

1 PERFORMANCE SUMMARY

1.1 Key Indicators

The *2003/04 NSW Water Supply and Sewerage Benchmarking Report* presents a full suite of performance indicators and benchmarking data for all NSW water utilities. It provides comparative information to enable each utility to benchmark its performance against that of similar utilities. Performance monitoring and benchmarking are required under National Competition Policy and the National Water Initiative, are important for public accountability and have been strongly endorsed by the Independent Pricing and Regulatory Tribunal.

Key NSW performance indicators are shown below while the full suite of indicators is available in the *2003/04 NSW Water Supply and Sewerage Benchmarking Report* on the DEUS website.

As noted on page ii, this report discloses performance on the basis of the 126 LWUs existing in July 2003, except for the 2004/05 water supply and sewerage tariffs which are on the basis of the 107 LWUs operating in July 2004.

UTILITY CHARACTERISTICS

New Residential Dwellings

Median new residential dwellings as a percent of the existing residential properties was:

- **1.8%** connected to water supply
- **1.7%** connected to sewerage

Properties Served per km of Main

The median number of properties served per km of main was:

- **33** for water supply
- **39** for sewerage

Rainfall

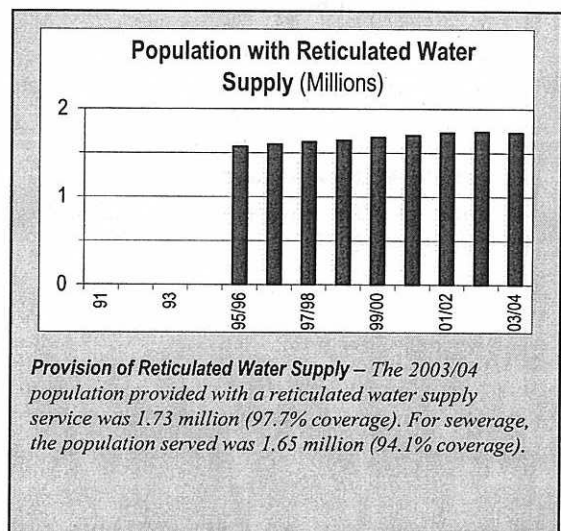
2003/04 was again a dry year with 81% of water utilities receiving below average annual rainfall. Eurobodalla received only 48% of its average rainfall while Narrandera (123%) and Albury (137%) received the highest percentage of their average annual rainfall.

Water Restrictions

During 2003/04, **49%** of LWUs needed to apply water restrictions. The median for water restrictions was 43% of the time. **35%** of LWUs have implemented a sound drought management plan [column 5 on page 34].

Business Plans

55% of LWUs have completed Strategic Business Plans and have demonstrated long term financial sustainability of their water supply and sewerage businesses to comply with National Competition Policy [column 21 on page 38]. A number of these LWUs now need to update their business plans and financial plans. A further 31% have prepared draft Strategic Business Plans for their businesses.



SOCIAL – Charges/Bills

Tariffs

94% of LWUs had residential water supply tariffs independent of land value, and 73% had residential sewerage tariffs independent of land value [columns 6 and 10 on page 38]. 58% of LWUs had both pay-for-use water supply pricing and full cost recovery for each of water supply and sewerage [column 20 on page 38]. These are required under National Competition Policy.

Water Usage Charge

The Statewide median residential revenue from water usage charges was 55% [pages 21, 39].

- The median water usage charge was 76c/kL [column 5 on page 39]
- 20% of utilities had a water usage charge of over 100c/kL, and
- 80% of utilities had a usage charge of over 50c/kL.

Sewer Usage Charge

Only 24% of water utilities had a sewer usage charge for non-residential customers [column 3a on page 43].

Annual Water Allowance

Only 14 LWUs still have an annual water allowance [column 4 on page 39].

Access Charge

The median residential access charge per assessment was:

- **\$185** for water supply [column 2 on page 39] and
- **\$355** for sewerage [column 1 on page 43].

Developer Charges

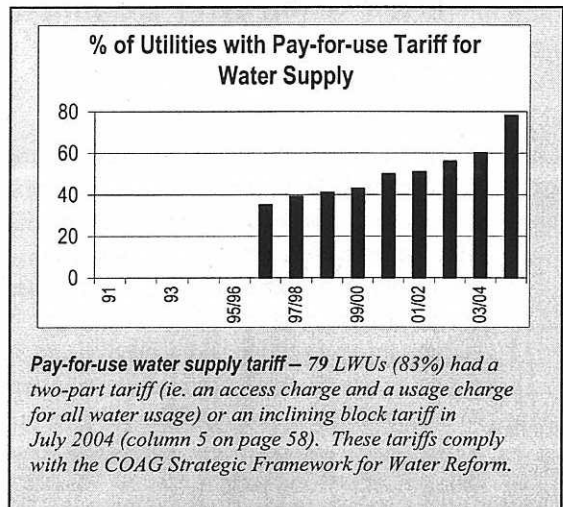
The median typical developer charge was:

- **\$2500** per equivalent tenement (ET) for water supply [column 7 on page 39, column 14 on page 34] and
- **\$2900** per ET for sewerage [column 7 on page 43].

Trade Waste Charges

46% of LWUs had liquid trade waste fees and charges, compared with 30% of LWUs in 2002/03 [column 4 on page 43].

All LWUs should levy appropriate non-residential sewerage access and sewer usage charges, together with trade waste fees and charges for all liquid trade waste dischargers to the sewerage system, including commercial properties.



All water utilities that still have a water allowance should use the software and guidelines discussed below to develop an appropriate pay-for-use tariff.

Software and guidelines to assist LWUs in developing appropriate water supply and sewerage tariffs and liquid trade waste fees and charges are available from DEUS (Scott Chapman on phone 8281 7335, fax 8281 7352, e-mail Scott.Chapman@deus.nsw.gov.au).

Typical Residential Bill

The median 2004/05 typical residential bill per assessment was:

- **\$330** for water supply [column 8 on page 39] and
- **\$375** for sewerage [column 8 on page 43].

Average Residential Bill

The median 2003/04 average residential bill per connected property was:

- **\$325** for water supply [column 9 on page 39] and
- **\$345** for sewerage [column 9 on page 43].

The typical residential bill (TRB) is that paid by a residential customer using the LWU's average annual residential water consumption. The average residential bill is generally lower than the TRB due to the \$87.50 pensioner rebate and the absence of water usage charges for vacant lots

[Notes 5 to 7 on page 19].

The NSW Government continues to actively encourage utilities to achieve best-practice through such measures as:

- *Best-Practice Management of Water Supply and Sewerage Guidelines were published in May 2004.*
- *Compliance with these Best-Practice Management Guidelines is a pre-requisite for payment of a dividend from a utility's water supply or sewerage businesses.*
- *Compliance is also required for financial assistance towards the capital cost of backlog infrastructure under the Country Towns Water Supply and Sewerage (CTWS&S) Program.*

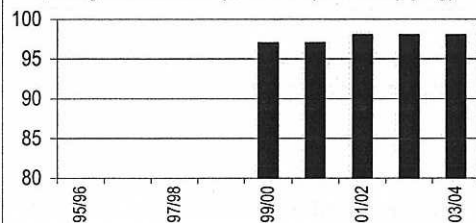
SOCIAL – Health

Served Urban Population

As noted on page 1, reticulated water supply and sewerage coverage of the urban population in non-metropolitan NSW was:

- water supply 97.7% coverage
- sewerage 94.1% coverage.

Compliance with Microbiological (E.coli) Water Quality Guidelines (% of samples complying)



For LWUs with a number of separate water treatment works or sewage treatment works, the 2003/04 compliance with drinking water quality guidelines and DEC licence conditions have been pro-rated based on the number of samples tested for each treatment works.

