

28 July 2005

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 of Report by ACIL Tasman ‘Review of the Draft ERA Report on Kalgoorlie-Boulder Water Supply’

We attach the above report, which was commissioned by UUA and prepared independently of UUA by ACIL Tasman. It was intended for internal use but is supplied to ERA as part of the public submission process in order to assist the Inquiry. Parts of the text have been discussed with ERA and/or its consultant over the past week.

The report considers the framework adopted by ERA, the cost-benefit analysis and other issues including risk allocation, avoidable cost and source water costs. It contributes new thinking and information in response to the approach and conclusion of the ERA draft report.

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

Yours sincerely,



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

Public Submission Document

Review of the Draft ERA Report on Kalgoorlie-Boulder Water Supply

Briefing Paper prepared for United Utilities Australia

July 2005



ACIL Tasman
Economics Policy Strategy

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Executive summary

This briefing paper to United Utilities Australia (UUA) provides an assessment of the ERA draft report on the Kalgoorlie-Boulder water supply dated 30th June 2005.

Conclusions

The ERA draft report ('the report') has clearly struggled with information limitations, and has relied strongly on a fairly deterministic cost-benefit framework for its primary assessments. This is in contrast to the options framework recommended by UUA as a sounder approach to dealing with a project at pre-feasibility stage.

The approach taken by ERA, and especially the way that the report melds information from Water Corporation and UUA, creates demands for additional information to be provided by UUA to reduce resultant biases. Furthermore, aspects of the draft report make it clear that there have been crucial misunderstandings between the parties.

Part of review process...

... and an opportunity for UUA

It is essential that the report be seen as part of the review process, in which data limitations have been documented and ideas have been tested. It is hoped the inquiry response process will afford UUA the opportunity to ensure that the final ERA conclusions are based on a better understanding of the UUA proposal and its implications for WA.

Adverse finding within error bands

Even within the ERA framework, the draft analysis and argumentation has limitations that appear to work fairly systematically against the UU position:

- The report estimates a benefit 'shortfall' on the UUA proposal of only 5% of current budgeted cost, well within credible error bands on the UUA and Water Corporation proposals, without addressing the implied high likelihood (approaching 50 per cent) that the true result lies in the opposite direction *even before addressing possible biases* that make this much more likely.
- Very significant underestimation of *costs avoided by the mining sector*, flowing from the inappropriate melding of UUA baseline and Water Corporation demand projections.
 - Fairly uncontroversially, we believe, this supports an increase in the estimate of these avoided costs of the order of \$141m, ie by over 50 per cent.
 - This increase would need to be *offset* by an estimate of the extra costs for UUA in the event that the Water Corporation demand projections for Kalgoorlie are valid.

UUA benefits understated by \$141m+

...but offsets of < \$44m

... We understand that this offset should be no more than \$43.5m based on working with the constraints of the baseline design, and may be substantially less if the design is optimised in the light of the new demand data – the recommendations include refinement of this position.

Net benefit, not net cost

- These changes alone imply the *inferred net cost is in fact a net surplus* of the order of \$40m. This:
 - ... fundamentally alters the basis on which the primary draft recommendations have been based;
 - ... means that the report should have addressed the risks and consequences of market/regulatory failure if it wanted to argue for leaving the solution to the market; and
 - ... more generally requires, for a sound policy process, an approach very different from the report's arguments in respect of the private nature of the benefits and their consequences.

New mining ignored

- An assumption that UUA water will only substitute for groundwater, where your market research and our inferences based on UWA econometric modelling both support there being *significant new mining activity*.
 - New activity implies very different regional impacts, heightened royalty revenues and clear economic surplus contribution.
 - While horizontal fiscal equalisation applied by the Commonwealth Grants Commission process *may* reduce net budget receipts (though we suspect by less than is implied in the draft report), State revenue from mining would almost certainly still rise significantly, both from direct payments of royalties and taxes, and also indirectly from the increased economic activity.

UUA hedging of delivery risk

- Failure to consider the implications of UUA's *willingness to assume all delivery risk* alongside *Water Corporation's inability to do the same*, because of its Government ownership.
 - This asymmetry has important implications for benefits, costs and risks and should substantially improve the attractiveness of the UUA proposal from a WA perspective.
 - This becomes particularly important given evidence of a recent substantial increase in Water Corporation's assessment of the forward costs of the IWSS and a review by the Allens Consulting Group pointing to *evidence of systematic underestimation* by Water Corporation of project costs, with an average underestimation across a range of projects of 11% of capital costs. This has implications for both G&AWS upgrade estimates and source cost of water used by ERA, with the latter feeding directly into the avoidable cost estimates.

Market/regulatory failure

- The fact that there are strong grounds for expecting that there is *significant market/regulatory failure* as a result of the *form* of the current *CSO arrangements*.

Regional mining is now penalised

Reason for UUA seeking mandate from Government – without subsidy

Incremental cost differences

Competition yardstick

How will long-term demand growth be met?

- This market distortion has the effect of imposing a *substantial penalty*, indicatively of the order of 30 per cent or more, on the cost of potable *water supply to mining*.
- The presence of this cost penalty, on the very activity that underpins the regional economy, is almost certainly *unintended* and may well not even be appreciated.
- The report does not address the issue at all, even though it is a key part of the case (alongside perverse incentives on Water Corporation) for UUA seeking an *in-principle mandate from Government*, not the Water Corporation, even though *UUA is not looking for any subsidy*.
 - … There is an important policy as well as commercial issue to be resolved – with the current policy distortion being an *impediment to private sector competition* as well as to mining.
 - … There is also the likelihood that Water Corporation is somewhat conflicted between a short-term opportunity to lower costs and longer term ramifications for its market position.
- The evidence of water price sensitivity, from both econometric studies and UUA market research, strongly suggests that the price distortions translate into significant economic cost.
- UUA is well placed to argue that its proposal offers a low cost opportunity for WA to greatly reduce the economic costs of this distortion to Goldfields mining and to the WA economy, while *retaining the CSO policy*.
- The report neither derives nor discusses the \$4.52+ levelised cost of Water Corporation growth water that is implicit in the draft report's figures; nor does it comment on the economic incentive and efficiency effects implied by the very different *marginal costs* of water supply between the UUA and Water Corporation.
- The report fails to address the potential value of the UUA project in providing a *yardstick benchmark* for Water Corporation, and in promoting greater competition in ideas and innovation for better meeting WA water needs.
 - This is despite the fact that the response of Water Corporation to UUA's cost estimates strongly supports the view that Water Corporation is not probing alternative supply models adequately to allow it to deliver efficient infrastructure development.
- The report opens, but does not probe in any detail, an important issue relating to *how long-term demand growth will be handled*.
 - Incremental expansion of G&AWS to 77ML/d is assumed possible, being reached after 30 years, but there is no discussion of what then happens, apart from some suggestion that the opportunities for a UUA-like solution may grow over time.

- The UUA proposal, given Water Corporation demand growth, reaches 120ML/day by year thirty and there is no information from ERA or UUA regarding what then happens. In practice, for good commercial reasons, we would expect UUA to then augment its project by incremental expansion.
 - We suspect the relative merits of the two approaches in dealing with the period beyond 30 years may become a more important issue, and should favour the UUA strategy.
- Options framework essential**
- As has already been flagged, the report fails to engage with the options framework and the potential it offers to hedge downside risk while retaining upside opportunities – and hence to offer a greater net benefit that is indicated by ERA’s deterministic cost-benefit framework.
 - We remain strongly of the view that an options framework is essential for sound management and policy assessment of the present necessary information limitations.
- Regional impact assessment**
- The report is light in its treatment of regional impacts:
 - The above argument about the detrimental impact of the form of the CSO on mining activity is legitimately part of the cost-benefit case as well as a key reason why the draft ERA conclusions are not supported by the report’s analysis.
 - Measures of economic activity, including increased mining turnover and the construction and operation of the pipeline and desalination facility, along with associated regional employment, are relevant to TOR 5 but deal with issues different from the main cost-benefit.

Recommendations

(This section, and corresponding entries through the report, have been deleted, relating as they do to commercially confidential advice to UUA regarding its response)

1 Purpose

This paper has been prepared for United Utilities Australia (UUA) by ACIL Tasman (AT). It has been requested by UUA to assist the company in developing its response to the ERA's draft report on the cost of water supply options to Kalgoorlie-Boulder.

Context for this report

ACIL Tasman has been retained to provide analysis and advice to UUA in relation to the inquiry. The draft recommendations of ERA are not supportive of the UUA proposal. Given these facts, ACIL Tasman cannot be treated as an impartial reviewer, though our brief from UUA has at all times been to provide professionally sound analysis and advice.

Our brief in preparing this paper has been quite explicit in this matter. We have been asked to provide a balanced assessment of the report as this relates to the UUA proposal, including:

- any weaknesses in the analysis or argumentation that might appropriately be addressed by UUA in its submissions; but extending to
- arguments of substance raised in the report that may have implications for the UUA position and strategy.

In both cases we will provide subsequent advice to UUA in respect of economic and policy analyses of identified issues; but the purpose of this paper is to assess the report and its implications for UUA, not to promote a specific outcome.

This declaration has been included, and the document has been drafted, in recognition of the possibility that UUA may choose to provide some or all of this document to ERA as part of UUA's response.

2 Initial reactions

2.1 Context and purpose of report

Part of process...

It is essential to recognise that the ERA draft report is a *part* of the review process, *not its end point*. Were it the latter, it would certainly be disappointing – both for UUA and for wider economic regulation in WA. We suspect, however, that some of the drafting is deliberately designed to encourage better cooperation by both UUA and Water Corporation in dealing with information deficiencies – and this is an opportunity for UUA. It is easy to read a level of exasperation into some of the drafting, and some of the apparent 'sticking points' can, we believe be readily relaxed. Importantly, as part of the inquiry

...seeking more information

process, it incorporates specific requests for information to allow key issues to be addressed better.

