Paying for the Victorian desalination plant: *A case study in regulatory ambiguity*

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The Essential Services Commission is Victoria's economic regulator. The Commission regulates prices in the Victorian water industry. It is also responsible for establishing various codes and service standards as well as monitoring, and publicly reporting on, each business's performance. In June, the Commission approved multi-year price paths for the nineteen Victorian water businesses. In this Paper, Dr Ben-David recounts the challenges posed by the recovery of costs for the Victorian desalination plant. He reflects on the different perspectives taken by Melbourne Water, customers and the regulator. Dr Ben-David concludes that the Commission will need to address the regulatory ambiguity encountered during the recent price review before the issue is revisited in 2016.

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* The opinions expressed in this presentation are those of the author alone. They do not represent the views of the Essential Services Commission, its staff or the Victorian Government. The author takes full responsibility for any errors, omissions or conjectures made herein.

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Introduction

By any account, 2006 was not the most exceptional year in history. No empires collapsed. There were no memorable assassinations. We were spared political scandals of any note. It was the year, however, that Twitter was launched and Pluto was demoted from planet to planetoid. It was also the year that Cyclone Larry devastated a large swathe of the Queensland coast; and in 2006, Sir Nicholas Stern of Her Majesty's Treasury published his epochal report into the economic effects of climate change. I say "epochal" because until that time, climate change (or 'global warming', as it was then known) was viewed as a fringe, greenie issue. The Stern report changed all that. Seemingly overnight, climate change moved from the green stream to the main stream.

In my part of the world, Melbourne-Victoria-Southern Australia, the year 2006 was the year when it stopped raining. It was the year in which communities and governments started to realise that we were in the midst of a drought. In the Murray-Darling Basin, water allocations to irrigators dropped precipitously and planning began on ensuring critical human needs would continue to be met. In Melbourne, the level of our water storages became a topic of discussion with the nightly news and the print media providing daily updates.

For the 5 or 6 preceding years, Melbourne's water storage typically ranged between 50 and 60 per cent full. The normal cycle for these storages is to peak in November-December and then decline through summer, autumn and into winter. Then from June or July or August the storages begin replenishing with the so-called 'spring break'.

In January 2006, storages were a little under 60 per cent of capacity. This was a completely unremarkable start to the year. By June-July, storages had declined to 50 per cent. Again, there was nothing remarkable or disconcerting about those levels. What followed was very different. The 'spring break' never arrived and storages continued to decline. By December, they had dropped

below 40 per cent. Now, that level is not unprecedented; but alarm was growing on account that it had been breached in December when storages were usually peaking before the onset of the dry season. And with the onset of the summer of 2006-07, storage levels continued to fall. By May, they were breaching 30 per cent and tracking down. Alarm was now turning to fear. If the 'spring break' again failed to arrive, then what? Around the state, some towns had already run out of water; but they were small towns and water could be trucked in. But Melbourne? Could Melbourne really run out of water?[1]

As water storage levels began falling, water restrictions began to be imposed. As storage levels continued falling, restrictions were ratcheted more tightly every few months. At first, these restrictions were quite welcomed. Conserving water was seen not just as a matter of physical necessity, it had assumed an air of moral imperative. In many quarters, restrictions and water conservation were seen as a tangible manifestation of the community's greater duty to the environment. This responsibility, this moral obligation, became all the more urgent with, what seemed to be, the unfolding truth that our disappearing rain was the harbinger of climate change.

And *that* is a very important point.

Realisation that we were in the midst of what came to be known as the 'millennium drought' dawned just as community and political awareness of climate change was peaking. It was an environment in which many people began to believe it might never rain again (at least not in the way to which we had become accustomed). It was an environment of muted panic. Looking back, many people now forget how the print and televised media were

[1] As it turns out, the spring break did arrive in July of 2007, but only restoring storage levels to around 40 per cent. Levels then fell back to 30 per cent, despite harsh restrictions. The spring break of 2008 arrived late (in August-September) and was weak. Melbourne entered the summer months of early 2009 with storage levels at 35 per cent; steadily falling to about 26 per cent by June when a very anaemic spring break prevented any further decline in storage levels. It was only in October that levels began tracking back towards 40 per cent. Unlike earlier years, the dry months of early 2010 saw a comparatively small decline in storage levels. And, since June of 2010, when it started raining again, storage levels began a long term recovery — peaking at a little over 80 per cent by late 2012. (At the time of writing this paper, storage levels were hovering around 70 per cent.)

projecting into zeitgeist image-after-image of emptying reservoirs and a parched countryside. People forget the coalescence and confusion of messages about the drought and warnings about climate change. People forget the impact on community consciousness of the constant refrains about our obligation to use water responsibly. People forget that *The Age* newspaper was running a countdown clock: the number of days till Melbourne ran out of water; the number of days till doomsday.

This was the environment, in the early months of 2007, in which a recently returned Victorian Government decided to commission a desalination plant to secure Melbourne's water supply. Little could they have realised that in the months ahead, just as they were going to market to procure "the biggest desalination plant in the southern hemisphere" that a second, equally ferocious drought would hit. This second drought, however, had nothing to do with water. It was to be a financial drought — the so-called, 'global financial crisis'.

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The purpose of my presentation today, is not to recount the details of that decision. I will leave the writing of that history to others. Nor is my purpose to review the way in which that decision was made and executed. Again, I will leave such assessments to others. Irrespective of those decisions, my purpose is to explore how the cost of the desalination plant might be recovered through consumer prices.

