1 June 2011

Urban Water Inquiry
Productivity Commission
LB 2 Collins Street East
MELBOURNE VIC 3165

Dear Sir/Madam

Please find attached a submission by the Water Corporation to the Productivity Commission's inquiry into microeconomic reform in Australia's Urban Water Sector in response to your draft report.

This submission is a supplement to that made by the Water Corporation in January 2011, and is intended to complement the more wide ranging submission made by Water Services Association of Australia with issues specific to Western Australia.

Yours faithfully

Sue Murphy
CHIEF EXECUTIVE OFFICER

Att

WATER CORPORATION

Introduction

The objective of this submission is to provide additional input on three issues included in the Productivity Commission's *Australia's Urban Water Sector – Draft Report.* The issues are:

1. The additional cost associated with proceeding with the Southern Seawater Desalination Plant (SSDP) rather than the South West Yarragadee aquifer option.

   The additional cost was known and taken into account by the Government at the time the decision was made to proceed with the SSDP. The additional costs reflect the Government's assessment of the social and environmental value of the water. They are not an example of the potential benefit of using real options analysis.

2. The cost of demand side and water conservation programs.

   While there are some examples of water efficiency and recycling projects with high unit costs, water efficiency and recycling can be an efficient and cost effective means of meeting part of the community's water supply requirements.

3. Structural models that involve separate control of water sources from control of the distribution system.

   Care should be taken in advocating structural models that separate control of water sources from the distribution system. An examination of Perth's Integrated Water Supply Scheme (IWSS) demonstrates that:

   - source augmentation costs are dominated by the cost of integration into the scheme, not the water sources themselves.

   - each source has a different contribution to overall scheme capacity that is different to its nominal stand alone capacity. This is particularly so for Perth due to the link between dam storage levels and ground water abstraction.

   - some potential new sources, such as aquifer recharge, rely on existing groundwater extraction infrastructure, and therefore need to be developed in conjunction with existing sources.

South West Yarragadee Borefield

The Productivity Commission has used the Carpenter Government's 2007 decision to develop the SSDP rather than the South West Yarragadee aquifer as an example of the potential benefits of taking a real options approach, and suggests an additional cost of $421 to $557 million for developing the SSDP over a 20 year period (Draft Report page 125).

To be clear, the following analysis is not intended as a criticism of the real options approach. However, as described in more detail below, there is a real option value for the SSDP that is in addition to the nominal annual yield. The simple additional cost over the South West Yarragadee aquifer should not be used as an example of the potential benefits of utilising a real options approach. Additionally, the estimate of the additional cost from the Commission's model appears high, and may suggest the need for further calibration adjustments.

The SSDP has a greater real option value than the South West Yarragadee aquifer in three ways:

- it is expandable from 50GL to 100GL;
- it can be operated above the nameplate capacity without additional environmental impact; and
- the yield is certain and not subject to future revision.

These factors should at least partially offset the additional cost of developing the SSDP, suggesting a lower real options cost differential than the actual additional cost.

The additional cost of the 2007 decision over the 20 year period used in the Commission's model, run as a base load, can be calculated as follows:

SSDP for 50GL	$955 million
Proportional SSDP cost for 45GL	$860 million ($955 million x 90%)
SW Yarragadee for 45GL	$729 million
Additional Capital Cost	$131 million ($860 million - $729 million)
Additional Operating Cost	$20 million per annum
	= $229 million (Present Value @ 6%, 20 years)
Total	$360 million ($131 million + $229 million)
	= $31 million per annum = 10c/kL over 320GL total demand = 2% increase (average residential customer).

Both sources are base load options and would be operated at full capacity. As the SSDP has a greater option value, it should have a real option based differential that is less than the absolute cost differential. It therefore appears that the Commission's assessment of $421 to $557 million significantly overstates the real additional costs.

