Australia's urban water sector

Melbourne Water's submission to the Productivity Commission's draft report

Victoria
The Place To Be

Melbourne Water

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1. Executive Summary

Melbourne Water is supportive of the Productivity Commission's (PC) inquiry on Australia's urban water sector and the opportunities for efficiency gains. It welcomes the opportunity to comment on the PC's draft report.

Melbourne Water notes that the PC's review was instigated by Assistant Treasurer, Nick Sherry, in light of the:

- Challenges urban water systems have faced in recent times
- Incomplete progress on reform.

While the PC's draft report notes the challenges industry has faced recently, it finds that the response to those challenges has been inefficient, particularly in respect of certain major augmentation decisions and the reliance on water restrictions and conservation programs. Therefore, the PC recommends reforms to clarify roles and responsibilities particularly in respect of procurement decisions and best practice regulation.

In respect of the first driver for the review, the PC notes that the urban water sector has faced significant challenges in recent times mainly as a result of a lengthy period of unexpectedly low rainfall. It is worth reiterating the severity of these challenges. For example, in a number of urban environments recent circumstances statistically were without precedent, and Perth continues to experience extreme low rainfall conditions. In Melbourne, our experts have estimated a probability of occurrence for the 1997-2006 drought of 0.002 (i.e. it was a one in five hundred year event). In other areas, such as the Murray Darling Basin, the circumstances were statistically even more unlikely.

In Melbourne, these extreme circumstances, coupled with an increase in expected population, made it necessary to make major and rapid decisions to ensure continuation for safe and reliable drinking water supplies. These decisions were informed by major strategies developed in consultation with the community in 2002, 2004, 2006 and 2007.

Melbourne Water believes there are opportunities to learn from recent experiences to establish a decision making framework that provides for active and adaptive management of a broad portfolio of demand and supply side options, in an uncertain and changing environment, to meet the varied needs of the community and the environment. This approach necessitates:

- Clearly defined industry objectives and accountabilities
- Effective allocation of normal (business as usual) and extreme (emergency) risks
- Informed community discussion of the costs and benefits of different levels of service, supply and demand options and contingency measures
- Ongoing research and analysis to achieve an improved basis for decision making and reform.

In relation to the second driver for the review, many of the findings and recommendations made by the PC – for example, in relation to industry structure, outsourcing, governance and pricing – recognise that the Melbourne water system has undertaken a considerable amount of reform. Melbourne Water has been proactively involved in developing and implementing many of those reforms and, in the vast majority of cases, they have provided significant benefits to water consumers and the broader community.

Industry objectives and governance

Melbourne Water is broadly supportive of the PC's findings and recommendations in respect of establishing an industry objective and introducing charters to provide greater clarity around the responsibilities and accountabilities of the stakeholders in the industry, and greater transparency on how key decisions are made. It is also supportive of the PC's recommendations to ensure that these processes are transparent and accessible to encourage more community involvement.

Melbourne Water considers that in terms of the industry objective, that proposed by the National Water Commission is more appropriate. The National Water Commission identifies specific objectives that are otherwise assumed within the PC's definition of economic efficiency and gives weight to the significant sustainability and broader urban planning considerations that are of major significance for decision making in the urban water sector. In relation to use of the charters, to be as effective as possible Melbourne Water considers that they should clearly specify the roles, accountabilities and required decision making processes and transparency requirements under both normal (business as usual) and extreme (emergency) conditions.

Decision making frameworks

Melbourne Water is broadly supportive of the PC's findings and recommendations in respect of decision frameworks as they relate to the basis on which decisions should be made and the options that should be considered. In particular, Melbourne Water agrees that all options should be considered on a consistent basis.

Melbourne Water considers that economies of scale and scope will be achieved in meeting customer, community and environmental needs from a co-ordinated approach, across multiple scales and sources, to integrated water planning and augmentation decision making.

Melbourne Water notes while the real options methodology holds considerable appeal, it needs to be acknowledged that there are potential limitations to adopting this framework, particularly in the shorter term given its application in the water sector is relatively new. In this regard, given its current application, and the level of understanding in the industry, in the short term a triple bottom line approach that incorporates externalities is favoured.

Industry structure

Melbourne Water is broadly supportive of many of the PC's findings in respect of industry structure and the priority it assigns to structural reform.

The PC recognises that significant structural reform has already occurred in Melbourne and competition reform has been examined in more detail by the Victorian Government than the PC could appropriately cover given the nature of its report.