2.2 Support for conclusions

Some significant limitations in the analysis and link to draft conclusions

Our initial reading of the report did raise some serious concerns regarding aspects of approach and policy argument and specifics of analyses that appear to have shaped the draft conclusions. We do not believe that the draft conclusions are supported by the analysis after some of these matters are taken into account, and we set out our reasoning below. This is different from saying the conclusions are incorrect, though this too does seem highly likely in relation to the primary conclusion as to cost-benefit and its subsidiary conclusions.

2.3 Information limitations

At the same time, the report prompted some sympathy for the authors, who were clearly dealing with very limited information and indeed with information, probably from both Water Corporation and UUA, where there would be understandable concerns for possible selectivity in information provided or possibly even some bias in estimates developed. Some of the deficiencies alluded to above appear to stem from attempts at marrying incompatible data sources.

These information problems are an almost inevitable consequence of the process. The TOR recognised that Water Corporation is potentially either a customer or a competitor for UUA in relation to water supply to the region. The Inquiry, and the involvement of Water Corporation and UUA in the inquiry process, has undoubtedly involved elements of both commercial negotiation and competitive positioning by both parties – to the detriment of the information available to the process.

Water Corporation's history as a regulated monopoly, coupled with the joint product character of its supply of services, including G&AWS services, has created the not unusual situation where external verification of parameters, such as avoidable costs and true costs, is extremely difficult. Water Corporation has a command of the data to the point of a significant 'information asymmetry', while in respect of some of the economic cost and joint cost issues of central importance to this inquiry, it would not be surprising if not even Water Corporation has seen good estimates.

Similarly, UUA's case has been heavily dependent on two related blocks of information, both of which are impossible to pin down with great precision at this stage in the process:

- the level of new demand that might be satisfied by the UUA strategy; and
- the value that should be attributed to the satisfaction of that new demand, based on costs avoided mainly by mining and mineral processing operations.

2.4 Options approach to uncertainty

Options paradigm

UUA had recognised the limitations of some of its data (reflecting the ‘pre-feasibility’ stage of the project) and had proposed, based on our advice and its own internal approach to the investment planning and valuation, an *options-based paradigm* for dealing with the uncertainty. We believed then, and still believe, that that approach is both *appropriate* and *essential* in avoiding significant bias in the assessment process. We therefore provide a clearer presentation of the options-based argument below.

However, for reasons of substance the report has so far largely failed to engage with this paradigm. Instead, heavy reliance is placed on what is perceived as the *essentially private nature* of the benefits in play here – allowing ERA to conclude that the market should be capable of sorting out the uncertainties without the need for the mandate sought by UUA. We deal with this issue in some detail below.

2.5 Key specifics

More immediately, there are some quite fundamental matters that we feel have not been well-handled. In part, these may be attributable to the confusion created by multiple versions of assumptions and models that have been floating around – largely as a result of attempts by the ERA team to get comparable information from the two parties – but this does not detract from a key fact.

Argument that benefits fall short of costs is ill-founded...

The main conclusions of the report are primarily predicated on a *prima facie case* that the UUA project, as interpreted by ERA, does not offer enough benefits, relative to progressive expansion of the G&AWS, to justify its incremental cost. Nominally, the report concludes that there is a shortfall, over 50 years at 6% discount, of \$56m – or about 5 per cent of project costs. We believe strongly that this figure is seriously in error, even assessed within the precise algebraic framework set down in the report – being based on a ‘hybrid UUA project’, involving elements of both Water Corporation and UUA assumptions, that is in conflict with the UUA proposal and that would make no commercial sense to UUA or any other private provider.

and the conclusion appears not justified

Again, we set down our reasoning in some detail below – and the reasons why the *inferred shortfall* of \$56m should have been a surplus of about \$40m, *even*

before taking into account other factors that are legitimately part of the cost-benefit evaluation. With these other factors accounted for, our view is that there is a robust conclusion that, given the other assumptions made by ERA, the UUA scheme offers a substantial surplus of benefits over costs. Within our proposed options paradigm, this conclusion is strengthened even further.

Shortfall well within 'error bands'

It is also worth noting that the 5 per cent discrepancy in any case lies well within reasonable error bands in respect of either or both of the UUA project and the Water Corporation alternative. We would expect a reasonably wide and flat spread of plausible estimates for both approaches around the baseline figures used by ERA – suggesting that, even before addressing any questions of systematic bias, there is a probability approaching 50 per cent that the measured net cost is in fact a net surplus.

Also taking into account the systematic factors discussed below, we infer that the *prima facie* evidence no longer supports the conclusion that benefits fall short of costs. Important consequences follow for the report and its conclusions.

Private benefits need reassessment in light of evidence of market failure

The arguments about whether the benefits are *essentially private in nature* would still have been appropriate, but would no longer lead naturally to the conclusion that the resolution of UUA project's future can safely be left to commercial negotiation. Instead, it would have led more directly into a questioning of whether *market failure* may be an issue, preventing normal commercial processes from leading to an outcome shown to offer net benefits. This question was not addressed, because the \$56m shortfall suggested it was irrelevant. In our opinion, it is highly relevant – and there is an important failure argument, linked to the form of the CSO arrangements, that we outline below.

Dynamic benefits to competition and monopoly regulation important

The report also fails to engage with the potential *dynamic benefits* for WA of having a level of true competition – in innovation and service delivery – for Water Corporation. Even a small nominal 'shortfall' in measured benefits might sensibly be bridged by recognition of these dynamic benefits; we are therefore somewhat surprised that the issue was not addressed, if only to set down reasons for not making allowance for these benefits. Our view is that these benefits are important and we develop this case further below.

Asymmetry in allocation of delivery risks to WA

The report also does not address the significant difference, from a WA perspective, between the allocation of G&AWS upgrade delivery risks to Water Corporation and therefore WA, and the willingness of UUA to accept its delivery risks. Cost uncertainties are significant, especially in the context of a shortfall of ERA-measured benefits relative to costs of only 5 per cent, and failure to recognise the value of the insurance offered by the UUA proposal seems odd and questionable. We discuss this further below.

Meeting long-term demand growth

The report collaterally identifies an issue relating to the way that residential and commercial demand will be met beyond 30 years – either strategy (UUA and Water Corporation) may need to address growing capacity constraints in the event that demand continues to grow, rather than suddenly flattening and staying there as has been assumed by ERA in its 50-year modelling and now by UUA and AT in trying to reproduce the figures. UUA, of course, originally modelled only out to 25 years, reflecting both commercial reality and a brief that specified 25 years.

We believe that UUA should be more explicit in addressing the way that this constraint could be addressed – it may well be one of the strengths of the UUA approach, but superficially, if the Water Corporation incremental growth capacity argument were accepted beyond 77ML/day, then the UUA strategy might be seen as self-limiting.

The report effectively assumes that any new markets for UUA water will be markets that involve substitution of UUA water for groundwater, with no implications for new mining and processing activity. This is a particularly strong assumption that is contrary to the market research UUA has done and contrary to the work done at the University of Western Australia on price elasticities for Goldfields minerals production. The implications of the assumption are important, with implications for both cost-benefit analysis, for the financial impact on WA and especially for the regional impact assessment, so we develop this matter further below.

Treatment of regional impacts

Finally, we note that the report provides very light treatment of regional impacts, despite this being one of the TOR items. As you know, we believe strongly in separating the regional impacts analysis from a cost-benefit analysis – and this separation between the regional impact analysis and cost-benefit analysis is clearly set out in the WA guidelines for project assessment. The same guidelines do, however, recognise the value of a regional impact assessment and the TOR for the Inquiry request such an assessment. It is in the nature of the UUA proposal that, if it proceeds, the regional impacts will be very substantial and beneficial to the Kalgoorlie-Boulder and Esperance regions.

We have provided UUA with some analysis of levels of investment and activity in the region as a result of the project.

3 The framework

The report and its findings have largely been determined within a tightly focused economic assessment paradigm. Key elements seem to be:

- The UUA comparator approach, involving costing of G&AWS upgrade and UUA approaches to meeting future demand, inclusive of UUA's suggested profile for industrial demand, has been rejected.
 - This is understandable to ACIL Tasman given the views expressed by Water Corporation and the fact that the choice became essentially a choice between two very different supply scenarios – rather than a comparison of costs for similar supply scenarios.
 - The demand that will not be satisfied by the Water Corporation strategy therefore assumes centre stage and has proved key to the report's draft conclusion that benefits of the UUA project fall short of costs.
- Analysis of the G&AWS upgrade is restricted to meeting growth in the current residential, commercial and (extremely limited) industrial customer base;
 - though notably the profile of demand growth based on Water Corporation advice is much stronger than UUA had been assuming for comparator purposes – averaging 3 per cent per annum for the first 30 years (implying continued strong growth of mining and associated processing activity in the region that will drive other water demand), and flat after that (presumably as demand growth prediction after 30 years is well into the realms of the unknown)).
 - For the purposes of analysis, ERA has accepted UUA's cost estimates for its baseline project (the 60-100ML/day version) and Water Corporation's estimates of the forward costs of expanding and operating the system to meets its demand forecasts for its 'market'.
- The UUA strategy is then compared to this G&AWS strategy on the basis of incremental costs over 50 years at 6 per cent, offset by an estimate of the incremental benefits to new industrial usage of UUA water, broadly but not exactly using the *conservative* methodology that we developed and provided in the context of an options model (not used by ERA) where great precision was made unnecessary by the abandonment and deferral options built into the economic analysis.
 - Crucially, the report assumes (Figure 3.1) that effectively all of the industrial demand for UUA water is substitution for groundwater – ie, the possibility that a significant proportion of the water could be used in mining/processing activities that *would not otherwise have proceeded* at all is rejected, as reflected in the report's discussion of growth in royalty revenue.
 - This is counter to the picture suggested by the market research by UUA, and to AT's knowledge of mining water quality requirements, which are highly differentiated between commodities and processing technologies. Growth in both laterite and sulphide nickel production will require additional good quality water – and conversely, access to such water can render reserves viable for development.

