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Mr Simon Farnbach
Manager Projects
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Economic Regulation Authority
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Dear Simon,

Re: Comments on NERA draft of Procurement Structures

Purpose

As requested, I am writing to provide you with comments on the paper by NERA, reviewing bulk water procurement options within the context of your present inquiry into competition in the water sector. I have also had a useful meeting with Adrian Kemp of NERA – in which we explored the interactions between our separate items of work. My impression is that he would agree with much of what I have set out here.

My response has benefited from feedback from Sue Jaffer and Paul Breslin – which I sought given the obvious overlap with the work we are doing on size and scope economies and associated lessons from other sectors. The focus in our comments is on links with the work we have been doing on requirements for sound procurement that embodies options principles. In response to your specific request, we have also paid special attention to the arguments regarding the need for a central procurement planning process, if this approach is to be followed (NERA Option 1), to be clearly separated from Water Corporation.

Main reactions

The paper should certainly make a useful contribution to your Inquiry process. It provides a valuable collation of possibilities and perspectives in relation to some aspects of procurement, and has clearly benefited from NERA's experience in the electricity sector. It provides a critique of important aspects of the Water Corporation proposal – which, with very significant modifications, emerges as NERA's preferred way forward. The reasoning in the paper of justifying those modifications is important, and parallels similar arguments we developed in relation to supply planning for SE Queensland – but where the problem started at the opposite end, with a regionally fractured resource planning process.

Dispatch vs new sources

I am not entirely clear as to the scope of work agreed with NERA. The emphasis in the paper is more strongly directed at *water dispatch procurement* than at new source procurement, *per se*. This is evidenced in the emphasis on securing supplies on a rolling 5-year forward basis, when major new source development has traditionally involved longer lead times than 5 years and when high capital source procurement investments are likely to require justification over substantially longer time periods.

Our work to date on procurement has been directed mainly at source/capacity procurement. Viewing the primary problem as one of securing access to cost effective service flow over time, each is part of a larger problem and the different perspectives are likely to be complementary. As we reviewed in our Discussion Paper on Procurement Issues, it is feasible to think in terms of a dispatch only procurement process (as in the NEM) that happens to post incentives for investment in new sources, but we have serious reservations about its early application to water.

Water vs security of water

The differences would not be that great were it not for the important distinction, somewhat underplayed in our opinion in the report, between procurement of water to satisfy short- to medium-term demand expectations (the main emphasis in the report) and the need to procure *security of supply services* within a setting where forward availability from existing sources, and to a lesser extent forward demands, are highly uncertain. Here the implications of uncertainty regarding the structural form of forward hydrology – mainly due to climate change uncertainty, exacerbated by the relatively short time series of experience with highly volatile hydrology even before factoring in structural shifts – assumes a key role, that we emphasised in our paper.

This issue is not ignored in the paper – and the second version, following my meeting with NERA, is certainly more systematic in recognising a risk dimension to the problem. However, I believe the crucial role of security is still understated – and the crucial implications of *forward structural uncertainty* in climate change for the commercial incentives to invest in order to participate in a short- to medium-term dispatch market are not developed. The situation here – in terms of the distribution of time till capacity is needed to meet supply – is very different from the electricity market. I believe that to grapple with this issue properly, an options framework is needed. The NERA paper acknowledges our discussion of the framework – and I have discussed my thinking with Adrian, I believe with general endorsement – but the paper has not really integrated this reasoning.

I believe there are major implications for the workings of NERA's Option 2 – and significant implications for Option 1 – if the potentially large benefits offered by the options approach are not to be designed out of the system. Aspects of these concerns were addressed in our Discussion Paper on Procurement Issues – and we are probing them in more detail in some of the additional work you have requested.

Bias in price signals

The paper sensibly sets out two broad classes of procurement frameworks – with one much more centralised and system- vs project-oriented than the other. Option 2 posits a price mechanism and a willingness to acquire all water offered at that price. This does (potentially and probably) cut across

important points made in our discussion paper, in which I argue that great care is needed in developing cost measures that are sensibly comparable across different sources.

These matters may not be huge where the focus is on least cost dispatch, to a specified requirement, *from within existing capacity*. However, even here it is important to recognise that drawing down some sources entails different system opportunity costs than does drawing down others. The situation is analogous to the use of hydro power vs thermal power in the electricity market – the former entails a non-zero risk that future generation capacity will prove to have been reduced, while in general the latter does not. As long as these risks are seen clearly by the bidders, with full risk-weighted system costs being attributed to the bidder, the market should still be able to operate soundly – as can hydro bidders. I suspect that substantial care will be needed to achieve this alignment of incentives but it could well be doable.