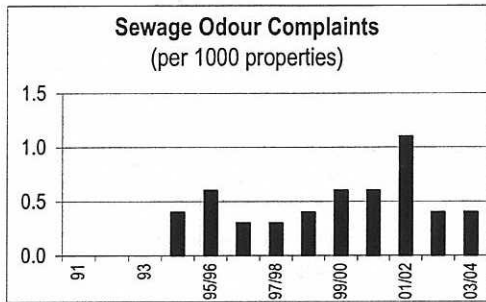
Drinking Water Quality – Microbiological water quality compliance for E.coli (health related) was 98% on the basis of the 1996 NHMRC/ARMCANZ Australian Drinking Water Guidelines [column 8 on page 38] and was similar to the other Australian utilities [page 24]. Physical compliance was 95% of samples tested, while Chemical compliance (health related) was 97%.

Over the last 5 years microbiological compliance has increased from 97% to 98%, and physical and chemical compliance have ranged from 95% to 97%.

68% of LWUs complied with the microbiological water quality guidelines for E. coli. 79% of LWUs complied with the physical water quality guidelines and 81% with the chemical water quality guidelines

[column 7 on page 38].

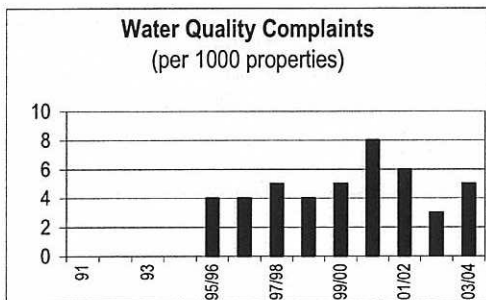
SOCIAL – Levels of Service



Sewage odour complaints - 0.4 per 1000 properties which was much lower than the other Australian utilities [page 25] and

Sewerage service complaints - 13 per 1000 properties.

Odour complaints have remained relatively constant at 0.4 over the last 10 years while service complaints have fallen from 20 to 13. DEUS is working with LWUs experiencing high odour complaints to develop appropriate control measures.



Water quality complaints - 5 per 1000 properties – similar to the other Australian utilities [page 25] and

Water service complaints - 9 per 1000 properties.

Water quality complaints have remained at about 5 over the last 9 years while service complaints have increased from 7 to 9. Water quality has improved significantly over this period due to the commissioning of new water treatment facilities.

ENVIRONMENTAL – Water Usage and Reuse

Average Annual Residential Consumption

The median average annual residential potable water consumption was 215 kL/connected property, which was similar to Hunter Water and Melbourne Water and was lower than the other Australian utilities [pages vi, 26].

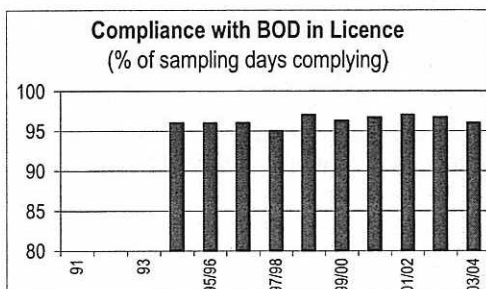
Recycled Water

Re-use of recycled water was carried out by 68% of LWUs, mostly for agriculture. The total volume of water recycled was 31,000 ML. This was about 20% of the total volume of sewage collected, compared to 14% in 1998/99. 26% of LWUs recycled over 50% of their effluent.

Water Conservation

35% of LWUs have implemented a sound water conservation plan [column 4 on page 31].

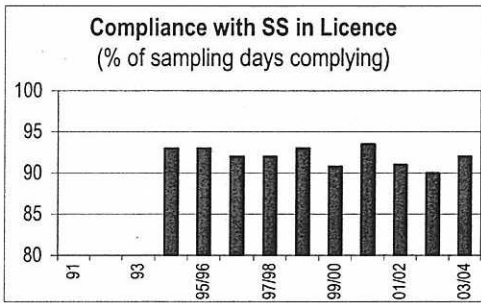
ENVIRONMENTAL – Effluent Management



Sewage Effluent Quality - 96% of the sampling days complied with the 90-percentile limits of the Department of Environment and Conservation (DEC) licences for Biochemical Oxygen Demand (BOD).

Compliance over the last 10 years has ranged from 95% to 97%. Over this period, licence limits for both BOD and SS have become more stringent for many LWUs.

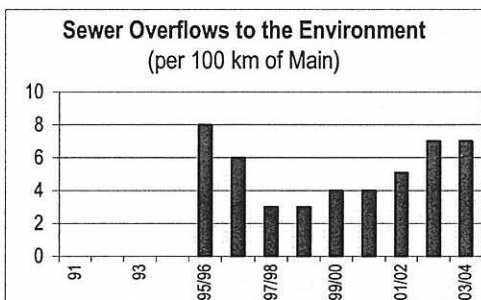
58% of utilities complied with the 90-percentile limit of their BOD licence.



Sewage Effluent Quality – 92% of the sampling days complied with the 90-percentile limits of the DEC licences for Suspended Solids (SS). SS and BOD compliance was slightly higher than country Victoria and slightly lower than the Australian Capital City utilities [page 24].

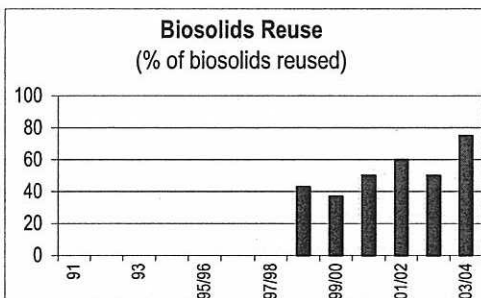
Compliance over the last 10 years has ranged from 90% to 94%. The major cause of non-compliance is the growth of algae in maturation ponds being measured as SS.

33% of utilities complied with the 90-percentile limits of their SS licence. The major cause of non-compliance was due to the growth of algae in maturation ponds, being measured as SS. Most treatment works in non-metropolitan NSW have maturation ponds due to the previous DEC preference for ponding over chlorination. Negotiations with the DEC to develop an appropriate licencing method when maturation ponds are used for disinfection have favoured an option to test for SS prior to the maturation ponds. For new installations and major augmentations, Ultra Violet (UV) disinfection is being used as an alternative to maturation ponds to overcome this problem.



Sewer Overflows To The Environment

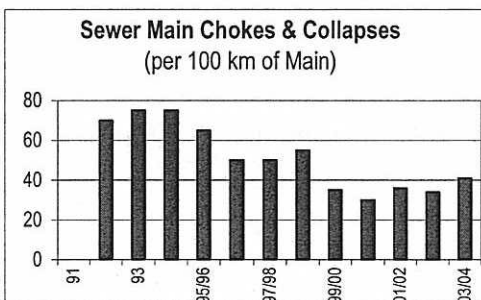
7 per 100 km of main, which was lower than most other Australian utilities [page 25]. This is lower than the reported sewer overflows 9 years ago.



Biosolids Reuse

In total, 75% of the biosolids produced was reused in 2003/04. This has increased from 43% in 1998/99.

As noted on the facing page, 20% of the total sewage volume collected was recycled.



Sewer Main Chokes And Collapses

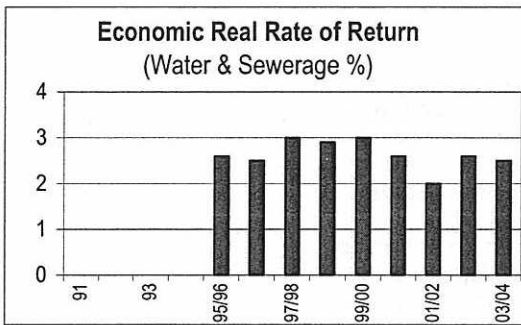
41 per 100 km of main, which was lower than most other Australian utilities [page 25]. This has fallen from 75 to 41 over the last 12 years.

ECONOMIC – Financial

Turnover (revenue less grants for capital works) [columns 4, 9, 13 on page 38]

Total turnover was \$806M comprising:

- **\$439M** for water supply and
- **\$367M** for sewerage.



Economic Real Rate Of Return - 2.5% for water supply and sewerage, which was lower than the Australian capital city utilities but higher than country Victoria and significantly higher than the last reported values for country utilities in the other states [page 26]. 75% of LWUs had a positive real rate of return [column 15 on page 38].

