

**Mid-term review of
Sydney Water Corporation's
Operating Licence**

**Report to Minister for Energy
September 2002**

**INDEPENDENT PRICING AND REGULATORY TRIBUNAL
OF NEW SOUTH WALES**

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1 INTRODUCTION

Under the provisions in Sydney Water's Operating Licence, the Tribunal is required to conduct a mid-term review of the Licence. The Licence specifies that the mid-term review must be undertaken:

- to determine whether the licence is fulfilling its objectives; and
- in relation to any other matter required to be reviewed by the licence.

The Minister for Energy has provided a Terms of Reference for the review (Attachment 1) and has requested that the review be completed by 30 September 2002.

The Tribunal has recommended no immediate changes to the Operating Licence. However, the Tribunal has highlighted a number of areas where changes to the Licence may be necessary at the end of term review of the Licence.¹ In these cases the Tribunal has identified deficiencies in existing information and has defined a work program to gather the information required to make informed recommendations at the end of term review. The Tribunal has also recommended Ministerial requirements to audit and publicly report progress against this work program.

This report explains the Tribunal's recommendations and has the following format:

- outline of the review process
- summary of recommendations and the way forward
- detailed explanation of the recommendations on each of the key issues in the Terms of Reference.

1.1 Review Process

The Tribunal conducted its mid-term review of Sydney Water's Operating Licence in accordance with Part 4B of the *Independent Pricing and Regulatory Tribunal Act 1992* and the terms of reference issued by the Minister for Energy. The review was conducted concurrently with the mid-term review of Sydney Catchment Authority's Operating Licence.

In March 2002, the Tribunal released an Issues Paper that discussed the key issues for the mid-term review and sought submissions from Sydney Water, the Sydney Catchment Authority and other stakeholders. It received submissions from 11 organisations, and placed these submissions on the IPART website (Attachment 2 lists the organisations that made submissions).

In addition, in July 2002, the Tribunal conducted a workshop to obtain the views of stakeholders. At this workshop, the Tribunal and stakeholders discussed options to address the key issues for the review (Attachment 3 lists the workshop participants). After the workshop, the Tribunal received further comments on key issues from stakeholders.

¹ The end of term review begins on 1 January 2004. The new Licence is required to be in place by 1 January 2005.

To assist it in the review, the Tribunal engaged an independent consultant—Montgomery Watson Harza Australia (MWH)—to review Sydney Water’s Demand Management Strategy and water conservation targets. MWH’s final report was made available on the IPART website.

The Tribunal has made its recommendations, taking into account the information obtained through the process outlined above.

1.2 Summary of recommendations

1.2.1 Whether the Licence is fulfilling its objectives

The Tribunal has found that Sydney Water’s Operating Licence is fulfilling its objectives and recommends no changes to the Licence at this stage.

1.2.2 Compliance with aesthetic guidelines values for drinking water quality

The Tribunal recommends that the Minister require Sydney Water to report (as part of its Quarterly Drinking Water Quality report) on its compliance with the aesthetic guideline values for pH, true colour, turbidity, aluminium, iron and zinc (set out in the Australian Drinking Water Guidelines 1996). This compliance should be reported from 1 October 2002 until the end of the Licence term. Compliance against these guideline values should be assessed as part of the annual licence audit process.

1.2.3 Annual Drinking Water Quality Improvement Plan

The Tribunal recommends that no changes should be made to the Annual Drinking Water Quality Improvement Plan and that the requirement for the Plan remain as a licence condition.

1.2.4 Minimum standards or guidelines for non-drinking water

In regards to other grades of water, the Tribunal recommends that no minimum standards and no guidelines (in addition to those in Clause 6.7 of the Licence) be included in the Licence.

1.2.5 Water conservation target for 2014/15.

The Tribunal recommends that a 2014/15 target should not be set at this stage but should be determined at the end term review, subject to the availability of sufficient information.

The Tribunal believes that more information is required on Sydney Water's Demand Management program and water use patterns across Sydney to enable an accurate assessment of Sydney Water's water conservation efforts. The Tribunal recommends that the Minister require Sydney Water to report annually (from 1 July 2002) on:

- *its Demand Management program, in the format prescribed in Attachment 4. The data on estimates of water savings and planned costs/activities for 2002/03 and 2003/04 should be reported to the Minister by 30 October 2002. At this time Sydney Water should also report on the assumptions that underpin the estimated water savings for each program category.*
- *the components in the Water Balance table, consistent with the format and definitions in the WSAA publication Benchmarking of Water Losses in Australia (Table 1 in Attachment 5)*
- *the consumption across sectors, in the format prescribed in Table 2 in Attachment 5.*

The Tribunal recommends that the Minister require Sydney Water to report the above information as attachments to the Demand Management Strategy Implementation Report and that this report be posted on Sydney Water's website for downloading by the public free of charge.

The Tribunal recommends that the accuracy of the above information should be audited and reported on in the annual Licence audit. The auditors should comment on the reasonableness of the assumptions used to estimate the savings from each program category.

1.2.6 Performance standards

The Tribunal recommends no changes to the performance standards approved by the Minister that applied from 1 July 2001.

2 WHETHER THE LICENCE IS FULFILLING ITS OBJECTIVES

The terms of reference for this review required the Tribunal to review whether Sydney Water's Licence is fulfilling its objectives. The overall objective of this licence is to enable and require Sydney Water to lawfully provide its services within its area of operations. Consistent with this objective, the Licence requires Sydney Water to:

- meet the objectives and other requirements imposed on it in the *Sydney Water Act 1994*
- comply with the quality and performance standards in the Licence
- recognise the rights given to customers and consumers
- be subject to operational audits of its compliance with the Licence
- establish a dispute resolution scheme.²

2.1 Recommendation

The Tribunal has found that Sydney Water's Operating Licence is fulfilling its objectives and recommends no changes to the Licence at this stage.

2.2 Issues considered

The Tribunal has considered whether Sydney Water has fulfilled the requirements outlined in the Licence (as above) and considered any issues raised by stakeholders in regards Sydney Water's performance.

Customer and consumer rights are incorporated in the Licence itself, and in Sydney Water's Customer Contract. (The Tribunal has recently reviewed the Customer Contract and advised the Minister for Energy of its findings.)

In addition, Sydney Water has developed an internal dispute resolution process that meets the requirement set out in the Licence. It has also joined the Electricity and Water Ombudsman New South Wales (EWON), which satisfies the Licence requirement to establish a dispute resolution scheme.

