

**A SUBMISSION TO THE INDEPENDENT COMPETITION  
AND REGULATORY COMMISSION DRAFT REPORT ON;**

**SECONDARY WATER USE IN THE ACT**

**JUNE 2012**

## Table of Contents

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+	
<b>Executive Summary</b>	<b>3</b>
<b>1. ACTEW's comments on findings and recommendations</b>	<b>1</b>
1.1 Comments on Findings	1
1.2 Comments on Recommendations	2
<b>2. Response to Chapter 8 "An adaptive and integrated urban water supply and demand planning framework"</b>	<b>3</b>
2.1 What is an adaptive and integrated approach?	3
2.2 The Water Security Objective	4
2.3 A new framework for the ACT	6
2.3.1 Overview	6
2.3.2 Roles and responsibilities	7
<b>3. Detailed comments on the Draft report</b>	<b>10</b>
<b>Appendix 1 – ACTEW Role as defined by Utilities Licence</b>	<b>17</b>

## Table of Figures

---

Figure 1 – Extract from WSAA Occasional paper 14 – Erlanger and Neal	5
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## List of Tables

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Table 1 FWO performance indicators & indicative targets	4
---	---

## Abbreviations

ACT	Australian Capital Territory
ACTEW	ACTEW Corporation Ltd
ActewAGL	Public/private company operating ACT water supply under contract
e-flows	Environmental Flows
FWO	Future Water Options
GL	Gigalitre (1,000,000,000 litres)
GL/yr	Gigalitre per year
ICRC	Independent Competition and Regulatory Commission
km	Kilometre
LOS	Level of Service
L	Litre
L/c/d	Litres per capita per day
LMWQCC	Lower Molonglo Water Quality Control Centre
m	Metre
MDBA	Murray Darling Basin Authority
ML	Megalitre (1,000,000 litres)
ML/d	Megalitre per day
NEB	Net Economic Benefit
NPR	Non-Potable Reuse
NSW	New South Wales
PWCM	Permanent Water Conservation Measures
SDL	Sustainable Diversion Limit (from the MDBA Basin Plan)
TIR	Time In (temporary water) Restrictions
TWAW	<i>Think water, act water</i>
TWR	Temporary Water Restrictions
WSAA	Water Services Association of Australia
WTP	Water Treatment Plant

## Executive Summary

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ACTEW is generally supportive of the recommendations and findings contained in the Draft report on secondary water use in the ACT.

ACTEW also believe it is important to note that there remains a role for secondary water use in maintaining water security for the ACT, if and when opportunities arise that have the right economic and sustainability features. Hence ACTEW also agrees with the comments surrounding recommendation 4.1 that the assessment of the value of secondary water is an ongoing issue, and that future assessments may arrive at a different conclusion to those arrived at in this report. Therefore, when planning for the future water needs of the ACT, ACTEW will continue to consider the contribution secondary water use can make to water security.

In relation to chapter 8 of the draft report, ACTEW is pleased that the ICRC has raised these issues, and with the constructive intent in which they have been raised. Whilst there is plenty to be proud of about the way the ACT managed its way through the unprecedented water scarcity in the millennium drought, it is a good time to capture any lessons learnt from that time. We have included comments relating to chapter 8 by way of a contribution to an ongoing discussion on these issues. ACTEW is keen to continue such discussions with the ICRC and the ACT Government.

In the final part of this submission ACTEW lists some detailed points about the wording and content of the Draft report the ICRC might like to consider.

# 1 ACTEW's comments on findings and recommendations

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## 1.1 Comments on Findings

ACTEW generally accepts Draft Findings 4.1 and 5.1 and believes they are well founded.

In relation to Draft Finding 7.1, ACTEW also accepts the logic of this finding, but would like to add three important points;

- It may be possible for the ACT to trade in water to meet future SDL requirements, but “trading in” comes with risks, and costs. If it can be achieved could place significant cost burdens on the ACT. If it cannot be achieved, or can only be partly achieved, then it could result in the economic cost of increased water restrictions. These restrictions are not supply driven, but SDL driven (i.e. water restrictions may be required to keep under the 40.5GL SDL even at times when our dams are full);
- In so far as secondary water use is derived from stormwater interception, it can delay the point at which SDL is reached, albeit marginally. The MDBA do not count all stormwater in the net calculation of the SDL. Therefore some stormwater initiatives (e.g. rainwater tanks), that are not counted, and to the extent they substitute for water from the primary supply can assist the ACT meeting it's SDL. ACTEW do understand that the principles around the definition of an SDL suggest that stormwater schemes will be, and should be, counted as an extraction against the SDL. We note the possibility that rainwater tanks could remain outside the SDL because of the cost and difficulty in measuring their extraction volumes. If efforts were made to count stormwater interceptions then the ACT should also receive a credit for the additional stormwater generation resulting from urban development;
- The requirement for secondary water use schemes to substitute for primary water use is noted and agreed. It is worth considering that, in very dry times, when Temporary Water Restrictions (TWR) are placed on the primary water source, failure to place similar restrictions on secondary water use schemes is likely to result in increased total extractions from the environment. Migration to secondary water use schemes in dry times, because of this “competitive advantage” would exacerbate the increase in total extractions, and have consequences for the environment. The solution, placing TWR on secondary use schemes is also a conundrum as avoiding TWR is a major motivation for customers to connect to secondary water use schemes.

## 1.2 Comments on Recommendations

ACTEW generally supports the recommendations of the report, and would be happy to assist in the implementation of these recommendations, where appropriate.