- The ERA analysis does not include a modest but important adjustment for the high likelihood that early contracts would be mainly with companies with the strongest incentives, an adjustment that adds to the robustness of our view that benefits are in excess of costs.
- These benefits and costs are then assembled (Figure A) into a table that builds up to an estimate of “net benefit/(cost)”, and the conclusion that the UUA scheme, relative to G&AWS upgrade, entails a net cost of \$55.6m over the 50 years.
- These benefits are assessed in a sensitivity context, but one that emphasises downside risk if UUA demand assumptions are not met, without giving similar treatment to upside opportunities, to the downside risks of Water Corporation cost estimates proving optimistic nor to the risk hedging features offered by the proposed options paradigm and not available to the Water Corporation incremental growth .
- In the absence of a net benefit (by the above calculations) and given that the benefits and costs are viewed as essentially private, ERA concludes that the project should therefore be allowed to sink or swim on the basis of its commercial appeal, on the assumption that WC forms a foundation customer, with pricing set at no more than its avoidable cost level, and UUA accepts all risk in respect of new forward demand.

4 The \$56m ‘gap’

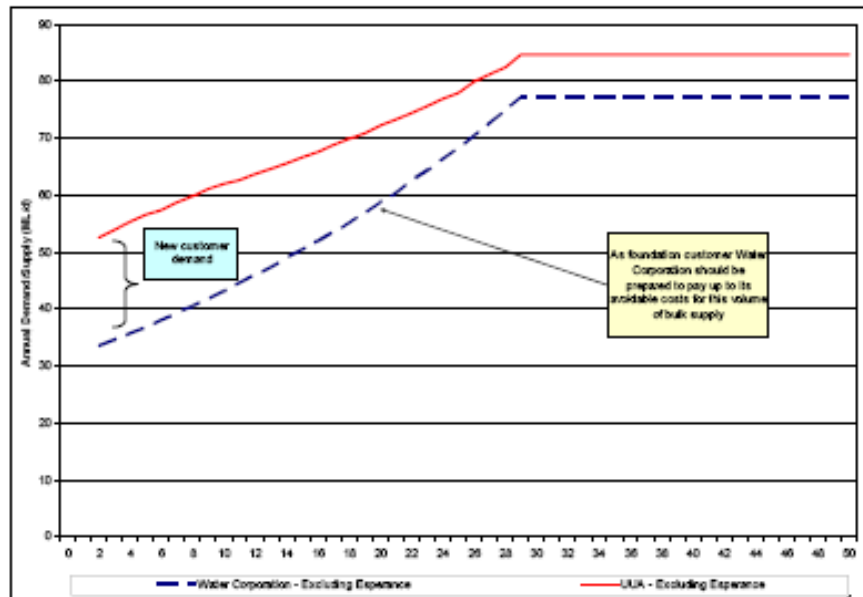
The central role of the inference that there is a \$55.6m ‘gap’ means that it deserves close attention. In particular, we focus on the component figure of \$262.8m estimated by ERA as the *value of costs avoided by mining*.

When we first saw this figure we were surprised, given that the report claimed to have worked with the UUA methodology. We revisited our spreadsheet, adjusted it to the discount rate and time period assumptions used by ERA, and calculated a figure of \$403.6m. This discrepancy of \$140.8m seemed hard to explain, so we sought further details from ERA, through UUA.

In the meantime though, we spotted the likely explanation, built into the assumptions underpinning Figure 3.2 (reproduced below). The chart presents a quite peculiar and unattractive interpretation of UUA’s proposal. It suggests that, on project launch, UUA manages to contract supply to new customers (assumed to be mining) about 20ML/day and then, systematically over the next 30 years, proceeds to shrink this market by about two thirds. We were certainly never involved in assessing any such proposition and have in fact worked with an assumption of growing, not shrinking, new industrial demand.



Figure 3.2: EKP and GAWS Demands/Supplies, Years 2 – 50, excluding Esperance



Source: MJA analysis of UUA's and the Corporation's models and data.

Note: This chart ignores divergences in UUA's and the Corporation's estimates of water demand levels and growth at Esperance. (UUA estimates demand at Esperance at significantly higher levels than the estimates by the Water Corporation.) If the levels assumed by UUA were taken into account total demand would start at 60 ML/day rising to 100 ML/day.

The explanation is clear – ERA has accepted, at least for the purposes of analysis, the Water Corporation forward demand projections, based it would seem on an assumed rate of *growth of 3 per cent* for 30 years. ERA has assumed that this demand will be satisfied (not unreasonable if a commercial deal is to be done with Water Corporation) and has subtracted this volume from the baseline total demand profile provided by UUA.

UUA had assumed that Water Corporation demand would *grow at 2 per cent* and these figures were provided to UUA as the basis for both the options modelling and the comparator. The ERA report indicates (page 6) that UUA also assumed 3 per cent growth; we are certainly unaware of this and have been working all along with the 2 per cent growth figures included in the modelling provided to ERA.

Our first observation is that the investment 'prospect' captured in this chart is almost certainly *not feasible*, so the subsequent net cost calculation is probably irrelevant. We cannot see how enough supply contracts of any duration could be negotiated with mining companies, on a basis that would be bankable for either UUA or mining companies, if supply is to be 'choked off' in the way

indicated. We would have expected this observation alone to warrant careful discussion in the report.

Our understanding is that UUA's proposal is to meet demand, including expected demand growth, and to deliver supply capacity to meet that demand. We would also expect UUA to be delighted at the prospect of such strong growth in Kalgoorlie demand, which should bolster the economics of its project – and at the implied growth in the mining sector that presumably would be driving the predicted strong growth in residential and commercial demand.

As a bare minimum, even if the above logic were accepted, ACIL Tasman would have substantially revised *upwards* the assumed distribution of *unit costs avoided by mining*. With these much smaller volumes, UUA would have been strongly motivated to 'cherry pick', selecting the subset of the demand willing to pay the most, and with demands that could be met through an appropriately sculpted profile to allow for the later shrinkage. We note in passing that this would have further emphasised our concerns with ERA rejecting our argument that the *present value of the avoided costs* would be elevated by the tendency for early contracts to involve those for whom the water would be most valuable – the \$3.33/\$3.40 issue that we discuss below.

In practice, it seems far more likely that UUA would want to go after the extra demand being suggested by Water Corporation and to tap into the increased revenues and scale economies.

From the start, UUA has indicated that the final scale of the pipeline and desalination plant would be determined *only after* more detailed market research. UUA has further put to ERA that planning for growth to 120GL/day over 30 years was included in the range of possibilities. Our advice is that the nominal 100ML/day design is capable of being pushed to at least 120ML/day, enough to satisfy the demand profile presented by ERA. Inclusion of the stronger demand assumptions clearly entails some incremental costs, but it also entails higher revenues and a significantly lower levelised cost and improves the economics of the project. The ERA analysis has been of a hybrid project that does not exist as a proposal.

Of course there is a question of the likelihood that average growth in demand of 3 per cent per annum will be sustained over this period. Even the 2 per cent assumed by UUA looks bullish on the basis of recent growth, though clearly this has reflected some supply constraints. The ERA report notes (page 6) that demand has not grown in the past 5 years. For Perth, Water Corporation is targeting a per capita demand limit and there is a question of whether this might make the demand forecast less realistic. UUA certainly needs to do more work on this demand – we understand that this was planned

for the project proving up process, but it may be necessary to look more closely now.

However, if a demand profile like this can be supported, we would expect that the UUA project would be capable of adaptation to take advantage of the expanded commercial opportunity.

We have received a revised version of the UUA cost model that indicates that meeting the extra demand by pushing a notional 100ML/day pipeline harder would be possible, with modelled incremental costs, over 50 years, of about \$43.5m. *Optimisation* of the project design to take into account the *likelihood* of stronger demand growth – possibly through a larger pipeline – may allow this incremental cost figure to be reduced substantially and might be justified if the higher than expected Water Corporation demand estimates are justified. A larger initial diameter pipe may certainly be sensible, given the stronger demand expectations now being considered, increasing the value of the options to meet subsequent demand growth.

The second feature here was ERA's rejection of UUA's proposed adjustment to the costs avoided, to reflect earlier contracting with customers able to avoid the highest costs. The logic behind the argument is quite clear, and there is nothing in the paper to refute the argument, yet the effect has been ignored.

The effect of ignoring the then proposed rough adjustment (using \$3.40 rather than \$3.33 for the average cost avoided) is to drop the avoided cost estimate by \$8m. We originally suggested the \$3.40 as a crude adjustment. We have now modelled the impact of this effect analytically (to match the analytical solution that yielded the mean \$3.33 figure for the upper tail distribution), based on first contracting the highest avoided cost customers and using assumptions regarding the distribution of avoided costs identical to those underpinning the original \$3.33 figure. This involved solving the distributional question algebraically, but then applying it to the assumed profile of new contracts. This implies an adjustment to \$3.396 – suggesting our original crude estimate was not off the planet. For the 30-year analysis originally proposed, the figure would be significantly higher, so our original suggestion was quite conservative.

We would normally view the \$3.33/\$3.40 effect as small, possibly even negligible, but not in a setting where the ERA calculations are suggesting costs very close to benefits. Certainly, assuming the effect is zero on top of the above artificial 'squeezing' of UUA's industrial market, implies very significant underestimation.