The real rate of return has remained relatively constant over the last 9 years. The real rate of return for water supply was 2.7% and for sewerage was 1.9%.

Many LWUs had a negative economic real rate of return for water supply or for sewerage [pages 39, 43]. These LWUs should increase their annual water supply, sewerage and trade waste bills and their developer charges and/or reduce their operation, maintenance and administration costs to ensure they achieve full cost-recovery.

Debt to Equity [column 16 on page 38] - the median debt to equity was:

- 1% for water supply and
- 3% for sewerage.

Utilities facing significant capital investment are encouraged to make greater use of borrowings to reduce their required Typical Residential Bill (TRB) and avoid unfairly burdening their existing customers.

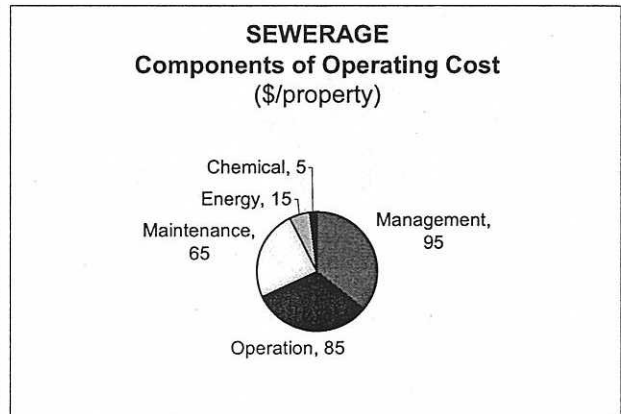
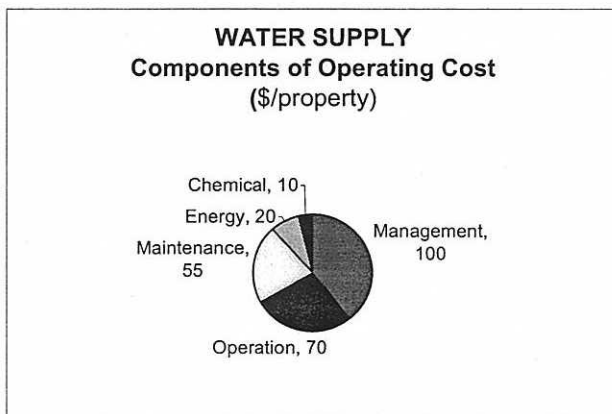
Loan Payment - the median loan payment per connected property was:

- \$22 for water supply and
- \$37 for sewerage.

Operating Cost/property

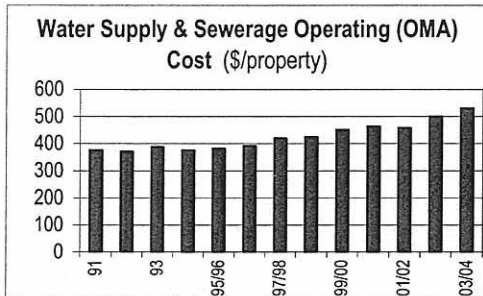
Water Supply median Operating Cost (OMA*) - \$255/property

Sewerage median Operating Cost (OMA*) - \$265/property



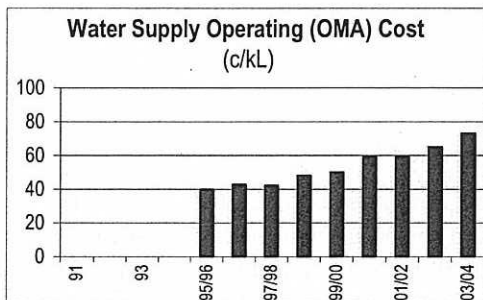
* OMA – Operation, maintenance and administration cost

ECONOMIC – Efficiency



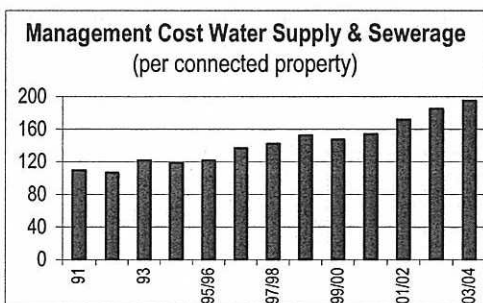
Operating Cost (OMA)* - \$520/property for water supply and sewerage [column 17 on page 38]. The operating cost per property has increased from \$370 to \$520 (Jan 2004\$) over the last 13 years, largely due to more stringent standards for sewage treatment and to increasing management cost. As noted on the facing page, the operating cost for water supply was \$255/property, which was similar to Sydney and lower than the country utilities in other states. The operating cost for sewerage was \$265/property, which was higher than most Australian utilities. Refer also to page 9.

LWUs with higher operating costs than the above medians should examine their operations to determine whether they can improve their cost-effectiveness [page 17].



Water Supply Operating Cost [column 2 on page 39]- 73c/kL (Jan 2004\$). This has risen from 40c/kL in the last 9 years largely due to higher management costs and reduced water consumption per property.

Sewerage Operating Cost - 110c/kL [column 2 on page 43].



Management Cost - \$195/property for water supply and sewerage [column 18 on page 38]. The management cost per property has increased from \$110 to \$195 (Jan 2004\$) over the last 13 years.

The management costs/property for water supply and sewerage were \$100 and \$95 respectively.

Treatment Cost - the median treatment cost per property was:

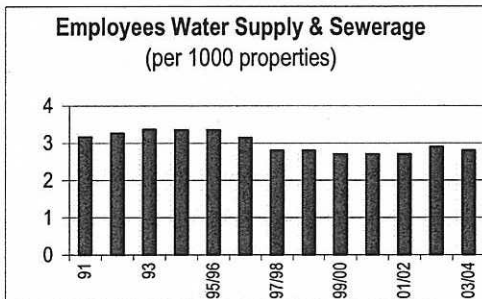
- \$27 for water treatment (only utilities with water treatment works involving at least filtration and disinfection for over 50% of their supply have been considered) and
- \$80 for sewage treatment (including chemical and energy costs).

Pumping Cost - the median pumping cost per connected property (including energy) was:

- \$20 for water supply and
- \$38 for sewerage.

Water Main and Sewer Main Cost - the median water main and sewer main cost per connected property was:

- \$43 for water mains and
- \$33 for sewer mains.



Number of Employees - 2.8 per 1000 properties for water supply and sewerage, which was lower than country Victoria and the last reported values for Sydney and Hunter [page 26]. This indicator has fallen from a maximum of 3.3 over the last 13 years.

Water Supply - the employees per 1000 properties has fallen by over 20% from a maximum of 1.7 to 1.3 and

Sewerage - the employees per 1000 properties has fallen by almost 20% from a maximum of 1.8 to 1.5.

1.2 Interstate Comparisons

To provide an overall assessment of the performance of NSW LWUs, a number of performance indicators have been compared below with those of interstate utilities. For detailed graphs of performance over the last 13 years, refer to Appendix A.

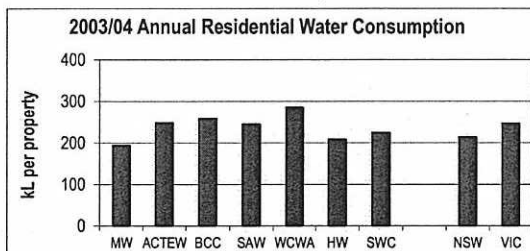
Social

Water quality complaints were similar to the other Australian utilities while sewage odour complaints were much lower than most other Australian utilities [graphs 9 and 10 on page 25].

Compliance with microbiological water quality guidelines [graph 3 on page 24] was similar to the other Australian utilities.

Environmental

Annual residential water consumption per property was similar to Hunter and Melbourne, and was lower than the other Australian utilities [graph 11 on page 26].