ACTEW also agrees with the comments surrounding recommendation 4.1 that highlight that the assessment of the value of secondary water is an ongoing issue, and that future assessments may arrive at a different conclusion to those arrived at in this report. Therefore, when planning for the future water needs of the ACT, ACTEW will continue to consider the contribution secondary water use can make to water security.

In relation to recommendations 6.2, 6.3 and 6.5, ACTEW notes the report's comments that the costs and benefits of these initiatives will need to be constantly scrutinised to ensure costs don't outweigh benefits, and agree with these recommendations on this basis.

In regard to recommendation 7.2, ACTEW suggests that additional issues should be measured during the trial, and these should be related to the services an ACT Water Utility licence holder needs to provide, including;

- Safety (including public health);
- retail service performance (customer service);
- emergency response (burst mains, broken pumps etc etc);
- asset management, including planning and implementation of asset maintenance and asset reliability should also be included in the trial, noting these are the type of services required to be provided by Utilities Act licence holders.

Asset management is particularly important as costs associated with it are likely to rise over time, as the asset ages, and a short term study is unlikely to uncover these issues unless a life-cycle approach is taken.

## 2 Response to Chapter 8 “An adaptive and integrated urban water supply and demand planning framework”

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ACTEW is pleased the ICRC has included chapter 8 to the report. Whilst ACTEW believe many of the points raised in chapter 8 are already included in decision making on water issues in the ACT, any discussion that leads to a better understanding and clearer roles can only be helpful. ACTEW also notes this provides the opportunity to see how some of the thinking contained in the recent Productivity Commission report into reform of the Australian Urban Water Sector might be incorporated into management of water in the ACT.

However the main reason ACTEW believes it is time to review responsibilities for water security is that we have just experienced a cycle of water security planning, and it is important that we capture the lessons learnt from that process and continue to improve our planning for the future.

The following is an outline of ACTEW’s current thinking on this issue, and we look forward to further discussion and refinement with both the ICRC and the ACT Government.

### 2.1 What is an adaptive and integrated approach?

ACTEW agrees that future uncertainty has and always will be one of the key features of planning any infrastructure. Uncertainty has increased in recent years due to climate change. The uncertainty around population growth remains as it has always been, and demand uncertainty has increased following water restrictions, wet weather, price changes and a greater awareness of the value of water. Climate is the principle uncertainty issue. Climate change and natural climate variability combine to make it very likely we will experience more severe droughts in the future than experienced in the 140 years of records we have of Canberra’s weather.

ACTEW agrees that supply/demand planning needs to be adaptive and integrated, and believe we have already been on this path for some time. Our normal business involves constant review of planning assumptions and resultant short, medium and long term operational and infrastructure requirements. Whilst there is always room for improvement, ACTEW believes that the most recent round of supply/demand decisions in the ACT did display strong elements of adaptive and integrated planning. Examples are;

- Integration – The ACT Government’s target of reducing per capita demand by 25% by 2023 meant that the ACT has adopted both demand and supply side initiatives;
- Integration – ACTEW considered indirect potable and non-potable reuse and accelerated demand management (bringing forward the ACT Government targets) as options for achieving improved water security;
- Adaptation – ACTEW did, and still does, continually review and model water security issues in the ACT. As part of our normal business we continually plan all aspects of future water security;
- Adaption – During the millennium drought ACTEW was constantly adapting to the changing conditions. The Lower Cotter dam was put back into use, a pump station built in the Murrumbidgee River, and systems implemented to enable Cotter catchment water to be transferred into Googong Dam.

- Adaption – On the demand side ACTEW worked with customers on reducing demand through PWCM and TWR. The work done with the ACT Government on reducing water used on irrigation was also a key adaptation project during the drought.
- Adaption – During the millennium drought the ACT Government and ACTEW developed an adaptive management process to manage the environmental flows out of Lower Cotter dam in a way that kept a balance between the water needs of the river below the dam, and the water needs of Canberra. In 2006, after a thorough review, the ACT Government implemented new Environmental Flow Guidelines. These Guidelines improved river health and also improved water security.

Notwithstanding this track record, ACTEW agree that adaption and integration are needed. We believe our normal planning processes do contain the adaptation and integration elements the Draft Report suggests and would be happy to brief ICRC and ACT Government on our plans in this regard.

## 2.2 The Water Security Objective

The Water Security Objective requires separate consideration. The key issue with an objective as expressed in Box 8.1 in the draft report is how it is to be measured, and what assumptions are to be made when measuring it. Objectives such as those in Box 8.1 can give very different investment outcomes with different measurement methods and different again with different assumptions.

ACTEW believes that the ACT Government should have the responsibility for setting a Water Security Objective. However it is a difficult task to both select an objective like this, make it economically sensible and fixed, and then define it in a way that it is clear and measurable. ACTEW would be happy to assist with the technical studies that will be required in order to establish an assessment methodology.

ACTEW has some experience with targets of the type set out in box 8.1 of the Draft report, and we generally call them Time in Restrictions (TIR) targets. In April 2005 ACTEW did its own review of water security objectives<sup>1</sup> around the country and came up with the following objectives for water security in the ACT, plus a methodology to measure performance against these objectives.

