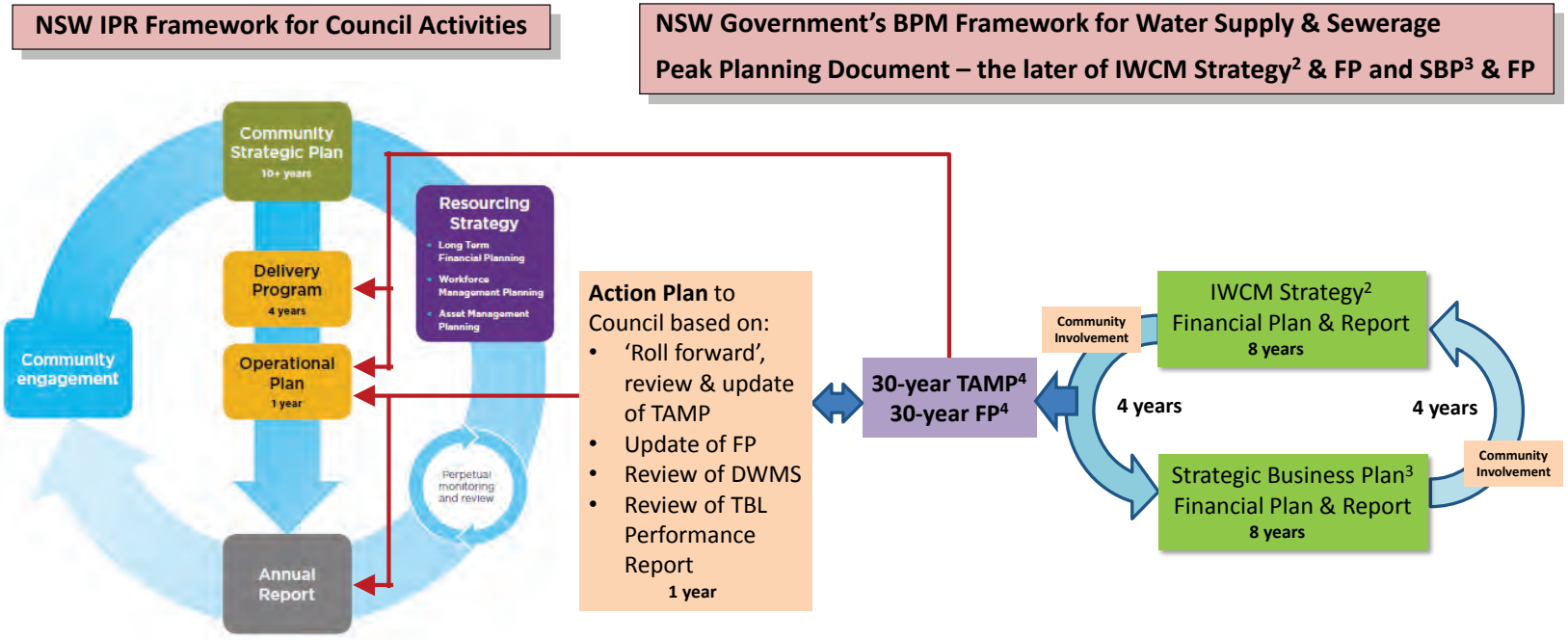
Years	0	1	2	3	4	5	6	7	8
SBP & FP					SBP and FP & Report Including 'roll forward', review & update TAMP, renewals focus, Required revenue & TRB • Includes review outcomes of: - DMP - DWMS				
IWCM Strategy & FP	IWCM Strategy and FP & Report, including Water Conservation Measures, TAMP – sound assessment of alternative scenarios, value focus (TBL), Required revenue & TRB • Includes review outcomes of: – DMP – DWMS								IWCM Strategy and FP & Report, including Water Conservation Measures, TAMP – sound assessment of alternative scenarios, value focus (TBL), Required revenue & TRB • Includes review outcomes of: – DMP – DWMS

Note:

In addition to the peak planning documents of IWCM Strategy & Financial Plan and Strategic Business Plan & Financial Plan, each LWU needs to continue to prepare an annual **Action Plan to Council** (Section H2 and Figure H1).