We discuss later the question of UUA satisfying demands other than through substitution for groundwater. We see this as a very important issue not

addressed in the ERA report – and one that would suggest the avoided cost estimates are underestimated even further.

Putting these pieces together leads us to the view that the ERA estimate of mining costs avoided should, for these reasons alone, be revised from \$262.8m to \$403.6m, an increase of \$140.8m. This adjustment seems to us entirely consistent with the methodology used by ERA, but factors in the above additional information. The effect is to boost the Figure A avoided costs from \$859.8m to \$1,000.6m.

Table A of the report lists UUA costs at \$901.2m (plus the adjustment for G&AWS water quality). We believe that UUA has reconciled these figures with its own modelling, though this reconciliation appears to be based on a large allocation of administration costs. The figure we have, corresponding to the information we believe was provided by UUA, is \$903.1m. I assume this latter figure is correct, in which case the ERA report would, in this respect, appear to have underestimated UUA costs by \$1.9m.

	\$M	\$M
Avoided costs from Figure A	859.8	
Adjustment for increases mine sales	140.8	
Revised avoided costs		1000.6
UUA proposal costs from Figure A	-915.7	
Adjustment for increased supply	-43.5	
Adjustment to base cost figure	-1.9	
Revised UUA costs		-961.1
Revised net benefit		39.5

Either way, the increase in costs is only \$43.5m, implying the need for the ERA net benefit calculation to be increased by \$97.3m. I assume, however, that this should then be adjusted downwards by this \$1.9m.

The result of these changes is to convert the inferred net *cost* figure of \$55.6m to a net *benefit* of +\$39.5m as set out below.

This is decidedly *not* our view as to the end point in the assessment. There are several reasons why the net benefit, calculated with the ERA paradigm, could be very substantially greater, given the assumptions implicit in the above table:

- The adjustment for increased supply is based on pushing the 100ML/d system harder, not on optimisation of a system around the new demand information.

- The ERA methodology here is essentially deterministic, and if this is the case then an optimised cost solution, analogous to the undoubtedly optimised solution proposed by Water Corporation, would be appropriate.
 - … We would hope that UUA is able to supply ERA with revised cost estimates on this basis.
- Alternatively, an options approach could be applied to the UUA strategy and this could be expected to deliver large additional benefits, for reasons discussed below.
- The analysis does not address a range of other benefits that we deal with below.

The key conclusion is that that ERA’s inference of a net cost is not sustained, even within the ERA deterministic framework and the evidence supports there being a significant net benefit rather than cost. .

5 Allocation of delivery risk

The report reflects on-going concern about demand risk, although our proposed options paradigm would go a long way towards hedging this risk, while giving UUA and both the WA Government and the State of Western Australia access to the upside opportunities suggested. On the other hand, the report does not address question of allocation of delivery risk, and this is one area where there is a striking difference between the UUA and Water Corporation strategies.

Both the UUA project and Water Corporation’s estimates of its upgrade costs must be subject to significant error bands at this stage. We have no knowledge of what level of contingency has been factored into the Water Corporation cost estimates, but we do note that Water Corporation’s incentives would be to err on the side of under- rather than over-estimation. This makes sense both as a negotiating strategy, if UUA pricing to Water Corporation may ultimately be linked to estimated avoidable cost, and as a strategy to defend Water Corporation’s position as the supplier of bulk water to Kalgoorlie.

Ultimately, any cost blow-out would be transferred through to the Government and would not imply a commercial threat to Water Corporation. On the other hand, UUA is offering to accept delivery risk, so must necessarily be more cautious about risks of under-estimation in developing its costings.

The scope offered by the UUA proposal for the Government to hedge against the risks of a cost blowout is one of the advantages offered by this approach, in contrast to the Water Corporation strategy. We have seen no recognition of this fact, nor of the associated benefit in the form of *insurance for the WA*

Government and WA. This argument would stand *even if there were no concerns for a bias* in the Water Corporation cost estimates.

Whether these effects are treated as part of the formal cost-benefit analysis or not may be arguable. We incline to the view that, from the perspective of costs and benefits to WA, this sharp distinction between the two schemes is relevant and big. In any case, systematic assessment of these risk allocations, especially in the context of some asymmetry in the estimation incentives faced by the two organizations, must strengthen the attraction of the UUA offering relative to the Water Corporation offering.

Evidence of systematic estimation bias would certainly be relevant to the cost-benefit assessment. Unbiased volatility might be handled in other ways, though evidence of willingness to pay for ‘insurance’ against cost blowouts would suggest it too is relevant to the cost-benefit assessment.

The above incentive argument raises one argument as to why some bias, at least in relation to contingencies, might arise. Another consideration is track record.

The following quote is from the recent ERA draft report on urban and wastewater pricing:

“From a high-level review of selected projects it can be concluded that, in general, the Water Corporation has historically under-estimated project capital costs, with actual costs exceeding both planning and approved implementation estimates. The Water Corporation has in the past dealt with this issue by delaying capital expenditure programs or projects to ensure the approved annual capital budgets are not exceeded. Assuming most projects in the five-year capital program are at an approved stage, current capital budgets may need to be increased by **10 per cent** (or \$60 million) per annum to cover capital forecasting inaccuracy. This budget figure could be **higher** if some key projects are only at the **planning stage.**”

The recent report by the Allens Consulting Group, that examined source costs of water, identified significant delivery risk on Water Corporation’s part with respect to project capital costs. Page 42 of the report calculated the difference between planning estimates and final out-turn costs to be +45% for a selection of major schemes. The average difference between approved capital cost and final outturn cost was +11%. As Allens noted, this suggests a systematic bias towards under-estimating future costs.

Between July last year and the 14 April this year Premier’s statement on the Kwinana desalination plant, the cost estimate appears to have risen by 11.8 per cent.

We are not raising these points as criticisms of Water Corporation costing, though we would stress that they appear to be features of Water Corporation costings. There are large uncertainties *inherent* in these classes of engineering project early in their planning. Various approaches can be taken to handling these uncertainties. Project planners we have worked with in relation to water projects would commonly allow for contingencies of 30 per cent or more, even to deliver a reasonable estimate of *expected* (as opposed to upper bound) cost.

We understand that UUA has sought to be conservative in its cost estimates and has been able to draw on extensive international experience to guide its costing. The basis on which Water Corporation has handled the uncertainties in providing its cost estimates to ERA is not clear, and should, if possible, be clarified. We understand that normal practice is to plan to forecast within a band of -10% to +15%, though the reasonableness of this will of course depend on the time in the planning cycle. The fact that the band is asymmetric does suggest that Water Corporation cost estimates are unlikely to be estimates of expected costs, implying a different practice to that suggested above.

The above comments suggest that the Water Corporation approach may not be as conservative as that adopted by UUA – in which case the straight comparison of the two sets of cost estimates may involve a substantial bias against the UUA approach.

Again, we started with a ‘gap’ in the ERA assessment of 5 per cent of UUA costs and less than 10 per cent of Water Corporation direct costs – and that was before the above arguments are introduced to close the gap. The uncertainties must be large in relation to this. Certainly, a 10-11% underestimation by Water Corporation, in line with the above reports, would have been enough, on its own to bridge the \$56m ‘gap’ claimed in the draft report; with the earlier adjustments, we see this track record as indicative of an additional large block of benefits associated with the UUA project.

We are also aware of considerable questioning within UUA and its advisers of the effective scope for the ‘incremental expansion’ path assumed, and believe that Graham Dooley has written to ERA requesting better information. The ERA report notes that a need to collapse the upgrades rather than do them incrementally would add substantially to the Water Corporation costs – but then accepts the incremental costings for purposes of comparison.

6 Market/Government failure

Given the above revision to the quantified net benefit – in particular the move from a deficit to a surplus well in excess of \$40m – and the discussion of extra value to WA from the implied change in risk allocation, it is appropriate to ask

if there are reasons why the project has not proceeded autonomously, and especially why UUA might feel the need to seek a mandate from Government, rather than from Water Corporation. ERA, in the draft report, has essentially expressed the view that the market should be able to resolve the matter, though this was made easy by its conclusion that the project did not stack up economically, when the above discussion suggests it does.

It is crucial that ERA understand that UUA is not seeking any subsidy here. However, it is also crucial that ERA understand that the natural market resolution here, especially based on the principle of UUA supplying water to Kalgoorlie demand and growth at Water Corporation avoidable cost, does not in this case represent an efficient outcome. The reasons have nothing to do with rejection of the avoidable cost argument; as we have stated from the start, we believe that avoidable cost that recognises sunk capital investments is the appropriate starting point.

Instead, the reasons we feel need highlighting are twofold:

- Flowing from the discussion above, Water Corporation does not necessarily see all the costs that are relevant from a WA perspective and may be reluctant to agree a deal that involves a net benefit assessed with the ERA framework.
 - Water Corporation effectively cannot help but transfer delivery cost blow-out risks to the WA Government through a complex system where the joint product features make cost attribution impossible and where Water Corporation necessarily has a better command over the information than any outside audit.
 - It may well have a preference for not completing a deal, even if nominally attractive on a single project basis, where that deal could be threatening to its monopoly position in the WA market.
 - Both these could be seen as a forms of market failure, though in both cases with some regulatory underpinning.
- There is also a serious *market distortion* induced by the *form* of the CSO arrangements that apply – a distortion that means that industrial water supply to the Goldfields is artificially costly, to the detriment of the mining and minerals processing activities that are the foundation of the region's economy.
 - This distortion acts against price competitive supply to mining activities by either UUA or Water Corporation.
 - This is a form of regulatory failure.

We see no value in challenging the CSO commitment; that is a social policy position the WA Government has adopted and that is not up for consideration. It is the *unintended consequences* of the *way the CSO has been delivered* that underscores the case for not relying simply on market forces.