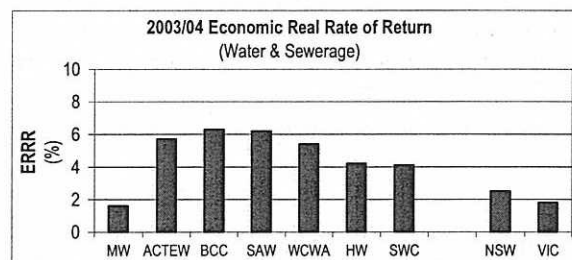


BOD and SS compliance [graphs 4 and 5 on page 24] was slightly higher than in country Victoria and slightly lower than the capital city utilities.

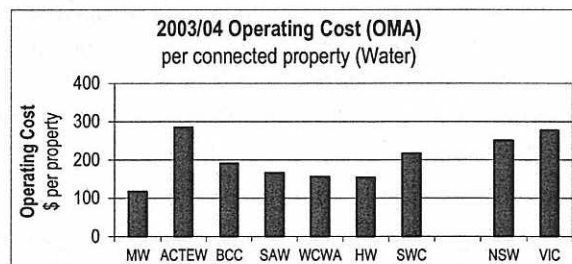
Water main breaks, sewer main chokes and sewer overflows to the environment were lower than most other Australian utilities [graphs 6, 7 and 8 on pages 24, 25].

Economic

Economic real rate of return [graph 13 on page 26] was lower than most capital city utilities, but higher than country Victoria and significantly higher than the last reported values for country utilities in the other states.



Annual operating cost (OMA) for water supply was \$255 per connected property [graph 1 on page 23], which was similar to Sydney and lower than country utilities in the other states. Properties served per km of water or sewer main was similar to country Victoria and significantly lower than capital city utilities [graphs 14 and 15 on pages 26, 27].



The operating cost (OMA) for sewerage was \$265 per connected property [graph 2 on page 23], which was higher than most other Australian utilities. However, all sewage treatment works in non-metropolitan NSW provided at least secondary treatment, while 5 of the 7 capital city utilities provided significantly less (Sydney provided such treatment for only 17% of its sewage [graph 16 on page 27]).

The number of employees was 2.8 per 1000 properties [graph 12 on page 26]. This is lower than country Victoria and the last reported values for Sydney and Hunter (not reported by the other utilities over the last 6 years).

2 PERFORMANCE MONITORING

Performance monitoring and benchmarking are required under National Competition Policy and the National Water Initiative, are important for public accountability and have been strongly endorsed by the Independent Pricing and Regulatory Tribunal.

This report presents the key NSW performance indicators. The *2003/04 NSW Water Supply and Sewerage Benchmarking Report* provides the full suite of performance indicators and benchmarking data for LWUs to enable each LWU to benchmark its performance against that of similar LWUs. The benchmarking report is available on the DEUS website (www.deus.nsw.gov.au/water).

Triple Bottom Line Focus

To provide a balanced view of the long-term sustainability of NSW Local Water Utilities (LWUs), a Triple Bottom Line (TBL) accounting focus has been adopted, with performance reported on the basis of social, environmental and economic performance indicators.

Statewide Performance

Statewide performance indicators are calculated on a *'percentage of connected properties basis'*. This best reveals Statewide performance by giving due weight to larger LWUs and reducing the effect of smaller LWUs on the data.

To facilitate comparisons, the performance indicators in this report have been prepared for each LWU's aggregated water supply businesses and aggregated sewerage businesses, rather than for individual water supply and sewerage systems.

Factors Impacting on Performance

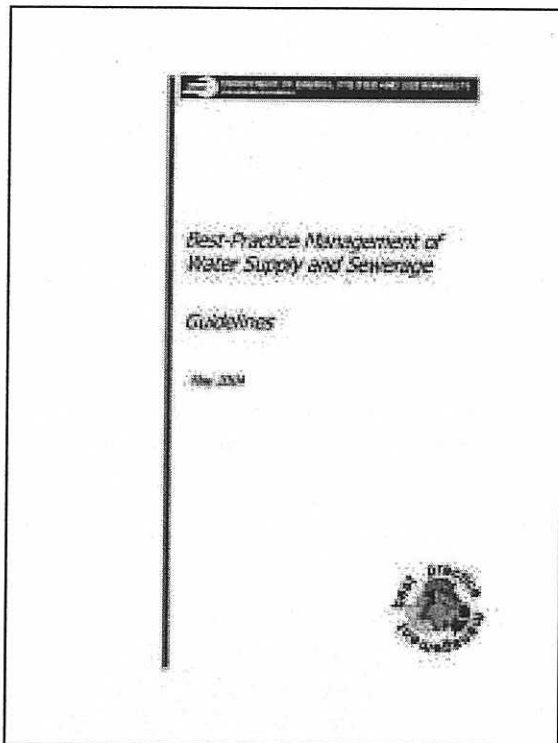
When comparing reported performance, utilities should take account of the wide range of factors which can impact on their performance and on their **typical residential bill** which is the **principal indicator of the overall cost** of a water supply or sewerage system (refer to page 3 and Note 5 on page 19). Such factors can produce a fundamental difference in performance.

For example, in the case of water supply, a utility which provides the full water supply system will perform differently to one which only provides components of the system (eg. Reticulation or Bulk supply). Each utility can improve its performance by taking account of such factors and comparing its performance with utilities having similar characteristics (refer to page 18).

3 BEST-PRACTICE MANAGEMENT

3.1 Best-Practice Management Guidelines

The community and governments are demanding increased accountability by utilities, together with increased levels of service and efficiency. The Minister for Energy and Utilities has published *Best-Practice Management Guidelines* to assist utilities to identify the key elements they need to carry out for efficiently and sustainably delivering water supply and sewerage services to the community.



The purpose of best-practice management is to achieve:

- effective and efficient delivery of water supply and sewerage services, and
- sustainable water conservation and water demand management throughout NSW.

There are many incentives for best-practice management. In particular, utilities that comply with the *Best-Practice Management Guidelines* will:

- have achieved healthy and sustainable water supply and sewerage businesses.
- comply with National Competition Policy.
- be eligible to pay an annual dividend from the surplus of their water supply and sewerage businesses to the council's general revenue.
- be eligible for financial assistance towards the capital cost of backlog infrastructure under the *Country Towns Water Supply and Sewerage* program.

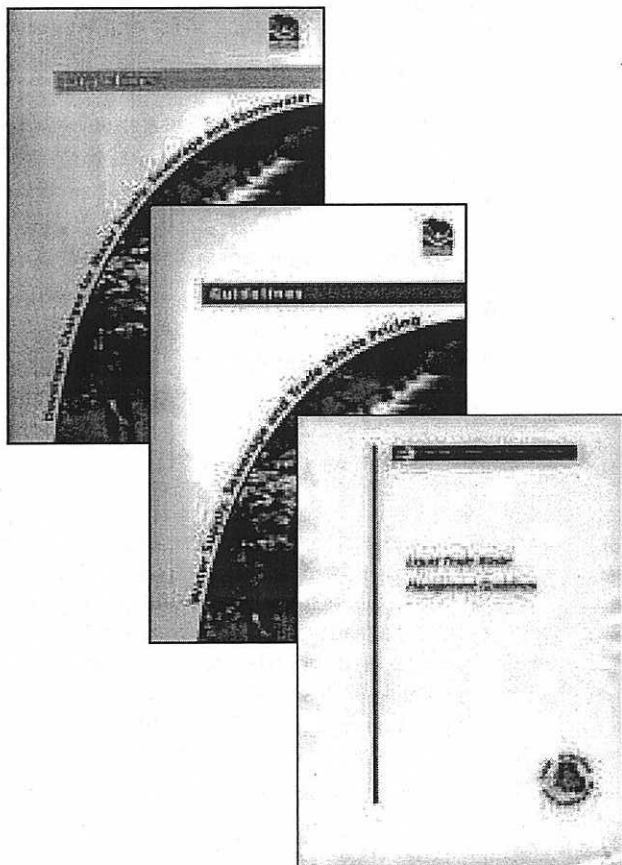
The six criteria of the *Best-Practice Management Guidelines* are:

- strategic business planning,
- pricing and developer charges (including liquid trade waste approvals),
- demand management,
- drought management,
- performance reporting,
- integrated water cycle management.