IWCM - Integrated Water Cycle Management
SBP - Strategic Business Plan (Water & Sewerage)
FP - Financial Plan
TAMP - Total Asset Management Plan – Capex, OMA plans, Non-build solutions
OMA - Operation, Maintenance & Administration costs
DMP - Drought Management Plan
DWMS - Drinking Water Management System – incl. Circular LWU 18, Section 61 Reports
TBL - Triple Bottom Line
TRB - Typical Residential Bill

Figure H4 - Inputs to Integrated Planning & Reporting (IPR) Framework from NSW Government's BPM Framework for Water Supply & Sewerage

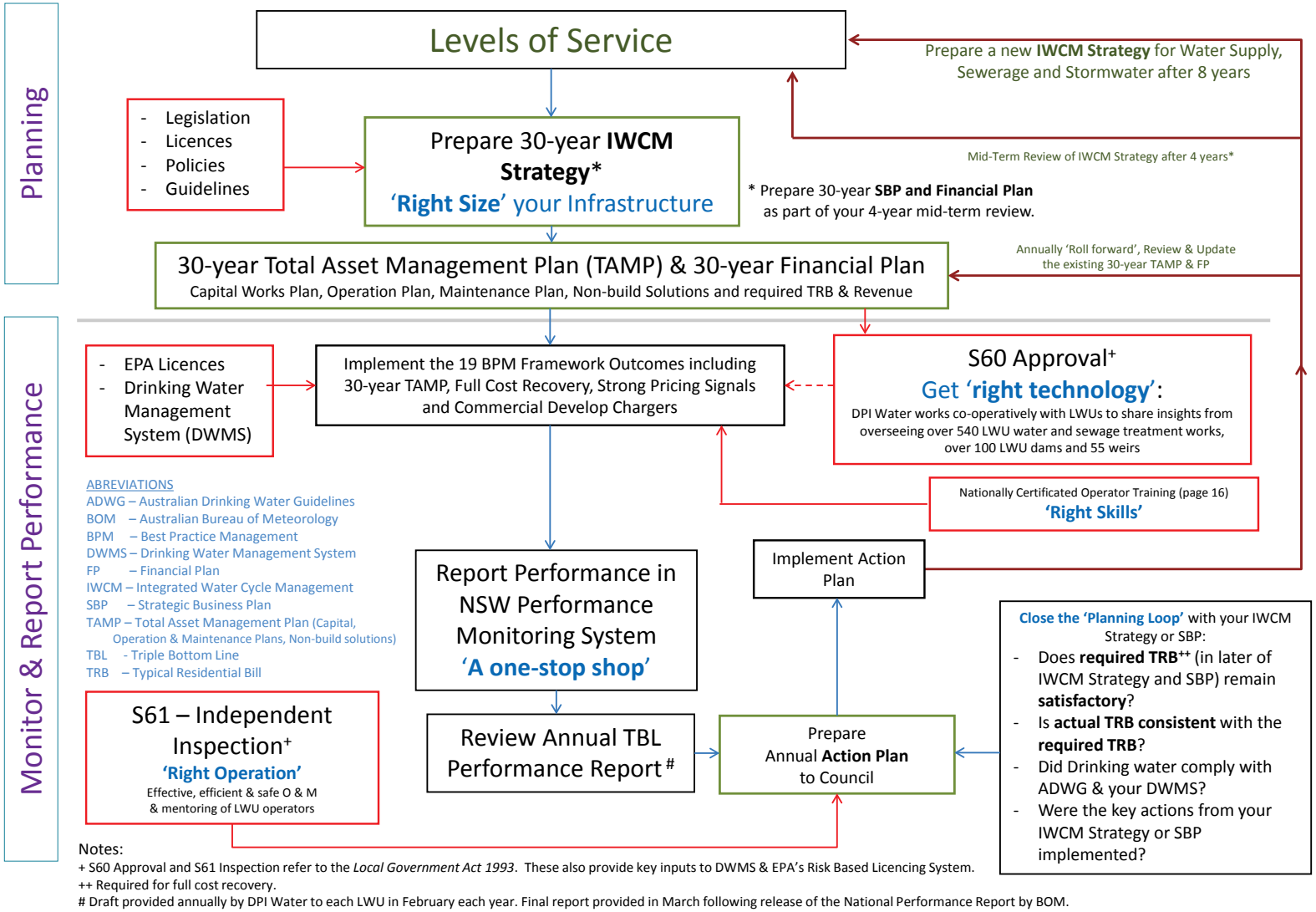


Notes:

1. As indicated on page 20 of the *Integrated Planning & Reporting Manual for local government in NSW, March 2013* (www.olg.nsw.gov.au) Councils responsible for water supply and sewerage infrastructure need to comply with the requirements of the *NSW Government's Best-Practice Management of Water Supply and Sewerage Guidelines, 2007*. Refer also to the footnotes in section H2.
2. In accordance with the IWCM Strategy Check List of July 2014 (www.water.nsw.gov.au).
3. In accordance with the Strategic Business Planning Check List of July 2014 (www.water.nsw.gov.au).
4. The adopted 30-year total asset management plan (**TAMP**) and 30-year **financial plan** from the later of a Council's IWCM Strategy and Strategic Business Plan are its '**Resourcing Strategy**' for water supply and sewerage.

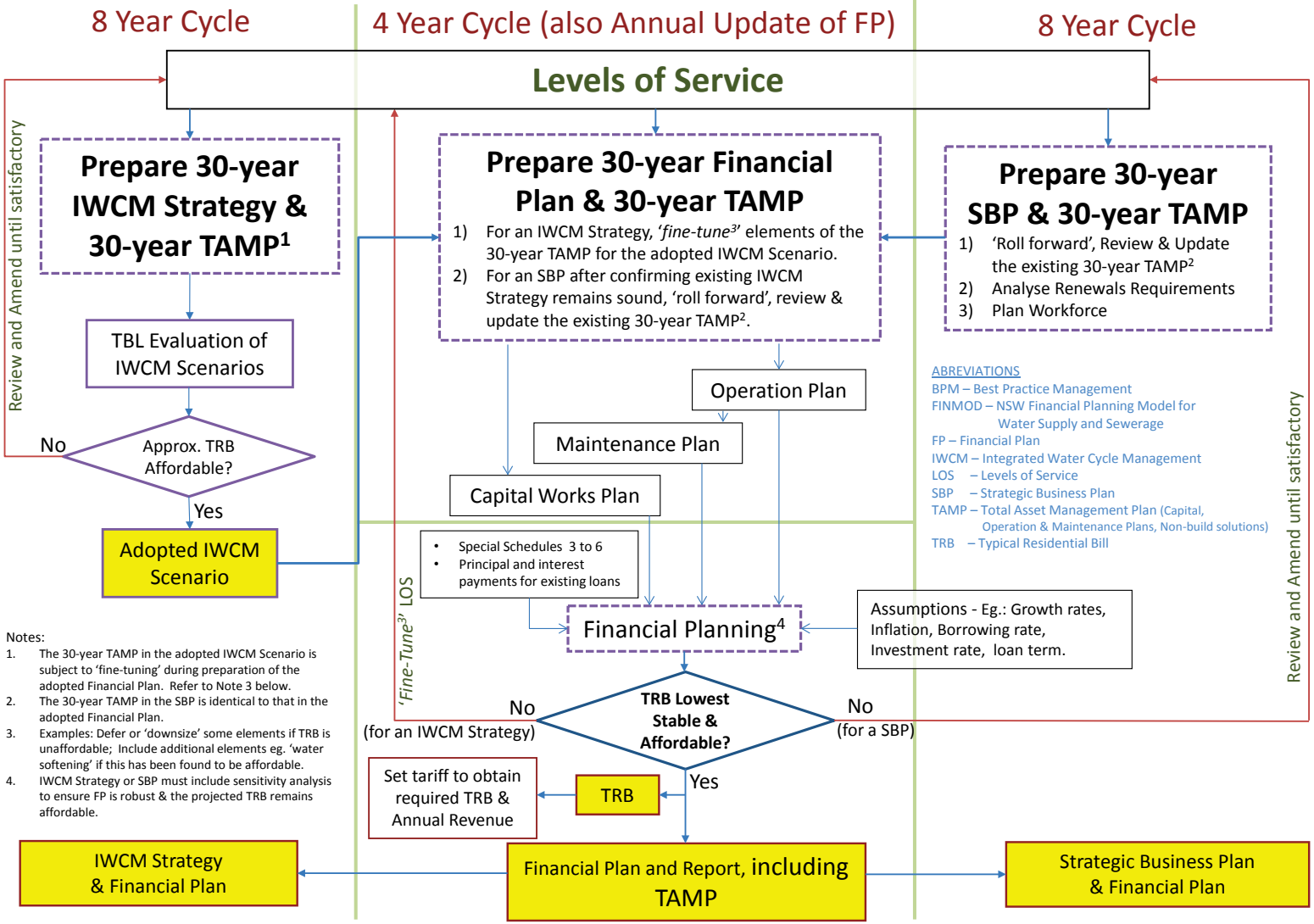
BPM - Best-Practice Management
IWCM - Integrated Water Cycle Management
SBP - Strategic Business Plan (Water & Sewerage)
FP - Financial Plan
TAMP - Total Asset Management Plan – Capex, OMA plans, Non-build solutions
OMA - Operation, Maintenance & Administration costs
DWMS - Drinking Water Management System – incl. Circular LWU 18, Section 61 Reports
TBL - Triple Bottom Line
TRB - Typical Residential Bill