**Table 1 FWO performance indicators & indicative targets**

PERFORMANCE MEASURE / INDICATOR	INDICATIVE TARGET
<u>Security of supply</u>	
Minimum % of total storage left at the end of any reasonably expected drought event	5%
<u>Level of moderate drought service</u>	
Frequency – ARI <sup>(a)</sup> of Stage 1 or higher water restrictions	1 in 10 years
Duration - % of time in Stage 1 or higher water restrictions <sup>(b)</sup>	5%
<u>Level of severe drought service</u>	
Severity 1 - ARI of Stage 3 or higher water restrictions	1 in 25 years
Severity 2 - % time in Stage 3 or higher water restrictions	1%

<sup>(a)</sup> ARI – Average Recurrence Interval

<sup>(b)</sup> the % being calculated as  $m/(12*N)$ , where  $m$  denotes the number of months in which restrictions occur, and  $N$  is the total number of years in the simulation.

<sup>1</sup> ACT Future Water Options Water Resources Modelling Report – Volume I

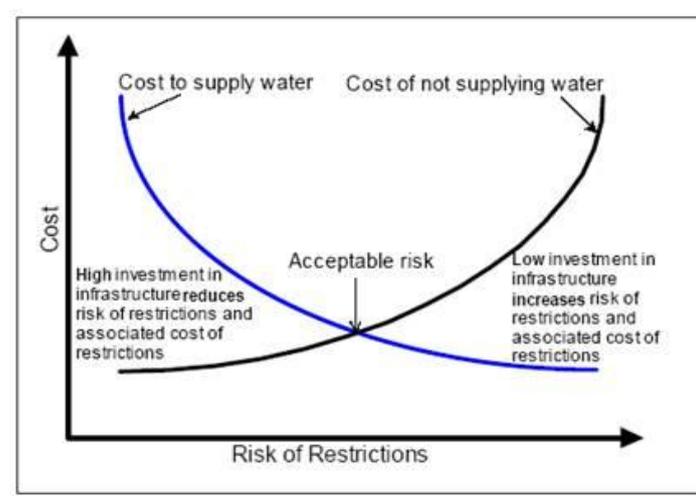
However, when applying TIR criteria ACTEW found they had the following shortcomings;

- There was no assessment of the economic cost of meeting the criteria. If the criteria were set without knowledge of the economic cost of meeting them, then they may drive either over or under investment in water security;
- Those that ACTEW examined in 2007 had not been tested with customers, or against customer's willingness to pay. If, for example, it costs the community \$100M to achieve 5% time in restrictions, but nothing if they are in restrictions 7% of the time, would they rather save the \$100M?

The case set out at bottom of page 96 and top of page 97 of the Draft Report highlights one of the shortcomings. Whilst presented as a case for measuring the 5% TIR target against stage 2 or worse, not stage 1 or worse, it is also the case for not having a water security objective expressed as TIR.

In 2007 ACTEW adopted its Net Economic Benefit (NEB) approach. Put simply the concept is that action is taken (in our case action to improve water security) when the benefits of that action outweigh the costs. The benefits accrue from avoiding water restrictions, and the costs are the costs of implementing the supply/demand project that realises this benefit. WSAA occasional paper 14 sets this out very simplistically, graphically, below;

**Figure 1 – Extract from WSAA Occasional paper 14 – Erlanger and Neal<sup>2</sup>**



The Productivity Commission also addresses this issue in its recent report On Australia's Urban Water Sector.<sup>3</sup> Whilst not agreeing with the entire contents of the Productivity Commission report, Section 3 of the report looks at objectives for the Urban Water Sector and gives some further insight on this issue. The following extract is from the key points in that section, highlighted on page 53.

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<sup>2</sup> Erlanger, Peter D. & Neal, Bradley, & Water Services Association of Australia. & Sinclair Knight Merz (Firm) 2005 *Framework for urban water resource planning / authors: Peter Erlanger, Brad Neal* Water Services Association of Australia, [Melbourne] :Available at <http://nla.gov.au/nla.cat-vn3572243>

<sup>3</sup> Australia's Urban Water Sector - Productivity Commission Inquiry Report Volume 1 – available at [http://www.pc.gov.au/\\_data/assets/pdf\\_file/0017/113192/urban-water-volume1.pdf](http://www.pc.gov.au/_data/assets/pdf_file/0017/113192/urban-water-volume1.pdf)

*The concept of maximising net benefits to the community encapsulates most of the more specific objectives that should be pursued in the urban water sector, including those related to water security, public health, flood mitigation and the environment. It can also be used, through the application of a number of quantitative and qualitative techniques, to guide the tradeoffs that need to be made between these objectives, as required by ecologically sustainable development principles.*

ACTEW understand this to be saying that a process like ACTEW's Net Economic Benefit (NEB) approach is required to balance the costs and benefits of levels of water security, ultimately finding the best mix as illustrated very simplistically in Figure 1

Hence ACTEW would prefer a target that based on the idea that the ACT should have the level of water security that keeps the best balance between the cost of not having water (water restrictions) and the cost of supplying additional water through implementation of supply/demand projects. If such a target existed then ACTEW would assume that the ICRC would sign off on an agreed process for measuring this target, just like an agreed process is needed for measuring the system performance targets (e.g. 5% time in restrictions).

## **2.3 A new framework for the ACT**

### **2.3.1 Overview**

ACTEW agrees with the comments by ICRC in this chapter that the framework proposed in the chapter is "...*just one possible method..*" and that sufficient time should be taken to work through the detail.

