

# WHAT SHOULD CLEAN SAFE WATER COST?

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In giving this talk tonight I wish to make it clear that what I am presenting are my own opinions and not those of any institution or employer with whom I may be affiliated. I ask no one here to accept anything I say as fact; on the contrary, I invite you to make your own inquiries and come to your own opinions and conclusions. I would, of course, be grateful for any assistance in refining and extending data, since published sources occasionally differ somewhat or data is aggregated.

I should also mention that I have no financial interest in what happens to ACT water, apart from some small dividends on some AGL shares. I should also warn you that while as an economist I loathe monopoly, as an investor I love it, which may explain why water is now such an attractive asset class for merchant banks, private equity firms and governments seeking to extract more cash from your pockets.

## 1. WHAT DO WE PAY FOR WATER?

First, let us start with what has happened to ACT water prices.

ACT water prices have skyrocketed since 1991.

The pre-paid allowance was 455 kilolitres per household in 1991 and anything over was charged at 47 cents per kilolitre.

ACT households now pay \$1.33 cents per kilolitre from the first drop and pay \$3.12 for every kilolitre over 300 kilolitres. That includes a so-called “water abstraction charge” of 55 cents which is supposed to reflect water scarcity. (If you ask, why then does the price rise from \$1.33 to \$3.12 if scarcity is already being charged for, you are a good economist!)

If you used 455 kilolitres back in 1991, you paid \$400. Now you pay \$1,548.86 - an increase of 287%.

If you have a family or garden and used 950 kilolitres back in 1991, you paid \$632.65. Now you pay \$3,093.26 - an increase of 389%.

So you shouldn't have a family or create a garden, it seems.

By contrast, irrigators, such as rice farmers downstream, pay a lot less. For permanent high security water downstream costs \$2.20 per kl, equivalent to around 12 cents per kl annually. Temporary water downstream costs about 21 cents per kilolitre.

ACT households are paying 16 to 30 times more than what irrigators are paying downstream and nearly 1,000 times more than what a Queensland river licensee would pay. Partly the difference reflects higher security and quality together with sewerage and drainage but by no means most of it.

The increase in ACT water prices has delivered a big increase in ACT Government revenue. What happens to all this money?

No new dam has been built.

In 2005-2006 ACTEW earned a gross profit of \$93 million on revenue of \$168 million.

It paid \$80 million as dividends and income tax to the ACT Government in addition to the water abstraction charge.

Half of ACTEW's revenue goes to ACT Government as taxes or dividends, so you can see household water and electricity bills contain a large measure of hidden taxation.

Not bad for the ACT Government, considering much of the water infrastructure was paid for in the lease payments for land when blocks were laid out and sold as serviced with water.

Only a monopolist can make people pay twice over for what they have already paid for.

## **2. IS WATER SCARCE?**

There is no scarcity of water in the ACT. ACTEW's *Future Water Options* project said the ACT had enough water for a million people.

Where supply exceeds demand, prices should be zero, no matter how useful a thing is.

For example, air costs nothing to breathe though, like drinking water, it is essential to life and literally priceless

*On average* 494 Gigalitres is available annually from ACT catchments.

Even after a very high environmental flow allocation of 272 Gigalitres, Canberra and Queanbeyan only use a gross 65 Gigalitres, less than one-third of the 222 Gigalitres allocated for human use.

35 GL is treated as sewage and returned to the river system at Lower Molonglo sewerage works, leaving an apparent net usage of 30 GL a year.

However, even this net usage is necessarily overstated as it takes no account of water returning to the rivers from houses, parks and gardens outside the sewer system (which is increased by urban run-off). In Canberra's case, urban areas are thought to produce on average about 13 GL more runoff than the previous largely rural environment – a significant impact.

So the net human usage is at most 17 GL out of 494 GL or 3.4% (which still does not account for returns by way of evaporation and precipitation within the river basin).

So the ACT only uses on average less than 4% of its water resources. Even this is an over-statement as much of the water used on gardens would seep back into the rivers and what evaporates may fall elsewhere in the Murray-Darling Basin.