Melbourne Water notes that, in respect of that debate, the essential trade-off is between the benefits and costs of a more centralised approach to integrated headwork system planning and investment and a more decentralised model of decision making based on competition.

Melbourne Water believes the extent to which competition can be introduced in the bulk water and wastewater functions is a complex issue that should be based on clear objectives and a detailed and practical assessment of the costs, benefits and risks of various reform options.

Economic, health and environmental regulation

Melbourne Water supports some of the PC's findings and recommendations in respect of industry regulation. Melbourne Water considers that certain parts of health regulation provide a good example of the accountable and transparent processes that should surround decision making.

Melbourne Water understands the PC recommendations regarding the need for economic regulation in the urban water sector. The PC's proposed approach would, however, place a high burden on the charters achieving the objectives the PC sets out for them, of which ensuring cost recovery is a subset.

Melbourne Water also considers there is a need to ensure the economic regulator is working closely with the health and environment regulators. This may be supported by the use of Memoranda of Understanding, as currently occurs in Victoria, to ensure that regulatory and decision making processes are closely integrated and informed.

Integrated resource management

Melbourne Water supports some of the PC's findings and recommendations in respect of integrated resource management. Melbourne Water agrees that all options should be considered on a consistent economic basis and that there are instances of where certain activities conducted within the context of integrated resource management have not compared consistently with other options (e.g. re-use targets).

Melbourne Water does not accept the PC's views in respect of it inferring that the industry's approach implies that alternate source projects are "always" in the community's interests. However, Melbourne Water believes that, an integrated approach to water planning is likely to be in the community's interest. This necessitates balancing across large scale centralised and local decentralised options and between supply and demand side measures. This includes having restrictions and water conservation programs available to meet short term supply constraints where the benefits of doing so are greater than the costs.

2. Introduction

2.1 Background

The PC's review was instigated by Assistant Treasurer, Nick Sherry, in light of the:

- Challenges urban water systems have faced in recent times
- Incomplete progress on reform.

The Government's Terms of Reference focuses on opportunities for efficiency gains in reforming structural, institutional and regulatory arrangements and requires that the:

- Options should be subject to rigorous cost benefit analysis
- PC develop an implementation plan.

The PC's draft report:

- Notes the challenges the industry has faced recently and the public perception that "water is different"
- Finds the response to those challenges has been inefficient, in respect of the:
    - Allocation of water resources and investment decisions; and
    - Reliance on water restrictions and conservation programs.

The PC therefore recommends reform essentially on:

- The conflicting roles and responsibilities between Government and key stakeholders
- Procurement decisions
- Best practice regulation
- Competition - although this is a lower priority and should proceed in a measured way.

The PC has also requested specific feedback on a number of matters, which are discussed in Section 2.2 of this submission. Before proceeding to this discussion, however, Melbourne Water wishes to highlight two issues relevant to the context for the PC's review.

2.1.1 Challenges faced by urban water systems

The first driver for the PC's review was the challenges faced by urban water systems in recent times. The PC notes that the urban water sector has faced significant challenges in recent times, mainly a result of a lengthy period of unexpectedly low rainfall.

It is worth reiterating the severity of these challenges, as the PC's report does not appear to recognise this adequately and there are potential implications for water planning (and management tools). This is also relevant in the context of potential climate change, further climate shifts and increasing climatic variability.

For example, in a number of urban environments, recent circumstances statistically were without precedent, and Perth continues to experience extreme low rainfall conditions. In Melbourne, our experts have estimated a probability of occurrence for the 1997-2006 drought of 0.002 (i.e. it was a one in five hundred year event).[1]

More recent studies, using climate reconstruction techniques, put the return period of the recent event for the Murray Darling Basin at around 1 in 1,500 years.[2] The rapid transition in rainfall and streamflow conditions in the period after 1996 and the duration and severity of the drought presented circumstances that the industry had never had to deal with before. This event led to increased Government involvement to make timely, and what may be viewed by some in hindsight, as inefficient investment decisions.

These extreme circumstances in Melbourne resulted in streamflow conditions at the extreme end of expected probability distributions and the placing of considerable pressure on normal water resources planning techniques and processes. This made it necessary to make major and rapid decisions to ensure continuation for safe and reliable supplies during the drought and to provide future drinking water supplies for growing populations.