As part of the mid-term review, the Tribunal sought stakeholders' views on whether the current Operating Licence reflects the objectives and requirements of the *Sydney Water Act 1994*, and is fulfilling its objectives. Overall, stakeholders indicated that the Licence does reflect the objectives and requirements of the Act and is fulfilling its objectives.

² Sydney Water, *Operating Licence*, 12 April 2000, clause 2.1.

The Total Environment Centre believes that an additional objective should be added to the Licence to 'require Sydney Water to conduct its operations in accordance with ecologically sustainable development principles'.³ However, clause 21(1b) of the *Sydney Water Act 1994* specifies that one of Sydney Water's principal objectives is:

...to protect the environment by conducting its operations in compliance with the principles of ecologically sustainable development contained in section 6(2) of the *Protection of the Environment Administration Act 1991*.

The Tribunal does not see a need to duplicate this objective in the Licence.

Stakeholders also indicated that they were concerned about Sydney Water's ability to meet the 2004/05 water conservation target set in the Licence. This issue is discussed in detail in chapter 6 of this report, which also includes the Tribunal's recommendations for improving the reporting of Sydney Water's water conservation activities to enable a more accurate assessment of Sydney Water's performance. The Tribunal will also consider further incentives to encourage water conservation at the upcoming pricing review and at the end of term review of the Licence.

The Healthy Rivers Commission has presented a number of reports to the Government on river systems in Sydney's water catchments. Government decisions on the recommendations in these reports have been published in Statements of Joint Intent. There may be merit in reflecting some elements of the Statements of Joint Intent in the Licence. The Tribunal will consider this issue at the end of term review.

On the whole, given general agreement that the Licence is fulfilling its objectives, the Tribunal believes no changes should be made to the Licence at this stage. However, the Tribunal will consider whether the Licence could be refined at the end of term review, when additional information will be available from the annual licence audits and other sources.

³ Total Environment Centre submission to mid-term review on Sydney Water Corporations Operating Licence, May 2002.

3 COMPLIANCE WITH AESTHETIC GUIDELINE VALUES FOR DRINKING WATER

In relation to drinking water, Sydney Water's primary concern is to provide a quality of water that meets all health guideline values set out in the *Australian Drinking Water Guidelines 1996* (1996 Guidelines). However, in meeting these values, high levels of disinfectants may be required and this can affect the taste of drinking water. Customers are also concerned with aesthetic factors.

The 1996 Guidelines contain aesthetic guideline values. Currently the Licence does not require Sydney Water to comply with the 'aesthetic guideline values' in the 1996 Guidelines. Rather, it provides that NSW Health (following consultation with the Minister) may require Sydney Water to comply with specified aesthetic guideline values under this provision. NSW Health currently requires Sydney Water to monitor and report its performance against aesthetic guideline values for aluminium, ammonia, iron, zinc and turbidity.

Sydney Water commissioned an independent study of the costs and benefits of it complying with the aesthetic values of the 1996 Guidelines. It released a discussion paper on the issues involved on 1 October 2001, and held a three-week consultation from 2 October to 23 October 2001, which included a series of workshops for the general public. It delivered its final report to the Tribunal in January 2002.

The terms of reference for the mid-term review require the Tribunal to report on this study.

3.1 Recommendation

The Tribunal recommends that the Minister require Sydney Water to report (as part of its Quarterly Drinking Water Quality report) on its compliance with the aesthetic guideline values for pH, true colour, turbidity, aluminium, iron and zinc (set out in the *Australian Drinking Water Guidelines 1996*). This compliance should be reported from 1 October 2002 until the end of the Licence term. Compliance against these guideline values should be assessed as part of the annual licence audit process.

3.2 Issues considered

The Tribunal considered the findings of the independent study Sydney Water commissioned, together with stakeholders' submissions received as part of the mid-term review.

The independent study found that Sydney Water already consistently meets most of the aesthetic guideline values set out in the 1996 Guidelines. However, it does not always meet the values for chlorine or monochloramine, depending on the type of drinking water delivery system in that area. The study also considered the most suitable technology options available to achieve compliance with the guideline values for these substances.

In relation to the aesthetic guideline values for chlorine, the study found that approximately 7,000 to 10,000 households (around 34 per cent of households in chlorinated systems) would benefit from improved compliance. It suggested two technical options, pre-oxidation with potassium permanganate and booster chlorination, should be further investigated, as they showed some net benefit to the community.

In relation to the aesthetic guideline values for monochloramine, the study also found that approximately 80,000 to 190,000 households (around 5-15 per cent of households in chloraminated systems) would benefit from improved compliance. However, the report recommended against proceeding with the options available to achieve better compliance, due to their significant net costs to the community.⁴

The Tribunal sought comment from stakeholders on the costs and benefits of Sydney Water complying with the aesthetic guideline values. NSW Health and the Total Environment Centre expressed concern that complying with certain aesthetic guideline values may be costly and divert expenditure from activities that would improve Sydney Water's ability to comply with health guideline values.

The Total Environment Centre believes that the aesthetic guideline values could be included in the Licence but health-related guidelines should take precedence over them where there could be conflict (similar to the provisions in the recently gazetted Operating Licence for Hunter Water Corporation).⁵ NSW Health agrees that if aesthetic parameters were included in the Licence they should be secondary to health-related parameters.⁶

The Department of Land and Water Conservation (DLWC) also believes that aesthetic characteristics are secondary to health-related issues. However, it notes that as Sydney Water is in the business of delivering a product to customers, it seems inappropriate to ignore the aesthetic aspects of the drinking water supply to customers. Given the importance of aesthetics to customers, DLWC believes that:

...there should be something in the Licence that ensures that Sydney Water recognises that the aesthetic quality of the water is important to their customers.⁷

In addition, some stakeholders question the benefits to consumers of regulating aesthetic values. NSW Health notes that

...the independent study indicated that even in complying with the two disinfectant residuals, there would be a marginal gain in terms of consumer acceptance. So in other words, ...there will still always be a baseline level of consumer complaints regardless of whether all aesthetic parameters are met or not...⁸

Sydney Water expressed caution about setting aesthetic guideline values as compliance targets, which are expressed in terms of averages. It notes that aesthetic characteristics are based on a person's perception, and it is possible to comply with the aesthetic values but not meet a customer's expectations.⁹

⁴ A full copy of the independent study is available on Sydney Water's website www.sydneywater.com.au

⁵ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 83.