In essence, the form of the current CSO arrangements encourages a distinct distortion in the use of the scarce water resources in the Goldfields – a distortion that is *highly detrimental to mining activity* and *detrimental to the WA economy*. This argument stands under the current G&AWS and is *not* an argument against the objectives of the CSO arrangements.

The UUA proposal, especially given later arguments about the scope it offers for a substantial rise in royalties, creates an affordable opportunity to break out of this distortion, while retaining the CSO subsidy for water supply to residential and commercial customers. The ERA report currently argues for a mechanism that excludes this outcome without considering its merits.

ERA has concluded that the merit of the UUA strategy needs to be judged on an avoided cost basis and argues that the benefits of additional industrial supply are largely private in nature. We do not disagree with this, judged within a narrow cost-benefit framework. We do, however, believe that ERA should follow through on the logical consequences of this assumption, including the fact that this includes the avoidance of substantial loss by the Government of royalties, which the earlier discussion makes clear are part of the economic assessment, and also includes the *retention* of an artificial cost penalty on regional industry.

ERA's approach has assumed that effectively *all of the benefits of the sunk capital* in the G&AWS should continue to be granted to the *existing water users*, even though current pricing and CSO policy has introduced a significant distortion to the *detriment of the WA economy and to mining activity* in the region. This distortion has the potential to also distort the commercial assessment of the UUA proposal. As such, retention of such a penalty appears to run counter to the competitive neutrality provisions of the CPA. It also fails to meet the spirit, and arguably the letter, of the CPA requirement to avoid cross subsidies within business activities.

What is happening is that the sunk cost (legitimately) helps the G&AWS to compete because it lowers the average costs (especially if calculated across the artificially low demand profile), but this then locks in high incremental costs relative to the UUA alternative and it is these that industrial users see. The UUA scheme offers much lower incremental costs, so it would be commercially attractive to supply industrial demands at prices below G&AWS incremental costs, once the scheme gets over the 'start-up hurdle'.

Of course the benefits of the sunk costs need to be factored in, but it is not essential that none of these benefits be shared with industrial users if the alternative is that industrial users are not just no better off but instead are substantially worse off.

To help understand the issues here, we work through three synthetic views of the world that highlight the issues.

First, suppose for a moment that the G&AWS were to disappear tomorrow. The ERA analysis sets out a strong case to suggest that the UUA project would proceed to fill the gap – a new G&AWS could not compete. Without any G&AWS, a supply agreement to existing commercial and residential customers could be struck that would meet demand and demand growth and that would entail a substantial *reduction in the current CSO payments* by government, based on something close to the levelised cost of supply. And realistically, new mining customers could expect to negotiate access to the water at prices on broadly similar terms – and the Government would receive a greatly strengthened royalty revenue stream. Everyone would be better off for the scheme proceeding, there would be substantially increased industrial use of the water, large saline usage costs would be avoided, Government payments would fall and royalty revenues would rise.

What is interesting here is that, *even with the CSO still being paid*, industrial users would be able to negotiate supply starting from a much lower marginal supply cost than is currently the case. We recall that Water Corporation was indicating, at the workshop, a *marginal cost of new supply* in the vicinity of \$4/kL against the levelised cost of the UUA proposal of well under \$3/kL. Direct calculation of the levelised cost of growth water from Table A in the draft report and the demand series in Figure 3.2 yields a levelised cost for G&AWS growth of \$4.52, here calculated at 6% over 50 years. This is a striking figure – given that it presumably underpins Water Corporation offer prices for supply to mining – and we are surprised that there has been no reference to it in the report.

The current sunk capital may be creating an avoidable cost impediment to the UUA scheme entering commercially, but it is also *prima facie* delivering a cost penalty for industrial access to potable supply of perhaps 50%. We are not proposing this as a sophisticated estimate of the error, but believe it should be indicative of the order of magnitude and it certainly points to a very high effective G&AWS cost from the perspective of industrial users.

The UUA project could eliminate this cost penalty while still allowing a CSO to be applied to residential/commercial supply.

It follows that a ‘greenfields’ solution, even with residential and commercial subsidies, would allow industrial users to access water much more cheaply than is currently possible.

The ERA proposal is that, for the scheme to proceed, it will need to be able to rely only on (Water Corporation) avoidable cost revenue from the supply to

residential and commercial customers, and will need to recover enough from the new industrial users to make the scheme commercial. While this sounds like simple application of the sunk cost principle, it is not. As well as (correctly) recognising sunk costs, it is allocating all the benefits of those sunk costs to a subset of Goldfields demand, in a manner that almost certainly differs substantially from the way those costs would be allocated by the market.

This will necessarily imply that industrial users will have to pay a higher price for their water than would arise naturally under a greenfields development. From this perspective, the ERA position would perpetuate the water cost penalty that now applies to industrial supply, and might well dissuade the project from proceeding at all.

From a second synthetic perspective, suppose (purely for the sake of *illustrating* the economic distortions) that the G&AWS were back in place but the CSO were lifted tomorrow. We can pretty well guarantee that the outcome would involve a reduction in residential and commercial usage of water, and an increase in industrial use of the water at prices *above current subsidised prices* but *well below current costs of incremental supply* to new mines.

The CSO is designed to subsidise commercial and residential water prices at the expense of the rest of the state – and that is a policy objective that we are not opposing here. However, an *unintended consequence* has been to impose an *effective penalty* on water usage by industrial customers and this effectively bites as a deadweight loss to the region and the WA economy. As we discuss below, work done at the University of WA on price elasticities clearly indicates that such a cost penalty must translate into reduced mining activity, limiting access to the corresponding royalty payments, employment etc.

Importantly, this outcome is a *creation of the way the subsidy has been delivered*, rather than as a result of the subsidy itself. Ironically, we would expect that current residents of the Goldfields have probably not benefited greatly from the subsidy, because it would have been capitalised into the land and housing values – which is not to say that they would not suffer if the subsidy were removed. Nonetheless, people moving into the area, now and in the past, may get subsidised residential water from the CSO, but are likely to face an offsetting set of costs in the price of land and housing, or the price of rental properties.

The form of the CSO is such as to tie the CSO payments to a requirement that the water not be on-sold or otherwise sold to mining and minerals processing activity; it is available on every kL used for residential and commercial purposes, but only for such uses. It is this condition that creates the economic distortion and that serves to work to the disadvantage of both the mining activities and commercial and residential water users who might happily reduce

their demand if they were able to access some of the benefits of water becoming available for mine use.

To make this point clearer, consider the third synthetic view. The CSO is replaced by a set of lump sum payments to households, while water prices move to be cost reflective. Commercial/residential users are allowed to ‘sell’ their demand management services – effectively they are given a water right separate from the CSO payment and are allowed to trade the right, just as mines receiving G&AWS supply have a water right and are allowed to trade it.

Householders who do not change their water consumption are no better or worse off. The Government and Water Corporation are no better or worse off. However, households could now choose to forgo a proportion of their water consumption, which could then be used by mines. The mines would pay the cost reflective price (above subsidised cost but below incremental cost) and would be better off; the households who reduce consumption would be better off; and no-one else would be worse off. There would be what is termed a ‘Pareto improvement’ as a result of the trading opportunity. Such trading is currently precluded by the fact that the CSO payments are *tied to the water being used in residences and commercial businesses, but not in mines*. We are not proposing this policy change, but it does illustrate the point that it is the form of the subsidy that hurts mining, rather than the fact of the subsidy.

ERA has essentially assumed that this distortion, and its artificial and detrimental impact on mining in WA, should remain locked in – and has not addressed the scope offered by the UUA proposal to eliminate the economic distortion and to further expand access to substantially cheaper water. This can be done because of the way that the UUA proposal would introduce supply involving much lower incremental cost than Water Corporation supply. Reductions in the *deadweight losses* that flow from the distortion are legitimately part of the cost benefit analysis as well as having major implications for the regional assessment.

Water Corporation may have a low average avoidable cost as a result of its sunk capital; however, it does not have a low incremental cost, with the ERA figures pointing to a cost of around \$4.52/kL. It is this incremental cost that is hurting mining in the region and it is this damage that the UUA proposal could address by delivering water with much lower incremental cost. Continuation of the G&AWS strategy, even accepting the Water Corporation argument regarding scope for incremental growth, effectively locks in this sort of price structure for growth activities in the region.

The dilemma suggested by the ERA analysis was that the overall combination of low avoidable cost and high incremental cost offered by Water Corporation was slightly more valuable than the low incremental cost solution offered by

UUA. The earlier discussion strongly suggests that this dilemma does not exist.

Nonetheless, it is still quite possible for a situation to arise where Water Corporation, responding to the incentives created by the CSO in its current form (and other possible perverse incentives), would not see UUA supply at a price sufficient to make the UUA project commercially as attractive and capable of lowering its costs. This would be because of market or regulatory failure, meaning that the costs to mining and the wider economy would not be seen by Water Corporation – Water Corporation avoidable costs understate true avoidable costs.

Perhaps ERA's position was motivated by a view that the WA Government should be protected from an increase in the cost of the CSO – though we saw no such requirement built into the TOR.

More generally, we can see no reason why the CSO subsidy – presumably intended to benefit the region – should be funded partially through a specific tax on the very activities that created and will sustain the region. I doubt very much that the impact was recognised or intended.

More generally, this indicates that the Government is logically a party to the negotiation needed to deliver the economic improvement – and that the Government's interests cannot be served by using Water Corporation as its proxy. Water Corporation would face a conflict of interest in acting for both itself and the wider Government/WA interests. This conflict could be reduced through changes to the form of the CSO arrangements, but barring this, there is a fundamental difficulty.