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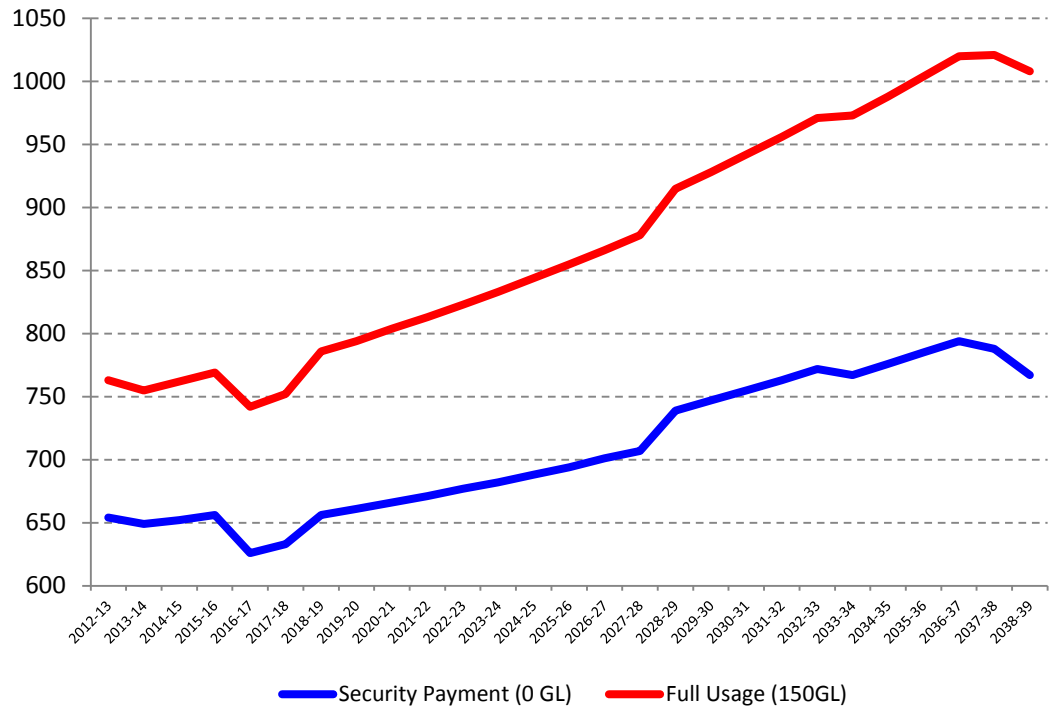
Now, picture the circumstances in which the procurement of the desalination plant was taking place. We had a buyer who had no water; and we had a seller who had no money. We had a buyer who had no water but had access to cash; and we had a seller who had no money but had access to water. It sounds like a perfect match.

The State proceeded to procure the desalination plant through a public-private partnership (PPP) arrangement whereby the plant would be privately financed, built and operated. The buyer and seller consummated the deal over many months of negotiations with the result shown in Figure 1.

Figure 1: Payments to desalination plant operator ($m nominal)



There are a few important features in Figure 1 that are worth noting.

The contract between the State and the provider is for 27 years and the contracted payment schedule for the desalination plant over that period is, broadly speaking, comprised of two elements. The 'security payment' represents that amount that must be paid to the operator irrespective of whether any water is ordered. In other contexts, this type of payment is known as an 'availability charge'. The security payment is shown by the blue line and increases from around $650 per year at the start of the contract to $800 million per year at the end of the concession period.

The second element of the payment arrangements is based on the amount of water to be ordered by the State and delivered by the provider. In April each year, the Minister for Water must indicate whether the State will require zero, 50, 75, 100, 125 or 150 GL in the following financial year. The red line in Figure 1 shows the total cost of ordering the plant's full potential output of 150 GL. In other words, the gap between the red and blue lines represents the 'usage charge' (or variable cost to the purchaser) associated with 150 GL of output.

As you might be able to see, for a full order of water, the contribution of the security payment declines more-or-less linearly from 86 per cent at the start of the contract, to 76 per cent at the end of the contract.

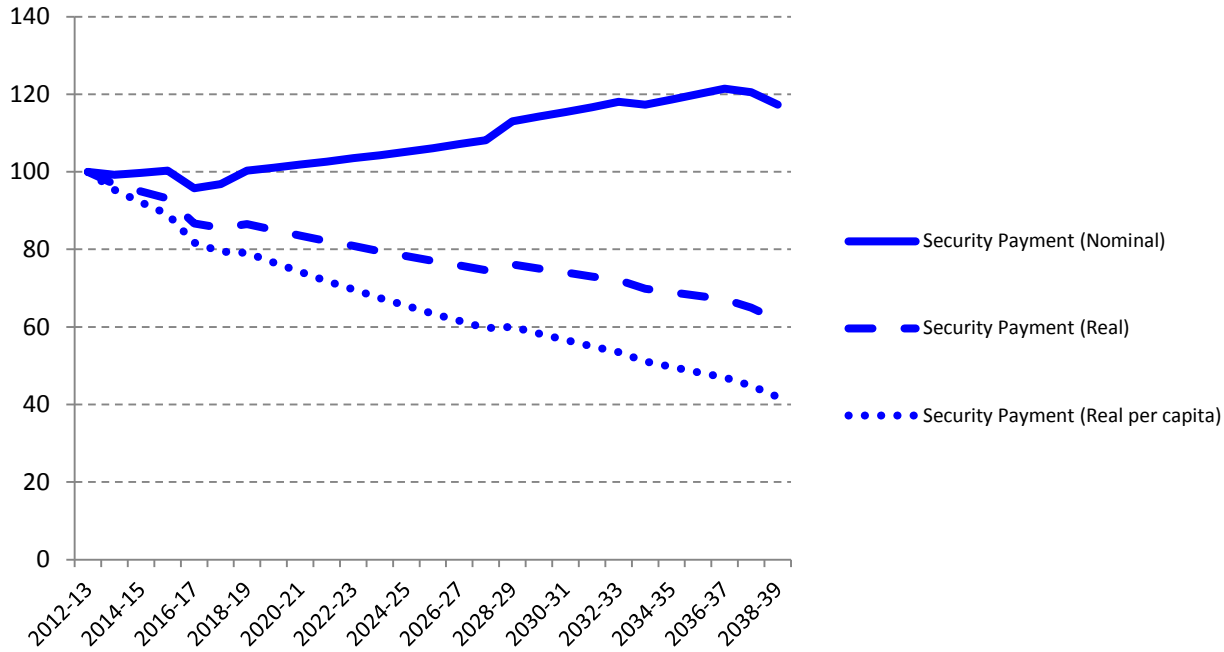
Another interesting aspect of the public-private partnership consummated betwixt the twin droughts, aqueous and financial, can be seen by removing the effects of inflation over the next 27 years. Figure 2 shows movements in the costs of the security payments in both nominal and real terms (and converted to an index with 2012-13 representing the base year).

The solid blue line in Figure 2 corresponds to the solid blue line in Figure 1 and shows that in nominal terms, the cost of the security payments increases by about 20 per cent over 27 years. In real terms, however, it declines by almost 40 per cent over that period. In other words, customers in the future are *collectively* contributing quite lot less than present customers to the 'fixed' cost of having a desalination plant.

Of course, during this time Melbourne can be expected to continue growing: meaning that, in the future, there will be more customers who can share the burden of paying for the desalination plant. The impact of customer growth is shown by the dotted line in Figure 2 which illustrates the change in cost per customer if we assume Melbourne's population will continue to grow by about 1.5 per cent per year. It shows that, under the contracted payment schedule,

customers in the future will *individually* contribute about 60 per cent less than present customers towards the desalination plant's security payments.