⁶ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 81.

⁷ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 83.

⁸ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 81.

⁹ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 85.

The Tribunal believes that there is merit in incorporating the aesthetic guideline values in Sydney Water's Licence, similar to the framework in Hunter Water Corporation's Licence (Hunter Water model). However, the Tribunal believes that it is prudent to consider this issue further at the end of term review, following any findings from the annual audit of Hunter Water Corporation's Licence.

In the interim the Tribunal recommends that the Minister require Sydney Water to report on its performance against the aesthetic guideline values in Hunter Water's Licence.¹⁰ This will enable the Tribunal to better assess (at the end of term review) the costs and benefits of Sydney Water adopting the 'Hunter Water model'.

At the end of term review consideration should be given as to whether reporting against aesthetic values should be a requirement in the Licence, similar to Hunter Water Corporation's current Licence.

¹⁰ As part of the Annual Drinking Water Quality Monitoring Plan, Sydney Water already monitors and reports on compliance against aesthetic guideline values for aluminium, ammonia, iron, zinc and turbidity. The additional parameters under the Tribunal's proposal are true colour and pH.

4 ANNUAL DRINKING WATER QUALITY IMPROVEMENT PLAN

Australian water authorities typically deliver drinking water of a high standard.¹¹ However, the *cryptosporidium* and *giardia* incidents relating to Sydney's water supply in 1998 underscore the need for water utilities to have adequate plans and reporting arrangements to safeguard water quality.

Sydney Water's Operating Licence requires it to prepare, to the satisfaction of NSW Health, three drinking water quality plans. These are:

- a Five-Year Drinking Water Quality Management Plan
- an Annual Drinking Water Quality Improvement Plan
- a Drinking Water Incident Management Plan.

The Annual Drinking Water Quality Improvement Plan outlines the specific projects funded through the capital works program to be undertaken during the next 12 to 24 months. These projects are derived from both the Five-Year Plan and from the results of drinking water quality monitoring through periodic system inspections and evaluations.

The terms of reference for this review require the Tribunal to assess the continued effectiveness of the Annual Drinking Water Quality Improvement Plan and whether there is a continued need for this Plan each year.

4.1 Recommendations

The Tribunal recommends that no changes should be made to the Annual Drinking Water Quality Improvement Plan and that the requirement for the Plan remain as a licence condition.

4.2 Issues considered

The Tribunal sought comment from stakeholders on:

- the effectiveness of the Annual Drinking Water Improvement Plan and whether there is a continued need for this plan
- whether the Five-Year Plan is sufficient to ensure that strategies to improve water quality are implemented.

Sydney Water believes that the Annual Drinking Water Improvement Plan is a very useful document for drawing together information from previous years' experiences on how to incrementally improve its system management approach. However, it notes that the document is audited through the Operating Licence and also by NSW Health. To remove this double auditing, Sydney Water suggests that the requirement to prepare the Plan be removed from the Licence and included in Sydney Water's Memorandum of Understanding with NSW Health. Alternatively, Sydney Water suggests that the requirement to prepare the Plan remain in the Licence but that it should be audited only by NSW Health.¹²

¹¹ Water Services Association of Australia, *WSAAfacts 2000 – The Australian Urban Water Industry*, p 33.

¹² IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 86.

NSW Health notes that it does not have a fixed view:

...on whether the Improvement Plan is necessary or not, other than to indicate that if it were to be dropped from the Operating Licence, the same issues would need to be taken up in the Five-Year Management Plan so that somewhere along the line you are still covering the same sorts of issues in terms of what improvements are needed in the system and what action have taken place.¹³

The DLWC supports maintaining the requirement to prepare the Plan, assuming that:

Sydney Water and other utilities go down the pathway of world best practice, which is basically heading towards incremental improvement as opposed to strict standards. If you have already got something in place, such as annual improvement plans, don't get rid of them because, effectively, that's part of the future in terms of world's best practice.¹⁴

The Total Environment Centre believes the Plan is important because it helps track progress towards implementing the Five-Year Plan. It also notes that there is a degree of flexibility in an annual plan that might not be able to be built into the Five-Year Plan.¹⁵

Overall, the Tribunal believes that there is a need for incremental improvements to the management system to ensure that water quality goals are met. The Annual Improvement Plan provides a useful mechanism to incorporate incremental improvements in response to the results of drinking water quality monitoring through periodic inspections and evaluations.

The Tribunal also believes that continuing to require Sydney Water to prepare the Annual Improvement Plan under its Licence ensures that Sydney Water's activities in relation to improving drinking water quality are clearly specified/reported and increases customers' confidence in the system.

¹³ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 81.

¹⁴ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 84.

¹⁵ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 83.

5 MINIMUM STANDARDS FOR NON-DRINKING WATER

Sydney Water supplies some of its customers with water that is not required to meet drinking water quality guidelines. For example, it currently supplies water for irrigation uses (such as watering golf courses). It also supplies recycled water to residents in the Rouse Hill development for non-drinking purposes and to commercial customers for use in industrial processes. These 'other grades of water' need to be fit for the purpose for which they are supplied.

The existing provision in the Licence requires that other grades of water must be supplied according to relevant guidelines and requirements prescribed by the Environment Protection Authority (EPA), NSW Health, the Department of Land and Water Conservation (DLWC), the Department of Agriculture, other relevant government agencies and the NSW Recycled Water Coordination Committee.¹⁶ It does not specify any minimum standards and guidelines itself.

The terms of reference for this review require the Tribunal to identify minimum standards and guidelines to regulate the supply of other grades of water.

5.1 Recommendations

In regards to other grades of water, the Tribunal recommends that no minimum standards and no guidelines (in addition to those in Clause 6.7 of the Licence) be included in the Licence.

5.2 Issues considered

The Tribunal sought comment from stakeholders on the need for minimum standards and guidelines for the supply of other grades of water to be included in the Licence. Most stakeholders believe that this is not necessary, or desirable.

Sydney Water opposes the inclusion of these standards in the Licence, and believes the quality of other grades of water should be regulated by focusing on system management and quality assurance. In the workshop hosted by the Tribunal, Sydney Water argued that setting minimum standards may limit the number of customers that could be supplied with other grades of water, because it is not possible to set minimum standards for all potential uses.¹⁷

NSW Health and the EPA also believe that standards for other grades of water should not be included in the Licence. In the workshop, the EPA noted that it would be difficult:

...to provide for standards for non-potable re-use within the Operating Licence. Also, on top of that, the standards change as we get new information. So we think it would be a very difficult, in fact an impractical thing to be able to do.¹⁸

¹⁶ Sydney Water, *Operating Licence*, clause 6.7.1.