Section 7 below discusses likely growth in mining as a result of the UUA project proceeding. This discussion is of importance in its own right, but also as a pointer to the extent to which the above distortion of incremental costs, and the price for potable supply faced by industrial operations in region, is likely to have been converted into significant changes in activity levels. This is a strong pointer to the economic costs of the distortion being substantial. Had the level of mining activity been insensitive to the cost distortion, then the economic costs would be small – though the equity effects might still be a concern. In fact, the evidence strongly supports the view that mining activity is quite sensitive to these price distortions.

7 New mining activity

The ERA report notes the theoretical possibility that some of the new water could be used to increase the level of mining activity, rather than just

substituting for groundwater usage. However, all of its analysis and its primary conclusions are based on the assumption that this will be negligible.

The difference is of great importance. Substitution of water sources would have implications for company profits, but relatively little implication for the wider region and no implications for royalties earned.

ERA's assumption that encouragement to new mining would be negligible is in conflict with the UUA market research we have seen, and the calculations we have performed.

UUA's market research distinguishes between substitution water and water for new development. We have calculated the royalties implied by the new water component – on the basis of the technical relationships between water volumes and production of gold and nickel concentrate. We have applied the current royalty regime to these extra volumes and estimate a present value (@6%) of additional royalty revenues, under the 60-100ML/d uptake schedule that ERA claim to have accepted, in excess of \$80m (estimates still being developed).

Of course this situation may change, and the market research data remain preliminary, but the above arguments stand. It seems highly likely that the strongest and earliest demand will come from developments where the avoided costs are high or irrelevant – because of effective unavailability. In this context, it should be noted that mining water quality requirements are highly differentiated between commodities and processing technologies. For example, growth in both laterite and sulphide nickel production will most likely require access to additional good quality water, which is effectively unavailable at present.

Even if ERA were skeptical about the demand estimates, there is another way of looking at the scope for additional royalties on the basis of firmer evidence – though this relates only to that proportion of royalty growth associated with *marginal expansion of existing operations*.

There is a near-linear relationship between volume of water and volume of gold or nickel production from ore of a particular grade. In effect then, a drop in the long-run effective price of water (adjusted for salinity effects) must operate, for existing mining operations that are limited by their marginal costs relative to prices, like a *sustained increase in the price* of gold and nickel. Is ERA suggesting that the long-run supply elasticity is negligible?

The most relevant work we have seen has been by Prof Ken Clements and others at the Economic Research Centre at the University of Western

Australia. That work¹ which is based on econometric modelling, points to long-run supply elasticities for gold from the Western Goldfields of about 1. A contract with UUA to reduce a key input price for some years into the future should encourage a long-run response by these mining operations – it should induce a systematic shift in forward expected prices, net of water costs.

While assumptions need to be made about where the UUA water goes, it is impossible to avoid the fact that there will be an incentive for expanded production at the margin of existing operations, and that the value of the extra production will convert to many hundreds of millions of dollars on a present value basis – with an associated stream of royalty payments.

ERA only considers these royalty payments in the context of *financial implications* for WA. We assume this is because royalty payments, like other taxes, are normally interpreted as transfer payments, rather than additions to benefits. However, there is a crucial economic argument that suggests they should also be considered in a wider net benefit setting.

Any extra production of gold or nickel will need to be based on a business case that allows the extra costs of production to be covered, including an adequate rate of return *and the ability to pay the royalties*. If we accept that a commercial rate of return approximates (and indeed probably exceeds) the 6% return required used by ERA, then the ability to pay the royalty on the expanded production suggests that the value of the extra royalties is in fact *economic surplus for WA*. This is true even if the mining operations can then only just pay a commercial return to the mining companies. We are not dealing with a transfer payment, so much as an *increase in net benefits*, even where the extra production is, commercially, only marginal once given the access to lower cost water.

Based on the profile of new demand identified by UUA in its market research, we have developed an indicator of the additional royalty revenues that might be obtained. This is based on the figures supplied by UUA for new demand that would not be substituting for either groundwater or G&AWS supply. Our estimate at this stage stands at \$75m (PV@6% over 50 years). The figure is subject to revision when we obtain further information from geological chemists in relation to nickel, but should provide a reasonable indication.

I stress that the number flows from UUA's water demand figures; we have not independently verified those figures, and in particular the share going to new activity.

¹ Clements, K (1996), *Economic Aspects of Gold Mining in WA*, Paper presented to the Australian Gold Conference, Kalgoorlie, 12-14 March 1996.

This implies that the extra royalty payments – possibly in excess of – are available as offsets to the ERA gap of \$56m. In effect, access to the cheaper water (which, for reasons discussed in Section 6, is currently artificially high) would allow the (accepted) distorting effects of the royalty tax arrangements to be reduced. A tax on resources need not be distorting, but *ad valorem* royalties are; their appeal and wide use lie in simplicity and enforceability, not in neutral economic effects.

In fairness, to the extent that new mining activity is involved, rather than substitution of water sources, the earlier avoidable cost estimate should be reduced (it being based on source substitution) alongside any attribution of benefits to the new activity. What this assessment does is increase the robustness of the conclusion that there are large potential benefits to mining activities, inclusive of capacity to pay royalties, which have not been accounted for in the draft report.

The market research data UUA has gathered suggest that the UUA proposal could effectively *attack an availability constraint*. This could well involve a high proportion of mineral reserves where the effective cost of groundwater is well above \$4 – making our estimate even more conservative than we had suggested.

This is a key issue. The data on costs of hypersaline water that we assembled and provided to ERA from several sources (including the joint WC/UUA study) related to the effective cost of groundwater *for those operations already using the groundwater*. The methodology, of surveying and modelling actual mining operations, necessarily excluded reserves where the effective cost of groundwater was prohibitively high – for either or both of very high salinity or very long pipe requirements. It was biased away from these high cost operations, yet the evidence from UUA’s market research suggests substantial interest in UUA water from these sources. The UUA pipeline route and capacity opens up supply opportunities that are effectively not available from the G&AWS system.

The report does note that, for gold at least, the increase in royalty payments may have a diminished impact on State finances, because of the way the Grants Commission operates. No quantification is provided. This may be true but in our opinion should not be a pivotal factor in the deliberations, and certainly not in the assessment of cost-benefit. It would be most unfortunate if mining activity in the region, already disadvantaged by the high artificial water cost penalty flowing from the CSO arrangements discussed earlier, were to be further disadvantaged because of the form of Grants Commission formulae. Such an outcome would clearly be to the disadvantage of Australia.

We recognise, nonetheless, that the TOR for the inquiry did request advice on financial impacts, so it is appropriate that the issues be discussed. We are aware of the issue and of past attempts within the Grants Commission methodologies to deal with perverse incentives.

The discussion in the report seems, nonetheless, odd. The flavour is strongly that there is a high likelihood that extra royalty receipts may have negligible net revenue implications for the WA Government. As far as we are aware, royalty rates on gold and nickel are identical across Australia, except in Victoria where the gold rate zero and where the rate for nickel (in a state with no nickel production) is 2.75%. The discussion of iron ore and petroleum (where rates do vary significantly across states) as pointers to the problem is likely to have created a substantially more extreme view of the potential problem than is really the case.

If the report is correct in suggesting that extra nickel royalties would receive ‘top up’ while gold would be ‘discounted’, then extra care is needed in drawing strategy conclusions in relation to a 50-year project assessment. The pattern of minerals extraction and processing activities is likely to change substantially, and largely unpredictably, over this time period. Right now, nickel production is rising relative to gold in the Goldfields. Nickel prices are highly volatile. Processing technologies are changing rapidly. Discounting the value of industry growth driven by sound fundamentals, because of a short-term quirk in CGT arrangements, would seem particularly dangerous.

In short, we would be concerned if CGT offsets became a significant factor in the final decision. If it is to be given weight, then it would seem appropriate that ERA seek rather more definitive information on the size of the impacts – and we suspect these will be a lot smaller than is suggested by the discussion in the draft report.

8 Source water costs

This Section raises an issue where we are not sure what has been done. However, based on available information it suggests that there could be significant underestimation of the source costs of water – that feed into Water Corporation avoidable costs. We set out our reasoning here and suggest that it needs either clarification of what has been done or possible adjustment to update what has been done to deliver source cost estimates.

The ERA report relies on two estimates of LRMC of 0.92 and 0.75 \$/kL. These are calculated using a 6% cost of capital and over a 50 year time horizon.

LRMC for growth water

The \$0.92 is said to be calculated from the models used by Allens in their recent work on the urban pricing review. In the Allens report, they identified a LRMC of \$0.97/kL using a 6.5% cost of capital and a 100 year horizon (not 50 years as suggested by ERA). We assume that costs were expressed in 2003/4 prices to be consistent with the price base used for the pricing review.

Thus the movement from \$0.97 to \$0.92 could reflect a number of influences, such as:

- The use of a lower cost of capital. (Our modelling suggests that this could account for the whole 5c movement);
- The use of 2004/5 as the price base (which would increase rather than decrease LRMC);
- Using a 50 year instead of 100 year horizon. (I am confused why the shorter time horizon serves to reduce the LRMC. I suspect that they are not just altering the time horizon, but also reverting to the Water Corporation method of assuming flat demand beyond 2023 which gives a lower LRMC as per the Allens report). Using an horizon of 100 years ERA derive a LRMC of \$0.93/kL;
- Changes in the costs or timing of schemes used in the Hanke-Turvey calculations.

ERA does not provide any indication of the reasons for the movement from \$0.97 to \$0.92, and we presume that it is largely driven by the change in discount rate rather than changes in scheme assumptions. This in itself is plausible and, if this is the reason, would be appropriate. However, it seems likely that Water Corporation's recently released reassessment (IWWS report) of the forward costs would now imply a substantially higher source cost than the \$0.92.