Figure H5 - Interaction of BPM Framework, S60, S61 & LWU Operations



Notes:
+ S60 Approval and S61 Inspection refer to the *Local Government Act 1993*. These also provide key inputs to DWMS & EPA's Risk Based Licencing System.
++ Required for full cost recovery.
# Draft provided annually by DPI Water to each LWU in February each year. Final report provided in March following release of the National Performance Report by BOM.

Figure H6 – Overview of BPM Framework Planning



APPENDIX I: Characteristics of the Australian urban water sector - 2015-16

NWI ID	Indicator Name	Regional NSW[3] (1)	Regional Victoria (2)	Regional QLD[4] (3)	Sydney[2] (4)	Hunter (5)	NSW Total (6)	Victoria Total[9] (7)	QLD Total[5] (8)	South Australia (9)	Western Australia[7] (10)	Tasmania[8] (11)	ACT (12)	Northern Territory[6] (13)	Australian Total[1] (14)	Regional NSW (% of NSW Total) (15)	NSW Total (% of Australia Total) (16)
C1	Population receiving WS services (millions)	1.85	1.44	2.82	4.99	0.56	7.41	5.97	4.22	1.68	2.30	0.43	0.39	0.16	22.6	25%	33%
C5	Population receiving SGE services (millions)	1.75	1.30	2.54	4.80	0.54	7.09	5.67	3.88	1.32	2.11	0.38	0.39	0.15	21.0	25%	34%
C4	Total connected properties - WS (millions)	0.84	0.69	1.21	1.90	0.24	2.98	2.61	1.78	0.77	0.96	0.20	0.17	0.07	9.55	28%	31%
C8	Total connected properties - SGE (millions)	0.76	0.61	1.07	1.85	0.23	2.84	2.46	1.61	0.60	0.86	0.18	0.17	0.07	8.78	27%	32%
W11	Total urban water supplied (GL)	300	212	382	539	72	911	642	527	237	312	72[8]	46	47	2,790	33%	33%
W11.1	Total urban potable water supplied (GL)	270	207	338	525	68	863	633	479	228	273[7]	72[8]	46	47	2,640	31%	33%
W11.3	Total volume of potable water produced (GL)	262	194	219	529	68	859	595	519	228	274[7]	72[8]	50	52	2,650	30%	32%
W8.1+W9.1	Volume of potable water supplied - residential and non-residential (GL)	235	191	296	474	56	765	568	721	204	242[7]	51	42	46	2,640	31%	29%
W10.1	Non revenue water (NRW) (GL)	34.9	16.1	42.4	52	12.2	99	64.6	57.6	24.0	31.2[7]		3.9	0.7	281	35%	35%
W26	Total recycled water supplied (GL)	35.5	42.7	36.8	43.3	5.4	84	77.6	45.6	26.6	14.3		4.1	0.5	253	42%	33%
W18	Total sewage collected (GL)	177	147	220	548	70	794	505	330	107	152	50[8]	33.9	21	1,990	22%	40%
W18.5	Volume of sewage treated effluent (GL)	173	128	217	535	70	778	467	329	96	136[7]	50[8]	31	21	1,910	22%	41%
W17	Volume of sewage collected - trade waste (GL)	6.6	36.7	15.4	19.0	4.9	31	87.2	26.2	13.2	8.4			1.1	167	22%	18%
F1+F2	Total revenue - WSS ($M)	1,490	1,022	2,610	2,745	325	4,560	5,130	4,670	1,430	1,810	293	346	209	18,400	33%	25%