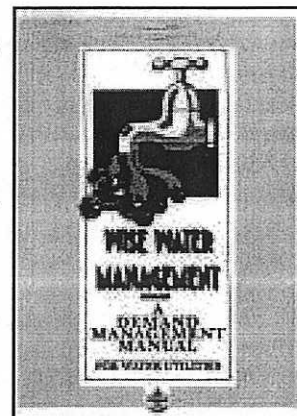
(1) Strategic Business Plan This is a utility's principal planning document for water supply and sewerage. It includes a long-term financial plan which enables the utility to negotiate appropriate levels of service with the community and to develop a cost-effective capital works program and operation and maintenance plans. 55% of utilities have completed such strategic business plans while a further 31% have prepared draft plans [column 21 on page 38].

(2) Pricing and Developer Charges (including Trade Waste Approvals) Best practice pricing is fundamental to the effective management of water supply and sewerage businesses, resulting in fair pricing of services, removal of significant cross-subsidies and protection of our valuable water resources and the environment.

- 58% of LWUs now have both pay-for-use water supply pricing and full cost recovery for water supply and sewerage [columns 2, 2a and 20 on page 38].
- 50% of LWUs have an appropriate water supply Development Servicing Plan (DSP) with commercial developer charges and 40% of LWUs have such a sewerage DSP [columns 2c and 2d on page 34].
- 37% of LWUs have complying liquid trade waste fees and charges [column 2c on page 34].
- 25% of LWUs have completed an appropriate liquid trade waste policy and have issued a liquid trade waste approval to all their trade waste dischargers [column 2e on page 34].



(3) Demand Management and water conservation are essential for ensuring efficient use of our valuable water resources and to improve environmental outcomes. Cost-effective water conservation delivers significant environmental and social benefits and reduces capital and operating costs.

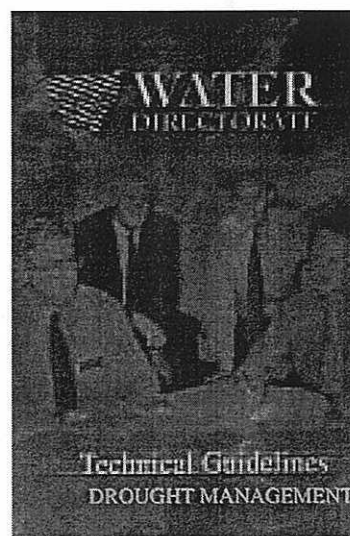


As noted on page 4, 35% of LWUs have implemented a sound water conservation plan [column 4 on page 34].

Measures that should be examined in each LWU's water conservation plan include:

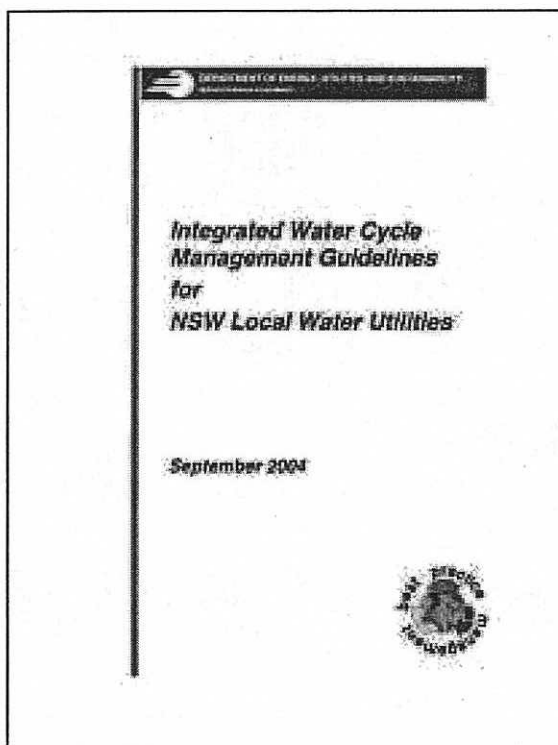
- active intervention - eg. retrofit programs, rebates for water efficient appliances or rainwater tanks and building code programs (including BASIX),
- water pricing reform, community education, water loss and leakage reduction programs.

(4) Drought Management is a fundamental responsibility of the LWU. This needs to be documented with a drought management plan. As noted on page 1, 35% of LWUs have implemented a sound drought management plan [column 5 on page 34].



(5) **Performance Reporting** is required under National Competition Policy and the National Water Initiative and is essential for monitoring and improving performance and for public accountability. Reporting forms should be lodged with DEUS by 31 October each year. All LWUs have reported their performance and over 80% of reports were lodged by the due date [column 3 on page 34].

(6) **Integrated Water Cycle Management (IWCM)** is a framework to help identify water management issues, to address these issues, to determine the appropriate management strategies to meet social, environmental and economic objectives. LWUs should substantially commence an IWCM strategy by June 2005 and complete and implement the strategy by June 2006. Over 20% of LWUs reported that they have at least commenced their IWCM strategy [columns (6) and (4) on page 34].



3.2 Compliance with Guidelines

Water utilities are required to report their outcomes against the required key criteria (6 for water supply and 4 for sewerage) in Notes 2 and 3 of the Special Purpose Financial Reports of their 2003/04 Annual Financial Statements. The reported LWU compliance with the *Guidelines* is shown in Appendix C.

It can be seen from page 34 of Appendix C that only 15 utilities have reported that they complied with all the required criteria for water supply businesses. Of these utilities, 10 are large utilities (businesses with a water supply and sewerage annual turnover of \$10M or more). The highest reported compliances are for pricing with full cost-recovery (71% - column 2) and performance reporting (87% - column 3), while the lowest reported compliances are for non-residential charges (33% - column 2b) and demand management (35% - column 4). Compliance is also low for drought management and integrated water cycle management but these are not required until June 2005.

Only 9 utilities have reported that they complied with all the required criteria for sewerage businesses and these are all large businesses with a water supply and sewerage annual turnover of \$10M or more. The highest reported compliances are for residential charges (69% - column 2a on page 34) and performance reporting (80% - column 3), while the lowest reported compliances are for non-residential charges (21% - column 2b) and developer charges (40% - column 2d). Compliance is also low for liquid trade waste approvals, trade waste policy and integrated water cycle management but these are not required until June 2005.

All utilities should move to comply with the guidelines by addressing these criteria. Particular attention is required for residential water supply revenue from usage charges, non-residential water supply and sewerage charges, trade waste fees and charges and developer charges.

3.3 Eligibility for Payment of Dividends

Appendix C also indicates that only 5 utilities have reported that they propose to pay a dividend from the surplus of their water supply or sewerage businesses.

The compliance guidelines were only recently released in May 2004. Therefore, compliance is expected to increase markedly over the next 2 years as utilities proceed to implement best-practice management. This will result in many more utilities being eligible for payment of a dividend and more importantly, an increase in the number of efficient and sustainable water supply and sewerage businesses in non-metropolitan NSW.