Figure 2: Security Payments shown as an index (2012-13 = 100) (Nominal, Real & Real per capita)



Do these findings suggest that present customers are being asked to contribute too much towards the cost of the desalination plant? I will return to this question shortly.

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None of what I have just described has anything to do with the regulator. The contractual agreements all rest between the State and the concessionaire. Indeed, even the water industry has not yet entered the story.

So let me very briefly explain the structure of the water industry in Melbourne.

Unlike Sydney, where there is a single vertically integrated supplier, our industry is disaggregated with a single provider of wholesale water and sewerage services (namely, Melbourne Water) and three geographically defined distributors-cum-retailers.[2] All are publicly owned state corporations with their own boards, management and staff, service delivery and reporting obligations.

Having entered into a contract with the privately owned operator of the desalination plant, the State then established parallel arrangements with Melbourne Water that place specific obligations on Melbourne Water in relation to the desalination plant. These are detailed in:

- a *Statement of Obligations* issued to Melbourne Water under the *Water Industry Act* (1994)
- the *Water Interface Agreement*, executed in March 2012, between the Minister for Water, Melbourne Water and the government department responsible for water policy
- the *Supplementary Agreement to the Water Interface Agreement* executed in July 2012.

Under these arrangements, the financial obligations of the Victorian Government in relation to the desalination plant are to be met by Melbourne Water. Specifically, Melbourne Water is required to:

- pay all monies payable by the Victorian Government to the private provider of the desalination plant (AquaSure),
- pay $320 million to the Victorian Government for the right to acquire the residual interest in the asset when it reverts to Government ownership at the end of the PPP term (that is, at the end of 27 years), and

[2] City West Water, South East Water and Yarra Valley Water.

- reimburse the department for ongoing project management costs that the department incurs in managing the contract on behalf of the Victorian Government over the period of the contract.

One important consequence of these arrangements is that Melbourne Water must recognise the desalination plant as a finance lease for statutory accounting purposes. The finance lease results in a liability of $4.3 billion[3] being recorded in Melbourne Water's balance sheet along with an asset with a corresponding opening value. These will appear for the first time in Melbourne Water's 2012-13 statutory accounts. The asset will be depreciated over its useful life which is estimated at 50 years.[4,5] In Melbourne Water's profit and loss statement, the desalination security payments will be segmented into depreciation, finance (interest) charges and operating expenses. The finance lease liability will amortise in accordance with the 27 year lease schedule (over the period to September 2039).

Now, all that detail is pretty boring unless you are an accountant. But, it is important. It is important for two reasons. First, it establishes beyond any doubt that the life of the lease and the life of the plant are two very different periods. While the former runs for 27 years, the latter lasts almost twice as long. In other words, Melbourne Water is paying for the desalination plant over 27 years, but it will be operational for at least 50 years. The second reason why all the accounting treatment is important is because it has consequences for Melbourne Water and the regulator when it came to considering how the cost of the desalination plant ought to be recovered through consumer prices.

Melbourne Water, the three metropolitan water retailers and the Essential Services Commission first needed to consider the question of how the cost of the desalination plant ought to be recovered through consumer prices back in

[3] This amount includes approximately $4.1 billion for the desalination plant, and an additional $0.2 billion for the High Voltage Alternating Current assets, which is the source of power supply for the plant.
[4] This depreciation period matches the design life of the majority of the desalination plant assets specified in contract documents related to the desalination public private partnership (PPP) arrangement. Some assets, for example the marine intake and outlet tunnel and the transfer pipeline, have a design life of 100 years.
[5] Details on the desalination PPP are available via www.tenders.vic.gov.au

our 2009 price determination. That experience and its consequences are summarised in Appendix A. While interesting, it is not particularly germane to this presentation so I will make no comment other than to note that our decision in 2009 provided no useful precedent for the new five-year pricing decision that we were required to make just a few weeks ago.

Unlike in 2009, in 2013 we knew with reasonable confidence the costs associated with the desalination plant; we knew the structure of the payments under the contract; and we knew that despite a 27 year payment schedule, the plant would have an operational life of at least 50 years.

The significance of that last observation is paramount: that despite a 27 year payment schedule, the plant will have an operational life of at least 50 years.

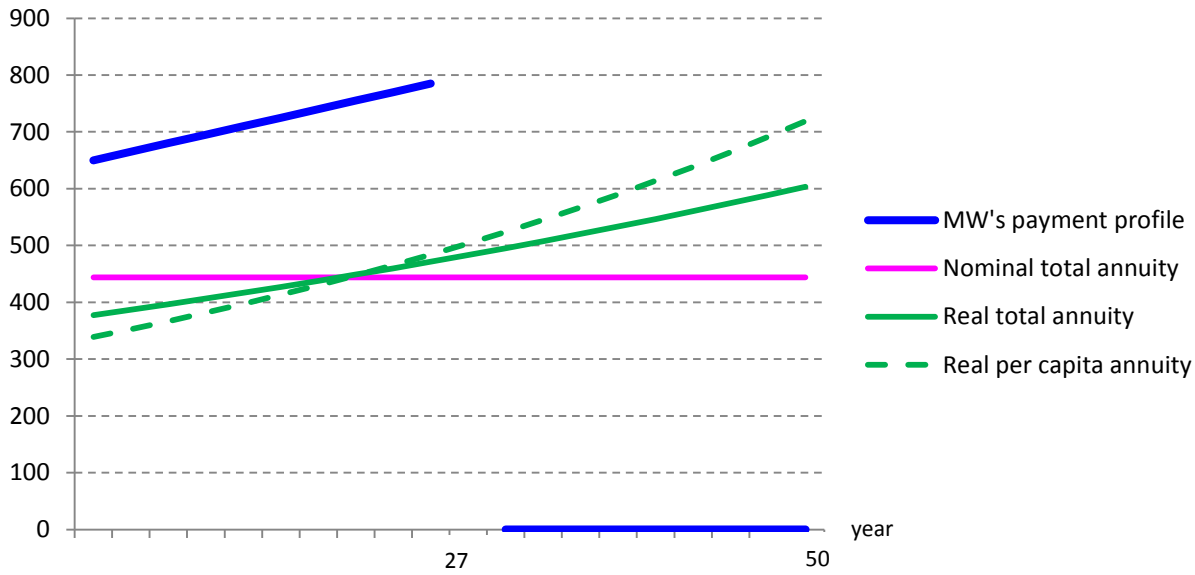
Before exploring the significance of that observation, it is worth recapitulating perhaps the most fundamental tenet of economic regulation, namely, that the capital costs associated with an asset should be recovered over a period that approximates the useful life of the asset. This approach seeks to ensure that customers contribute to the cost of assets as they receive the benefits of those investments. It is the approach used in the economic regulation of electricity networks, gas pipelines, rail infrastructure and the water industry across the country and around the world. Because assets in these industries are usually very long-lived, it means that capital costs are often recovered through customer prices over multiple regulatory periods spanning decades. Businesses are not disadvantaged under this approach as they are allowed to generate a return on their investment (which includes a component to cover estimated costs of finance) and a return of their investment (through a depreciation allowance) over the life of an asset.

