

29 July 2005

Mr Greg Watkinson  
Acting Director Projects - References and Research  
Economic Regulation Authority  
197 St Georges Terrace  
Perth WA 6000

Dear Greg,

**Re: Inquiry into the Cost of Supplying Bulk Potable Water to Kalgoorlie-Boulder  
– Public Submission – Memorandum 'Net Cost Upside' by ACIL Tasman**

We attach the above report, which was commissioned by UUA and prepared independently of UUA by ACIL Tasman. It is supplied to ERA as part of the public submission process in order to assist the Inquiry. ACIL Tasman has agreed to UUA providing this to ERA in support of UUA's submission. It should not be interpreted as a submission in its own right to ERA from ACIL Tasman.

The report provides adjusted net benefits and net costs within the framework adopted by the ERA. It concludes that there is an aggregate net value of more than \$120 million.

As throughout the Inquiry to date, we offer the support of the ACIL Tasman team to explain their reasoning and analysis to your team at the ERA.

Yours sincerely,



**Phil Endley**  
Project Manager – Goldfields Water Supply Project  
United Utilities Australia



ACIL Tasman  
Economics Policy Strategy

To Phil Endley  
From David Campbell  
Regarding Net Cost Upside  
Date 29 July 2005

# Memorandum

I am writing in response to your request for my views as to the impact of the factors set out in our assessment of the ERA draft report on a reasonable assessment of net value of the UUA proposal over the G&AWS expansion. I have interpreted your need as being principally the impact within the ERA framework.

## Background

ACIL Tasman's review of the draft report identified a range of areas where we feel the analysis and presentation is biased against the UUA proposal.

A major concern was the way that the higher demand projections from Water Corporation were handled, with an assumption that UUA would withdraw from its commercial markets, rather than incur the incremental costs of continuing to service these markets while meeting the higher residential and commercial growth. Our review concluded that the ERA approach resulted in an underestimation of the costs avoided by mining by \$141m, of UUA costs by \$43.5m and of the net benefit by \$97.3m. This alone suggests that the 'deficit' reported in the draft report should in fact have been a surplus of \$39.5m.

Beyond this effect, we considered a range of other factors that we believe should add greatly to the attraction of the UUA proposal, but in most cases did not seek to quantify these. Included here were:

- Evidence reported by both ERA (in its draft report on Urban Water and Wastewater Pricing) and Allen Consulting Group (in their report on source costs for Perth water) of systematic downwards bias in project cost estimation by Water Corporation.
  - Both reports suggesting a bias of the order of 10%
  - In the context of cost estimates for the G&AWS upgrade, we recognized commercial incentives for Water Corporation underestimating rather than overestimating its project costs, while UUA faces reverse incentives.
- Comparison of the Allen's report, that suggested a source cost of \$0.97/KL while the ERA analysis has moved to \$0.75/\$0.92/KL for existing and growth water respectively.
  - We understand the argument for the lower cost for existing water, but have argued that it is driven by the cost of surplus capacity, assumed by Water Corporation to be unavoidable, when



in fact this cost could be largely avoided given the lead times for the project and background growth in demand.

- We also compared the project costs on which the Allen’s figure was based with the recent IWSS costs and found there has been an upwards revision by about 17% in the capital costs of the relevant projects. We do not have details of the ERA estimates, but cannot see how this upwards revision in costs could have been factored into the source cost calculations, given that ERA is assuming a lower source cost than Allen’s derived.
- Especially (thought not only) in view of the above evidence of underestimation bias in estimating the true costs of the G&AWS upgrade strategy (and this extends to source cost estimation), we have argued that the failure to recognise the value to WA of the UUA willingness to underwrite delivery risk involves a significant bias.
  - Water Corporation is unable to offer such underwriting to WA.
  - Beyond correction for bias, there is likely to be additional value in such underwriting for a state operating close to a credit rating threshold.
- The draft report fails to recognise the large distortion in the cost of water to Goldfields mining, even accepting the sunk cost argument, as a result of the form of the CSO arrangements – and does not address the scope, offered by the UUA proposal, for reducing the severity of this cost distortion, while retaining the CSO arrangements.
  - This effect is captured most starkly in the ERA numbers that point to the cost of growth water from the G&AWS as exceeding \$4.52/kL while the cost of growth water from the UUA project appears to be as low as \$1.01 in the medium term, and we would expect well under \$3 in the longer term.
    - … These differences in marginal/incremental costs must have major implications for efficiency of use of Goldfields and even WA resources.
- The report fails to recognise the dynamic efficiency implications, for water supply across WA, of a second major supplier entering the market on the back of a major investment in innovation and market research.
  - This approach offers both direct scope for ‘yardstick competition’ and heightened incentive for other firms to explore and develop alternative approaches to better meeting WA water needs.
  - The experience of this review certainly suggests that Water Corporation were not exploring and costing options – including costing an Esperance-Kalgoorlie project – in a way that would ensure that Water Corporation delivers the most cost effective development of supply arrangements over time.