So what's the problem?

The problem is that rainfall is highly variable and past rainfall averages are no guarantee any year will be an average rainfall year.

*Storage* of water when rain does fall is the issue. To quote ACTEW's 2005 *Future Water Options* project "The ACT is therefore water rich relative to its population. It has enough water under ACT control to meet the environmental requirements and to supply more than a million people, *however storage is currently limited.*"

*Storage* is what is scarce and what costs money

### **3. WHAT IS THE COST OF WATER RESTRICTIONS AND SUPPLY FAILURE?**

It is not generally realized that the ACT Government plans a deliberate reduction in water use per person of 25% over the next 20 years. This comes on top of a 20% fall in per capita consumption since 1992.

ACTEW's *Future Water Options* project estimated this further 25% reduction (to little more than half of 1992 per capita consumption) would inflict costs on the community of \$400 million.

Looking at the costs in more detail, it is likely that at least 16,000 trees have been lost due to lack of water. To take a "back of the envelope" computation, if it costs \$1,000 to \$2,000 to chop down a dead tree and dig out its roots for replanting and if a new tree costs \$100-\$200 and takes 30 years to grow, then the replacement cost of a tree at a 7% interest rate compounded over 30 years is \$8,000 to \$16,000.

The cost of dead trees alone to the community could be \$300-\$400 million by now. This cost ignores the cost of trimming damaged and dangerous trees.

The time cost of forced labour and wasted effort being inflicted on people also needs to be valued. If 80,000 ACT householders have to spend an average of 3 hours extra per week holding hoses or lugging buckets through 16 weeks of water restrictions, that cost comes to a labour time levy of 3,840,000 hours annually. Taking an hourly labour value of \$30.54, the total time cost of just one year of such water restrictions is then \$118 million.

Turning to lawns and gardens generally, if we assume it would take an average of \$2,000 to restore lawns and gardens per household, that implies a cost over 100,000 households of \$200 million.

If we took into account the structural damage done to buildings through clay soils reacting to extreme moisture changes around houses and took into account the loss of amenity from damaged and dangerous sports ovals, costs would be higher.

All up, it seems a fair estimate that socio-economic costs which may exceed a billion dollars have already been inflicted by water restrictions and the failure of the ACT Government and ACTEW to supply water to the people of Canberra and Queanbeyan.

The truly horrifying thing is that these costs may become perpetual if chronic water supply failure continues to be tolerated. ACTEW itself put a very low figure of \$71 million on the costs of water restrictions prior to 2005. But even this under-estimate if repeated as a regular cost would represent the equivalent of a one-off loss of \$800-\$900 million.

#### 4. DO WE HAVE ENOUGH STORAGE?

Yes, if we don't empty dams with very large and unnecessary environmental flow releases.

No, if we empty the dams.

The ACT Government *has* emptied dams and has recently supplied some figures as follows.

##### Environmental Flows Since 2000

Year	Required environmental flow releases	Actual Environmental Flow Releases (ML)	Eflows as % of start of year storage	Storage at end of year
2000	40478	40478		100 %
2001	38679	38680	19%	97 %
2002	32394	32394	20%	79 %

2003	14713	14714	13%	54 %
2004	8932	8932	7%	59 %
2005	8069	<b>14477</b>	13%	54 %
2006	8300	<b>15719</b>	11%	67 %
2007	3500 Planned	580 (to end March 2007)	5%	38 %

The total releases have thus been 166 Gigalitres since 2000 (or nearly two and half years worth of Canberra's normal non-restriction usage of 65 Gigalitres).

The figures do not include spills over dam walls, which can be very large. They include the releases from final dams in river sequences (i.e. Bendora and Googong, pre 2005; Cotter and Googong, post 2005, since Cotter was brought back into service after that time).

The 2005 and 2006 figures include a proportion of the Bendora release that spills over Lower Cotter.