With this in mind ACTEW would prefer a framework that;

- Had a TAWW type document that had broad principles;
- Had both long and short term planning documents. However we believe 30 years is a more reasonable timeframe due to increasing uncertainty in water planning the longer one looks into the future.
- Defined the short term planning document differently. It should not be a "drought response" or contingency plan. Both short term (5 years) and contingency plans are required. Planning for droughts is part of water security planning. A short term plan is required in case preparatory planning or demand management work is required on a five year horizon. A contingency plan is a plan for situations that arise which are outside of (say) the 90% confidence interval for which short and long term plans have been made. Drought contingency plans comprise more short-term emergency response plans that will ensure that basic water needs for a community can be met for the duration of a very severe drought. These plans are required as it would be excessively costly to put in place permanent measures that to provide for every future climate possibility. Such plans may include short-term, higher-cost, possibly unsustainable measures to respond quickly if a more extreme drought emerges than is allowed for in the more economic longer-term plans

ACTEW has also learnt a lot more about implementation risk issues with major infrastructure and/or demand management initiatives. Implementation risks (including additional costs, and possible benefits like economies of scale in project delivery) are significant and need to be taken into account more in the qualitative and quantitative analysis of options.

In short, ACTEW's current plan for water security is to;

- Continue to monitor the emerging future with annual reports on future climate, future water availability and future water demand
- Develop a diverse portfolio of agreed projects to "best" (i.e. multi-criteria assessment) balance future demand with future availability. The portfolio is designed to cover future risks, be integrated by containing demand, supply and secondary water use initiatives, plus contain options that can provide extra water in a drought and others that take longer to realise their full potential.
- Be ready to implement any project in the portfolio within (say) 2 years of a trigger point. This implies that land provision, planning approval and a progressing level of design will be complete for all projects in the portfolio. This increases some costs as designs need to be progressed for the entire portfolio, but allows for a potential delay in the much larger implementation costs. The portfolio would undergo a major review every 5 years;
- Contain agreed trigger levels for certain actions. e.g. we may say something like a 70% storage level triggers detailed development and implementation of a demand management program to avoid or slow down further reduction in storage. ACTEW would constantly update the triggers, based on the most recent weather, climate and demand outlook.
- To have contingency plans for extreme events that are outside of the "normal" range of planning assumptions;

The planning, development and management of this portfolio of initiatives, and having them ready to implement in a short timeframe if triggered by an emerging future, is the major adaptation response, primarily a response to climate risk. Integration comes from ACTEW's decision to include all supply and demand options when determining the portfolio of preferred projects.

### **2.3.2 Roles and responsibilities**

ACTEW proposes that the principle of assigning roles and responsibilities should include clear direction, allocating responsibility for decision making, and strict accountability (e.g. regular reporting) to those who will bear the risk associated with the decision.

Despite the detailed modelling and assessment that would precede a major investment decision, such a decision will never be determined by the modelling, simply informed by it. Major investment decisions will involve a degree of judgment in assessing the risks involved in acting, and the timing of any action. There is a role for post decision reviews to determine if due process was followed, but not for a re-assessment of judgment decisions.

ACTEW's views on the roles and responsibilities in the water planning framework are;

### **2.3.2.1 ACT Government**

ACTEW sees the following roles for the ACT Government;

- ESDD – setting the framework being discussed here;
- ESDD - setting the broader water resource management strategy (TAWW successor). ACTEW sees this as essentially the same containing the Draft Report calls the Water Supply and Demand Planning Guideline, if not in the detail of the very prescriptive Victorian version. It should include a water security target, but ACTEW would prefer such a target to be economically prescriptive, not prescriptive about the frequency or length of a restrictions event;
- ESDD – and ACTEW agreeing the population and climate assumptions to be used in any water security analysis. In relation to climate, ACTEW envisages producing proposed climate assumption, and having it peer reviewed by a person or persons nominated by ESDD, then being endorsed (or otherwise) by ESDD;
- ESDD – signing off on an agreed ICRC and ACTEW demand projection for the long and short term water security plans (noting that this demand projection does not necessarily have to be the same as that demand projection used by ICRC for water price setting). Again ACTEW and/or ICRC would include an ESDD nominated peer reviewer to ensure it is happy with the process and outcome;
- ACTPLA – developing an approach to allow the necessary approvals for the portfolio of agreed projects to be done well in advance to reduce time to implementation;

### **2.3.2.2 ACTEW**

ACTEW sees its roles as;

- Selection of supply/demand long list and reducing these to a shortlist of preferred options, with portfolio associated risks, in close consultation with key stakeholders;
- Further refining the shortlist, using an agreed methodology, to a portfolio of agreed water security options, and calculating the costs and benefits of the portfolio. This portfolio would be adaptive and integrated as it would include all supply side and demand side options that contribute to water security. Climate, population and demand assumptions to be determined by ACTEW, with agreement from ACT Government and potentially ICRC for demand. The economic assessment methodology to be developed and agreed by ACTEW and ICRC.
- Developing the investment plan and implementing it as required, including having the portfolio of agreed water security options ready for implementation;
- Continual short term and long term re-assessment of the portfolio based on changing economic, climate, population and other assumptions.
- Regularly (5 year) re-assessment of the portfolio and updating it as/if required.

### 2.3.2.3 The Commission

The Draft Report suggests three roles for the Commission in the urban water planning framework. ACTEW sees the Commission as best placed to review the economic rigour in decision making. This prudence and efficiency role should not include, for example, review of issues such as climate and population projections. Specifically ACTEW sees the ICRC's roles are;

- Agree the prudence of the decision making PROCESS, before investment decisions are made, not the outcomes or the non-economic assumptions;
- Auditing that this due process has been followed;
- Post decision review of the efficiency of the delivery of projects arising from the process;
- Ongoing regulatory pricing role, including ex post review of prudence and efficiency of ACTEW investments in excess of expenditure allowances, and;
- Agreeing, with ACTEW, future demand assumptions/model used for water security planning.