IF11+IF12	Operating cost - WSS ($M)	677	609	1,159	1,294	138	2,110	3,284	1,813	497	613	178	155	87	8,700	32%	24%
F20	Dividend ($M)	4.9	0.0	162.8	389.2	37.3	431	73.8	288.9	204.9	547.7	20.3	80.0	0.0	1,650	1%	26%
F9+F10	Written-down value of fixed WSS assets ($M)	17,800	10,640	14,800	45,100	7,080	70,000	33,200	19,700	13,200	14,300	2,630	3,810	675	158,000	25%	44%
F16	Total capital expenditure for WSS ($M)	440	265	448	648	88	1,180	992	731	275	335	129	84	54	3,800	37%	31%
F25	Community Service Obligations ($M)	15.2	47.5	16.1	165.9	14.4	196	168.1	39.1	130.4	115.2	8.4	11.3	9.5	678	8%	29%
F26+F27	Capital works grants - WSS ($M)	49.1	4.0	13.6	0.0	0.4	50	8.5	25.0	8.7	0.0	0.0	0.0	0.0	92	99%	54%
A2	Length of water mains (1,000 km)	30.6	22.6	28.0	22.5	5.0	58	48.7	38.1	26.9	17.8	6.2	3.3	1.9	201	53%	29%
A5	Length of SGE mains and channels (1,000 km)	20.1	15.1	21.9	25.4	5.0	50	38.4	31.3	8.9	14.8	4.7[8]	3.3	1.0	153	40%	33%
A1	Number of water treatment plants providing full treatment (no.)	164	169	73	9	6	179	175	99	42	23	43	2	2[6]	565	92%	32%
A4	Number of sewage treatment plants (no.)	300	193	118	26	19	345	214	147	24	23	112[8]	6	7	878	87%	39%

Notes

1 Based on data reported in the Part B National Performance Report 2015-16 for utilities with over 10,000 connected properties and the urban data for all of regional NSW (www.bom.gov.au). In order to provide the best estimate for the Australian totals in column 14, where practicable, performance indicators which were not reported in the Part B Report have been estimated from similar reported indicators, as shown in notes 6 to 9 below. As there remain a small number of missing values for Tasmania and Western Australia, the Australian totals in column 14 for those performance indicators (W11.1, W11.3, W8.1+W9.1, W10.1, W18.5, W17) slightly understate the correct values. Refer also to Notes 6 and 7 on page 68.

2 Includes Water NSW for Sydney.

3 Includes Water NSW for the Fish River Water Supply.

4 Includes Gladstone Area Water Board.

5 Includes SEQ Water, except where duplicated reporting has occured - eg. for W11 and W11.3.

6 The number of water treatment works was obtained from the Power and Water website (www.powerwater.com.au).

7 As Perth did not report W10.1, W11.1 or W18.5, the reported values for W10, W11 and W18 have been used in the above tabulation. W11 was also used for W11.3, with W8 + W9 used for W8.1 + W9.1.

8 Results for Tasmania for indicators W11, W18, A5 and A4 are taken from the TasWater Annual Report 2015-16 (www.taswater.com.au).