The comparison of costs could be used to question how the social and environmental values of source augmentation should be valued (i.e. is the

additional cost justified?).The additional cost of developing the SSDP was clearly known when the decision was made by the Carpenter Government to proceed and reflects their valuation of the social and environmental values.

This should draw the Commission's attention to the need to identify a method to value social and environmental benefits in source decisions. The problem is that if the Government is not going to address these values, the Commission needs to identify an alternative method of valuation. This requirement is in addition to applying a real options methodology. These values cannot be simply ignored in favour of the cheapest option.

Water Efficiency and Recycling

While there are some examples from around Australia of water efficiency and recycling projects with high unit costs, water efficiency and recycling can be an efficient and cost effective means of meeting part of the community's water supply requirements.

The Water Corporation has set long-term targets to reduce per capital water consumption by 15% and increase recycling to 30%. These targets have been set after consideration of what opportunities may be available, and how the relative cost of these opportunities compared to source development. They are not targets that will be pursued at any cost.

The table below provides the indicative costs of the Water Corporation's water efficiency program in country regions. The cost per kilolitre are all well below the alternative of source augmentation, and can be delivered in a shorter timeframe. It should be noted that the cost of augmentation varies considerably in country locations and can be substantially higher than for major cities. As a result, some projects will be economically justified in some locations and not in others.

Country Water Efficiency Program

Integrated Water Efficiency project	Water savings (GL/yr)	Cost / kL	Total project cost
West Pilbara	1.3	$1.08	$8.1M
East Pilbara	1.1	$0.67	$3.1M
Kimberley	0.5	$1.61	$3.7M
Great Southern	0.7	$2.86	$8.1M
Goldfields	1.1	$0.38	$4.3M
Total	**4.7**		**$27.3M**

None of the initiatives involve the compulsory participation of customers. However, it is unlikely that a large proportion of customers would adopt the efficiency measures if they were not made available to them as part of a program, as there are considerable economies of scale (i.e. reduced individual effort) in the collective provision of these programs.

The ability to reduce demand in the short-term, whether through the implementation of efficiency programs or restrictions, provides a risk response that

can result in a significant increase in the average yield of climate dependent sources, and therefore has a value greater than the long-run marginal cost. Significant capital expenditure can be deferred (i.e. storages can be run lower before augmentation, less reserve capacity is required in desalination plants) leading to lower customer prices.

The Commission should recognise that there is a role for water efficiency and recycling programs in meeting the community's water requirements. The cost effectiveness of these programs need to be assessed relative to the alternative of expanding source capacity, and that individuals are unlikely to fully adopt cost effective water efficiency measures unless much of the individual effort is removed.

Structure - Integration of source and distribution management

The Water Corporation agrees with the Commission's assessment that the retail/distribution entities are the most appropriate organisations to procure new water supplies and services as they:

- are best placed to understand the preferences of urban water consumers;
- are in a position to facilitate contestability and competition for new water supplies and services from potential service providers; and
- have the incentives to, and are best placed to, manage the commercial risks of procurement, particularly those associated with long-term supply and service contracts.

However, the Commission makes this recommendation on the basis that source ownership should be divested to make it clear that the client is not also a competitor. This view requires the assumption that a private sector source proponent would be seeking to develop a source to sell water in competition with existing sources.

In reality, in a system such as Perth's Integrated Water Supply Scheme (IWSS), source proponents would be seeking the right to construct the next source, with a contract with the water utility to recover their costs. This is not a situation of competition with existing sources, and the utility as the owner of the existing sources is in no way in competition with the next source.

The assumption that separation is desirable should be given further practical consideration. An analysis of the IWSS will show that sources cannot be viewed as being separate and in competition with each other. The yield of each source is subject to:

- the interrelationship of dam and groundwater capacity;
- the capacity of the distribution system; and
- the schemes overall optimal source operating strategy.