From a regulatory perspective ACTEW considers the financial impact from exceeding the allowance to be sufficient disincentive to incur any more expenditure than absolutely necessary. ACTEW considers that any ex post review should be undertaken with caution, given the regulatory uncertainty it may create.

### 3 Detailed comments on the Draft report

This section of the ACTEW submission lists detailed “line by line” comments and suggestions on the draft report in dot point form. This section generally involves suggestion corrections to the draft report. Any such suggestions are meant to be made in a constructive way, and in no way impact on ACTEW’s generally positive view of the report and recommendations.

Set out below are the detailed comments on the report at points where ACTEW feel the wording needs to change and/or additional text is required. Note these detailed comments are in addition to the comments in Section 1 of this submission.

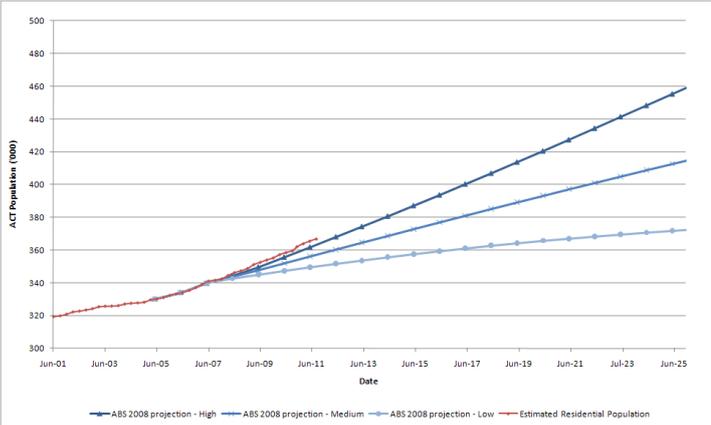
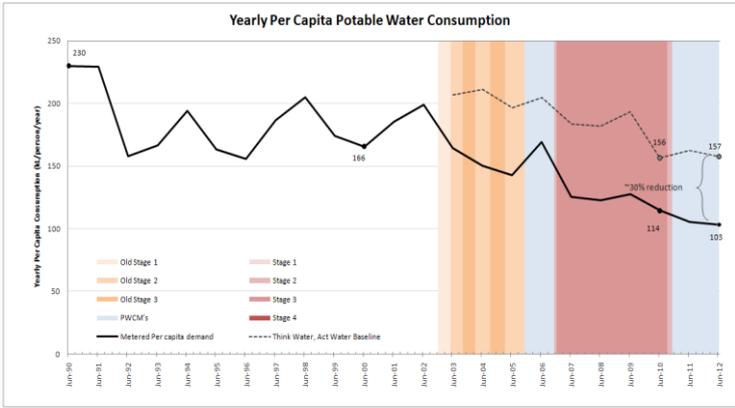
No.	Page	Draft report words	ACTEW comment
1	3	Some water is lost from evaporation and transpiration .....	All external use of the primary water supply is “lost”. Internal use flows to the sewerage system, and is treated and returned to the river, or can be reused prior to return to the river. External water use does transpire and evaporate, but also infiltrates and runs off. Over time this water is also returned to the river unless it is intercepted and reused.
2	5	... no more than one year in 20. This has commonly been re-expressed by saying that there should be no more than a 5% chance of water restrictions	The report mentions three different targets, namely restrictions; <ul style="list-style-type: none"> <li>• No more than one year in 20 (page 5);</li> <li>• 5% chance (probability) (page 5 and 35)</li> <li>• In restrictions 5% of the time (page 36).</li> </ul>
and	35	.....the Commission adopted ACTEW’s interpretation of the objective, which is that for any year over the modelled period, there should be less than a 5% probability of any level of temporary water restrictions.	It is important to note that <i>5% probability, one year in 20</i> and <i>5% of the time</i> are measuring two different things. One year in 20 is a composite measure of a combination of the length and probability of restrictions, as is 5% of the time. 5% probability is merely a measure of the chance of water restrictions, not of their duration (i.e. a restrictions event may last for years).  The way the target is mentioned is also important. “ <i>1 in 20 year probability</i> ” (table 5.3) is not the same as 1 year in 20. The former could be a probability or one event in 20 years. 1 year in 20 is not a probability.
and	36	...an objective that temporary water restrictions occur no more than one year in 20, or 5% of the time.	ACTEW’s have, in the past, adopted performance measures like one year in 20, along with four others and a detailed definition as to how these were to be calculated. These can be seen in our 2005 report <i>ACT Future Water Options Water Resources Modelling Report – Volume 1</i> , and included in this submission as Table 1. Subsequently ACTEW moved away from such performance measures in favour of the Net Economic Benefit approach, as outlined in Section 2.2.  Also, ACTEW does <u>not</u> interpret one year in 20 to be 5% probability (page 35), we simply measure and report on both.  We also note the comments in Section 4.1.1 on page 35, and again on page 92 regarding uncertainty with the way the one year in 20 is measured, and strongly agree with these comments. Nevertheless ACTEW prefer a move away from such measures, as discussed further in Section 2.2.