None of these effects is suited to precise quantification. To an extent, if our argument for there being a net benefit of at least \$39.5m is accepted, then the above arguments strike us as being part of the upside in the UUA proposal. We adopted a similar view of regional impact assessments. However, there is scope for talking through at least some of the likely implications of reasonable quantification. We have sketched out our thoughts here.

## Cost underestimation bias

The draft report's Figure A reports estimates capital costs for the G&AWS and Esperance upgrades of \$261.2m and source water costs of \$151.3m. An average 10% underestimation in each of these, based on the evidence of project cost underestimation, would imply underestimation of the net benefits by \$41m.

Source cost for existing water is estimated at \$100m, based on the figure of \$0.75. Suppose the surplus capacity costs could be avoided, bearing in mind that Perth demand is growing at a rate where three years growth is approximately equal to current Kalgoorlie supply. We accept that this *may* now be difficult, given the desalination plant commitment, but it would have been very straightforward at the time that UUA put forward its proposal. The effect of this would have been, by ERA estimates, to add an additional \$17m to avoidable costs (and hence net benefits) and adjustment for project cost underestimation bias could have pushed the number closer to \$20m. These contributions to net benefit would be on top of the above \$41m, taking the earlier estimate of net benefit of about \$40m to a figure between . \$56m and \$75m.

These figures are, of course, only indicative. The use of 10 per cent is based on evidence in track record and includes no adjustment for the incentives Water Corporation faces in the present inquiry to keep the estimate of avoidable cost as low as possible – on the assumption that this will feed into their negotiating position with UUA and/or help to protect their existing monopoly supply position. They also include no adjustments for underestimation of G&AWS operating costs.

## Delivery risk hedging

One of the main advantages of UUA's ability to underwrite delivery risk lies in the scope for eliminating the above risks of underestimation bias in Water Corporation costings. The above assessment suggests that this alone would be worth between \$41m and \$60m. However, this benefit is recognised above and should not be double counted.

The remaining question is whether a value should be attached to the curtailment of *cost volatility*, over and above this correction for bias. The Allen's report cites evidence of a selection of major projects costing an average of 45% more than planning estimates. We understand that dam safety upgrades have involved some very large underestimation. It is at least plausible that there could be a significant cost overrun, over and above the above indicative adjustments for bias. Any engineering estimates for major project works



must have a level of uncertainty. As we discussed in our main review, it may be that Water Corporation is using a different, and less conservative, approach to contingencies than is UUA.

A 45% cost overrun would add \$92m to avoided costs, *over and above* the adjustments for 10% underestimation bias in G&AWS upgrade capital costs. We are not suggesting that this be treated as an addition to net benefits, but it is an indication of the magnitude of the exposure that could be underwritten by the UUA strategy. We have no direct evidence of Water Corporation track record in relation to G&AWS upgrades. We would expect coverage of these risks for a state under credit rating pressure to be worth something. This value might be interpreted as willingness to pay a premium for insurance, at a cost greater than the 'expected claim'.

NRMA Insurance, as an example of a general insurer, averages a loss ratio of about 85% across its insurance business – ie, claims average about 85% of premiums paid. A highly stylized representation of the above exposure might be to view the risk as binomial, with a non-zero probability of a \$92m overrun (over and above the 10% bias adjustment). Suppose that risk was 10%, a risk that does not seem absurd against the backdrop of the Allen's reporting of past overruns, and perhaps the concerns that we have been hearing regarding the possibility that incremental expansion will in fact encounter some costly and lumpy barriers in practice. Then the expected 'claim' if insured would be \$9.2m and the associated premium would be about 10.8m if it involved an 85% loss ratio. Willingness to pay for the insurance could, of course, be higher – NRMA loss ratio are probably driven more by insurer costs than by insured willingness to pay. Trying to pin down a firm figure would be extremely difficult, but the reasoning suggests a value of delivery risk hedging in the broad vicinity of \$10m would not be out of the question.

## Distortion of the cost of growth water

We do not propose trying to quantify this effect, beyond:

- The above indications of the differential in incremental costs of growth water;
- The discussion in our main review paper of the nature and cause of this distortion, which we see as a serious issue and a key reason why the WA Government as well as Water Corporation is logically part of the negotiation process.
- The associated discussion of potential for expansion in the value of mining production and royalties in the region, as set out in our briefing note on regional impacts.