¹⁷ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 86.

¹⁸ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 79.

DLWC also opposes establishing exact standards for all types of reused water. Rather, it believes that Sydney Water should negotiate appropriate contracts with its customers within the guidelines and provisions already included in the Licence. It also notes that it is important to encourage the reuse of water to reduce pressure on the existing supply of potable water.¹⁹

On the other hand, the Total Environment Centre believes that specifying minimum standards in the Licence will help increase public confidence in the reuse of effluent. This is particularly relevant in situations where there is no contractual agreement between Sydney Water and the customer purchasing the water. However, the Total Environment Centre recognises that such situations are likely to be very rare.²⁰

Overall, the Tribunal believes there is no clear need to introduce minimum standards for the supply of other grades of water or to specify additional guidelines in the Licence, given that guidelines and requirements administered by the EPA, NSW Health and DLWC are in place to regulate the quality of non-drinking water, and Sydney Water is meeting these requirements. In addition, non-drinking water is supplied to specific customers on a 'fit for purpose' basis that is negotiated between Sydney Water and the customer. Further, minimum standards for all types of reused water do not appear to be available at this stage.

While the guidelines and requirements administered by the EPA, NSW Health and DLWC are in place to regulate the quality of non-drinking water and Sydney Water is meeting these requirements, there does not appear to be a need for additional minimum standards to be set in the Licence.

The Tribunal also notes that, in the 2000/01 audit of the Operating Licence, Sydney Water achieved a high compliance with regard meeting the relevant guidelines in the Licence relating to the supply of non-drinking water.²¹

¹⁹ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 84.

²⁰ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 83.

²¹ *Sydney Water Corporation Operational Audit 2000/01*, March 2002, pp 6-14.

6 WATER CONSERVATION TARGET FOR 2014/15

Water conservation targets were first included in Sydney Water's 1995 Operating Licence. The current Licence requires Sydney Water to meet the following target levels:

- 364 litres per capita per day by 2004/05
- 329 litres per capita per day by 2010/11.²²

The terms of reference for this review require the Tribunal to consider the appropriateness of determining a water conservation target level for 2014/15.

6.1 Recommendations

The Tribunal believes there is merit in setting a 2014/15 water conservation target. However, given the lack of information, it does not believe that this target should be set at this stage. Rather the Tribunal recommends that it be determined at the end of term review, subject to the availability of information.

The Tribunal believes that more information is required on Sydney Water's Demand Management program and water use patterns across Sydney to enable an accurate assessment of Sydney Water's water conservation efforts. The Tribunal recommends that the Minister require Sydney Water to report annually (from 1 July 2002) on:

- Its Demand Management program, in the format prescribed in Attachment 4. The data on estimates of water savings and planned costs/activities for 2002/03 and 2003/04 should be reported to the Minister by 30 October 2002. At this time Sydney Water should also report on the assumptions that underpin the estimated water savings for each program category.
- The components in the Water Balance table, consistent with the format and definitions in the WSAA publication *Benchmarking of Water Losses in Australia* (Table 1 in Attachment 5).
- The consumption across sectors, in the format prescribed in Table 2 in Attachment 5.

The Tribunal recommends that the Minister require Sydney Water to report the above information as attachments to the Demand Management Strategy Implementation Report and that this report be posted on Sydney Water's website for downloading by the public free of charge.

The Tribunal recommends that the accuracy of the above information should be audited and reported on in the annual Licence audit. The auditors should comment on the reasonableness of the assumptions used to estimate the savings from each program category.

The Tribunal also proposes to undertake further work to develop a long term framework for regulating demand management. This work would include a discussion paper outlining several options for regulating demand, followed by a stakeholder forum to further discuss the key issues.

²² Sydney Water, *Operating Licence*, clause 8.1.1.

6.2 Issues considered

The Tribunal considered stakeholders views expressed in submissions and at the workshop on 23 July 2002. It also considered the findings of Montgomery Watson Harza's (MWH) review of Sydney Water's Demand Management Strategy and water conservation targets.

Performance since 1995

MWH's key findings in relation to Sydney Water's demand management performance include:

- Sydney Water did not begin to implement initiatives under a formal Demand Management Program until 1999/2000, as indicated in Table 1 below. Prior to this time, it relied on the introduction of quarterly billing, a two-part tariff and temporary water restrictions to manage demand.
- Sydney Water achieved savings of approximately 22 gegalitres per annum (GL/a) between June 1999 and June 2002, largely through its residential retrofit and leakage reduction programs and through water recycling at its Sewerage Treatment Plants.²³

Table 1 Sydney Water's expenditure on demand management and savings achieved

Program	98/99 (\$m)	99/0 (\$m)	00/01 (\$m)	01/02 (\$m)	Estimated total savings from program (GL/a)
Residential	0.05	4.23	10.95	6.52	4.51
Business		1.15	1.00	0.46	0.45
Leakage reduction		0.30	1.00	2.37	5.1
Recycled water					12.12
Other		0.45	1.41	1.99	
Total	\$0.05m	\$6.13m	\$14.36m	\$11.34m	22.18GL/a

Opportunities to improve the existing Program

The 2004/05 per capita target translates to a volumetric target of between 530 and 570GL per annum (depending on assumed population growth). Given that current total demand is 625GL per annum, Sydney Water needs to achieve additional savings in the order of 55 to 95GL per annum to meet this target.

²³ Overall the per capita demand for Sydney has fallen from the baseline of 506 Lcd in 1991 to 411 Lcd in 2002, a reduction of 18.6 per cent.

MWH undertook a detailed analysis of Sydney Water's demand management program and recommended ways to achieve greater savings. These include:

- Fast-tracking the retrofit of Department of Housing's homes, so it is completed in 1 to 2 years. (This initiative is expected to provide total additional savings of 1 GL per annum.)
- Improving leakage management by improving dividing valve²⁴ maintenance, providing additional flow-metering and reducing zone sizes. This will enable leakage to be measured more accurately and provide a sustainable long term solution. (This is expected to provide additional savings of 15 GL per annum for the period up to 2005.)
- Removing barriers to the major user program by providing free audits and other incentives to the business sector.