This is the context in which the PC has deemed some major augmentation decisions were inefficient. Under these circumstances, with the benefit of hindsight, it should not be surprising that the response was perhaps not as efficient as it might have been if there was perfect information about future streamflow conditions.

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[1] K.S. Tan, B.G Rhodes, Melbourne Water, Implications of the 1997-2006 Drought on Water Resources Planning for Melbourne, Paper presented to Water Down Under, 2008, Adelaide.

[2] Gallant, A.J.E. and Gergis, J. (2011) An experimental streamflow reconstruction for the River Murray, Australia, 1783–1988, Water Resources Research, 47, doi:10.1029/2010WR009832.

Melbourne Water agrees that this should not be seen as an excuse for not improving governance arrangements, particularly in relation to major augmentation decisions, but it does provide relevant context. It is also worth noting that apparently similarly rare events in other sectors in recent times (e.g. in banking with the Global Financial Crisis) for a time also resulted in extensive Government intervention in decision making. Improved decision making could be achieved by having more robust regular scenario planning, with well thought through contingency plans, including procurement options.

2.1.2 Progress with reform in the Melbourne system

The second driver for the PC's review was the incomplete progress with water reform, which included both major city and rural water systems, but noted the progress made in some of the major city systems.

Many of the findings and recommendations made by the PC – for example, in relation to industry structure, outsourcing, governance and pricing – recognise that the Melbourne water system has been subject to a considerable amount of reform. It is worth re-iterating what those reforms have been, as they were designed to meet (and have subsequently achieved) a range of objectives.

Melbourne Water and the retail water businesses have worked cooperatively with policy makers in delivering these reforms over a long period of time (since 1995). Table 1 provides a chronology of the key reforms since the mid 1980s.

Table 1 Key reform milestones in the Melbourne water sector to 2008

Mid 1980s	Commencement of systematic urban water industry benchmarking through the Australian Water Resources Council
Late 1980s	Metropolitan Melbourne Board of Works (MMBW, Melbourne Water's predecessor) commences major reform initiative to improve efficiency, including downsizing and outsourcing services to the private sector
1991	Merger of all Melbourne water, sewerage and drainage services
1993	Corporatisation of MMBW to form Melbourne Water
1995	Disaggregation of Melbourne Water to form one water and sewer wholesaler and waterways manager (Melbourne Water), three retail water businesses (City West Water, South East Water and Yarra Valley Water) and a parks and waterways recreation authority (Melbourne Parks and Waterways later to become Parks Victoria)
1998	Introduction of user pays pricing for water
2004	Introduction of independent economic regulation by the Essential Services Commission and a focus on competition by comparison for the retail water businesses

2004	Government White Paper, *Our Water Our Future*, which amongst other things, created a new water planning framework for Victoria and expanded Melbourne Water's waterways responsibility to encompass the entire Port Phillip and Westernport region
2006	Release of Central Region Sustainable Water Strategy
2006	Government decision that rights to water used to supply Melbourne be transferred to retail water businesses, Melbourne Water established as custodian of the Environmental Water Reserve (EWR)
2007	National performance benchmarking introduced by the National Water Commission, building on benchmarking frameworks already established by the Essential Services Commission and Water Services Association of Australia
2007-2008	Inquiry by the Victorian Competition and Efficiency Commission (VCEC) into reform of the metropolitan retail water sector to improve efficiency, operation and performance of the sector
2010-11	Ministerial Advisory Council review on the strategic priorities for reform in the water sector to support the Living Melbourne, Living Victoria policy

As Table 1 demonstrates, the Victorian urban water sector has been subject to numerous reforms aimed at achieving objectives such as improved customer service (e.g. benchmarking and performance reporting), allocative efficiency (e.g. property right reform, competitive tendering), productive/dynamic efficiency (e.g. structural reform and shared services, economies of scale), improved regional planning (e.g. the Central Region Sustainable Water Strategy) and improved environmental outcomes (EWR).

The Department of Sustainability and Environment has been examining industry reform topics (which are at various stages of development) with the involvement of stakeholders across the Victorian water industry. Three primary reform work programs currently underway, with relevance to Melbourne Water, include:

- Further investigation of a state-based third party access regime and licensing arrangements
- A process for determining how best to optimise the operational management of the Melbourne headworks system[3], a joint project between Melbourne Water and the retail water businesses
- An investigation of the most appropriate bulk water management arrangements for an expanded Melbourne water grid.