9 As Melbourne Water did not report W11.3, the reported value for W11.1 has been used in the above tabulation.

WS Water Supply

WSS Water Supply and Sewerage

SGE Sewerage

Regional NSW vs NSW Totals

Appendix I shows that the populations receiving water supply and sewerage services in regional NSW are each 25% of the NSW totals of 7.41 million and 7.09 million respectively. The volume of urban water supplied in regional NSW is 33% of the NSW total of 911 GL and the recycled water supplied is 42% of the NSW total of 84 GL.

The water and sewerage revenue for regional NSW is 33% of the NSW total of $4.56 billion, the operating cost is 32% of the NSW total of $2.11 billion and capital expenditure is 37% of the NSW total of $1.18 billion.

Regional NSW has 53% of the 58,000 km of NSW water mains, 40% of the 50,000 km of NSW sewerage mains and channels, 92% of the 179 NSW water treatment works and 87% of the 345 NSW sewage treatment works.

NSW vs Australian Totals

Appendix I shows that the total populations receiving water supply and sewerage services in NSW are 33% and 34% respectively of the Australian totals of 22.6 million and 21 million. The volume of urban water supplied in NSW is 33% of the Australian total of 2,790 GL, and the recycled water supplied in NSW is 33% of the Australian total of 253 GL.

The water and sewerage revenue for NSW is 25% of the Australian total of $18.4 billion, the operating cost is 24% of the Australian total of $8.7 billion and capital expenditure is 31% of the Australian total of $3.8 billion.

NSW has 29% of the 201,000 km of Australian water mains, 33% of the 153,000 km of Australian sewerage mains and channels, 32% of the 565 Australian water treatment works and 39% of the 878 Australian sewage treatment works.

APPENDIX J – Council amalgamations – basis for calculation of performance indicators

In July 2015 there were 105 regional NSW local water utilities (LWUs) providing water supply and sewerage services. However, on 12 May, 2016 there were a number of amalgamations resulting in a reduction in the number of LWUs to 92 in June 2016. These amalgamations are listed in the table below.

There were 12 amalgamations in total, 11 of these where LWUs were combined or where alterations to boundaries significantly altered the number of assessments. Edward River Council involved no additional water supply or sewerage assessments as Conargo Shire Council was not a local water utility.

Data for the 12 amalgamated LWUs is shown in Appendices C to F and also in Figures 1 to 36. The performance of these amalgamated LWUs has been calculated by aggregating the reported data from their constituent LWUs. Financial data reported for 2015/16 for the constituent Councils has been reported for the period 1 July 2015 to 12 May 2016. This financial data has not been included in the calculation of statewide medians or percentiles.

Table 2 - Amalgamated LWUs

New LWU	Old LWU
Armidale Regional Council	Armidale Dumaresq Council, Guyra Shire Council
Central Coast Council	Gosford City Council, Wyong Shire Council
Cootamundra-Gundagai Regional Council	Cootamundra Shire Council, Gundagai Shire Council
Dubbo Regional Council	Dubbo City Council, Wellington Council
Edward River Council	Deniliquin Council, Conargo Shire Council
Federation Council	Corowa Shire Council, Urana Shire Council
Hilltops Council	Young Shire Council, Harden Shire Council, Boorowa Council
Murray River Council	Murray Shire Council, Wakool Shire Council
Murrumbidgee Council	Murrumbidgee Shire Council, Jerilderie Shire Council
Queanbeyan-Palerang Regional Council	Queanbeyan City Council, Palerang Council
Snowy Monaro Regional Council	Snowy River Shire Council, Cooma-Monaro Shire Council,
Snowy Valleys Council	Tumut Shire Council, Tumbarumba Shire Council

The basis for aggregating the results of amalgamated LWUs is generally on the percentage of connected properties in each constituent LWU included in the new LWU. This percentage is used to determine the ratio to be applied to each constituent LWU to determine the appropriate performance indicator.

The percentage of the water supply connected properties of each constituent LWU in the amalgamated LWU is shown in column (2) of table 3 on the following page. Eg. column (1) shows that Armidale Regional Council involves 8,870 connected properties from Armidale Dumaresq Council (87.5%) and 1,270 connected properties from Guyra Shire Council (12.5%).

Water supply performance indicators for Armidale Regional involving connected properties may be computed by summing 87.5% of the indicator for the former Armidale Dumaresq Council and 12.5% of the indicator for the former Guyra Shire Council.