MWH also identified the need for Sydney Water to improve implementation planning (budgets, activities) for its demand management programs.

Short term framework

At the workshop, the Tribunal proposed a short term framework to regulate Sydney Water's demand management. This framework included maintaining the existing per capita targets in the Licence, but improving the reporting/auditing of water use categories and Sydney Water's Demand Management Program.

In general, stakeholders supported the proposal to improve reporting/auditing of water use categories and Sydney Water's Demand Management Program. Stakeholders believe this additional reporting would provide detailed information required to assess the success of the Program and understand the trends in water consumption. A number of stakeholders also believe that Sydney Water should be required to report on the metered demand by customer type (as defined in its Demand Management Program). This information should help identify where savings had been achieved.

Stakeholders also generally agreed that the existing per capita targets (while not ideal) should be maintained in the Licence, as they provide an incentive for Sydney Water to reduce water consumption.

The Total Environment Centre believes that a per capita target should also be set for 2014/15 to ensure a commitment to continue to reduce demand into the future.²⁵ The Tribunal recognises the benefits of a long-term target, but believes it would be premature to recommend a 2014/15 target prior to the findings of the Expert Panel on Environmental Flows. These findings will assist in establishing the sustainable yield of Sydney's water supply.

²⁴ Dividing valves are mechanisms that enable supply pipelines to be separated into different zones for improved management (eg different water pressure in different zones).

²⁵ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 42.

Longer term framework

At the workshop, the Tribunal also proposed that the reporting/auditing of water use categories and Sydney Water's Demand Management Program be continued in the longer term. The Tribunal also proposed that, at the end of term review, the per capita targets be replaced with a target that better reflects the availability of water and the limits of the system (taking into account the Government's commitment to indefinitely defer the construction of Welcome Reef Dam). The Tribunal proposed that the new target would be a single target based on the aggregate water savings (in ML per annum) required to reduce consumption to the sustainable yield of the system.

There was less consensus on this proposed longer term regulatory framework. Stakeholders agreed that targets should:

- play a primary role in a framework to regulate demand management, although a number of stakeholders, such as the Total Environment Centre²⁶, also argued that the targets should be complemented with financial incentives to reduce demand to the sustainable levels
- reflect the overall availability of water and limits of the system
- be set beyond a 10-year time horizon, as longer term planning of the overall demand and the system capacity is required.

However, stakeholders did not agree on the form that targets should take. Some stakeholders supported targets for key consumption sectors (eg residential, industrial), rather than a single aggregate target. The DLWC, for example, commented that

...a single demand management target is not appropriate. We would say that a multiple set of targets split up by sector is probably the way to go. Individual targets for the individual sectors of usage will allow Sydney Water to determine where it has performed and where it can add further effort to ensure that the ultimate target is met.²⁷

The Tribunal, on the other hand, supported a single global target as this would provide Sydney Water with greater flexibility to achieve the target through the most cost-effective combination of demand management measures, recognising that the appropriate mix of measures may shift as knowledge increases and circumstances change.

There was also discussion on whether the target should be expressed in per capita or in aggregate volumetric terms. The EPA, for example, supported a per capita target for the residential sector as this would send a signal to households on their consumption levels.²⁸

²⁶ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 42.

²⁷ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 43.

²⁸ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 50.

Another issue raised by stakeholders was the role of other Government agencies in reducing the long term demand on the system. For example, the Expert Panel on Environmental Flows noted that other agencies that can influence water consumption in Sydney include the Catchment Authority, Planning NSW, the Department of Housing, the EPA, the DLWC, the Department of Mineral Resources and local government.²⁹

The Tribunal notes that the information currently available is insufficient to establish the longer term demand management framework, particularly information relating to the sustainable yield of Sydney's water supply. However, it believes this information should be available by the end of term review.

Prior to this review, the Tribunal proposes to conduct further work to determine an appropriate longer term framework. As part of this process, it proposes to release a discussion paper that canvasses the range of options for setting a longer term target and hold a stakeholder forum to discuss the options for regulating demand. By the end of term review, the Tribunal hopes to have gained consensus on the appropriate longer term framework to regulate demand, and be able to recommend changes the Licence to incorporate this framework.

²⁹ IPART, Transcript of *Mid-term review of the Operating Licences for Sydney Water Corporation & Sydney Catchment Authority*, 23 July 2002, p 46.

7 PERFORMANCE STANDARDS

The terms of reference for this review require the Tribunal to consider any amendments to the performance standards adopted by Sydney Water.

7.1 Recommendations

The Tribunal recommends no changes to the performance standards approved by the Minister that applied from 1 July 2001.

7.2 Issues considered

The Tribunal has recently completed a review of Sydney Water's performance standards, and recommended tightening existing standards and introducing performance indicators to provide greater insight into Sydney Water's performance.

The Minister for Energy has considered the Tribunal's recommendations, together with advice from the Ministry of Energy and Utilities, and amended the existing performance standards. The amended performance standards and associated definitions were published in the Government Gazette and took effect from 1 July 2001.

The Tribunal does not believe it is necessary to make further changes to Sydney Water's performance standards.

ATTACHMENT 1 TERMS OF REFERENCE

Mid-term review of Operating Licence for Sydney Water Corporation

1. The Tribunal is requested, pursuant to Part 4B of the *Independent Pricing and Regulatory Tribunal Act 1992* to conduct the mid-term review of Sydney Water Corporation's Operating Licence.
2. As required under clause 2.3.1 of the Operating Licence the Tribunal must review whether the licence is fulfilling its objectives.
3. As required under the Operating Licence the Tribunal:
 - a) must report on the independent study commissioned by Sydney Water on the costs and benefits of complying with the aesthetic guideline values of the NHMRC and ARMCANZ Australian Drinking Water Guidelines 1996 (clause 6.2.3)
 - b) must assess the continued effectiveness of the Annual Drinking Water Quality Improvement Plan and whether there is a continued need for the plan each year (clause 6.5.5)
 - c) must identify minimum standards and guidelines to regulate the supply of Other Grades of Water (clause 6.7.2)
 - d) must consider the appropriateness of determining a water conservation target level for 2014/15 (clause 8.1.1)
 - e) must consider any amendment to performance standards adopted by Sydney Water Corporation (clause 7.3.4)
 - f) may consider other aspects of the Sydney Water Corporation's performance that are relevant to an assessment of whether the Operating Licence is meeting its objectives.
4. The Tribunal is not required to include any terms that amend, substitute or modify the provisions of the *Sydney Water Act 1994* in its recommendations for the amended or substitute Operation Licence but may include such recommendations in its report to the Minister under clause 2.3.4 of the Operating Licence.
5. In determining whether the Operating Licence is fulfilling its objectives and in recommending any amendments to the terms of the Operating Licence, the Tribunal:
 - a) must take into account relevant considerations from the reviews of the licences of the Sydney Catchment Authority and Hunter Water Corporation
 - b) must consult with relevant parties as necessary
 - c) may consider the impact of performance standards on the cost of service provision.