Googong has not spilled since 2001. Actual Googong releases with no spills have been:

2002 9,870ML

2003 1,850ML

2004 1,630ML

2005 1,950ML

2006 4,280ML

to end March 2007 300ML.

Temporary water restrictions were introduced in December 2002. Environmental flows were reduced in 2003 in line with this. Temporary restrictions ceased in November 2005 after good spring rains and dam inflows, but were reintroduced again in November 2006.

From when dams were 100% full at end 2000 to May 2004 it appears 109 Gigalitres were let out.

The dams were 67% full in late 2005 when the drought was declared over. In December 2005 *“normal” environmental releases were resumed and continued right through to November 2006, during the worst drought year on record.*

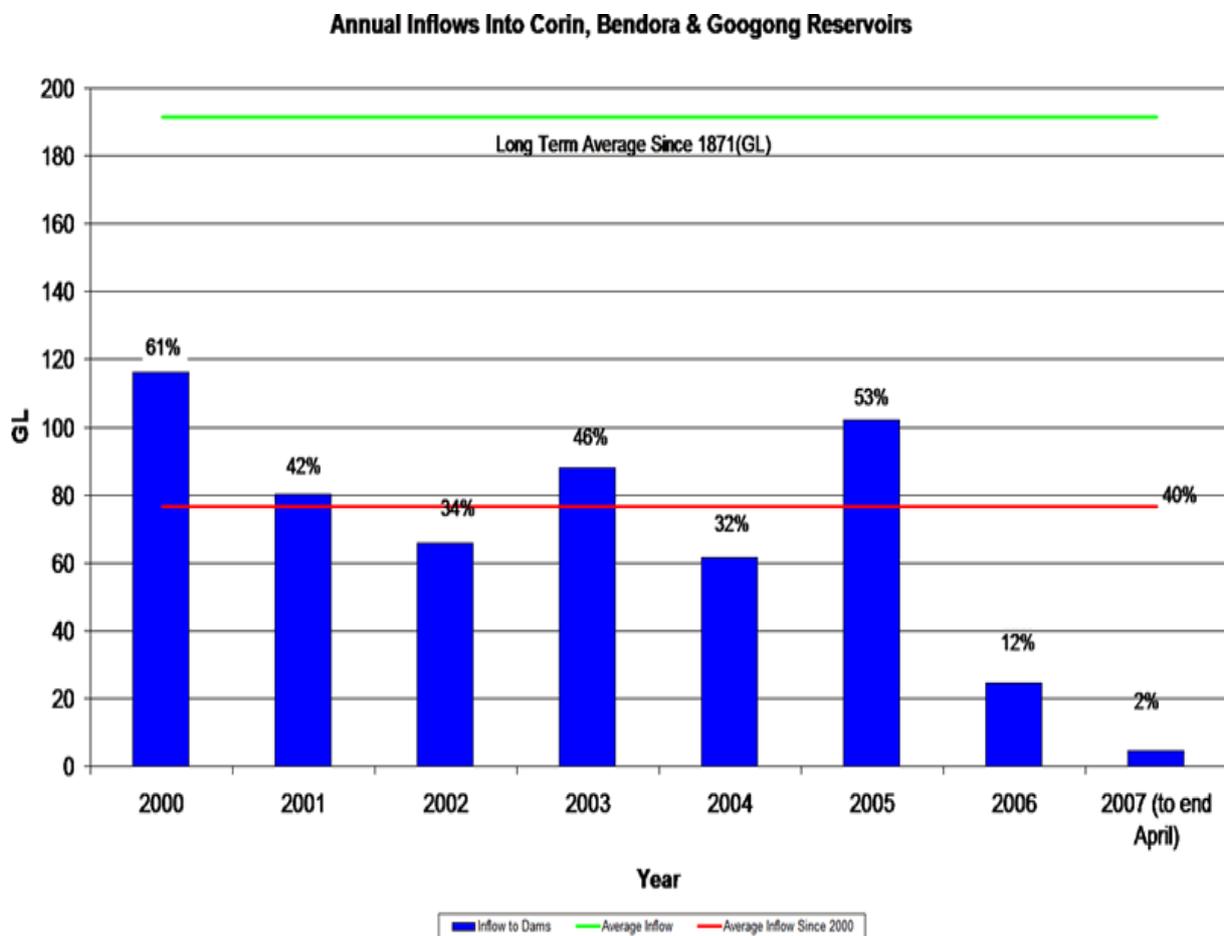
According to ACTEW's 2005-2006 Annual Report, “ACTEW commenced releasing flows in December 2005 in accordance with the ACT Government's new *Environmental Flow*