Not surprisingly then, the Commission made it clear that it expected Melbourne Water and the retailers to submit pricing proposals that considered options for smoothing the recovery of the desalination plant security payments — that is,

options to spread 27 years of security payments over the 50 year operational life of the plant.

Figure 3 is a schematic representation that illustrates some potential ways in which the principle of inter-period smoothing could be applied to Melbourne Water's recovery of the desalination security payments. Put another way: it shows the consequences of different assumptions about how customers might to contribute to the cost of the desalination plant security payments over 50 years.

Figure 3: ***The annuity approach*** **- Total annual customer payment towards Melbourne Water's security payment costs ($m, nominal; schematic diagram only)**



The simplest option, and the one initially proposed by Melbourne Water, involved the costs of the security payments being recouped as they were incurred. In other words, Melbourne Water would pass the entire cost of the security payments through to customers in the same year that it was required to make those payments. This option is shown by the blue line in Figure 3. Clearly, once the security payments ceases about half way through the operational life of the plant, the costs passed through to customers drops to zero.

This approach ensures that Melbourne Water's cash-flows are neutral to the effects of the security payments

This approach has one major shortcoming, however.

This profile implies that customers in the latter half of the plant's operational life are not contributing to the cost of the plant. The entire cost is expected to be borne by customers in the first 27 years. In effect, the current generation of customers is 'gifting' this very large asset to a future generation.

One alternative, albeit overly simple way of thinking about how costs and benefits might be better aligned, would be to assume that Melburnians should collectively pay the same amount in nominal dollars each year for the entire life of the plant. This is shown by the pink line in Figure 3. The immediate effect is to reduce by almost one-third the amount that Melbournians collectively pay in year one. Of course, the longer term impact is that customers must continue paying for the plant for much longer.

The implication of this approach, however, is that, in *real* terms, future customers will be paying far less than current customers. The green line in Figure 3 seeks to redress this shortcoming by ensuring that customers collectively contribute the same amount in real terms each year for the entire fifty years. The dashed green line goes a step further by taking population growth into account so that the *real per capita* contribution of customers is the same in each and every year.

At this point, I need to stress that all the annuity options in Figure 3 (the pink, green and dashed lines) have been calibrated so that the net present value of the area under those curves is identical to the net present value of the area under the blue line. Alternatively stated: all things being equal, Melbourne Water (and customers) should be indifferent between the four cost recovery profiles shown in Figure 3.[6]

[6] Exclusive of tax effects.

(It is worth noting that the calculations described above, and throughout this paper, assume the customers' discount rate is equal to Melbourne Water's assumed cost of finance as represented in the regulatory model by the Weighted Average Cost of Capital (WACC). This approach reflects our two earlier decisions in relation to: (i) the rate of interest to be applied on funds to be returned to customers arising from an over recovery of costs for the desalination plant in 2011-12 and 2012-13 (see Appendix A),[7] and (ii) the interest rate to be applied by the Victorian water industry on debt arising from unpaid bills.[8])

As we were undertaking our work on assessing whether annuity options were a viable way forward, it struck me that we were missing something. While these annuity approaches were certainly spreading the financial costs over a longer period, we had not really turned our minds to the *economic* problem. Indeed, what was the economic problem we were trying to fix? I have already answered that question. Recall my earlier comments about one of the fundamental tenets of economic regulation, namely, that where an investment produces a stream of benefits, the cost associated with that investment ought to be borne by the beneficiaries of that investment in line with those benefits.

The annuity options shown in Figure 3 certainly spread *the cost* of the desalination plant over the full fifty years of its operational life. To the extent that the annuity approaches take into account customer interests, they do so under an implicit assumption that as a whole, and over time, customers are better-off if costs are spread more *evenly* across the life of the plant. But that is just an assertion.

Yes. The annuity approach is a financial solution but it is not an economic solution. Why? Because it involves no attempt to discuss or define the 'benefits' to be derived from having the desalination plant sitting there waiting

[7] Essential Services Commission 2012, *Opinion Report – Return of Additional Desalination Payments*, September.
[8] Essential Services Commission 2012, *Water Customer Service Codes Review 2012, Regulation of debt management powers: Final Decision*, December.

for a water order. And, if we have not defined the 'benefit' then there is no basis for considering whether the costs of the desalination plant are being recovered in line with the benefits being received by the customers.

In order to know whether costs are indeed being recovered in line with the benefit being received, we first need to ask: What is the value received by customers in return for any payments they make towards the desalination plant? I suggest that value is twofold.

The first form of value derives from the security the plant provides in relation to its potential as a source of water (150 gigalitres per year) for the next fifty years. In other words, it is the benefit associated with simply knowing, for fifty years, that the desalination plant is sitting there waiting for an order (which can be delivered at short notice). It has nothing to do with the water that might be ordered and delivered by the plant. That water would be paid for separately. Therefore, the second form of value derives from the actual delivery of water should it be required.

That being the case, the first form of value is something akin to owning a 'right' to exercise an option, while the second form of value resembles the value to be derived from exercising that 'option'.[9] At t = 0 (that is, the point in time at which the plant becomes operational[10]), the *total maximum value* customers can expect to derive is represented by the sum of 50 years of 'rights' and 50 years of fully exercised 'options'.

From a regulatory perspective, the challenge lies in identifying the monetary worth of the plant's total maximum value to customers. One approach might entail forecasting the monetary value of the underlying resource, that is, the expected monetary worth of 150 gigalitres of water in each year over the next 50 years. This would be a highly speculative endeavour that would be completely beholden to input assumptions about supply and demand conditions

[9] A call option can be defined as an arrangement that gives its owner a right (but not the obligation) to buy a commodity or other instrument at a specified price within a specific time period.
[10] The plant was formally commissioned in December 2012.

over the next 50 years (including assumptions about: population growth and demographic, technological advances, changing consumer preferences, climatic conditions, and the development of new and alternative sources of water).