[3] Defined as the reservoirs, weirs, transfer conduits, treatment plants and associated water supply works owned by Melbourne Water, together with the waterways within Melbourne Water's area of responsibility, and flows harvested from these waterways as well as from the Sugarloaf pipeline and Victorian Desalination Project.

The current investigations being undertaken by the Victorian Ministerial Advisory Council, and the liveability agenda contained in those investigations, will build on previous reforms.

In addition, in April 2011, the Victorian Treasurer directed VCEC to undertake an inquiry into a State-based reform agenda, to identify potential areas for reform. Melbourne Water anticipates that the water industry will be considered by VCEC as one element of its investigation. The results of VCEC's inquiry may form an input to the PC's considerations.

2.2 The Productivity Commission's feedback requests

The PC explicitly requests feedback on a number of matters relevant to Melbourne Water, including the following matters:

- Pricing principles
- Ministerial directions, in relation to its findings on governance issues. Specifically, the PC wants to know if ministerial directions are common for Government Trading Enterprises (GTEs) in the urban water sector and, if so, are they given formally and publicly reported (or are informal)
- Regulation, including whether regulatory inconsistencies between jurisdictions are creating unnecessary burdens for participants
- With respect to its proposed structural reforms, the PC is seeking additional information or analyses on scale and scope economies in the urban water sector. The PC is also seeking feedback on the feasibility of its structural reform options.

Where relevant to Melbourne Water, comment is made on these matters in the appropriate sections of this submission and relevant evidence provided for the PC to consider.

2.3 Outline of submission

The remainder of this submission provides additional information and analysis that might assist the PC in developing its final report. It is structured broadly according to the importance of the issues from Melbourne Water's perspective. More specifically:

- Section 3 addresses industry objective and governance issues
- Section 4 addresses decision making frameworks
- Section 5 addresses industry structure
- Section 6 addresses environmental, health and economic regulation
- Section 7 addresses integrated resource management and pricing issues.

3. Industry objectives and governance

Melbourne Water is broadly supportive of the PC's findings and recommendations in respect of establishing an industry objective and introducing charters to provide greater clarity around the responsibilities and accountabilities of the stakeholders in the industry, and greater transparency on how key decisions (e.g. major augmentations) are made. It is also supportive of the PC's recommendations to ensure that these processes are more transparent and accessible to encourage more community involvement.

Melbourne Water provides some additional comment on aspects of the PC's findings and recommendations that might assist in developing its final report.

3.1 Industry objective

The PC recommends Governments should set a common industry objective and introduce charters incorporating best practice governance arrangements and performance requirements to provide greater clarity on industry direction, roles and accountabilities.

Melbourne Water agrees that Governments should set industry objectives, governance arrangements and performance requirements, including decision making and regulatory frameworks. This reflects the fact that Government's ultimately own the resources and water businesses. Further, it is important that the right governance arrangements and performance requirements should be put in place to ensure there are incentives for water businesses to meet industry objectives. The charters, as discussed below in section 3.2, should be used to specify industry objectives.

The PC's draft report suggests that the primary objective of the sector could be: *"To provide water, wastewater and stormwater services in an economically efficient manner so as to maximise net benefits to the community."*

The PC suggests that, provided economic efficiency is broadly defined to include all costs and benefits (including health, environmental and social), this objective encapsulates many of the more specific objectives that should be pursued in the urban water sector, including those related to water security, water quality, flood mitigation and the environment. The PC also suggests that the objective can provide a framework to guide the trade-offs that need to be made between these more specific objectives.

Melbourne Water contends that there are multiple objectives that policy makers in the water industry should be cognisant of when setting a reform agenda. These include cost, security of supply, water quality (public health and aesthetic), sewage quality, waterway health, social outcomes and the environment, which should be explicitly recognised in the industry objective. Paramount amongst these objectives is the need to drive efficiencies and sustainability across the whole of the water cycle.