I do believe the problem gets a lot harder in relation to new source development. As I have shown, ranking projects based on project levelised cost can be very badly wrong in the pointers to preference – projects can easily involve bias factors of 2 or 3 and, in some circumstances, much more. If the price applies only a few years out, how do we factor in the system option value delivered by different approaches to providing the water? I believe that gradual movement in the direction of Option 2 should be possible over time, but it will require a more complex decision rule than a single price if serious distortions are to be avoided.

The rule will almost certainly need to be multivariate in nature, to capture expected price, risk and option value adequately. We have developed (for Sydney and now being applied in Melbourne) some portfolio optimisation models, for the selection and timing of multiple projects for least system cost subject to constraints, which have such a rule implicit in their structure. Section 9 of our Discussion Paper, particularly its case study, is also relevant in showing the way complex interactions between cost, risk and capacity can be brought together within a coherent options setting – but with a very different value estimate from that normally considered.

Dual capacity and supply contracts

I believe that Option 1 could probably be modified to work more easily and hence much earlier, and that is the direction my thinking has been heading – as was flagged in our Discussion Paper and as we are now developing in more detail. NERA note that it would be possible for the procurement body to contract for *either* capacity or dispatch – and go on to focus on dispatch. I strongly suspect that it will be necessary for the body to *contract for both*, and ideally to do so using an options paradigm that limits incentives for unnecessary or too early investment, but that secures system supply capacity ahead of actual demand.

It would probably require consideration of something analogous to the capacity payment mechanism used in the WA electricity market (as is discussed in Section 8 of our Discussion paper), and in a number of US markets – as opposed to the high VoLL mechanism used in the NEM. It would need to have access to quite sophisticated portfolio options modelling ability – paralleling and extending the type of portfolio modelling we have done for packages of capacity measures, inclusive of readiness options.

I do not want to sound like a scratched record, but I cannot see how this challenge for water procurement in WA can be soundly approached other than through a *portfolio option value framework*. It may look like it is adding to complexity – but it is only reflecting the real complexity, *inherent in the*

problem, not just in the solution. Sticking with the current arrangements does not obviate the reality of this complexity either.

Least cost capacity procurement

Note that electricity capacity payments are almost always (and in WA) pitched around the *least capital cost form of entry to the market* – open cycle gas turbine (peaking). Anyone wishing to compete for the delivery of capacity services with a higher capital cost (lower operating cost) strategy will need to take on an exposure, hedged by the lower operating cost and therefore scope for recovering more of the capital cost through actual dispatch. In power, system volatility is typically such that a generation asset must be physically present at the time a peak starts to emerge to be of any use. The same is not true of water – where desalination, recycling and pipeline connection to currently sperate systems may all be feasible within the timeline of a developing major drought.

Under the options paradigm for water, the least (expected) capital cost way of ensuring capacity might well be a readiness option or package of readiness options and triggering rules (virtual desalination, planned but not implemented network connection to an isolated irrigation source, *demand-side readiness options* etc).

Such an option package may envisage the *possibility of a high capital cost investment*, while still presenting a *low expected capital cost* strategy by maximising flexibility and deferring commitment – along the lines suggested in our discussion paper and in earlier work. Indeed, as we discuss there, it may make sense to plan for a larger than otherwise project, with higher nominal cost, because of the scope this may offer for even greater deferral. Technically, this approach would deal with costs broader than up-front capital costs – for example, planning for intermittent operation of desalination is a real options strategy driven by the scope for avoiding some operating costs – but the concept is closely analogous to the electricity model.

The economics of these readiness options could well underpin a well-defined and justifiable *price for contracting for capacity* ahead of firm need for dispatch. With onset of drought and/or growth in underlying demand, the need may emerges to cover capacity in an increasingly near-term – the lead times of the readiness options might well become too long, bringing in the need to *contract via commitment to an actual project*. This would probably take the form of triggering (exercising) the readiness option – and in fact could provide a sound framework for defining the trigger point as part of the procurement planning process – in which commitment is made to a planned readiness strategy in line with a predetermined algorithm (which would be subject to regular review).

Maximum duration of contracts

As in the NERA proposals, the electricity dispatch market rarely operates more than 5 years out – but the capital payments, where there are separate contracts, can and do operate for longer. A *quid pro quo* for the central process being willing to contract for capacity has been a lower price cap, reflecting the margin on dispatch that can be achieved as supply capability becomes threatened. The WA electricity market has, I believe, a price cap of $150/MWh, compared to $10,000 in the NEM, where capacity payments are not made. NEMMCO does contract for reserve capacity, but this concept is probably less relevant to water.