IWWS report

Comparison of the IWWS report to the Allens report appears to show that the costs incorporated into the Allens model have since been revised upwards on a systematic basis. These adjustments are unlikely to have been incorporated into ERA's revised LRMC, as the magnitude of the IWWS adjustment is too large, as shown by Table 1. As we are unclear whether the ERA LRMC has up-rated by inflation for 2004/5, we show the comparison both with and without an inflation adjustment.

The second column of the table lists the source development capital costs identified by Allens in Table 4.2 on page 30 of their report. This is then

compared with the capital costs identified in the IWWS report (Tables 4.1 and 5.4).

Table 1 Comparison of costs per Allens report and IWWS

Source	Allens capital cost	Allens adj for inflation	IWWS capital cost	Inc on Allens	Inc on Allens adj for infl
Harvey Water trades I	111	114	134	21%	18%
Desalination no 1	324	332	376	16%	13%
SW Yarragadee	309	317	383	24%	21%
- Construct Ravenswood	17	17	19	12%	9%
- Upgrade Tamworth PS	17	17	19	12%	9%
- Duplicate pipelines	17	17	18	6%	3%
- Upgrade nicholson PS	2	2	2	0%	-2%
- Duplicate trunk mains	58	59	60	3%	1%
Eglington groundwater	45	46	54	20%	17%
- NW corridor trunk main	65	67	65	0%	-2%
Wellington pumpback	70	72	87	24%	21%
- duplicate mains	55	56	57	4%	1%
Harvey Water trades II	220	226	253	15%	12%
- Duplicate mains	33	34	34	3%	1%
Yanchep groundwater	28	29	33	18%	15%
Brunswick dam	247	253	275	11%	9%
- upgarde Ravenswood PS	2	2	2	0%	-2%
Gingin groundwater	349	358	439	26%	23%
Aquifer storage					
Total	1969	2018	2310	17%	14%
Total excluding bulk transfers	1703	1745	2034	19%	17%
De-sal, Eglington, Wellington and SW Y	748	766	900	20%	17%

The table shows that, assuming that no inflation adjustment was made by ERA, there has been an increase in average capital costs of 17% since the Allens assessment was undertaken. Moreover, the revision in cost has been greater for the source works than for the bulk transfer infrastructure (19% for source works alone).

From the table on page 90 of the Allens report, it is not clear whether the bulk transfer costs were included in the calculation of LRMC. The magnitude of the numbers involved suggest that they were not. For the schemes identified as part of the base case in the Hanke-Turvey calculation, we find the average increase in capital cost is some 20%.

In addition, as was discussed in Section 8, Allens identified significant *delivery risk* on Water Corporation's part with respect to capital costs, averaging an 11 per cent underestimation. As Allens noted, this suggests a *systematic bias*

towards under-estimating future costs in relation to projects of the type that feed into LRMC calculations.

Overall, therefore – and subject to confirmation of our interpretation of what has been done by Water Corporation, Allens and ERA – we would expect that the LRMC should be at least 33% higher than the \$0.92/kL used by ERA (at \$1.23/kL) and potentially 75% greater (at \$1.60).

LRMC of existing water

The LRMC of \$0.75 estimated for existing water was estimated by imposing a demand decrement in the Hanke-Turvey calculation. Given that Water Corporation currently has a supply deficit, there are a number of early schemes which would not be deferred, or deferred by less, than if demand and supply were in balance.

We do not have enough information to be able to check these calculations. However, we note that the time horizon appears to be more important for existing water (LRMC changing to \$0.81 under a 100 year horizon).

However, the sorts of adjustments identified above for new water will apply equally to existing water (with only slight adjustments according to whether any particular schemes drop out of the Hanke-Turvey calculation). Thus we would expect that the LRMC of existing water should be between \$1.00/kL and \$1.30/kL.

When we met with Water Corporation and ERA, we questioned the lower long-run cost of existing water may not in fact be real. We understand the reasoning – based on the concept that a sudden stopping of the need to supply a block of water should generate surplus capacity – but we questioned whether it would be efficient to generate this surplus capacity. The fact is that the UUA project will take approximately 3 years from commencement to commissioning. The existing volume of water supplied to Kalgoorlie is, we believe, equivalent to approximately 3 years of normal demand growth for Water Corporation. This would suggest scope to manage the forward capacity augmentation program in such a way as to reduce substantially, if not eliminate, the surplus capacity and the associated ‘unavoidable’ costs. Our recollection is that, at the time, the Water Corporation representatives accepted the logic of what we were saying, but we doubt that the reasoning has been built into the \$0.75 figure. The effect of the argument should be to further increase avoidable costs.

9 Avoidable cost of growth water

It is possible to back-calculate from the information in the draft report estimates of G&AWS levelised costs:

- average levelised cost is nominally \$2.12
- existing water levelised cost is nominally \$0.92
- growth water levelised cost is nominally \$4.52.

We include the term ‘nominally’ because these figures are subject to the concerns raised above regarding possible downwards bias in the estimation of both project and source costs. Calculating the estimates from the data provided does not mean we endorse their validity, but we would expect the bias, if any, to be downwards.

You have requested a separate briefing on avoided costs, and we will deal with the issues in more detail there. For now we note that the very high figure for growth water is well above UUA costs, and stress that a key distinction between the UUA and Water Corporation approaches lies in the implied incremental costs and the incentives these create for industrial use. This is an efficiency as well as an equity issue.

10 Yardstick competition for WC

The report does not even mention the potential value for WA that could be expected to flow from the introduction into the WA market of a real and serious alternative to Water Corporation monopoly supply, despite the fact that we raised the point several times with Marsden Jacob and our clear impression was that the argument was not in dispute.

Our impression is that a factor in the exclusion of this argument may have been the concerns, flagged earlier, with the UUA emphasis on seeking a mandate from the Government as opposed to a commercial deal with Water Corporation. There may have been a view that a ‘subsidised’ private sector competitor would not have offered useful competition or yardstick benchmarking.

For reasons set out above, we do not believe that UUA is seeking a subsidy, but is seeking to have the cost-benefit judged taking into account the market/regulatory failure issues set out above. This is a very different matter and we cannot see how this would diminish from the value of UUA as a yardstick – quite the contrary in fact. The very process of identifying the impediment to competitive entry, and the impact on regional mining, is a demonstration of the potential for value here.

Granted that UUA supply would then take the form of something close to a regional monopoly in respect of new industrial supply – but one that would have to compete with groundwater and changing industrial technologies, and in a market where Water Corporation was essentially not present because of its approach to supply and pricing. A lot has been written on the benefits of yardstick competition. While Goldfields supply would not form the ideal yardstick, it is likely to offer very substantial benefits over no yardstick at all.

The smallness of the ERA ‘gap’ at 5% of costs, whether or not the above arguments regarding shortfalls in the benefit assessment are accepted, points strongly to the scope for both productivity and consumer cost benefits over time for Western Australia as a result of serious probing by private suppliers of opportunities to improve the system.

A striking outcome from the discussions held with Water Corporation during the course of the review was the extent of surprise expressed by Water Corporation when the UUA costs were put on the table. This points to a serious gap in their probing of alternative approaches to meeting future needs, or to serious cost penalties in their approach to implementing new technologies. An efficient monopoly provider should be across these issues and it would appear that Water Corporation were not.

Even accepting the ERA report at face value, there is nothing there to suggest that a serious prospect has not been identified by UUA – and one that deserved serious scrutiny and one that would make sense under very small changes to the market assumptions. This is an example of the sort of innovation process that should not be discouraged.

11 Avoidable cost

The figures in the report support an avoidable cost for Water Corporation of \$1.89/kL. If avoidable cost were to be used as a basis for price agreement with Water Corporation, the actual number becomes important. This is a hybrid figure, reflecting the benefits of sunk costs for existing supply, and a much higher cost of future supply.

It is extremely difficult to pin this number down, and subtle shifts in definition can lead to very different outcomes.

In principle, the approach of costing Water Corporation investment and operation strategy with and without the UUA scheme in place is appropriate, alongside the resultant levelised cost. For now I note that the work done by ACIL Consulting, with GHD and Stanton Partners, in 2002 led to a suggested avoidable cost of \$2.72/kL. With adjustments for inflation and ERA source cost figures, a substantially higher figure would be suggested now.

There is an important issue here, but I propose addressing it in a separate briefing.

12 Decision not to engage with the option/gateway framework

UUA has made it clear from the start that it neither seeks nor needs unconditional commitment by the WA Government to this project at this stage. What it has sought is the level of ‘in principle’ commitment needed to allow bankable assessment of market demand. This extends to a willingness to engage in looking at ways to use the UUA initiative to address the market/regulatory failure issues outlined earlier.

In support of this position, UUA has argued that the appropriate investment paradigm to apply is that of *an option*, available to the government at the cost of this ‘in principle’ support, but an option that would *only be exercised if* both UUA and the Government were able to assess that the project offered benefits in excess of costs – based on the better information on market demand that would emerge.

We have had no indications, prior to the draft report, that the review team or ERA had difficulties with this proposition – and the report refers to our position (quite superficially) with no indications of concern. We would argue that any attempt to value the investment proposition that fails to factor in the value of the options – and the associated flexibility to walk away from the project in the event that the economics are not confirmed by the further project development and market testing – entails a significant bias against the most cost-effective decision by the Government.

The ERA report (p15) does discuss the scope for dealing with uncertainty through the use of probability-weighted benefits and costs, but argues that the probability estimates “cannot be soundly based in an early stage proposal”. That is a fair comment, but does seem to miss the point that, in an options framework, the conclusion that conditional commitment to the UUA proposal, with the option to switch back to a G&AWS strategy if the demand evidence does not firm up as planned, dominates immediate commitment to a G&AWS strategy for almost any probability. The strength of the options approach is that it allows robust inferences *despite the necessary uncertainty*, and effectively avoids the reason implied in the ERA report for not using this approach.