The Tribunal's review and recommendations must be provided by 30 September 2002.

ATTACHMENT 2 LIST OF SUBMISSIONS

Department of Housing

Department of Local Government

Department of Land and Water Conservation

Nature Conservation Council

NSW Environment Protection Authority

NSW Health

PlanningNSW

Public Interest Advocacy Centre

Sydney Catchment Authority

Sydney Water Corporation

Total Environment Centre

ATTACHMENT 3 WORKSHOP PARTICIPANTS

Organisation

Department of Housing
 Department of Housing
 Department of Housing
 Department of Land & Water Conservation
 Department of Land & Water Conservation
 Department of Land & Water Conservation
 Department of Land & Water Conservation
 Department of Land & Water Conservation
 Department of Land & Water Conservation
 Department of Land & Water Conservation
 Environment Protection Authority
 Environment Protection Authority
 Environment Protection Authority
 Environment Protection Authority
 Expert Panel on Environmental Flows
 GHD
 Gosford City Council
 Hunter Water Corporation
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Independent Pricing & Regulatory Tribunal
 Institute of Sustainable Futures
 Ministry of Energy and Utilities
 MWH Australia Ltd
 Nature Conservation Council
 NSW Health
 NSW Treasury
 NSW Treasury
 NSW Treasury
 Office of Minister for Energy
 PlanningNSW
 PlanningNSW
 Public Interest Advocacy Centre
 Stormwater Industry Association
 Sydney Water Corporation
 Sydney Water Corporation
 Sydney Water Corporation
 Sydney Water Corporation
 Sydney Water Corporation
 Sydney Water Corporation
 Sydney Water Corporation
 Sydney Water Corporation

Person

Beryl Jamieson
 Neil Sandall
 Pat Boow
 Russell Beatty
 Charles Essery
 Peter Schneider
 Salim Vhora
 Gary Hamer
 Steve Nicholls
 Doug Rhodes
 Lisa Corbyn
 Joe Woodward
 Natasha Lee
 Peter Moreza
 Bob Wilson
 Maurice Pignetelli
 Kevin Tomlinson
 Brad Foot
 Tom Parry
 Jim Cox
 Colin Reid
 Felicity Hall
 Liz Livingstone
 Kylie Miller
 Nigel Rajaratnam
 Gerard O'Dea
 Michael Sedwell
 Stuart White
 Dennis Fardy
 Shane O'Brien
 Peter Prineas
 Cristine Cowie
 Liz Dewar
 Phil Connolly
 Brett Turner
 Louisa Moore
 Peter Hamilton
 Susan Calvert
 Jim Wellsmore
 John Wood
 Alex Walker
 Angela Tsoukatos
 Denise Dawson
 Steven Baxter
 Richard Birrell
 Eric de Rooy
 Gavin Morrison
 Greg Reynolds

Organisation

Sydney Water Corporation
Sydney Water Corporation
Sydney Water Corporation
Sydney Water Corporation
Sydney Water Corporation
Sydney Water Corporation
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Sydney Catchment Authority
Total Environment Centre
Total Environment Centre

Person

Alan Gregory
Doug Cox
Colin Judge
Wal Setkiewicz
Brett Smith
Anthony Duchatel
Graeme Head
Richard Warner
Michelle McIlvaney
Amir Deen
Amit Chanan
Yasoda Muralitharan
Chris Maddock
Ian Tanner
Robert Emmanuel
Leigh Martin
Jill Merrin

ATTACHMENT 4 DEMAND MANAGEMENT REPORTING SCHEDULE

DEMAND MANAGEMENT ACTIVITIES 2002/03

Program	Water Savings (ML/yr)		Expenditure		Sydney Water Performance Indicators	Results		Measure of Outcomes	Results
	Planned	Actual	Planned	Actual		Planned	Actual		Actual
Residential indoor									
Department of Housing (DoH) Retrofit Program	150 ML		\$ 1,000,000	\$	Number of retrofits targeted to be done by DoH	6,000		Number of households retrofitted	
Targeted Residential Retrofits	1,100 ML		\$ 5,290,000	\$	Number of households contacted	450,000		Number of households retrofitted	
					Number of households followed up	90,000			
Washing Machine Incentive Program	200 ML		\$ 600,000	\$	Number of households contacted	40,000		Number of incentives given	
Retrofit Agent Pilot Program	100 ML		\$ 55,000	\$	Pilot program implemented and assessed			Number of households retrofitted	
Residential outdoor									
Residential Outdoor Awareness Program	2,000 ML		\$ 1,200,000	\$	Number of agreements with key stakeholders (eg Councils, Departments, TAFE) to support or develop water saving initiatives	5		Results of customer awareness survey	
					Number of long-term education sites installed eg. Demonstration gardens, dam displays, building information centre display, backyard to bush display at the Zoo.	6			
					<i>It's a Living Thing</i> TV campaign delivered				
					Number of paid demand management media items	540			
					Every Drop Count website established				
					Number of community events/exhibitions conducted	30			
					Number of households contacted via mailout	1,480,000		Number of households responding to mailouts	

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Residential Landscape Assessment Pilot Program	250 ML		\$ 507,000	\$	Number of households contacted	12,500		Number of households retrofitted	
					Number of households followed up	2,500			
Rainwater tank rebate program	300 ML		\$ 1,200,000	\$	Number of households contacted	1,480,000		Number of rebates paid for tanks installed	

Business

Every Drop Counts - Business Program	1,500 ML		\$ 1,500,000	\$	Number of users contacted - Industrial - Commercial - Hospitality - Government	150		Number of audits conducted by sector Number of companies participating Number of trials conducted	
					Number of water efficiency initiatives identified	40		Number of loans issued	
					Number of activities based on existing MoUs	120		Number of awareness campaigns conducted	
					Number of product development initiatives (eg Smart metering; cooling tower assessments; developing best practice guidelines etc.)	10		Number of marketing initiatives implemented	
					% of customers satisfied with diagnostic process	70			