I also feel there is a strong analogy to be made between water procurement needs and the problem faced by proponents of a gas-fired power station seeking to ensure adequate access to gas and

maximum flexibility of access, at least cost, to support a natural hedge for the positions such a plant wants to take in selling security services – and for the exposure it naturally takes on in committing to build. The solution involves a sophisticated portfolio procurement strategy, with a mix of levels of flexibility and contract duration to deliver a satisfactory portfolio outcome. The problem and process for converging on such a market outcome has a lot in common with the problem faced by a water agency responsible for forward system procurement. This process is rather different from the electricity market approach relied on so heavily in the NERA draft.

Demand-side readiness & user pricing

Note that readiness options do logically include demand-side as well as supply-side options. This possibility is recognised by NERA, and is to an extent implicit in the discussion of trading – though only in terms of redirection of limited water to highest value consumptive uses. Demand side readiness strategies would include diversion of consumptive to non-consumptive uses as a device for deferring the need for capacity procurement. While recognising the strong political considerations that arise, we note again (as in Section 9 of our discussion paper) that willingness to consider reflecting some of the system cost of water consumption into prices would dramatically expand the scope for engaging with competitive markets in providing for a more cost-effective form of *supply-demand balance procurement*.

Does procurement need to be separated from Water Corporation?

You asked that I give particular attention to the discussion in the NERA paper that argues for the central procurement function, under Option 1, being fully separated from Water Corporation.

As you indicate, Water Corporation does face incentives to lower its costs. It of course does not have incentives to minimise these – but rather to ensure that they are only incurred if they are necessary to meet responsibilities or can be justified on the basis of payment of an adequate return.

Conflict of interest?

NERA argue that a conflict arises for Water Corporation in choosing whether to dispatch their own sources or new sources –presumably giving rise to possible bias in decisions on which sources to procure when. Indeed, NERA sees an "inherent conflict of interest between the financial benefit to it of relying more heavily on existing water sources, and the competitive threat that arises from inviting and accepting proposed alternative supply sources."

Bias?

NERA also see a likelihood of bias in the discovery process for better procurement options, as a result of the signals posted by the Water Corporation pre-qualification and preferred option strategies – presumably they would see this as being linked to the conflict of interest argument.

It is certainly appropriate to recognise that Water Corporation has great expertise that is relevant to procurement planning and to the understanding of system operations, and interactions between capacity and operations. It is hard to imagine an efficient procurement strategy emerging without strong Water Corporation involvement in assessing the alternatives – as long as Water Corporation remains the system operator. Also, there would have to be substantial overlap between the modelling capabilities for a central procurement process and those for system operation – both size economies and the benefits of consistency of approach and key assumptions would seem to favour close

interaction. There may well be some scope economies in these modelling and planning functions, so that decisions on whether to separate or not could involve an explicit cost trade-off, even if there is some bias.

Is there a necessary conflict of interest?

In asking us to explore these issues, you clearly envisage a regulatory arrangement that will not 'disadvantage' Water Corporation for rational system changes. Some care is needed here, and much rests on what might be seen within Water Corporation as disadvantage and whether that entails considerations beyond satisfying regulator needs. For example, would a strategy that sacrifices throughput and revenues, even if it is still able to deliver an adequate return on the regulatory asset base, be seen as not entailing disadvantage within the Water Corporation corporate culture? Would there be neutrality in choosing between high capital/low operating cost augmentations and low capital/high operating cost ones – even though the implications for Water Corporations dispatch into a competitive market may be quite different.

If we *assume* that Water Corporation truly is a *pure system cost minimising entity* – within the service delivery constraints imposed on it by license conditions to meet approved standards of quality, reliability and security and compliance with environmental etc regulation – then there should be no inherent conflict. Sunk costs would be just that, and I am very much aware from past experience that Water Corporation knows how to account for and exploit sunk costs. If, given these sunk costs, a lower system cost strategy emerges that has a third party source being dispatched ahead of a Water Corporation source, then so be it. Water Corporation, viewed as an impersonal entity, should in principal be capable of being economically neutral across all potential sources of supply and market-based demand management – provided that it can account for its performance in these system cost terms. In considering supply sourcing alternatives, it should be happy to consider these neutrally, even taking into account that different forms of new capacity will have different profiles of likely forward dispatch for a given level of contribution to system security and reliability.