4 UTILITY PERFORMANCE

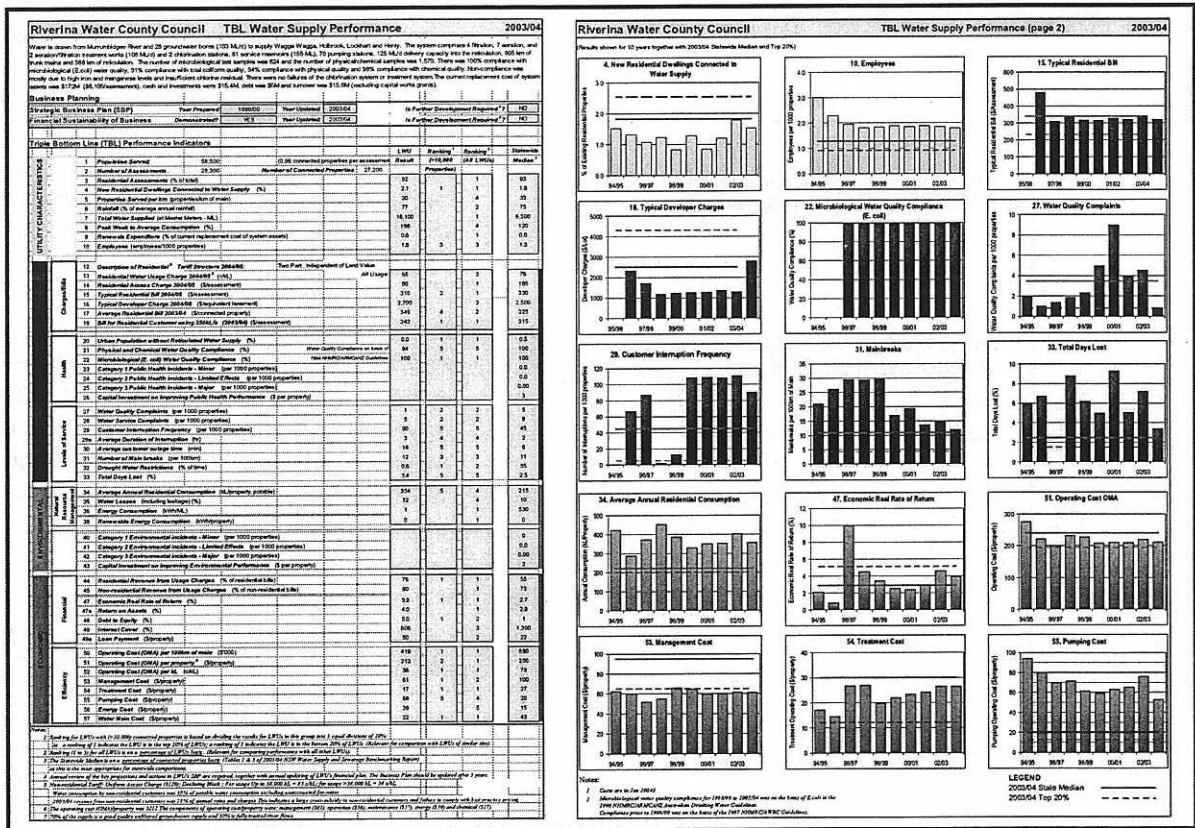
4.1 TBL Performance Reports

DEUS provides each utility and IPART with an annual Triple Bottom Line (TBL) Performance Report for the utility's water supply and sewerage businesses (a sample report is shown on pages 29 and 30).

The 2003/04 LWU TBL Performance Reports indicate the status of each LWU's strategic business plan and financial plan. LWUs that have completed these plans have demonstrated long-term financial sustainability of their water supply and sewerage businesses and comply with

To assist each LWU to gain a quick appreciation of its performance relative to **similar sized LWUs**, the LWU TBL Performance Report provides a ranking of each LWU's performance for each performance indicator (**second shaded column**). These rankings are based on 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). In addition, rankings are provided for each LWU's performance relative to **all LWUs (third shaded column)**.

LWUs will appreciate that each of the performance indicators is a "partial" indicator only and therefore cannot be interpreted in isolation. In addition, the rankings are



National Competition Policy.

The status of compliance of each LWU with best-practice water supply, sewerage and trade waste pricing and developer charges can also be obtained from the 2003/04 LWU TBL Performance Report.

indicative only and do not take account of the wide range of factors which can impact on an LWU's performance, as discussed on pages 17 and 18. The aim of ranking each LWU's performance is to assist the LWU in identifying any areas of under-performance in comparison with similar sized LWUs.

Each LWU can improve its performance in areas of apparent under-performance by benchmarking key work processes in these areas with the work processes of 1 or 2 high performing LWUs having similar characteristics (pages 17 and 18) and implementing best practices thus identified.

4.2 Best Performing Utilities

As noted on page 18, comparison of utility performance must be treated with caution due to the wide range of factors influencing the performance of these businesses. Substantial differences can arise due to whether or not the utility provides bulk storage and/or a filtered water supply and whether or not the utility has long transfer systems from its water sources and associated high pumping costs. Other differences can arise from the different customer profiles (eg. whether there is a significant industrial component or a high density residential component) and from other factors including geography and whether or not the utility operates nutrient removal facilities at its sewage treatment works. The size of utility is also a significant factor due to economies of scale.

A utility may appear to perform well for a particular indicator. However, it is essential to review performance for a suite of relevant indicators in order to gain an appreciation of the utility's overall performance.

The best-performing utilities have been identified from the utilities that broadly complied with the *Best-Practice Management Guidelines* (ie. indicated "Yes" to at least columns (1), (2), (2a) and (3) of Appendix C (page 31) and which achieved the best performance for the suite of indicators shown in Tables 4.1 and 4.2.

Water Supply

As shown in Table 4.1 below, key indicators used to compare performance and identify the best-performing water supply utilities are:

Best-Practice, Efficiency

- Broad compliance with the *Best-Practice Management Guidelines*, including a current strategic business plan and financial plan (1) and pay-for-use water pricing and full cost-recovery (2). As noted above, a "Yes" response to these indicators was a pre-requisite.
- % Residential revenue from usage charges (3) [page 21]
- Operation, maintenance and administration (OMA) cost per property (4)
- Management cost per property (5)
- Economic Real Rate of Return (6) [column 12 on page 39]

Environment

- Average Annual Residential Consumption per property (7) [column 3 on page 34]

Social – Bills

- Typical residential bill per assessment (8) [column 8 on page 39]

Social - Levels of Service

- Water Quality Complaints per 1000 properties (9)
- Water Service Complaints per 1000 properties (10)
- Water Main Breaks per 100km (11)
- Customer Interruption Frequency per 1000 properties (12)

Social - Health

- Microbiological Water Quality Compliance (E. coli) (13) [column 8 on page 34]

Table 4.1 Best-Performing Water Supply Utilities

Water Utility	Best-Practice Management, Efficiency						Environment Average Annual Residential Water Consumption (Potable) kL per property (7)	Bills Typical Residential Bill \$ per assessment (8)	Level of Service				Health Microbiological Water Quality Compliance (E. coli) % (13)
	Current SBP and FP? (1)	Pay-for-use Pricing with Full Cost Recovery? (2)	% Residential Revenue from Usage Charges (3)	Operating Cost \$ per property (4)	Management Cost \$ per property (5)	Economic Real Rate of Return (6)			Water Quality Complaints per 1000 properties (9)	Water Service Complaints per 1000 properties (10)	Water Main Breaks per 1000 properties (11)	Interruptions to Service per 1000 properties (12)	
1 Albury	Yes	Yes	43	201	94	1.0	307	225	0	14	13		100
3 Ballina (Reticulator)	Yes	Yes	70	339	99	0.6	234	270	0	3	6	4	100
39 Dungog (Reticulator)	Yes	Yes	42	208	89	1.5	186	310	0	73	30	1011	100
49 Gosford	Yes	Yes	69	219	130	-1.1 ⁺	193	218	8	17	36	278	100
58 Hastings (Unfiltered)	Yes	Yes	50	273	81	4.2	178	351	6	8	5	13	100
70 Lismore (Reticulator)	Yes	Yes	68	252	57	1.5	186	264	2	6	17	84	100
87 Nambucca (Groundwater)	Yes	Yes	45	187	86	4.5	186	254	2	5	6	17	100
97 Queanbeyan (Reticulator)	Yes	Yes	51	256	89	0.4	155	377	2	9	2	0	100
100 Riverina (Groundwater) (WS Only)	Yes	Yes	76	212	61	3.9	354	310	1	5	12	90	100
126 Wyong	Yes	Yes	68	199	83	4.1	188	225	7	2	6	24	100

+ This (-) ve real rate of return was due to drought water restrictions

Best-Performing Water Supply Utilities

It was found that the top 10 performing water supply utilities in 2003/04 were **Albury, Ballina, Dungog, Gosford, Hastings, Lismore, Nambucca, Queanbeyan, Riverina, and Wyong**. Table 4.1 shows the results for each of these utilities. Ballina, Lismore, Dungog and Queanbeyan are reticulators who obtain a fully treated water supply from their bulk suppliers (Rous Water, Hunter Water and ACT Electricity and Water). These bulk suppliers are also commended for providing a good quality and cost-effective bulk water supply.