In fairness to the ERA report, it does go some way towards working with the options framework, though in a selective way and it then critiques its own conclusion with an argument that is not relevant to the options framework. ERA accepts, at least for the sake of argument, UUA’s view as to the baseline

of industrial demand that underscores to interest in the project. Unfortunately, for reasons set out in Section 4, it does not then use these estimates in calculating the net benefit; instead it uses much smaller estimates after adjusting for Water Corporation demand growth estimates. Had it worked with the original estimates – and the above very sizeable adjustments would be needed to make this work – it would have produced a crude estimate of the benefits in the event that the option to proceed was exercised. However, this would not have done justice to key features of the options approach, including valuation of the flexibility to adapt the investment strategy to new information, and to benefit from upside opportunities while hedging downside risks.

An options framework reflects current best practice in valuing investments involving high levels of uncertainty and flexibility – while a traditional deterministic (even with sensitivity testing) approach is now uncontroversially biased and inappropriate. It answers the wrong question and does not match the structure of the UUA investment proposal.

In support of UUA’s position, we provided Marsden Jacob with a simple options model that sets out the logic of this approach. A key feature of the approach is that the *project does not proceed unless the economics have been proven*. We accepted that there was a non-zero chance that the economics would not be proven – and UUA indicated clearly that the project *would not proceed* if the market research led to start-up demand as low as 45ML/day. As we understand it, the only reason that 45ML/d start-up volumes were modelled and supplied to Marsden Jacob was *because they were requested by Marsden Jacob*, not because UUA had indicated that it was prepared to proceed with such a project.

It is therefore somewhat surprising that the draft report notes the possible large ‘losses’ associated with a 45ML/day start-up as evidence of the risks in the UUA project. This seems quite incorrect; as we understand it, there would be no losses (beyond the market testing, that was built into the options model and would largely be borne by UUA) with a 45ML/d start-up *because the project would not start*.

A key strength of the UUA proposal is that it is *fully hedged* against such an uncommercial start-volume (so there are no risks to Government), *yet* it gives the Government and WA access to the offsetting possibilities that the demand that will emerge is greater than the 60ML/day start-up, or subsequent rate of growth, that has been assumed. The scope for upside was made clear in the options model provided, and the likelihood of a stronger than 60ML/day start-up has, we believe, increased further since then. The evidence that has now emerged in the ERA report, suggesting substantially stronger growth in the Kalgoorlie market than had been assumed in the ‘baseline’, adds further to this upside.

For the same reason that ERA inferred that a 45ML/day start-up would be unattractive, the benefits from the UUA strategy would be greater under a more bullish demand pattern. In the options model provided, we envisaged the possibility that the market testing may well lead to a start-up volume of 75ML/d. If ERA is correct (page iv) in assessing that the 45ML/d scenario increases net costs by \$87m relative to 60ML/d, then a 75ML/d scenario would probably reduce net costs (or, given the earlier discussion, now *increase net benefits*) by a similar sum relative to the 60ML/d scenario, *based on the ERA assumption* of rapidly shrinking industrial supply. With appropriate adjustment as outlined above to allow for sustained growth in the customer base, the upside could well be a lot higher than this.

Higher start-up volume is just one way of representing upside. Higher growth in market, including growth in Kalgoorlie, probably driven by higher industrial activity, could deliver substantially greater upside, including justification for significant expansion in system capacity over time. We did not probe these opportunities in detail in the material provided, because we were being explicitly conservative and still concluding that the option value was positive. In the material provided to Marsden Jacob in relation to modelling the costs and benefits, we explicitly stated that:

“The approach has been designed deliberately to be conservative, and this conservatism must be recognised in any cost-benefit assessment.”

In practice, the ERA framework introduced these conservative estimates as point estimates within a deterministic framework, which fails to take any account of the conservatism, and then as a result of misinterpretation and blending with Water Corporation estimates actually scaled the numbers back very substantially.

We also note in relation to upside opportunities that UUA’s industrial demand estimates, as provided to ERA, have excluded expressions of interest that UUA considered to be ‘speculative demand’ – including, but not restricted to, all laterite developments and the pointers to some low volume/high value agricultural demand. While these elements have been deemed individually to be speculative, the fact remains that, collectively, they add to the *value of the options strategy* being offered by UUA and to the conservatism of the analysis done.

Even within the ERA paradigm, the upside potential should at least have been noted alongside the suggested downside of a 45ML/day outcome. However, within the options framework, this upside is available to WA, *without the corresponding downside*. This is where the real undervaluation of the UUA proposal enters within ERA’s deterministic paradigm.

We also note that, given the new information on Kalgoorlie demand, it would be straightforward to extend the options model to incorporate a decision on the level of pipe capacity, based on the outcome of the proposed market proving process. This would allow optimisation based on the then available evidence of likely demand trends.

13 Dealing with long term demand 'squeezing'

As we flagged earlier, we do believe the report effectively invites UUA to address the question of how its proposal fits in with meeting long-term growth in Goldfields-Esperance demand. Figure 3.2 presents a strange world in which strong growth in demands becomes dead flat 30 years out. At this time, total demand is likely to be about 120ML/d, accepting for the moment the Water Corporation demand growth forecasts; while Kalgoorlie demand would be about 77ML/d.

In one sense, the issue might have been avoided if the 25-year planning period specified in the TOR had been followed. However, a sound analysis even then would have had to address questions of residual value, and this would lead naturally into the same set of issues. Residuals values would be very different depending on forward demand forecasts.

This 77ML/d peak in Kalgoorlie demand seems a curious coincidence, given the statement that Water Corporation has assumed that “the GAWS system can be incrementally extended without cost penalty up to a level of at least 77 ML/day”. What does this say about the risks of Water Corporation meeting a major squeeze, with a sharp jump in incremental costs, around this point?

We could imagine that the quote could effectively be out of context – with Water Corporation being asked to indicate if they could meet the proposed schedule, and the reply saying nothing about looming constraints. However, we have also heard (and discussed earlier) strong scepticism about the ability of the G&AWS to be pushed even to this point without encountering some serious and ‘lumpy’ constraints. We are not qualified to judge. We understand this issue is being examined more closely by UUA and believe it is a matter that ERA should take seriously. If there is uncertainty, then the earlier discussion of asymmetry in delivery risk is given added poignancy.

That said, it is also appropriate to look to augmentation strategy by UUA or from some other source of supply beyond the design capacity of the UUA system. We assume that there is scope for some on-going incremental expansion, analogous to Water Corporation’s position, and that a point would be reached where a ‘lumpy’ new investment by UUA would also be needed,

analogous to UUA's view of there being a limit to incremental expansion of the G&AWS.

The revised cost-benefit analyses, including the inferred incremental cost of G&AWS water of \$4.52/kL+, certainly suggest that a completely new supply facility, such as that proposed by UUA, is competitive against incremental expansion of the G&AWS. So maybe, and probably, the same would be true 30 years out? The only complication is that the current competitiveness is predicated on the immediate 'foundation customer' demand, with established demand of 33ML/day, that Kalgoorlie brings – the supply to this source would be replaced and this helps secure the economics of the UUA scheme. Were UUA to look to meeting only the growth in demand, we assume the project would be less attractive.

However, for reasons flagged earlier, Kalgoorlie demand rising at 3% would probably only arise as a result of strong growth in industrial activity. The combination of these growing opportunities may well support the competitive introduction of extra capacity.

Furthermore, we would be amazed if expansion of the UUA scheme could not be more than competitive with expansion of the G&AWS, given the high incremental costs implicit in the draft report.

14 Wider economic and regional effects

While accepting that a narrow cost-benefit analysis is possible (provided that the above issues are correctly addressed), the reality is that there are wider considerations of interest, including regional development and employment.

The fifth of the terms of reference refers specifically to the requirement to assess “the potential to enhance regional economic development in Kalgoorlie-Boulder and the State generally.” Several of the above arguments, especially those relating to impacts on new gold and nickel production, suggest that even in its narrow terms the approach adopted has overlooked information highly pertinent to this item.

However, it is in the nature of the proposed project that it will involve a high level of local sourcing, from the perspectives of both Esperance-Goldfields and WA. The finance would largely come from outside WA and if, as the ERA report suggests may be possible, the scheme does not detract from the State credit rating, then the effect may well be to transfer benefits into WA that are not picked up in a conventional cost-benefit analysis.

We have assembled an assessment of impacts on regional and State activity levels that suggests very big differences between progressive expansion of the G&AWS and the UUA project. Some coverage of these matters by ERA would have seemed to us prudent and appropriate, given the political and social pressures behind the review.

At the same time, and for reasons we have stressed in the past, most evaluation of regional development and activity impacts is not strictly part of a sound cost-benefit evaluation. In terms of the formal WA Government guidelines for project assessment, there is a clear distinction between the economic evaluation and the regional impact assessment.

ERA correctly allude to the fact that demand for growth in regional activity is likely to apply pressure elsewhere in the WA economy, and even within the regional economy. This would be particularly true if the current strong commodity market performance were to continue during the roll-out of your project and then into the new mining development after commissioning. There will be competition for labour and other resources and this will serve partially to offset the immediate impacts.

In general, the scheme seems highly likely to favour regional development, to some extent at the expense of development elsewhere. We suspect the nature of the project will favour a lot of that competition being in international capital markets and into other States of Australia – but not all of it. If the UUA project were able to be mounted without the impact on WA's credit implied by Water Corporation commitment to the G&AWS upgrade, the net effect on regional and state activity may well be even more strongly in WA's favour, because of the relaxation of a constraint on development.

You have requested a separate briefing on regional impacts and we will cover the issues in more detail there.