*Guidelines.* This involved reverting back to normal release requirements, following three years of sustained dry weather that had led to an approved reduction in flows.”

***A remarkable thing is that in both 2005 and 2006 environmental release were even above requirements.***

***Another remarkable thing is that right through most of the drought right up to 2006, enough water was coming into the dams to cover 60 Gigalitres a year usage. Indeed, in November 2005 ACTEW and the ACT Government thought the drought was over.***

Only in 2006 did inflows drop way down to 22 Gigalitres. This is shown in ACTEW’s own graph.



The dams were 67% full in late 2005. 18 months later they are now at 31% full.

The capacity of the dams is about 207 Gigalitres.

Putting it in round figures, that means about 75 Gigalitres has gone from the dams. Who got it over the last 18 months?

Inflows were 22 Gigalitres in 2006. If we used 62 that year, it means we took 40 Gigalitres out of the dams.

Extrapolating over the last 18 months our usage accounts for 60 Gigalitres, not 75 Gigalitres.

So roughly 15 Gigalitres of our water went missing over the last 18 months.

The ACT Government has now admitted over 15 Gigalitres was released for environmental flows.

To put that in perspective, we use roughly 5 Gigalitres a month.

***So the ACT Government and ACTEW have now admitted to letting 3 months' worth of water out of the dams in 2006, the worst drought year on record.***

At the \$3.12 per kilolitre price the regulator, ICRC, and the ACT Government have now put on water, that 15 Gigalitres of water was worth \$47 million. *So it seems that the ACT Government poured \$47 million worth of water down the river in 2006 on its own valuation.*

The 166 Gigalitres let out down the river since 2000 during the drought would be valued at over \$500 million on the ACT Government's current valuation.

And now prices have gone up to compensate ACTEW and the ACT Government for the lost profits because we did not use or pay for the water. One might say that in reality water was not scarce at all, but it has been made scarce by the actions of ACT Government.

While many Canberra and Queanbeyan water users would not wish to injure rice growers and others downstream, there seems little reason why they could not have used more of those 166 Gigalitres first before sending them on their way downstream.

It a strange concept of economics that says that if I throw away my stock customers should pay me more the remaining stock I kept for sale.

There is a strange logic in an ACT Government saying that water is scarce but they should give most of it away for nothing without even letting the people of the ACT use their water first.

***Looking back it seems that not only have the ACT Government and ACTEW inflicted over \$1 billion worth of damage on the people of Canberra; they have thrown away water that they themselves would now value at over \$500 million – or nearly twice the cost of a new dam.***

## **5. WHAT WOULD IT COST TO EXPAND STORAGE?**

Tennent Dam would cost \$250 million to store another 159 Gigalitres, expanding our storage from the present 209 Gigalitres by 74%.

Paying by instalments at 10% to meeting interest and loan reduction means a cost of \$25 million a year.

Spread over 100,000 households that means an average rate increase of \$250 per year.

These figures are conservative. With a longer payback period and a larger population figure it's closer to \$150 per year which is what ACTEW itself said was the likely cost.

Operating costs to deliver the water would be 9.2 cents per kl.

That's a long way below the \$3.12 blessed by ICRC, the water price regulator and supposed consumer watchdog.

## **6. WHAT ARE THE COSTS OF RECYCLING SEWAGE?**

ACTEW and the ACT Government are proposing to spend \$250 million on a new lower Cotter Dam to store 75 Gigalitres (less than half of a large Tennent Dam) and \$150 million on a sewage recycling filtration plant and a Mt Stromlo treatment plant upgrade.