As noted on the preceding page, these best-performing water supply utilities have all achieved broad compliance with the *Best-Practice Management Guidelines*. In addition, they mostly have a relatively high percentage of residential revenue from usage charges and low residential bills, operating and management costs per property and a low level of water quality and service complaints. They also all have 100% microbiological water quality compliance.

Sewerage

As shown in Table 4.2 below, the key indicators used to compare performance and identify the best-performing sewerage utilities are:

Best-Practice, Efficiency

- Broad compliance with *Best-Practice Management Guidelines*, including a current strategic business plan and financial plan (1) and sewerage pricing with full cost-recovery without significant cross subsidies (2). As noted on the preceding page, a "Yes" response to these indicators was a pre-requisite.
- Operation, maintenance and administration (OMA) cost per property (3)
- Management cost per property (4)
- Economic Real Rate of Return (5) [column 11 on page 43]

Environment

- Compliance with BOD licence limits (6) [column 11 on page 34]
- Sewer Main Chokes and Collapses per 100km of main (7)
- Sewer Overflows to the Environment per 100km of main (8)

Social – Bills

- Typical residential bill per assessment (9) [column 8 on page 43]

Social - Levels of Service

- Sewage Odour Complaints per 1000 properties (10)
- Sewerage Service or Choke Complaints per 1000 properties (11)

Best-Performing Sewerage Utilities

It was found that the top 10 performing sewerage utilities in 2003/04 were **Ballina, Gunnedah, Lismore, Orange, Queanbeyan, Singleton, Wagga Wagga, Wyong, Yass Valley and Young**. Table 4.2 shows the results for each of these utilities.

As noted on the preceding page, these best-performing sewerage utilities have all achieved broad compliance with the *Best-Practice Management Guidelines*. In addition, they mostly have relatively low residential bills, OMA and management costs per property. They also have high compliance with BOD and they mostly have relatively low sewer chokes and overflows and low sewage odour and service complaints.

Director-General's Excellence Awards

Congratulations to all of the above top 10 performers. As indicated on page vii, each of these utilities will be presented with the Director-General's Excellence Award for water supply and sewerage.

Table 4.2 Best-Performing Sewerage Utilities

Water Utility	Best-Practice Management, Efficiency					Environment			Bills	Level of Service	
	Current SBP and FP?	Pricing with Full Cost Recovery without Significant Cross-subsidies?	Operating Cost \$ per property	Management Cost \$ per property	Economic Real Rate of Return %	Compliance with BOD Licence Limits %	Sewer Main Chokes & Collapses per 100 km of main	Sewer Overflows to the Environment per 100 km of main	Typical Residential Bill \$ per assessment	Sewage Odour Complaints per 1000 properties	Sewerage Service or Choke Complaints per 1000 properties
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3 Ballina	Yes	Yes	323	115	6.0	97	14	1	330	1	3
54 Gunnedah	Yes	Yes	117	24	1.7	100	55	26	237	0	26
70 Lismore	Yes	Yes	278	52	2.7	100	73	4	412	0	24
93 Orange	Yes	Yes	217	86	0.4	95	80	8	348	0	34
97 Queanbeyan	Yes	Yes	226	74	4.3	100	122	0	294	0	22
106 Singleton	Yes	Yes	191	49	5.2	100	33		307	1	13
117 Wagga Wagga	Yes	Yes	151	30	6.3	100	94	4	279	0	85
126 Wyong	Yes	Yes	231	64	1.1		42	0	359	0	10
129 Yass Valley	Yes	Yes	261	87	11.5	100	83	1	370	0	58
130 Young	Yes	Yes	121	33	11.4	100	50	8	315	0	44

5 IMPROVING PERFORMANCE

A utility's overall aim for its water supply and sewerage businesses should be to provide the levels of service negotiated with its community at the lowest sustainable cost. After setting cost-reflective developer charges, non-residential charges and liquid trade waste fees and charges, each utility should minimise its typical residential bill in current dollars on a sustainable basis.

In practice this means reviewing whether your performance indicators under "Health", "Levels of Service" and "Environmental" are satisfactory. If they are not, you need to develop options to raise your levels of service and consult the community to establish the option which provides the best value for money.

As noted on page 10, the **typical residential bill** is the **principal indicator of the overall cost** of a water supply or sewerage system and is the annual bill paid by a residential customer using the utility's average annual residential water consumption. A critical element in minimising the typical residential bill and providing value for money for the community is to ensure each utility's operating cost (OMA) is efficient.

To assess performance, you should:

- (1) **Review your performance** using your *2003/04 TBL Performance Report* for each of water supply and sewerage (sample review is on page 28, sample reports are on pages 29 and 30).
- (2) **Identify any trends** in your performance indicators over the last 10 years using the second page of the *2003/04 TBL Performance Report*, and compare the performance indicators with the Statewide median values and the top 20%.
- (3) **Compare selected performance indicators** with those of similar sized utilities using the Figures showing performance trends for 4 utility size ranges over the last 5 years [eg. Figure 28 of 2003/04 NSW Water Supply and Sewerage Benchmarking Report].
- (4) **Review Operating Cost** - the **operating cost** (OMA - operation, maintenance and administration) per property is a prime indicator of the performance of an LWU and should be reviewed carefully by each LWU to ensure it has an efficient operating cost.

The components of operating cost are:

- (4a) **Management cost** - this includes administration, engineering and supervision and is typically almost 40% of the total operating cost.
- (4b) **Treatment cost (water)** - this is dependent on the type and quality of the water source and the extent of treatment provided. In addition, there are great economies of scale for the operation of water treatment works (ie. facilities involving at least filtration and disinfection).
- (4b) **Treatment cost (sewage)** - this is dependent on the type of treatment and the discharge requirements. Where the discharge licence conditions are stringent, involving for example a low level of phosphorus, treatment costs will be high. There are significant economies of scale for operation of treatment works.
- (4c) **Pumping cost (water)** - this is dependent on topography and, for water supply, the location of the water source. For example, Australian Inland has a high pumping cost due to the distance required to pump from the water source, while Fish River is almost a fully gravitational supply, with negligible pumping costs. For water supply, there are significant economies of scale in pumping cost per property.
- (4d) **Energy cost** - this is mainly a consequence of pumping requirements and is a component of pumping cost for water supply. 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 and significant cost savings may be available by optimising energy use in the treatment process (eg. such optimising of energy use has provided annual savings of over \$100,000 for a number of large sewage treatment works).

- (4e) **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 km of mains.
- (5) **Undertake process benchmarking** for selected indicators for areas of apparent under-performance, eg. where the LWU has a ranking of 3 to 5 relative to LWUs with similar characteristics.

5.1 Factors Impacting Performance

A number of factors will impact on a utility's performance. These include the extent of the services provided by each utility, properties served per km of main, climate etc. Each utility should compare its performance with utilities having similar characteristics. For example, in the case of a *water supply* system, the following factors are likely to increase the typical residential bill:

- (1) **Low number of properties served per km of main** - tends to increase both the typical residential bill and the operating (OMA) cost per property.
- (2) **Bulk storage and/or long transfer systems** - can incur significant capital and operating costs for these facilities. Such costs would not apply for utilities relying on groundwater or those receiving a regulated supply from a State Water dam [Note 16 on page 20].
- (3) **Filtered supply** - will incur a high treatment cost per property for small 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) [Note 17 on page 20].

(4) **High residential consumption per property** - such utilities should examine opportunities for reducing consumption through water demand management and implementation of best-practice water pricing.

(5) **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.

(6) **High pumping cost** - is influenced mainly by topography and geography. As noted on page 17, the LWU may be able to achieve significant savings in energy cost.