4	8	Investments in the primary water system tend to be large and difficult to break up into smaller projects.	<p>Smaller investments in the primary water system, for smaller incremental gains in security, are possible, including small increases in pumping capacity, storage capacity and projects of similar scale and complexity as secondary water system investments. Examples of recent ACTEW investments in such small scale projects are the Murrumbidgee pump station at Cotter, additional Cotter Pump Station pumps, the Cotter to Googong transfer. The planning issue with these is whether or not a series of smaller investments over time are better than a larger one.</p> <p>This is not to say that investments in the primary water system are inherently preferred to those in the secondary supply as ACTEW agrees that they both should be considered on their merits. Scale is not a distinction between the primary and secondary systems.</p>
5	9	The Commission proposes that decisions about investments in the primary water systems be made on the basis of a rolling assessment of the capacity of the water system as a whole to provide the level of water security required.	Of course ACTEW agrees that investments of any type should be made as close to the time they are needed as possible, and we believe we have been doing this. ACTEW believes it should also be recognized that we are constantly assessing the ability of the water supply system (the whole system) to meet system performance criteria, as evidenced by work published by ICRC in this Draft Report. However climate uncertainty has made not only the selection of options, but the uncertainty of the timing of implementation much more complex. The critical issue becomes the modelling assumptions and the associated risk and uncertainty with the timing decision, and who is bearing that risk.
6	9	The bucket analogy	<p>Whilst ACTEW understands the need for the simplistic “bucket” analogy, this analogy only caters for increased supply in a situation where the demand/supply balance changes slowly over time (e.g. population growth). Augmentation decisions are not driven by a system’s ability to deliver against a slowly growing demand, they are driven by the system’s ability of the system to cope with a defined dry spells, and the economic cost and/or frequency of restriction events in these dry spells.</p> <p>The major issue of uncertainty now facing water planners is the increased likelihood of extreme droughts heightened by climate change, and hence how secondary sources can improve system performance in that dry spell. Measuring and reporting system performance is complicated, but relatively easy compared to defining the “design drought”. This “design drought” climate assumption is an order of magnitude more important than issues such as population growth or changes in demand patterns.</p> <p>The point made later in the report, about the reliability of stormwater schemes against effluent reuse schemes is also an important one in this context (draft report section 4.4.2). Secondary water schemes that do not produce water in a drought are not necessarily adding to water security, as mentioned by the report at the bottom of page 9 and top of page 10.</p>

7	15	Water situation chronology	ACTEW's decisions to start using Cotter Dam water, build a pump station in the Murrumbidgee River at Cotter, and build the Cotter to Googong project all had a major impact on lessening the impact of the drought and bushfires, as did the adaptive management of the ACT Government and ACTEW to environmental flow releases from the Cotter Googong dams. These incremental supply increases were highly significant and should warrant a mention.
8	15 & 17	The second and ongoing bushfire impact is a significant reduction in streamflows in ACT catchments, and consequently inflows into ACT dams, due to increased evapotranspiration as the bushfire –affected vegetation recovers. The streamflow reduction impact had more serious water security implications than the initial water quality issue caused by ash run-off, with reduced dam inflows occurring even during years of reasonable rainfall.	This incorrectly implies that much of the inflow reduction observed since 2002 is due to the bushfires. The greatest streamflow reduction has been observed in the Googong catchment, which was not affected by the bushfires. Additionally, a review of the Cotter catchment determined that “discerning the impact of the bushfire in the Cotter, on yield, is not possible” in the context of the much more significant impact of the drought conditions <sup>4</sup> . Reduced dam inflows in years of reasonable rainfall can be attributed to dry catchment conditions created by years of drought, not bushfires.
9	19	The magnitude of these changes in water supply and consumption suggests that a reassessment of the ACT's water security outlook is necessary.	ACTEW continually assesses the ACT's water security outlook, particularly in light of changes in the critical assumptions relating to climate, but also in relation to all other assumptions. The climate assumptions are the most important driver of water security for the ACT, but population (including decisions on the area to be supplied), and changes in demand also impact on water security. Each year ACTEW publishes its Annual Assumptions Review to show how the assumptions have changed.  In addition, ACTEW is constantly looking at the need for any new supply/demand projects that changed assumptions may indicate are warranted.
10	35	While the model is not ideally suited to the purposes to which the Commission has put it...	ACTEW believes the model is well suited to this type of evaluation. In fact, a model of this type (i.e. including the potable water system) is the only means available to evaluate water security in an integrated manner. Time constraints have led to approximations in estimating inflow and demand for stormwater ponds. While these approximations are not ideal, they are adequate for the study.
11	36	Figure 4.1	The figure could also include net evaporation from ACT reservoir surfaces in the "Water Supply/Demand Balance" section.

<sup>4</sup> WMA Water, *Cotter Yield Review – Post 2003 Bushfires*, May 2009

12	37	Future outflows from the bucket are largely determined by the demand for water by the ACT community. This in turn is influenced by a number of factors, including population growth, weather conditions (including climate change), efficiency of water use and the price of water.	Price is the only factor not considered in the model, and this could be stated.
13	37	Again, for each generated climate path, future water demand for each year is modelled by estimating per capita water demand based on previous experience, and multiplying this number by the projected population for that year to give total demand in that year.	The report could state here that the ACT Government target of a 25% reduction in potable demand by 2023 is incorporated into the model.
14	42	...it is evident from figure 4.4 that the high series assumes growth rates into the future well above historical growth rates over the last 20 years.	Figure 4.4 shows historic growth rates over the past 30 years, and it is not evident that the high series are “well above historic growth rates”. 1979-89 rate was 2.5%, well above anything else on the graph, and the average 1979 to 2009 rate (from extracting figures from figure 4.4) is around 1.7%. This is approximately equal to the 2010 to 2029 high series rate, and higher than the 2030 to 2049 rate. So it is possible to interpret figure 4.4 as reinforcing the selection of the high future growth rate as the best representation of the past growth rates shown on this figure.
15	41,42,43	Section 4.3.1.1 Population	<p>The ACTEW approach to population forecasts for the current investment in the Water Security Major Projects dates back to the time reports were written and decisions made (2007 to 2009) and derives from The Canberra Spatial Plan and Think Water, Act Water (TAW). The Spatial Plan says “<i>Prudent planning therefore requires that The Canberra Spatial Plan caters for both moderate and high population –for a population of between 389,000 and 460,000 for the ACT and between 430,000 and 500,000 for Canberra-Queanbeyan</i>”. TAW says “<i>...work being done to predict when new water supply infrastructure will be needed will therefore be using these higher growth projections for contingency planning to ensure that, if increased water supply is needed, necessary planning and design will be done well in advance of the need to begin construction</i>”.</p> <p>ACTEW does not have a policy of using high population growth projections for all decisions. We believe it is appropriate to use different population projections for making different decisions, based on timeframe and risk. For example, demand planning for the next three years might be medium population growth, but long term infrastructure might use high population growth.</p>