An alternative approach is to assume that the 'value' of the desalination plant is fully embodied in the payment profile to the plant operator — in which case, the total maximum value of the plant can be approximated by the total maximum payments that might be made to the plant operator over its operational life. This amount is given by summing 27 years' worth of security payments and 50 years of usage charges that would be incurred if the plant produced and delivered water at its full capacity.[11] The summed net present value of these payments can then be assumed to represent the total maximum value received by customers.

Dividing this sum by the total maximum output of the plant over its operational life; accounting for the plant's potential output declining by 150 gigalitres with each passing year; and allowing for the effect of customers discounting the future, provides a basis for deriving a 'benefits profile' that approximates the value derived by customers over the life of the plant. This benefits profile can then be used to generate customers' preferred payment stream for the security costs associated with the desalination plant.

Adopting this 'customer value' approach produces the payment profile shown schematically by the solid red in Figure 4. Melbourne Water's security payments are represented by the blue line.[12]

To put it another way, at the point of negotiating the contract (at t = 0), customers would have preferred to contribute towards the desalination plant's fixed costs according to the schedule shown by the red line. For the first 20 years-or so, they would prefer a payment schedule that entails gradually

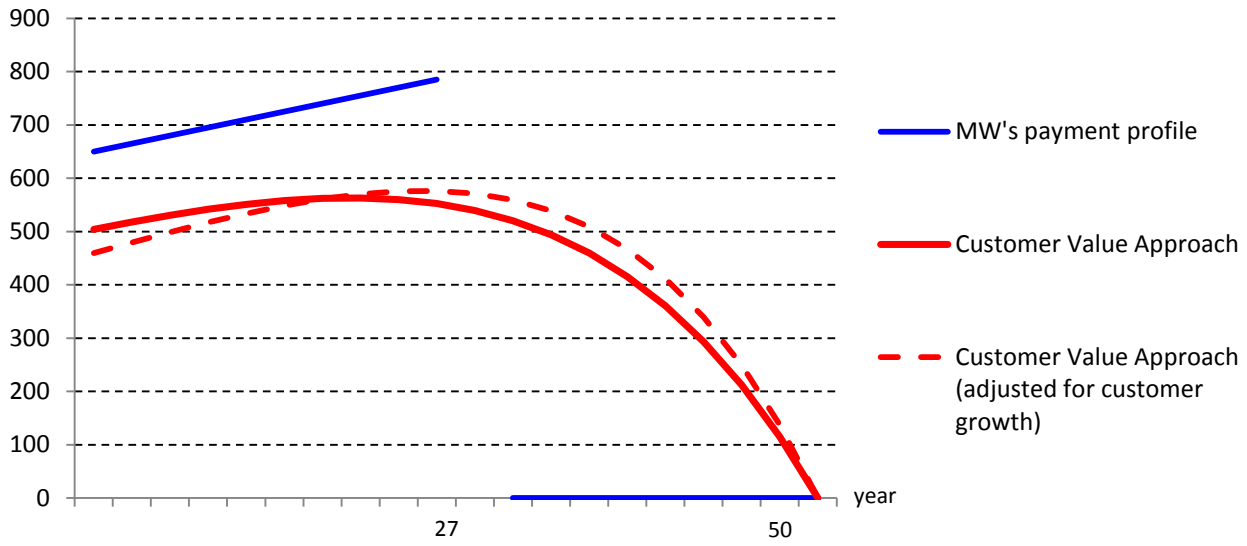
[11] As the contractual payment schedule only extends for 27 years, assumptions are required about the costs of producing water in years 28 to 50.

[12] For further detail, see: Essential Services Commission 2013, *Explanatory Note: Deriving a payment profile for the desalination security payment based on customer value* (April). Available at: www.esc.vic.gov.au

increasing amounts each year, reflecting their gradual discounting of the future. Thereafter, they would prefer to pay less each year. The concavity of the curve is driven by the declining value attached to the plant because, with each year, its remaining potential output reduces by a further 150GL. Gradually, this effect overwhelms customers' desire to defer costs into the future.

(The dashed red line in Figure 4 is based on the same customer value approach but allows for growth in customer numbers over 50 years. This has the effect of increasing the concavity of the curve — that is, shifting more cost recovery into the future when there is a larger customer base to share that cost.)

Figure 4: The *customer value approach* - Total annual customer payment towards Melbourne Water's security payment costs ($m, nominal; schematic diagram only)



As before, the model is calibrated to ensure that, all things being equal, Melbourne Water should be indifferent between all cost recovery options shown in Figure 4. That is, they have an identical net present value.[13]

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[13] Exclusive of tax effects.

So what happened in the so-called 'real world'?

Well, it turns out, Melbourne Water was not indifferent. In its initial Water Plan (submitted in October 2011), it simply sought the Commission's approval to pass-through the security payments directly to customers.[14] In other words, it wanted customers to pay strictly in accordance with the blue line in Figure 4. It made no attempt to better satisfy customer preferences despite the fact that, in financial terms, it would have been no worse-off. Of course, mathematically speaking, there are effectively an infinite number of options that would have made customers at least a little better-off without making Melbourne Water worse-off. (That is, there are many price paths that could traced between the blue line and solid red line shown in Figure 4.) So why the reluctance?

You would have noticed that on numerous occasions today, I have caveated my comments along the following lines: The model is calibrated to ensure that, *all things being equal*, Melbourne Water should be indifferent between various options. But, of course, all things are not always equal.

It is absolutely true that Melbourne Water would be no worse-off over the life of the plant. Indeed, as the regulator, we would have been forbidden from accepting any such outcome. What mattered for Melbourne Water, however, is not just what happens over 50 years but what happens *during* that period.

As you could well imagine from looking at Figure 4, if Melbourne Water collected revenues from customers according to the red line, but was obliged to make payments to the plant operator according to the blue line, it would incur large (and increasing) revenue shortfalls for 27 years. This situation would reverse in years 28 to 50. By the end of 50 years, Melbourne Water would have fully recovered its earlier revenue shortfalls; including interest on the earlier shortfalls.

[14] Melbourne Water's Water Plan is available at: www.esc.vic.gov.au/water

In the wake of such revenue shortfalls, Melbourne Water would have had a number of options. It could have borrowed funds, or sought additional equity from its shareholders, or reduced profits and dividends, or deferred non-essential capital expenditures. It does not really matter which way we look at it, as whichever way we choose, the capital required to fund any price smoothing would have had an opportunity cost. So for ease of exposition, we can just assume that Melbourne Water would have had to borrow funds had it sought to smooth the impact on customer prices of the desalination security payments. That debt would have steadily increased for 27 years; peaking at some billions of dollars before returning to zero after 50 years.

So why wasn't Melbourne Water indifferent to this debt given its repayment would have been assured under the regulatory framework?