Leakage reduction

Active Leakage/ Pressure management	4,400 ML		\$ 2,000,000	\$	Number of kms of watermain inspected for leaks	4,000		Number of kms inspected	
					Number of pressure trials conducted	1			

Water

Recycling

Sydney Water Reuse	10,200 ML		\$ -	\$	Percentage increase in effluent re-use by Sydney Water			Volume of effluent re-used	
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Overarching programs

Remote metering of sample single dwelling households			\$250,000	\$	Number of meters installed	100		Number of meters installed	
Residential customer research			\$70,000	\$	Number of research activities conducted into customer attitudes towards water conservation	3			

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DEMAND MANAGEMENT ACTIVITIES 2003/04

Program	Water Savings (ML/yr)		Expenditure		Sydney Water Performance Indicators	Results		Measure of Outcomes	Results
	Planned	Actual	Planned	Actual		Planned	Actual		Actual
Residential Indoor									
Department of Housing (DoH) Retrofit Program	250 ML		\$ 1,500,000	\$	Number of retrofits targeted to be done by DoH	10,000		Number of households retrofitted	
Targeted Residential Retrofits	1,100 ML		\$ 5,000,000	\$	Number of households contacted	450,000		Number of households retrofitted	
					Number of households followed up	90,000			
Washing Machine Incentive Program	300 ML		\$ 600,000	\$	Number of households contacted	40,000		Number of incentives given	
Retrofit Agent Pilot Program	100 ML		\$ 55,000	\$	Pilot program implemented and assessed			Number of households retrofitted	
Residential Outdoor									
Residential Outdoor Awareness Program	4,000 ML		\$ 600,000	\$	Number of agreements with key stakeholders (eg Councils, Departments, TAFE) to support or develop water saving initiatives	8		Results of customer awareness survey	
					Number of long-term education sites installed eg. Demonstration gardens, dam displays, building information centre display, backyard to bush display at the Zoo.	5			
					Number of paid demand management media items	200			
					Number of community events/exhibitions conducted	25			
					Number of households contacted via mailout	1,200,000			
Residential Landscape Assessment Program	2,400ML		\$ 5,100,000	\$	Number of households contacted	120,000		Number of households retrofitted	
					Number of households followed up	24,000			

Mid-term review of Sydney Water's Operating Licence

Rainwater tank rebate program	400 ML		\$ 1,500,000	\$	Number of households contacted	1,480,000		Number of rebates paid for tanks installed	
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Business

Every Drop Counts - Business Program	1,900 ML		\$1,500,000	\$	Number of users contacted	150	Number of audits conducted by sector	
					- Industrial			Number of companies participating
					- Commercial			
					- Hospitality			
					- Government			
Number of water efficiency initiatives identified	50	Number of trials conducted						
Number of activities based on existing MoUs	150	Number of loans issued						
Number of product development initiatives (eg Smart metering; cooling tower assessments; developing best practice guidelines etc.)	10	Number of awareness campaigns conducted						
% of customers satisfied with diagnostic process	70	Number of marketing initiatives implemented						

Leakage reduction

Active Leakage/ Pressure management	4,000 ML		\$1,800,000	\$	Number of kms of watermain inspected for leaks	4,000		Number of kms inspected	
					Number of pressure trials conducted				

Water recycling

BHP Reuse	365 ML		\$	\$	Project progress			Project progress	
Sydney Water Reuse	10,200 ML		\$	\$	Percentage increase in effluent re-use by Sydney Water			Volume of effluent re-used	

Overarching programs

Development of analysis tools - Climate modelling (SCA/SWC)			\$50,000	\$	Understanding of climate impact on demand - Model developed by June 2004				
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DESCRIPTION OF PROGRAM AND KEY ASSUMPTIONS IN SCHEDULE

Category	Program	Description and key assumptions
<i>EDC Residential Indoor Retrofits</i>	Targeted Retrofits	<ul style="list-style-type: none"> • Target high water users with water efficient retrofits (AAA showerheads, tap flow regulators & flush arresters for single flush cisterns for example). • A variety of program marketing methods will be tested, with the aim of attracting high water-using demographics that have to date, not been attracted to the program offer (individually mailed & addressed letter). Different marketing methods will be monitored for success via a comparison of program take-up against the previous retrofit program. • Customer follow ups are planned for the first time, this process may test a number of mechanisms (return mail, phone, email etc.) Measurement of success of each follow-up mechanism tested will be based on program take-up from followed-up customers. • Assume 20% of customer's contacted, will be followed-up • Assume additional 25 % take-up across Sydney over the next 10 years from current AAA penetration of 35%. • Assumptions relating to per property savings (21 kL/hh/a) are based on evaluation of SWC Retrofit Program.
	Dept of Housing Retrofits	<ul style="list-style-type: none"> • Target Department of Housing (DOH) properties with water efficient retrofits (AAA showerheads, tap flow regulators & flush arresters for single flush cisterns for example). • Assumes approximately 30,000 DOH properties retrofitted over the next five years. • Assumes about 25 kl/hh/annum saving, as DoH water consumption is higher than Sydney average. • Full delivery of program under existing budget is dependant on outcomes of the agreement currently under negotiation. • Average price per retrofit will be between \$95 and \$180, depending on contractual agreement with DoH. • Any shortfall in retrofits delivered this year are planned to be accommodated in 2003/04.
	Retrofitting Agents	<ul style="list-style-type: none"> • Pilot program to provide retrofits via a hot water system service company. • Costs and savings have only been theoretically modelled. • Assume that the cost of supplying water efficient products is substantially reduced as they are provided as part of a package. • Assume 60% (or 10,000 properties) of agent's hot water replacement/ maintenance customers will accept subsidised showerhead installation. • Assumes similar water savings per household as SWC Retrofit Program.