For example, each source is related as follows:

- Ground water abstraction is dependent on the volume stored in dams (lower dam levels result in greater groundwater production);

- Desalination production results in higher levels of dam storage, and therefore reduced groundwater abstraction, lowering average groundwater draw;

- A managed aquifer recharge source would result in greater groundwater availability which could allow greater groundwater production (resulting in more water in dams) or greater groundwater storage (allowing more groundwater production in future years);

- Average groundwater draws are the long-term driver for source augmentation;

- Dam storage levels are the indicator of security of supply and the short-term driver for source augmentation.

Additionally, some sources have a higher or lower value to the system than their nominal annual capacity. Climate dependent sources have a significantly lower contribution to system security as their capacity is not available precisely when additional capacity is required (they are the source of the supply security problem), but their storage capacity can be of significant additional system value.

Distribution assets now dominate the cost of new sources. Of the cost of augmenting the SSDP from 50GL to 100GL per annum, two thirds of the ultimate cost is for upgrading distribution infrastructure. Without this expenditure on integration, the desalination plant would only be able to produce limited volumes of water unless there are low inflows into the southern dams. While consideration is currently being given to developing the additional capacity as an insurance against the need for total sprinkler bans if there is failure of rainfall in the southern catchments, the ultimate contribution to scheme capacity depends on significant additional investment in distribution assets.

The point about separation of sources and competition is not about ownership but control. Private ownership of the existing desalination plants could be achieved through their sale, but both the Corporation and the new owners would require contracts that left the Corporation in control of the volume produced to allow the production to be distributed and scheme to be operated optimally, and to protect the new owner's returns with any variations in production required by the operating strategy. Pushing demand risk onto the private owners would force them to take an unmanageable risk, increase their required rate of return and therefore prices to customers. With the Corporation retaining control of water production and distribution, separate ownership would have no practical effect on competition.

There is also a considerable cost in creating separate entities. As outlined in the Water Corporation's last submission, there are costs of disaggregated structures that go beyond the cost of establishing additional management structures. Proponents of the benefits of separate structures need to show that they remove real constraints on competition. To date, the structural proposals appear to be about removing a general perception of constraints held by non-participants in the process.

Conclusion

The Water Corporation supports the concept of real options analysis of source augmentation, and recognises the benefits that this approach can bring with the uncertainty that is inherent in decisions to expand climate dependent systems.

The example the Commission uses of the benefit of this approach, by comparing the cost of the SSDP to the South West Yarragadee, appears to go against expectations. The additional option value associated with the SSDP does not appear to have been recognised as a benefit. If this is not the case, the Commission may wish to separately identify the assessment of these benefits in the final report.

Additionally, some explicit valuation is required of the relative social and environmental costs and benefits of each source. A simple lowest expected financial cost real options approach, without incorporating these values, may not result in the best overall outcome.

Some demand management and recycling projects have been criticised in the Commission's draft report as having high unit costs relative to other options such as source augmentation. While the Corporation acknowledges that there is an issue of discouraging uneconomic projects, the Corporation's programs and targets are based on the cost effective and timely response to the provision of overall water services, including reference to the cost of source augmentation. The Commission should make it clear that water efficiency and recycling have a significant role in meeting the community's water services requirements.

With respect to the alternative structural models proposed in the draft report, the Water Corporation acknowledges that the Commission has only recommended their adoption if the costs of implementation exceed the benefits. However, in proposing the alternative models, the Commission appears to have based their options on the common assumption that it will be possible to have privately owned sources competing with each other to meet current water demands. The Water Corporation's experience with the IWSS, which includes the integration of multiple sources with varying supply characteristics, suggests that this is likely to be an unrealistic assumption.

All new sources are dependent on the distribution system to realise their potential contribution to capacity, and some new sources, such as aquifer recharge, are dependent on existing source assets to deliver their output.

In these circumstances, competition is only likely to occur for the right to build and own the next source. To ensure optimal scheme operation, the new source would then be operated in conjunction, not competition, with the existing sources and the distribution system capacity. Without the prospect of competition, there would be no offsetting benefit to the additional cost and interface issues that would result from structural separation.