The answer lies in appreciating that Melbourne Water, like all other price-regulated entities, operates in two parallel universes. The first operates according to the rules of regulatory accounting. The second universe operates according to statutory accounting standards: with annual financial disclosures including a profit and loss statement.

It was the financial impact in this second universe that, according to Melbourne Water, prevented it from pursuing any inter-temporal price smoothing. It claimed that capitalisation of the revenue shortfall would have driven up its gearing ratio, driven down its profits and rendered the corporation 'sub-investment grade' — potentially putting at risk its ability to raise funds and meet the community's service requirements.

Unfortunately, these concerns, whether legitimate or not, were not well articulated or argued in Melbourne Water's original submission. In its 127 page Water Plan, the issue was addressed in just two-and-a-half paragraphs. A few months later, Melbourne Water submitted a supplementary submission (in March 2013) reasserting its case though more expansively.[15]

[15] Melbourne Water's supplementary submission is available at: www.esc.vic.gov.au/water

In our draft decision released in April, we indicated that we were not satisfied that Melbourne Water had considered (or demonstrated) the options available to it. Moreover, we were critical that the retailers, to whom Melbourne Water would pass on the cost (and who would then pass it through to their customers), had not engaged with the issue on behalf of their customers.

In an attempt to promote the public disclosure and public discussion that we believed should have been pursued by the metropolitan water industry, we released various pieces of analysis along with our draft decision. One paper looked at the economic arguments for price smoothing.[16] In a second paper, we had Deloitte attempt to model the impact of price smoothing on Melbourne Water's profit and loss statement, cashflow statement and balance sheet.[17] Moreover, our draft decision contained a chapter providing greater exploration of the options and issues relating to the recovery of the desalination costs (including the annuity and customer value approaches discussed above).

The results of the Deloitte modelling showed, without doubt, that while capitalisation of revenue shortfalls would have had an adverse impact on Melbourne Water's accounting position, those impacts were marginal.[18] The real impact on Melbourne Water's financial position came from elsewhere.

Recall, my earlier observations about the desalination plant's PPP arrangements being recognised for accounting purposes as a finance lease. The impact of that accounting treatment is to raise Melbourne Water's gearing ratio from a lowly 42 per cent to about 67 per cent. In addition, the impact of the finance lease was to reduce the interest cover ratio from a very robust 3.2 to the rather tepid 1.7.

[16] NERA and Farrier-Swieir jointly developed a paper looking at the regulatory case for price smoothing the cost of the desalination plant. The paper is available on the Commission's website. Note, while the consultants' paper discusses annuity approaches, their analysis is reported in real dollars (whereas all figure shown in this paper (eg. Figure 3)are presented in nominal terms).

[17] The Deloitte paper is available on our website.

[18] Deloitte's 'with capitalisation' scenario assumed that 15 per cent of each year's security payments were capitalised (that is, not passed on to customers but funded through alternative means).

This is against a benchmark minimum ratio of around 1.5 times typically adopted by regulators.[19]

The Deloitte analysis showed that over-and-above these results, the effect of capitalisation would be to worsen the interest cover ratio by just 0.1 in each year of the outlook period. In other words, without any capitalisation, the interest cover ratio would rise from 1.7 to 2.0 over the next ten years. With capitalisation, the interest cover ratio would have risen from 1.6 to 1.9 over the same period. This was still above the minimum benchmark adopted by the regulator; and it was certainly trending in the right direction during the outlook period. Over the same period, capitalisation would have had an almost unnoticeable impact on the gearing ratio which would continue to hover between 66 and 67 per cent.

In other words, it was the accounting treatment of the finance lease, not capitalisation, which seemed to be limiting Melbourne Water's willingness to pursue price smoothing in the interests of end-use customers. While in the accounting universe Melbourne Water was looking a little anaemic, in the regulatory universe (with its preference for cash measures of sustainability) its situation was notably rosier. But even when we looked at those somewhat anaemic accounting outcomes, it was clear that the situation was improving steadily over the outlook period. On this basis, at the time of our draft decision, we remained confident that Melbourne Water had the capacity to pursue some degree of price smoothing over the upcoming regulatory period (that is, next five years) in the interests of end-use customers.

Our draft decision required Melbourne Water to resubmit its proposal regarding the recovery of desalination security payments. We indicated our expectation that the new proposal would be developed in consultation with end-customers (as well as the retailers). We also required Melbourne Water to submit its

[19] Interest cover is expressed as a ratio of net cash flow (or earnings) to interest payments. The interest cover ratio provides an indication of a business's ability to pay interest on outstanding debt.

financial model so that we could cross-check its assumptions against our own modelling.

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In brief, Melbourne Water did attempt to consult with customers — somewhat of an unknown experience given its status as wholesale monopoly provider of bulk water and sewerage services. It did so via professionally run focus groups.[20] And while the Commission accepted that Melbourne Water's efforts were genuine, it was concerned that the conclusions reached may have been influenced by the substance and form of the information presented to the focus groups. One claimed finding from the research suggested that a majority of customers (57.8 ± 8.3 per cent) were not in favour of price-smoothing the cost of the desalination plant and preferred to pay-off the plant sooner rather than later.[21] I cannot help but suspect that this finding is an artefact of the manner in which issues, options and consequences were presented to the focus groups. (These concerns are discussed in Appendix B.[22])

Although Melbourne Water was, by now, convinced by the focus group findings that price smoothing was not in accord with customer interests (based on the focus group findings), it nonetheless complied with the Commission's request for a supplementary proposal outlining the opportunity for some capitalisation of the desalination security payments. That submission's 'preferred approach' suggested that some capitalisation was possible on the condition that the Commission restored a significant proportion of the revenue it

[20] The Melbourne Water submission advises that: Eleven research sessions, involving 102 end-customers, from a cross section of demographics, including low income customers, were held. The sample size provides 90 per cent confidence that the population result falls within ± 8.3 per cent of the survey results.

[21] Of the remaining customers: 30.7 per cent preferred some price smoothing in order to reduce prices and share the load with future generations of customers; while 11.8 per cent expressed no preference for or against price smoothing.

[22] There were numerous other concerns. Consumer groups considered the presentation made to the focus groups was emotive and heavily (but narrowly) focussed on Melbourne Water's financial situation, without providing a broader discussion of its financial capacity. A related concern by the Commission pertains to the absence of any discussion about the regulatory framework within which Melbourne Water operates and, in effect, the inability of regulator to let the corporation 'go broke'. In other words, there was inadequate consideration of what it meant, or why it mattered, that certain financial metrics would turn 'sub-investment grade' (a term used by Melbourne Water) if some of the desalination costs were capitalised.

had extracted through efficiency savings in its draft decision. The price impact on end-use customers would have been about $10 per year for an average household. Alternatively, Melbourne Water suggested that if the Commission persisted with its efficiency savings, then a significantly lower level of capitalisation would be possible (with household savings of about $4 per year).