			<p>In relation to the 2007 work on the Water Security projects, ACTEW also notes that, aside from the guidance received from the Spatial Plan and TAWW, growth at the time was running higher than the (then) projected high growth rate. Growth projections have since changed to account for this, so today's high projection is not the same as the 2007 high projection.</p> <p>The graph below best shows how actual growth has exceeded the 2008 ABS High scenario.</p> 
16	43-44	<p>The Commission's adjusted demand model on average generates per capita demand volumes approximately 25% less than the ActewAGL demand model.</p>	<p>This is misleading. ACTEW use scaling factors to reduce demand output from the model. We assume a 14.6% reduction in demand now, increasing to 25% by 2023. Therefore, ACTEW's assumption is only 14% higher than the ICRC's for 2012, and this diminishes to zero by 2023. While this is mentioned elsewhere in the report it does convey the message that ACTEW has a <u>much</u> higher demand assumption than used in the ICRC modeling, and this is not true. This point could be made more clearly here.</p>
17	44, 90 and 117	<p>...it is the Commission's view that the TAWW 25% target reduction in per capita water consumption by 2023 is likely to be achieved by 2012-13, with reduced consumption levels expected to be maintained into the future. In its submission to the inquiry, ACTEW supports this conclusion....</p>	<p>ACTEW does not believe the target has been met as the target is a 25% per capita demand reduction by 2023. To claim the target has been met now assumes that there will be no drift back to pre 2002 consumption patterns.</p> <p>The current per-capita demand reduction is approximately 30% below demand that would have been expected under similar climate conditions with pre 2002 per capita consumption patterns.</p> 

			<p>The graph above shows the most recent consumption compared to the Think Water, Act Water climate corrected baseline. ACTEW's considers that it most likely that under average climate conditions, per-capita consumption will increase slightly, but remain at the TAWW target.</p> <p>However ACTEW recognises that there are many factors including price, uptake of water efficient appliances and consumer knowledge and education which will assist in maintaining the per-capita demand at the TAWW targets. However ACTEW also recognises that there are other factors, including an aging population leading to smaller households, as well as increasing numbers of water using fixtures in households which may increase per capita water consumption.</p> <p>Hence ACTEW would prefer ICRC used the wording used on page 90 "...mains water reduction target of 25% on 2003 levels by 2023 is likely to be met given current reduction levels" to the wording used on page 44.</p>
18	45	<p>It is important to note that the above conclusion derives from a 2012 assessment of the capacity of the ACT water system to meet future ACT community water needs. Future assessments may arrive at a different conclusion, depending on the circumstances and information available at that time.</p>	<p>It is probably worth discussing climate here as well as population. The climate assumption is more important than population in the short term because current population is known whereas current climate is an assumption. ACTEW's modelling accounts for climate variability by using 200 possible future scenarios to show climate variability and sensitivity. However the underlying climate assumption remains highly uncertain. This uncertainty is unlikely to change significantly, even with much improved climate science. The key issue for current and future assessments is how to manage the significant risks associated with this uncertainty.</p>
19	50	<p>the fact remains that the model is not intended to predict, for example, the likelihood of a multi-year drought (or a long string of very wet years) starting from next year.</p>	<p>From a technical perspective the model can produce the likelihood as a percentage. However, the model cannot predict when droughts or floods will actually occur.</p>
20	50	<p>Nevertheless, should the ACT face another drought, with full storages (even with the ECD still under construction), operational improvements such as the upgraded Mt Stromlo Water Treatment Plant, the ability to pump water directly from the Murrumbidgee River, the Tantangara Transfer Project, and lower per capita demand patterns, the ACT is in a much better position to deal with it.</p>	<p>For completeness, reductions in environmental flow requirements during drought should be added to this list.</p>

21	50 & 97	developing a more appropriate model, built on the foundations provided by the ActewAGL modeling work but with richer and more flexible modelling of climate, should be a priority	<p>It is unclear what the Commission means by this sentence or how it arrived at this conclusion. ACTEW believes the current suite of models it uses are well suited to this type of evaluation. In fact, a model of this type (i.e. including the potable water system) is the only means available to evaluate water security in an integrated manner. ACTEW keeps up to date with the development of various modelling tools in the industry and an external independent expert review of similar work in 2005 stated that the work “... is considered that the work undertaken is both sound and thorough. The assessment has involved a considerable amount of work and represents a level of effort and degree of sophistication that is amongst the vanguard of such studies in Australia.”<sup>5</sup></p> <p>Climate impacts on the stormwater ponds considered have been modelled in detail by developing an inflow time series and a demand series. The model is capable of considering many climate scenarios.</p> <p>While it is always possible to improve the modelling, and ACTEW is constantly work at this, we are not aware how climate could be modelled in a "richer and more flexible" manner, or what that might mean.</p>
22	53	Levelised cost	<p>A shortcoming of the levelised cost approach is that it fails to account for the fact that not all kilolitres are equal. The benefit of interest is security of supply rather than simply volumes of water delivered. A kilolitre available in drought is more valuable than a kilolitre available when dams are full.</p> <p>It seems some of the costs included in the SECG calculation of the levelised cost of ACTEW potable water are not strictly marginal; for example, ACTEW network operating costs that do not vary with consumption.</p>
23	82	...measured volume of treated sewage effluent from LMWQCC, Fyshwick Sewage Treatment Plant and Queanbeyan Sewage Treatment Plant returned to the river....	<p>Fyshwick Sewage Treatment Plant is a no-discharge plant. Its effluent is returned to the sewage network and eventually treated at LMWQCC for return to the river.</p>