On the face of it, that is spending 40% more than the cost of the Tennent Dam to get half as much storage.

The sewage recycling is meant to add 9 to 18 Gigalitres back to the flow of the lower Cotter River.

This involves a lot of water treatment and pumping which is very expensive compared to the fairly low operating cost of 9.2 cents per kl of water from a Tennent Dam.

Sewage recycling involves a high usage and cost of electricity in water filtration.

Pumping costs are also high since water is allowed to drop down to the lower Cotter and then has to be pumped uphill to Mt Stromlo for treatment. Later it would have to be pumped back uphill again from the Lower Molonglo sewage treatment plant back into the Cotter River.

The electricity costs seem to be about an extra \$5 million per year.

***The operating costs for water produced from recycling sewage appear to be around 30 cents per kl – about 3 times the operating cost for supplying fresh water from a Tennent Dam.***

## 7. CONCLUSION

Why pay more to get less and of a lesser quality and safety?

Here are the new prices for water approved by ICRC from 1 July

First 100 kilolitres    77.5 cents per kilolitre

Second 100kl            \$1.67 per kilolitre

Over 300 kilolitres    \$2.57 per kilolitre

To these is added a 55 cent per kl “water abstraction” tax which is meant to include a charge for “water scarcity”.

So ICRC’s real standard price for water is really \$3.12 per kl.

By contrast, the recent report produced for the Federal Government by the consultants Marsden Jacob on urban water pricing estimated the full cost of urban water for the ACT as being \$1.56 per kilolitre.

But this allegedly justifiable price for water was based on the absurd hypothesis that users should pay again at today’s prices to have the benefit of the water infrastructure they have already paid for! - to quote the Marsden Jacob report “what should be the full or total cost of water supply in each city if we had to replace or replicate the entire system”.

I subsequently queried John Marsden about this figure and he was kind enough to provide me with the following figures.

Buying Tantangara water and piping into Corin was, in his view, the cheapest supply option at 80 cents per kl of future used (sold) water (as opposed to sustainable yield which may be in excess of what people want).

Tennant was \$1.20 per kl on the same basis (recovering all costs from water likely to be used and sold.)

However, Tennent water would cost 39 cents per kilolitre instead of \$1.20 if all we assume charges are spread over full hypothetical sustainable yield instead of “sold water”.

In addition John Marsden did concede that if one used the land value rating method to cover fixed costs the estimate of 10 cents or so per kilolitre was the purely operational (marginal) cost of water from a new Tennent Dam.

These figures are all, of course, way below the appalling \$3.12 now being visited upon ACT and Queanbeyan residents.

*So there is your answer.*

*Additional water should cost 10 cents a kl for delivery and \$150 per year per household with no water restrictions.*

The ACTEW and ACT Government proposals for recycling sewage into drinking water are an expensive diversion of public attention away from how brilliantly they have mismanaged the water resources we have.

ACT water is not scarce. It has been made scarce.

What has happened with ACT water supply and pricing is not proper economics. It is the economics of monopoly and exploitation of an unwitting and generous public. Many people have relied in good faith on what they have been told by government. But please let no one say there is any economic justification whatsoever for the damage done to Canberra by mismanagement of and over-pricing of water supply.

We have seen a perfect example over the last few years of what economists call deadweight loss – economic costs borne by people for which there is no compensation gain to anyone else.

For myself I confess myself continually amazed at what appears to be complete irrationality in ACT water policy.

It is for others to say whether this is due to greed, fraud, pigheadedness, ideology, stupidity, incompetence or muddle-headedness and on whose part.

But if you come to a similar opinion as to the economic foolishness of ACT water “non-supply policy”, perhaps the current outbreak of infectious irrationality may be cured by you telling the ACT Government and ACTEW to stop wasting your money on spin campaigns and expensive advertisements and start providing you with water on a reasonable basis.

After all, you will pay, so it will pay you to take an interest!