There was to be one final twist, however.

Melbourne Water in association with the water retailers offered that in place of capitalisation, Melbourne Water would provide $10 million over 4 years to the retailers to expand their programs in support of low income and vulnerable customers. The submission was very clear that this was an 'either/or' offer. The Commission could choose either capitalisation (with a small saving to all customers) or increased targeted support for vulnerable customers. It was one or the other, but not both. The decision lay with the Commission.

The Commission found itself in a most unusual position. Whether intended or not, the effect of Melbourne Water's submission was to place before the Commission a menu of conditional options. In effect, Melbourne Water was saying to the Commission:

> *"If you, the Commission, wishes to pursue capitalisation, then here are the options.[23] If you, the Commission, restore our funding then we can afford so much capitalisation. Alternatively, if you, the Commission, only partially restores our funding then we can afford this much capitalisation. Alternatively, if you, the Commission, so choose, then we will provide funding to support vulnerable customers instead of capitalisation."*

While I accept at face value that Melbourne Water was seeking to be helpful in providing options to the Commission, such an approach misunderstands the role of the economic regulator. As stated in our final decision:

[23] Melbourne Water's submission in response to the Commission's draft decision states, "Based on the consultation and analysis undertaken by Melbourne Water it has developed a preferred approach to capitalisation in the 2013 Water Plan **should the ESC determine a portion of the desalination security payments must be capitalised**." (p.9, emphasis added)

> "…in failing to make a clear recommendation on its preferred approach to the treatment of its desalination security costs, [Melbourne Water] has inappropriately deferred consideration of the issue to the Commission … [this] confuses the role of the regulator with the role of the Board and management of Melbourne Water. Businesses are best placed to consider the options, trade-offs, and provide the information that enables the Commission to decide whether to approve or not approve the proposals of the water businesses, in line with the requirements of the regulatory framework."
>
> — ESC Final Decision, June 2013 (p. 36)

On this basis, the Commission did not consider itself bound by the conditionality attached to the different proposals submitted by Melbourne Water. Rather, we focussed our efforts on assessing the viability of its claimed 'preferred approach'.

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So what did the Commission finally determine in relation to price smoothing the costs of the desalination plant?

To this day, the answer disappoints me. Not because of *what* we decided — I am confident we made the correct decision in the circumstances — but because of the reason *why* we were left with no option but to make that decision.

In our final decision we determined that there would be no capitalisation of the costs associated with the security payments that Melbourne Water was required to pay to the plant operator. We decided that the costs associated with the security payments would be passed through to customers dollar-for-dollar. However, we limited our price determination to three years rather than the originally intended five-year regulatory period. In other words, we will revisit the entire issue in three years.

And why did the Commission take this course of action?

It came down to the revised financial model submitted to us by Melbourne Water. In the two-or-three weeks we had to assess that model, we kept finding changes in the model that had not been disclosed to us. As we uncovered each of these changes, we sought explanations from Melbourne Water. Some of the changes were withdrawn, others were not. Some could be explained, others could not.[24] But the overall effect was to erode our confidence in the financial model.

With the countdown clock running-down from weeks to days, and finally from days to hours — we had to concede that we could not make a final decision with the necessary degree of confidence. The uncertainties were too great. We just did not know whether we had uncovered all the variations in the submitted model and whether we even fully understood the consequences of those that we had found.

But on the positive side, our analysis strongly suggested that with each passing year Melbourne Water's financial position improved and with it, its capacity to fund capitalisation in the future — hence our decision to approve Melbourne Water's prices *sans* capitalisation for the next three years only.

It was a very frustrating end to an endeavour that, from the Commission's perspective, had lasted for almost two years. We must now wait till 2016 for the opportunity to promote outcomes that we believe are more in accord with customer interests.

[24] These are discussed in our final decision.

Conclusion: A case of regulatory ambiguity

In the end, ambiguity meant that the Commission could not deliver a better outcome for Victorian consumers. But that ambiguity extended well beyond the informational short-comings just mentioned. The problems of uncertain information were only the final set of stumbling blocks. The real problem, the deeper shortcoming, lies elsewhere in the regulatory arrangements.

It lies in recognising that this type of decision should never — *never* — have found its way to the regulator for consideration. To understand why, we need to revisit the rationale behind economic regulation. This set of institutional arrangements was originally, and largely, designed to deal with the privatisation of natural monopoly assets. Only a little later was economic regulation imposed on publicly owned assets. That is a perfectly reasonable thing to do. However, let's recognise that publicly owned entities operate in a significantly different environment to privately owned enterprises.

Had this been a privately owned sector, there is no conceivable scenario in which such a decision would have ever come to the regulator. In that counterfactual world, 'Melbourne Water Private' in accepting the liability for the desalination plant security payment would have only done so with a guarantee, probably backed by legislation, addressing how it would recover those costs from the retailers. In turn, the retailers-private would have demanded an ironclad guarantee, again, probably in legislation, that they could recover those costs from end-use customers.

It seems that, somehow over the last five or six years, in the publicly-owned Victorian water sector, no-one pieced together all the links in the chain. Links that extended from: the desalination plant operator, the State as the contracting party, Melbourne Water as the obligated payer, the retailers as the captive purchasers of Melbourne Water's bulk services; and, finally, end-use customers. No-one linked together that chain and asked: who ought to be paying what and

when and how? It was only when it came to the regulator that questions of who and what and when and how began to be asked.

But even though the regulator was asking the questions — and thankfully so — on what grounds could it really assess any answers to those questions?

Yes, this was all about pricing; but unlike every other pricing consideration that comes before the regulator, this consideration was not about recovering the costs of efficient operations or the costs of a prudent capital program. In the final analysis, this was actually a matter relating to the consequences of a procurement decision. Or more precisely: the structure and profile of costs to have emerged from that procurement process; and then the funding of that contractual outcome.

But regulators ought to be disinterested and indifferent to procurement decisions. The role of the regulator is to allow prices to reflect the recovery of efficient costs over the life of an asset. Procurement strategy is a matter for management, the Board and the shareholder. They should choose the procurement method that works best within their allowed revenues, their management capacity and any other constraints they may face.

(That is, in any other conceivable situation, the regulated entity would come to the regulator with a proposed investment plan. This would be assessed and the recovery of efficient costs would be passed through to customers in prices over the life of the asset. Once the regulated revenue allowance was set, the regulated entity would determine the most appropriate procurement strategy.)