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<sup>5</sup> Letter from Dr Rory Nathan, SKM, expert reviewer of the report and modelling of Future Water Options, November 2005

## Appendix 1 – ACTEW Role as defined by Utilities Licence

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This section of the submission traces ACTEW's role by looking at its obligations in relation to planning for water security under the *Utilities Act 2000 (ACT)* and the *Territory Owned Corporations Act 1990*, and the Act Legislative Assembly's Standing Committee on Climate Change, Environment and Water's report from its *Inquiry into the ecological carrying capacity of the ACT and region*.

### Utilities ACT

To operate a water utility in the ACT requires a licence, issued under the *Utilities Act 2000 (ACT)*. The Utilities Act defines a "Water Network" in a way that includes all ACTEW's infrastructure, and "water services" to be the collection, treatment, distribution and supply of water through the Water Network. The Act ACTEW has such a licence.

The ACTEW Utility Services Licence describes the "Authorised Utility Services" to be supplied by ACTEW as those referred to in Item 4 of the reference schedule attached to the licence. Item 4 of the Reference Schedule is ACTEW's address!!! Obviously it is meant to be Item 3, which says, in part, that the water services to be supplied are those under Section 11 of the *Utilities Act 2000 (ACT)*.

Associated with the *Utilities Act 2000 (ACT)* are several Codes of Practice. Section 6.2 of ACTEW's licence requires ACTEW to comply with, in part, various Industry and Technical Codes.

The *Water and Sewerage Network (Design and Maintenance) Code* is relevant in relation to water security planning.

Section 3.1 of this Code requires water utilities to prepare 15 year service capability projections and for them to be reviewed every 5 years. The projections are to include how the utility is planning to meet demand, projecting population and anticipating changes in customer demand. Note there is no requirement for ACTEW to manage customer demand.

Section 4.1 (1) requires a water utility to design its network "to provide the most economic structure/asset to meet the service provision needs as evaluated over a whole of life cycle;"

Section 4.2 (4) calls for system reliability and availability as set out in the *Water Supply and Sewerage Service Standards Code*.

The *Water Supply and Sewerage Service Standards Code*, under section 4.1, requires ACTEW to meet reasonable needs in accordance with the Standard Customer Contract. Section 7, Water Quantities, and Section 9, Water Availability, talk about maintaining supply unless unable to do so by conditions outside the control of the Water Utility.

In short, ACTEW's role in water security is simply to meet demand, not to manage demand or strike a supply/demand balance.

ACTEW does have a role in managing demand through Permanent Water Conservation Measures (PWCM) through a specific regulations under the Utilities Act to cover to cover PWCM and TWR.

## Territory Owned Corporations Act 1990

ACTEW is a Territory Owned Corporation (TOC). The main objectives of a *Territory Owned Corporations Act 1990* (TOC Act) are listed in the Act as;

The main objectives of the Act, given equal importance, are;

- a) to operate at least as efficiently as any comparable business;
- b) to maximise the sustainable return to the Territory on its investment in the corporation or subsidiary in accordance with the performance targets in the latest statement of corporate intent of the corporation; and
- c) to show a sense of social responsibility by having regard to the interests of the community in which it operates, and by trying to accommodate or encourage those interests; and
- d) if its activities affect the environment—to operate in accordance with the object of ecologically sustainable development.

Ecologically sustainable development is defined in the Act as: the effective integration of environmental and economic considerations in decision-making processes achievable through implementation of the following principles:

- a) the precautionary principle;
- b) the inter-generational equity principle;
- c) conservation of biological diversity and ecological integrity;
- d) improved valuation and pricing of environmental resources.

***inter-generational*** equity principle means that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

***precautionary principle*** means that, if there is a threat of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

ACTEW interpret this to mean it should play a role in managing demand, as provision of water services do affect the environment, and managing demand is part of the effective integration of environmental and economic considerations required when striking a supply/demand balance. Hence the TOC Act and the Utilities Act are somewhat in conflict on clearly setting out ACTEW's role in demand management.

### **Inquiry into the ecological carrying capacity of the ACT and region**

In May this year the ACT Legislative Assembly's Standing Committee on Climate Change, Environment and Water released a report resulting from its *Inquiry into the ecological carrying capacity of the ACT and region*

Recommendation 8 of that report states:

5.83 The Committee recommends that the ACT Government examines the current situation whereby ACTEW is responsible for water conservation measures while at the same time being obliged as a Territory Owned Corporation to profit from the sale of water.

In the context of this ACTEW submission, this recommendation needs clarification in how price regulation operates, as ACTEW believes it can play a major role in demand management, in accordance with its Utilities Act and TOC Act obligations.