Melbourne Water believes that this complexity is captured more fully in the National Water Commissiion's national statement of objectives for the urban water sector.[4]

> *The Australian urban water sector should provide secure, safe, healthy and reliable water-related services to urban communities in an economically efficient and sustainable manner.*
>
> More specifically, the sector should:
>
> *1. understand and meet the long-term interests of all water consumers in the price, quality, safety, reliability and security of supply of fit-for-purpose water and wastewater services through the efficient use of, and investment in, systems, assets and resources.*
>
> *2. protect public health and the environment by ensuring that the impacts of the sector's operations and investments are managed cost-effectively in accordance with society's expectations and clearly defined obligations.*
>
> *3. enhance its effective contribution to more liveable, sustainable and economically prosperous cities in circumstances where broader social, public health and environmental benefits and costs are clearly defined and assessed, or where customers or other parties are willing or explicitly obliged to pay for the outcomes.*

Melbourne Water believes that the National Water Commission's national statement of objectives is more appropriate because it specifically identifies sustainability and some of the multiple component objectives that include reference to the inter-relationship between the provision of water (and other utility) services and the development of the broader urban environment in which they are delivered (e.g. urban planning). Over the long term, urban planning and development (and the technology it indirectly fosters), has a critical impact on the nature of water services that can be delivered to meet the community's needs. For example the Environment and Natural Resources Committee's Inquiry into Melbourne's Future Water Supply was advised by Monash University that *"depending on the density of a development … harvesting of stormwater could lead to between a 20 per cent and a 60 per cent reduction in …*

[4] National Water Commission, Urban Water in Australia: future directions, 2011.

drinking water" suggesting that urban planning is a key determinant in the city's long term supply-demand balance.[5]

Melbourne Water also considers that the industry objective should specifically refer to the *long term* interests of the community.[6] This would ensure that the industry objective captures more fully the long term nature of the investment decisions made and the role of uncertainty (and thus risk management) in the provision of urban water services. For example, the planning the previous Victorian Government undertook in its recent decision making processes on major augmentations had a 50 year outlook. Such an outlook also goes to the merits (and potential value) in developing of a range options to deliver the services the community wants as efficiently as possible over the long term.

3.2 Charters

The PC recommends the use of charters to clarify roles and accountabilities in the urban water sector. In other words, it would seek to adopt a framework where Government sets the overarching policy objectives for the longer term and the principles for the regulatory framework, regulators put in place arrangements to ensure the industry can, and is, delivering the services the community wants consistent with the regulatory principles and policy objectives, and the utilities decide how best to deliver those services.

The PC charters would cover obligations to serve (i.e. security of supply and obligation to procure), transparent processes around augmentation decisions, pricing and service offering principles, transparent processes for price setting, borrowing and dividend policies, customer service standards (including hardship), risk allocation and the nature and funding of community service obligations. Presumably the charters would also need to cover other issues such as water quality and procedures during emergency situations, although this might be captured under risk allocation processes. They should also provide the opportunity to set some minimum standards on the degree of stakeholder engagement on policy/program initiatives and major projects.

Melbourne Water notes that various instruments are already in place in the Victorian water sector that seek to clarify roles and accountabilities – a significant aspect of the role the PC sees for the charter. Key examples are the two Statements of Obligations, which impose obligations on Melbourne Water in the general performance of its

[5] Parliament of Victoria, Inquiry into Melbourne's Future Water Supply, June 2009, Report of the Environment and Natural Resources Committee, Parliamentary Paper 174, Session 2006-2009.

[6] Even though the long term is arguably implicit in a suitably broad definition of sustainability.

functions / exercise of its powers, and in the performance of its functions specifically in relation to system management.[7] In particular:

- The general Statement of Obligations details requirements in relation to governance and risk management, planning and service delivery, price setting, environmental management, payment schemes and contributions and compliance. These cover a wide range of obligations including:
    - Board performance, customer engagement, asset management and incident response
    - Water supply demand planning to identify the best mix of demand measures and supply options, drought response planning, conserving and recycling water, trade waste requirements, sustainability requirements and waterways and drainage operating charter requirements
    - Preparation and delivery of a price submission to the economic regulator
    - Environment management system requirements and river health requirements
- The system management Statement of Obligations sets out the obligations Melbourne Water must carry out in undertaking its water supply functions and how these relate to the obligations of the retail water businesses (as owners of the water). The requirements detailed include those relating to governance, headworks system management and compliance. For example, under the system management requirements, Melbourne Water is obliged to optimise the management of its headworks system to ensure the efficient operation and use of water services for the long-term interests of water users, with respect to water security, quality, reliability and price.

The Statements of Obligations are useful in clarifying Melbourne Water's roles and accountabilities in line with the overarching policy objectives for the longer term. However, difficulties can arise in ensuring that all obligations are sufficiently well specified for regulatory purposes (e.g. some sustainability requirements). This should be taken into account in determining the extent of reliance on the charters, as well as in their development. Melbourne Water also considers that tools of this kind (be they a Statement of Obligations or charters) should be developed transparently in consultation with all relevant stakeholders.