(7) **Small size of LWU** - there are significant economies of scale, particularly the capital cost of infrastructure and operation of water treatment works.

There is a strong correlation between the operating cost (OMA) per property and the number of employees⁺ per 1000 properties.

Similar considerations to those listed in this section apply to **sewerage**. In addition, a significant cost impactor is whether the LWU is operating nutrient removal facilities at its treatment works.

5.2 Benchmarking

Each LWU can improve its performance in areas of apparent under-performance by benchmarking its key work processes in these areas with the work processes of 1 or 2 high-performing similar LWUs and implementing the best-practices thus identified. This will provide better customer service, reduced environmental impact and better value-for-money for the community.

In addition, each LWU should undertake "Syndicate Benchmarking" with a group of LWUs with similar characteristics in order to determine current best-practice and to identify existing practices which each LWU can improve.

⁺ Reported employees include equivalent contractor staff engaged in operation, maintenance and administration (including billing).

The results of the syndicate benchmarking pilot project indicate that such process benchmarking should be highly cost-effective for all NSW LWUs. Over 40 NSW LWUs have advised they wish to proceed with syndicate benchmarking of their water supply and sewerage businesses. DEUS will be working with these LWUs to facilitate appropriate syndicate benchmarking projects and will disseminate the results.

6 GENERAL NOTES

- 1 To provide a balanced view of the long-term sustainability of Local Water Utilities (LWUs), a triple bottom line (TBL) accounting focus has been adopted in this report, with performance reported on the basis of **Utility Characteristics, Social, Environmental and Economic** indicators. As noted on page ii, this report discloses performance on the basis of the 126 LWUs existing in July 2003, except for the 2004/05 water supply and sewerage tariffs which are on the basis of the 107 LWUs operating in July 2004.
- 2 Where an LWU has not reported an item for 2003/04, the value previously reported has been used where available, otherwise an estimate has been used based on results for similar utilities. Such values are shown in **italics bold** in Appendices D to F. These values are also shown in the relevant figures.
- 3 This report has been prepared on a "**per connected property**" basis for consistency with national performance reporting. A connected property is a property that is connected to the system, as opposed to an assessment which is a bill issued by a water utility. Factors that influence this indicator are the number of vacant blocks (with no connection but which are billed as an assessment) and the number of multiple dwellings (eg. blocks of flats or units) with a single assessment.
- 4 The number of connected properties is generally not well reported by LWUs. A common error is to report the number of flats served rather than the number of blocks of flats in Question 2b of the Performance Reporting forms. A detailed review for three large coastal LWUs with a significant incidence of flats found the number of connected properties per assessment to be 0.95, 0.96 and 0.98 respectively. An LWU with about 10% vacant lots could expect this value to be about 0.90 while an LWU with few vacant lots and a high incidence of company title flats could expect this value to approach 0.98. DEUS has therefore estimated this ratio for many utilities.
- 5 The **typical residential bill** per assessment is the annual bill paid by a residential customer using the LWU's average annual residential water consumption 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.
- 6 The 2004/05 typical residential bill is based on a customer of the LWU's principal water supply or sewerage system using the LWU's 2003/04 average annual residential water consumption. These bills and tariff details are shown in Appendix E (water supply) and Appendix F (sewerage). The typical residential bill for 2003/04 and previous years is based on the reported average annual residential potable water consumption for that year (2003/04 residential consumptions are shown in column 3 of Appendix D).
- 7 The average residential bill per connected property (Appendices E and F) comprises the LWU's revenue from residential rates and charges, including residential sales of water, divided by the number of connected residential properties. Except for utilities with an inclining block tariff or an annual water allowance, and those with access charges not independent of land value, the average residential bill is less than the typical residential bill due to pensioner rebates and vacant lots.
- 8 The typical developer charges reported for Sydney Water Corporation and Hunter Water Corporation are for new release areas.
- 9 Drinking water quality guidelines have become more stringent. This report reports compliance with the 1996 NHMRC/ARMCANZ Australian Drinking Water Guidelines (National Health and Medical Research Council/Agriculture and Resource Management Council of Australia and New Zealand).
- 10 The average annual residential potable water consumption per connected property is shown in Appendix D as noted above. Where an LWU has not separately reported its residential water consumption, such consumption has been estimated using the Statewide average of 57% of the LWU's total potable water consumption.
- 11 10 LWUs had a dual water supply to over 50% of their residential customers in June 2004 (ie. with a potable supply for indoor use and a non-potable supply for outdoor use).

The total annual residential water consumption (ie. potable + non-potable) for those LWUs with a dual water supply in 2003/04 is shown below, together with their potable residential water consumption in brackets. The total and potable consumptions were: *Balranald 1,170 (179), Berrigan 490 (152), Bourke 1,580 (340), Central Darling 590 (108), Hay 790 (200), Jerilderie 370 (154), Murray 520 (193), Walgett 700 (146), Warren 480 (199) and Wentworth 1,050 (204).*

Note that as the potable residential consumption shown above for Berrigan, Central Darling and Murray is calculated only for those towns with a dual supply (ie. excluding towns with only a potable water supply), it is lower than the value reported in column 3 of Appendix D.

- 12 For consistency with national performance reporting, water losses include apparent losses (unbilled unmetered consumption, unauthorised consumption and under-registration of customer meters) plus real losses (leakage).
- 13 A review of water losses (including apparent losses) for NSW water utilities responsible for reticulating water supply to residential customers has indicated a minimum of 10% of total potable water supplied. The values for any such utilities reporting less than 10% water losses have been increased to 10% and the reported values for total water supplied have been increased accordingly. Similarly, as minimum real losses (ie. leakage) for such utilities have been found to be at least 6% of the potable water supplied, reported values of real losses of less than 6% have been increased to 6%. The adjusted values are shown in italics bold in Table 8 of the *2003/04 NSW Water Supply and Sewerage Benchmarking Report*.
- 14 Total annual water supplied comprises the sum of the potable water supplied plus the non-potable water supplied less the recycled water. Recycled water is a component of the non-potable supply which also includes raw water.
- 15 The operation, maintenance and administration (OMA) costs for water supply reticulators include the OMA cost for the bulk supplier on the basis of the volume of water supplied to the reticulator divided by the total volume supplied by the bulk supplier to all customers. For example for Cootamundra, the OMA cost of \$364/property comprises \$220/property for the bulk supply from Goldenfields (bulk supplier) plus \$144 for the reticulator (Cootamundra).
- 16 **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 (refer to section 5.1 (2) on page 18). The following non-metropolitan utilities provided such bulk storage: *Armidale, Australian Inland, Ballina, Bathurst, Bega Valley, Bourke, Brewarrina, Byron (Mullumbimby), Cabonne, Central Tablelands, Cobar, Coffs Harbour, Coonabarabran, Crookwell, Eurobodalla, Fish River, Glen Innes, Gosford, Goulburn, Guyra, Hastings, Inverell, Kempsey, Kyogle, Lachlan, Lithgow, MidCoast, Moree, Mudgee, Mulwaree, Murrurundi, Orange, Parkes, Parry, Rous, Rylstone, Shoalhaven, Tallaganda, Tamworth, Tenterfield, Tweed, Uralla, Wingecarribee, Wyong, Yarrowlunla, Yass.*
- 17 **Unfiltered** - refers to a utility with over 50% of its supply comprising an unfiltered surface water supply ie. the utility does not have a water treatment works involving at least filtration and disinfection for 50% of its supply.
Groundwater - refers to a utility with over 50% of its supply comprising good quality unfiltered groundwater.
Reticulator - refers to a utility which purchases over 70% of its source water from a bulk supplier and reticulates water to householders in its area.
Bulk Supplier - refers to a utility whose main task is to provide a piped bulk water supply to other utilities, rather than reticulating water to householders.
Dual Supply - refers to 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 (refer to Note 11 above).
- 18 The performance indicators shown for Sydney Water Corporation and Hunter Water Corporation were obtained from *WSAA facts 2004*.