Under these assumptions, it should *in theory* be possible for Water Corporation to manage the joint procurement and operation function, as you indicate. This clearly requires both the regulatory function and Water Corporation to handle sunk costs soundly – which, as you suggest, is likely to mean keeping in the regulatory asset base any investments that made sense at the time they were committed. It is also likely to mean that Water Corporation would need to be regulated to ensure that it gets no 'reward' (or perceived reward) for additional dispatch – ie the returns on being dispatched are just the economic cost of that dispatch. This will typically involve both the marginal costs of operation and the loss (if any) of forward option value from lowering reserves – but no contribution to 'profit' or measure of performance against which Water Corporation will be judged or held to account by the Government.

I suspect that this outcome will prove relatively hard to achieve on a consistent basis in a world in which the flexibility to price water on the basis of system opportunity costs (broadly reflective of system marginal cost of usage, SMCU, as we discussed in Section 9 of our Discussion Paper) does not exist. While I might hold out some hope for movement towards a pricing regime that incorporates some elements of SMCU alongside other requirements of the pricing regime, I cannot see it defining the price for many years to come. Without this, and especially in a world where volumetric prices are reflective of something approximating LRMC, I see scope for perverse incentives or the need for some fairly sophisticated tightening of the regulatory regime.

I would also note that the more that emphasis is given to the distinction between supply and supply security (something we consider to be pretty important), the more complex will be the choices if Water Corporation feels any conflict.

Is Water Corporation a cost minimiser?

It should certainly be possible to specify Water Corporation responsibilities and the regulatory framework in a way that is clearly designed to target minimisation of system costs, subject to satisfactory service standards, including risk management. It does not follow that this will drive behaviour.

In the wider commercial world, shareholders typically expect their firms to be profit maximisers (subject to adequate risk management), but there is a literature dating from the 1930s explaining why profit maximisation objectives do not adequately explain a firm's behaviour. The fact is that in some sectors, revenue maximisation sometimes explain behaviour more closely than profit maximisation – because in large corporate operations, it is often easier to reward and motivate based on turnover. Salaries from those of the CEO down through management are often assessed with reference to size of operations. In any case, there is a long recognised trade-off involved in setting remuneration levels where the increase in salaries is nominally a deduction from profits. Similar conflicts are typical in areas such as standards of office fit outs, calibre of cars, quality of travel entitlements etc. Furthermore, revenue targets are often easier to set and monitor within areas of a large firm than are profit contributions.

More generally, the processes that strike a balance between management, employee and owner rewards and risk allocations are complex, but in a large, multi-output firm, especially where substantial areas of the firms operations have monopoly elements or significant limitations on the scope for effective competition, there tends to be substantial flexibility. For commercial firms, we see behaviour models taking forms such as maximising management rewards, subject to at least holding profit levels, or at least matching an index etc.

I am not proposing that Water Corporation is more prone to these factors than many other firms. However, the fact that it would be coming out of a vertically integrated monopoly history may suggest an internal culture that could predispose it to protecting its 'turnover' etc – despite the formal structure of the regulatory arrangements and including in areas where it is no longer a monopoly.

These considerations would seem to at least urge caution.

Experience with ring fencing in rail, electricity and gas

Attempts to ring fence provision of access to rail infrastructure have been common in rail. The trade-off between the benefits of downstream competition (in the provision of rail freight services) versus the loss of economies of scope between above rail and below rail operations has been seen as difficult since economies of scope are significant – particularly for thinly trafficked regional railways where vertical separation may preclude the ability to price rail freight efficiently.

Given the natural monopoly characteristics of rail infrastructure provision, and the perceived benefits of downstream competition, rail access regimes have been instituted in virtually all Australian jurisdictions[1]. Where the rail infrastructure provider is vertically integrated with rail freight service

[1] The exception being Tasmania.

providers, ring fencing arrangements have been instituted to ensure a level playing-field for the contestable part of the supply chain.

However it is acknowledged that attempts to ring fence access services through accounting separation (combined with strict requirements on information provision and confidentiality) have not been particularly successful in rail[2]. Jurisdictions with a vertically integrated rail structure have invariably seen much more limited new entry than those jurisdictions that separated rail infrastructure from rail freight service provision.

The ACCC has suggested that the problem is that "behavioural approaches" (which include accounting separation) fail to modify the incentives facing the (integrated) firm to act in anti-competitive ways. Thus:

> *The regulator is constantly battling against the incentive on the regulated firm to find new ways to discriminate against its rival (in price, delay, quality, information and so on)[3].*

As an example, we observe that Pilbara mining companies have vigorously contested applications for access to their Pilbara rail lines. Access has been sought on several occasions in order to allow rival mining operations to develop mine sites that they own but which have no rail access to the ports. Sharing the rail infrastructure would reduce total cost to the incumbent as they bear the full cost of the rail operations and there is sufficient spare capacity on the lines (and/or the access seeker is willing to contribute to additional capacity). Despite this access has been resisted fiercely, including appeal to the Australian Competition Tribunal, which suggests that prevention of competitive entry was an over-riding consideration.