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	Washing Machine Incentive Program	<ul style="list-style-type: none"> • Assumptions based on efficiency of water use in front loader washing machines in comparison to top loader machine machines, assumed saving of about 20 kl/hh/annum. • Savings based on theoretical model, planned behavioural research will provide a better understanding of potential savings. • Assume a 5% increase in market share for the sale of AAA machines through rebate or discount incentive, approximately 10,000 rebates. • Assumes other utility partners or possibly manufacturers will contribute to the rebate scheme. • Uncertainty regarding customer take-up, will review after initial year.
<i>EDC Residential Outdoor</i>	Outdoor Foundation Program	<ul style="list-style-type: none"> • High profile community education program with an initial focus of delivery through EPA's "It's a Living Thing" campaign and the following SW funded, Go Slow on the H₂O campaign. • Assumes a voluntary 6% reduction in residential <u>outdoor</u> water use by 2005, based on the 7-10% reduction in <u>total</u> residential water use achieved during the mandatory restrictions in the mid nineties. (Ie about 6% reduction of 25% of residential water use). • Quantitative measurement of actual savings of educational programs is inherently difficult. • Planned behavioural and awareness research will provide a better understanding of program outcomes.
	Residential Landscape Assessment	<ul style="list-style-type: none"> • A 'retrofit' concept that can be applied to gardens and targeted to highest outdoor water users. The program is likely to include an irrigation system tune-up, general landscape advice and detailed irrigation system operating advice/ training/ education . • Assume a 25 % reduction in outdoor water use at participating properties.
	Rainwater Tank Rebate Scheme	<ul style="list-style-type: none"> • A rebate scheme that promotes the installation of larger (where feasible) rainwater tanks along with the use of rainwater for toilet flushing. • Assume sliding scale for rebate up to maximum of \$500 per tank. • Assumed take-up of about 2,500 rebates and 100-120 kl/year saving, however there is high uncertainty regarding customer take-up and actual savings, will review after initial year.
<i>EDC Business Program</i>	EDC Business Program	<ul style="list-style-type: none"> • Major industrial, commercial and institutional water consumers have been targeted as part of the Business Program. • "One-2-Five Water Diagnostics" and water audits are undertaken following establishment of a MOU regarding implementation of key recommendations. • Economic incentive is provided via a 'Revolving Investment Fund'. • All customers are surveyed for satisfaction after diagnostic

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<i>Active Leakage Reduction</i>	Active Leakage Reduction	<ul style="list-style-type: none"> Assumes 4,000 km of mains inspected per year and cover the majority of SWC systems over a five year period. Assumes savings per km from new zones will reduce over time as program moves into lower leakage rate zones Assumes leakage reductions from previously checked zones will decay by about 25% per year, as leaks return Pressure reduction – assumes some cost for resolution of potential customer pressure related internal plumbing issues.
<i>Water Recycling</i>	BHP Port Kembla Project	<ul style="list-style-type: none"> Highly treated recycled water supplied to BHP (Port Kembla) from Wollongong STP. STP upgrade and recycled water scheme due to be commissioned commencing late 2003/04 Assumes only an average flow of 10 ML/d for 30 days during commissioning period, so average for 2003/04 year of 1 ML/d.
	SWC Reuse	<ul style="list-style-type: none"> Total volume of effluent recycled for use in STP's and recycled water supplied to customers Assumes current annual STP effluent reuse will remain consistent, although will be higher in high wet weather years
<i>Overarching programs</i>	Remote metering	<ul style="list-style-type: none"> Project is in early stages of development – scope and cost are uncertain Assumes a pilot research program of 100–200 meters in 2002/03 to evaluate effectiveness and methodology assumed an inclusive meter installation, data collection and analysis cost of \$1,000 per meter, plus project management
	Customer research	<ul style="list-style-type: none"> assumes customer research for targeted retrofits and pre and post program research for Go Slow on the H2O outdoor campaign
<i>Regulatory</i>	Pricing	<ul style="list-style-type: none"> Appropriate pricing strategies will be developed in time for IPART's review of Sydney Water and the SCA's prices in 2005.
	Minimum Performance Standards	<ul style="list-style-type: none"> Sydney Water is a key member of a national inter-agency group working toward national water efficiency regulation for appliances.
	National Water Conservation Rating and Labelling Scheme.	<ul style="list-style-type: none"> Provide continued support for mandatory labelling on a broad range of water using products as a major step towards minimum performance standards. No assumed savings prior to 2005 – would change if mandatory rating and labelling introduced.
	Local Planning Regulations and Building Codes	<ul style="list-style-type: none"> Provide continued support to PlanningNSW in progressing implementation of the Sustainability Building Design Guidelines across NSW. Assume similar reduction in average water use as SWC Retrofit Program for all new residential dwellings once regulations introduced (assume no savings prior to 2005).

ATTACHMENT 5 WATER BALANCE AND SECTORAL CONSUMPTION

Table 1 Water Balance (ML/a)

Water supplied 624,767	Authorised consumption 541,372	Billed authorised consumption 538,548	Revenue water 538,548	Bill metered consumption 534,885
				Bill unmetered consumption 3,663
	Water losses 83,395	Unbilled authorised consumption 2,824	Non revenue water 86,219	Unbilled metered consumption -
		Apparent losses 16,703		Unbilled unmetered consumption 2,824
		Real losses 66,692		Unauthorised consumption -
				Customer metering inaccuracies 16,703
		Real losses (ie leakage) 66,692		

Table 2 Sectoral consumption (ML/a)

Residential	Billed metered consumption	Single residence	283,121
		Multi unit	89,921
		Other	2,168
Non-residential	Billed metered and unmetered consumption	Industrial	60,010
		Commercial	52,367
		Government	28,840
		Primary producers	3,564
		Other	13,050
	Unbilled metered and unmetered consumption	Other	-
Recycled		Effluent	10,810

GLOSSARY

ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
BWSA	Bulk Water Supply Agreement
Catchment Authority	Sydney Catchment Authority
CSIRO	Commonwealth Science and Industrial Research Organisation
DLWC	Department of Land and Water Conservation
DUAP	Department of Urban Affairs and Planning (now called PlanningNSW)
EPA	Environmental Protection Authority
EWON	Energy and Water Ombudsman NSW
IPART	Independent and Regulatory Tribunal of NSW
ML	Megalitres
MOU	Memorandum of Understanding
MWH	Montgomery Watson Harza Australia Pty Ltd
NHMRC	National Health and Medical Research Council
NSW	New South Wales
NSW Health	NSW Health Department
PIAC	Public Interest Advocacy Centre
PDF	Portable Document Format
REP	Regional Environment Plan
RMP	Risk Management Plan
SEPP	State Environmental Planning Policy
SWCM Act	Sydney Water Catchment Management Act 1998
SW Act	Sydney Water Act 1994
Sydney Water Tribunal	Sydney Water Corporation Independent Pricing and Regulatory Tribunal of NSW