Corresponding results for indicators based on water mains length are shown in columns (3) and (4), with sewerage connected properties in columns (5) and (6) and sewer mains length in columns (7) and (8).

For water supply and sewerage charges, those of the largest constituent LWU have been adopted for the amalgamated LWU.

Table 3 - Council amalgamations - basis for calculation of performance indicators

AMALGAMATED LWU		CONSTITUENT LWUs	WATER SUPPLY				SEWERAGE			
			Connected Properties (No.) (1)	Connected Properties (%) (2)	Mains Length (km) (3)	Mains Length (%) (4)	Connected Properties (No.) (5)	Connected Properties (%) (6)	Mains Length (km) (7)	Mains Length (%) (8)
111	**Armidale Regional Council**	Armidale Dumaresq	8,870	87.5%	291	83.0%	8,620	87.7%	245	81.1%
		Guyra Shire	1,270	12.5%	60	17.0%	1,210	12.3%	57	18.9%
112	**Central Coast Council**	Gosford City	72,330	52.5%	989	45.7%	70,460	52.5%	1,335	52.4%
		Wyong Shire	65,470	47.5%	1,174	54.3%	63,700	47.5%	1,212	47.6%
115	**Cootamundra-Gundagai Regional Council**	Cootamundra Shire	3,020	74.8%	70	66.0%	2,840	76.8%	63	46.3%
		Gundagai Shire	1,020	25.2%	36	34.0%	860	23.2%	73	53.7%
122	**Dubbo Regional Council**	Dubbo City	17,970	86.8%	516	81.3%	16,830	86.7%	418	82.4%
		Wellington	2,730	13.2%	118	18.7%	2,590	13.3%	89	17.6%
54	**Edward River Council**	Deniliquin	3,630	100%	149	100%	3,250	100%	109	100%
		Conargo Shire*		0%		0%		0%		0%
114	**Federation Council**	Corowa Shire	5,630	100%	182	100%	5,170	94.2%	154	91.1%
		Urana Shire (Sge only)	0	0%	0	0%	320	5.8%	15	8.9%
116	**Hilltops Council**	Young Shire	4,780	65.4%	151	40.8%	3,810	71.1%	93	56.0%
		Harden Shire	1,880	25.7%	171	46.2%	940	17.5%	42	25.3%
		Boorowa	650	8.9%	48	13.0%	610	11.4%	31	18.7%
117	**Murray River Council**	Murray Shire	3,160	68.5%	175	51.3%	3,160	75.1%	100	68.0%
		Wakool Shire	1,450	31.5%	166	48.7%	1,050	24.9%	47	32.0%
118	**Murrumbidgee Council**	Murrumbidgee Shire	790	61.7%	32	42.7%	790	64.8%	23	65.7%
		Jerilderie Shire	490	38.3%	43	57.3%	430	35.2%	12	34.3%
119	**Queanbeyan-Palerang Regional Council**	Queanbeyan City	18,500	88.9%	327	79.6%	17,620	89.0%	374	84.0%
		Palerang	2,320	11.1%	84	20.4%	2,180	11.0%	71	16.0%
120	**Snowy Monaro Regional Council**	Snowy River Shire	5,380	54.2%	129	42.6%	4,700	53.8%	93	39.1%
		Cooma-Monaro Shire	3,660	36.9%	134	44.4%	3,270	37.4%	110	46.2%
		Bombala	890	9.0%	39	13.0%	770	8.8%	35	14.7%
121	**Snowy Valleys Council**	Tumut Shire	4,520	79.9%	187	74.0%	4,240	81.4%	148	75.9%
		Tumbarumba Shire	1,140	20.1%	66	26.0%	970	18.6%	47	24.1%

Notes

* Conargo Shire had not previously been reported as they were not a local water utility.

INDEX

Note:

Page numbers shown in:

- **black bold** are the main reference to each topic
- **blue bold** refer to figures comparing the performance of the **NSW utilities**
- **red bold** refer to graphs of **Interstate performance comparisons**.
- **green bold** refer to tables of data comparing the performance of the **NSW utilities**