In the electricity and gas sectors ring fencing of a competitive element from a natural monopoly network in order to facilitate open access to the network is widely seen as a second best solution. Full retail competition for gas has not been successful in areas where the gas distribution network and retailer are the same firm, despite ring fencing requirements. Similarly, in electricity, and particularly in those areas where government owned corporations are providing a retail and distribution service, retail competition from third parties has not been significant. Following the full separation and sale of the retailer, however, (as has recently occurred in Queensland) the prospects for retail competition have increased considerably with a number of new retailers entering the market.

On this subject the Hilmer Report, by the Independent Committee of Inquiry (August 1993) stated that separation in electricity should go beyond ring-fencing. The report noted that

> "The Committee strongly supports structural reforms over more intensive conduct regulation. Where the natural monopoly element is vertically integrated with the potentially competitive activity, the Committee considers there should be a presumption in favour of full structural separation, leaving those who support some lesser reform to establish why this is in the long term public interest."

In August 2004, Frontier Economics prepared a report for the ACCC (Assessing Generation – Transmission Mergers in the NEM). The report argued that experience from overseas jurisdictions suggests that tighter ring fencing in the absence of structural separation has only a limited impact on curbing the exercise of market power.

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[2] See for example Luke Woodward, 2003, "Structural separation, market power and open access in rail", Speech at the ACCC regulation conference, p11

[3] Darryl Biggar ACCC, July 2003, Vertical separation in utility industries, Speech to the ACCC Regulation Conference.

In a submission to the Economic Regulation Authority in WA, Worsley Alumina commented on the draft determination regarding segregation/ring fencing arrangements for WestNet Rail. Worsley's view is that ring fencing is a second best solution and that perceived inadequacy of ring-fencing is seen as a barrier to entry for potential competitors in the competitive segments of the electricity industry. As an example, they point out that WA electricity industry ring fencing has not been adequate as implicitly recognized by the Electricity Reform Taskforce's vertical disaggregation of Western Power.

Perceptions

I presume it will come as no surprise to ERA or Water Corporation to learn that we have detected a sharp difference in perceptions of how Water Corporation operates between the stated positions of Water Corporation and those of many other stakeholders we have talked to in WA. We detect a strong sense in some quarters – including amongst, but not restricted to, potential providers of water to the system – that Water Corporation behaves in part to protect its monopoly. More generally, there is considerable suspicion, in some agencies as well as amongst commercial providers, as to Water Corporation behavioural drivers, and concern that information asymmetry limits ability to compete.

I would note that such perceptions need not be driven by a deliberate agenda to depart from system cost minimisation – they could instead emerge naturally in a complex system out of a culture that evolved in a vertically integrated monopoly provider setting. This experience will tend to favour strategies that favour command structure solutions – because monopolies do make such structures relatively more 'efficient' and lower in risk. This is simply a case of favouring strategies in which you have experience, and expertise that might in fact offer an 'edge'. Based on first principles, a predominantly engineering culture would similarly be likely to perceive and favour engineering solutions where other market solutions might be better but might also not play as well to the existing composition of the firm's workforce.

Whether the perceptions have a basis in fact or not, these perceptions could influence the behaviour of potential bidders into the market for source procurement. NERA recognises that the Water Corporation preferred option may be seen as having attraction by virtue of the Water Corporation preference – and I see some merit in that argument. It could stifle some innovation by others – but on the other hand it would seem important to draw on the innovation offered by Water Corporation.

In balance

There is certain to be a trade-off involved here. The more that the procurement planning process can tap into Water Corporation expertise and modelling while retaining independence in its ability to prove alternatives views and approaches, the weaker the trade-off is likely to be.

It is not possible, I believe, to mount a single killer argument to say that separation is better than non-separation. However, if coupled with careful design to build the linkages into Water Corporation expertise, a separated system looks likely to be preferable on a weight of evidence basis.

I hope that these comments are helpful. You are grappling with a set of issues that have not been well worked through in a water setting up to this point. They are complex and you are doing it with one of the more complex supply systems around. We are proceeding with work on deeper aspects of

the integration of our options approach into an institutional framework that can be practical and useful and I look forward to discussing that material with you. In the meantime, if you would like to discuss any aspect of this letter with me, I would be happy to talk.

Regards.

Yours sincerely

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