The approach taken by us, and used by ERA, in assessing avoided costs to mining incorporates some adjustment for these effects and, as we discuss in our review paper, care is needed to avoid double counting.



## Dynamic efficiency

Trying to quantify these effects is a lot harder than establishing the direction of the effect.

We do note that the recent Productivity Commission review of progress under National Competition Policy did incorporate some retrospective modelling of the impact of competition effects in urban water, on GDP. This was based on modelling using the Monash Model. The work suggested a long-term impact from changes that had occurred over the period 1989-90 to 1999-00 of about 0.35% of GDP. Translated to WA Gross State Product (\$89b in 2003-04) this would equate to a long-term annual gain from competition in urban water of around \$300m annually.

GSP is not a direct measure of net value within the cost-benefit paradigm, and we would not suggest that UUA supplying the Goldfields would match the competition policy developments over the period studied. These figures do, however, point to the potential for a quite modest improvement in competition in the water sector to make an important difference. To provide some calibration we note that, were the competition impact effect to equate to just 1% of the change modeled, with benefits only flowing after 10 years (to match the Monash long-term assumption), then the effect would still have a present value of the order of \$25m, calculated at 6% over 50 years.

All this is necessarily highly speculative, but it does caution against ignoring this effect – what are the chances that ongoing incentives to innovation and productivity improvement could equate to 10%, rather than 1%, of the above 10-year change? One indication, outlined in our main review, that the effect may not be negligible includes the apparent surprise of Water Corporation at learning how low UUA project costs were. Whether the UUA scheme is ultimately accepted or not, there can be little doubt that it is a serious enough candidate for consideration for it to be surprising that Water Corporation did not have a reasonably good feel for the costs of delivery of the scheme – since this would seem an integral part of any efficient planning process. Possibilities include:

- Water Corporation not seeing strong enough incentives to probe non-G&AWS alternatives, though their initial involvement in working with UUA in exploring industrial demand would seem to run counter to this;
- Water Corporation developing or assuming substantially higher cost estimates, perhaps based on extrapolation from its G&AWS experience and costs, with very high incremental costs; and
- Water Corporation seeing an Esperance-based desalination project as a threat to its ‘natural monopoly’; even if undertaken by Water Corporation, the project would represent an erosion of the ‘complex system interactions’ argument for a monopoly supply system, and would be a candidate for later, if not initial, separation.
- Water Corporation concern for the implied off-take risk and not facing strong incentives to investigate mechanisms for efficiently allocating the associated risks – including exploring the



likelihood of regulatory failure in relation to the form of the CSO introducing strong disincentives to meet growth opportunities.

Any of these explanations would support the view that there are gains to be had from a serious challenge to Water Corporation in respect of ideas and delivery systems.

## Summary

The above crude figures are collated in the following table.

|  |                  |
|--|------------------|
| Draft ERA net value estimate                                     | -\$55.9          |
| Adjustments to reflect accommodation of higher Kalgoorlie growth | +97.3            |
| Cost underestimation bias  | +\$41m           |
| Possible avoidance of source cost surplus capacity               | \$0 to \$18m?    |
| Delivery risk hedging  | c+\$10m?         |
| Dynamic efficiency   | c+\$25m+?        |
| <b>Aggregate net value</b>                                       | <b>c+\$120m+</b> |

We would not want to dignify these figures unduly – though we would happily back them against an assumption that the effects are zero, which is in effect what has been done in the draft ERA report. Our personal view is that the most robust case relies on the strength of argument that the above adjustments are all positive, and the first of them clearly moves the assessment from the negative to the positive region. As we argued in our main review, the moment that happens, the issue of market and regulatory failure assumes centre stage in any sound framework – and becomes crucial to the assessment of whether the opportunity can be safely left to commercial negotiation between UUA and Water Corporation. In our opinion, it cannot.

The figures in the table should be taken as crude indications only, though in most cases they document an approach to quantification that could probably be pushed further if ERA felt the need for more definitive quantification. We stress our view that definitive quantification is both out of the question and unnecessary.

These figures are based within the ERA framework. We remain of the view that an options framework is much more appropriate, given the nature of the prospect. This framework would introduce a legitimate reduction in the net value estimate, recognizing the non-zero probability that the conditions for the UUA project proceeding would not be met, but hedging against the risks of performing worse than the G&AWS upgrade. It would also introduce a legitimate increase in the net benefits reflecting the non-zero chance that the market may prove stronger than has been assumed in the baseline.