Circumstances dictated that the regulator could not be indifferent to the procurement strategy that had been pursued — and the sheer magnitude of the costs (for Melbourne Water *and* customers) meant that it could not be ignored. Bear in mind that in every dollar paid by an end-use water customer in Melbourne, about 25 cents now represents the cost of simply having the

desalination plant available and ready to produce water at short notice. (Any water ordered would result in an additional, albeit much smaller, contribution.)

So where does that leave the line between the respective roles of the regulator and the Board in determining matters relating to the capitalisation of costs associated with the desalination plant?

That is the great regulatory ambiguity with which we — the Essential Services Commission and the Board of Melbourne Water — were confronted over the last year-or-two.

As I have demonstrated today, I believe it is possible to derive a cost recovery profile from first principles. But as I have also shown, because Melbourne Water is contractually obliged to pay the plant operator according to the contracted payment schedule, the 'first best' customer price outcome would have imposed very significant debt on Melbourne Water. Of course, had we imposed upon Melbourne Water a pricing solution that embodied some form of compromise, the debt outcome might have been different; probably significantly less.

But therein lies the problem. Financing decisions rest with the Board; not the regulator.[25] So how could we, the regulator, ever have imposed a pricing outcome involving capitalisation within our available remit and given the financial consequences of such a decision?

Because of that inescapable regulatory ambiguity, throughout our 2013 price determination process, we continued to demand that Melbourne Water submit a proposal to us. It had to be their problem to solve and it had to be their solution for us to approve.

[25] Likewise, any decision about financially restructuring an organisation's financial position (in light of expenditure decisions and debt levels) is not a matter over which the regulator has jurisdiction. That is, it is not the role of the regulator to advise Melbourne Water that it ought to, or how it ought to, accommodate its financing obligations.

Of course, that still left us with the dilemma of *how* to assess any such proposal within a regulatory framework that never contemplated such decisions coming before the regulator. But that is the reality of the situation in which we still find ourselves. That is the regulatory ambiguity that we must now resolve as the clock counts down to the next price review in 2016.

— END —

Appendix A: How the desalination plant was reflected in customer prices in the second regulatory period

In 2009, the Commission authorised the maximum prices the water businesses can charge for the period to June 2013. These prices included a component for the desalination plant. However, information about the cost of a desalination plant was scarce at that time. In making its pricing decision, the Commission relied on costs estimates from a study by the then Department of Sustainability and Environment. There was no information available about the form in which services would be delivered or the structure of payments that would be involved in procuring services from a desalination plant. In the absence of any further information, the Commission's allowed Melbourne Water to recover its forecast payments in full over the second regulatory period (that is, forecast desalination related payments were treated as a simple operating cost).

At the time, it was expected that the desalination plant would commence operation in December 2011. In today's dollars, the Commission authorised the water businesses to collect nearly $230 million in 2011-12 and $460 million in 2012-13 from their customers. In other words, water prices approved in 2011-12 and 2012-13 included a maximum component of around $690 million to cover costs associated with the desalination plant.

In 2011-12, Melbourne Water and the three water retailers collected more payments than required from customers to cover costs relating to the desalination plant. Because the desalination plant ran behind schedule, the amount required was substantially less than allowed for in prices (around $275 million less). In response to community concerns, the Government announced a (nominal) price freeze in 2012-13.

The effect of the price freeze from 1 July 2012 was to start returning unrequired payments to customers. From early 2013, water businesses also began rebating customer bills to speed the return of funds to customers. The Commission has published a series of progress report on the return of funds to customers.[26]

Since the Commission approved prices for the second regulatory period in 2009, the quantum and structure of costs associated with the desalination payment obligations have become known. They bear little resemblance to the assumptions underlying the Commission's 2009 decision. For this reason, the Commission considered that the approach underpinning its 2009 decision did not provide an applicable precedent for the treatment of the desalination payments in its 2013 price determination.

[26] For more information on the price freeze and the return of funds to customers see the following reports on the Commission's website, www.esc.vic.gov.au: (1) Essential Services Commission 2012, *Monitoring the return of the unrequired desalination payments*, July, (2) Essential Services Commission 2012, *Opinion report – Return of Additional Desalination Payments*, September, (3) Essential Services Commission 2013, *Return of unrequired desalination payments to customers – February 2013 progress report*, February.

Appendix B: Focus group concerns about 'inter-generational equity'

One of the key findings claimed to have emerged from the focus groups pertained to customer attitudes towards 'inter-generational equity' — namely, that a majority of customers preferred paying for the plant over 27 years rather than pursuing price smoothing over a longer period. There appeared to be customer resistance to debt financing this type of expense.

While the Commission accepted that this finding reflected the views expressed, it was concerned that this conclusion may have reflected the way in which information was presented to the focus groups. That is, the attention of the focus groups was limited to repayment options for the costs of the desalination plant only. In isolation, the impact of any smoothing of the desalination plant on the final price faced by customers was relatively small (say, between 1 and 4 per cent) while the impact on Melbourne Water's finances was shown to be large. Perhaps then, it is not surprising that attendees considered that the small benefit they would receive did not warrant the seemingly large impact on Melbourne Water. Perhaps attendees did not want to appear selfish by being seen to support savings for themselves of $10-30 per year while their host, Melbourne Water, would have incurred debts of hundreds of millions of dollars.

But what was not explored in the focus groups was whether this was a universal aversion to debt financing by a large corporation. That is, if the desalination plant had been placed within the broader context of Melbourne Water's multi-billion capital program, would customers have been similarly averse to debt finance — particularly if paying for all those assets well ahead of their operational lives would have a very large impact on prices (for example, many hundreds of dollars per year)? After all, it is not clear why fully informed customers would support different payment principles for different assets.[27]

While the Commission has not undertaken its own research to test this hypothesis, it would be my expectation that the claimed customer altruism identified through the focus groups would not be substantiated if it were applied more broadly. In other words, looking at a problem in the increment can produce conclusions that differ from those that would be reached were that same problem to be conceptualised in a broader context.

[27] It has been suggested that the focus groups expressed a view that the desalination plant was a poor decision by this generation of customers and therefore future generations should not be encumbered with its costs. Again, it is accepted that this sentiment was expressed in the focus groups (though how widely is unknown) but what is its logical consequence? Would every investment decision be put to customers to evaluate its merits and the repayment profile determined accordingly? Again, looking at problems in the increment can lead to conclusions that do not accord with conclusions that would be reached when the problem is viewed *in toto*.