In relation to transparent processes around planning and augmentation decisions, it is noted that the general Statement of Obligations currently sets out requirements in relation to the Water Supply and Demand Strategies that must be prepared by the water businesses. This is a key long term planning tool updated in a joint and collaborative manner by Melbourne Water and the retail water businesses every five

[7] Water Industry Act 1994, Statement of Obligations (General), As amended at 30 October 2008 and Water Industry Act 1994, Statement of Obligations (System Management), 26 June 2009. See http://www.melbournewater.com.au/content/about_us/who_we_are/who_we_are.asp

years. It requires Melbourne Water and the retail water businesses to identify the best mix of demand measures and supply options for Melbourne's urban supply systems in accordance with a decision framework set out in guidelines issued by the Department of Sustainability and Environment. This was most recently completed in 2006[8] and fed into the Government's Central Regional Sustainable Water Strategy that was also completed in 2006.

There would be benefit in the PC's charters clearly specifying, upfront, details of the roles, accountabilities and required processes and transparency around planning and augmentation decision making under both normal (business as usual) and extreme (emergency) conditions. It is considered that this would help to address the concerns identified by the PC in relation to the efficiency of any augmentation decisions.

In response to the PC's call for case studies, the one below sets out the key steps undertaken in the major water supply augmentation decisions made most recently for Melbourne. As is illustrated, there was a detailed process led by the Victorian Government, during an extreme drought event, in relation to the augmentation decisions. In practice, the Government determined augmentation timings on the basis of a low inflow scenario and, while consideration was given to building a smaller scale desalination plant, the Government decided not to pursue this option to allow for quicker recharge of rainfall dependent sources and to lessen the use of restrictions.

Case study: recent major water supply augmentation decisions in Melbourne

In recent times, the Victorian Government undertook the following steps to determine major water supply augmentation decisions at a time when Melbourne was experiencing extreme drought conditions:

- In 2004, the Victorian Government developed a long term plan for water – *Our Water Our Future* – to secure Victoria's water future for the next 50 years.[9] It included a recommendation for the development of regional sustainable water strategies.
- In 2005, Melbourne Water and CSIRO completed what is believed to be the first study in the world of the potential impacts of climate change on water, sewerage

[8] *Sustainability Assessment of Water Supply and Demand Options for Melbourne*, *Water*Smart: Water Supply Demand Strategy for Melbourne 2006 – 2055, Technical Report #4, 22 May 2006.

[9] State of Victoria, Victorian Government White Paper – Securing Our Water Future Together (2004), Department of Sustainability and Environment, Melbourne.

and drainage systems and brought forward the reconnection of Tarago Reservoir reconnection as an adaptive response.[10]

- In 2006, the *Central Region Sustainable Water Strategy* (which incorporates the Melbourne system and the findings of the Melbourne Water Supply Demand Strategy) was produced.[11] It considered the possibility of a rapid step reduction in water supplies as a result of climate change. It also announced feasibility studies for rainfall independent sources of water such as desalination.
- In 2007, the Government produced *Our Water Our Future: The Next Stage of the Government's Water Plan*.[12] It confirmed the unprecedented low inflows in the calendar year of 2006 (at which time storage levels were around 30%) warranted the need for large-scale supply-side augmentations for the Melbourne system.

As part of *The Next Stage of the Government's Water Plan*, in 2007, the Government announced that it was developing a long term solution (which included a desalination plant with a capacity of up to 150 GL/year). The plan envisaged investing at that time $4.9 billion, which would increase the total supply for Melbourne by 240 billion litres annually by 2011 – half of Melbourne's current annual water use.

The plan noted that 150 GL was the planned desalination capacity, but that the plant could be built in modules to allow for economies of scale in operation. It also noted that the capacity was capable of being varied prior to the Expression of Interest phase of tendering in 2008. It noted that variations may occur for a number of reasons, including better information from studies of climate change. Scenario modelling and a Resource Allocation Model (REALM) were used to guide analysis of various investment decisions. Three plausible scenarios were used as described and illustrated below:

- Using the past 100 years' average inflows as a basis for planning – on which no major augmentations were required
- Using the past 10 years' average inflows – on which a major augmentation would be required in the medium term
- Using extreme low inflows of 2006 in a scenario based on the past three years' experience. This scenario represents a step-change in climate. On this basis, it concluded that storage levels would progressively decline and more than one major new supply source would be required in the shorter term.

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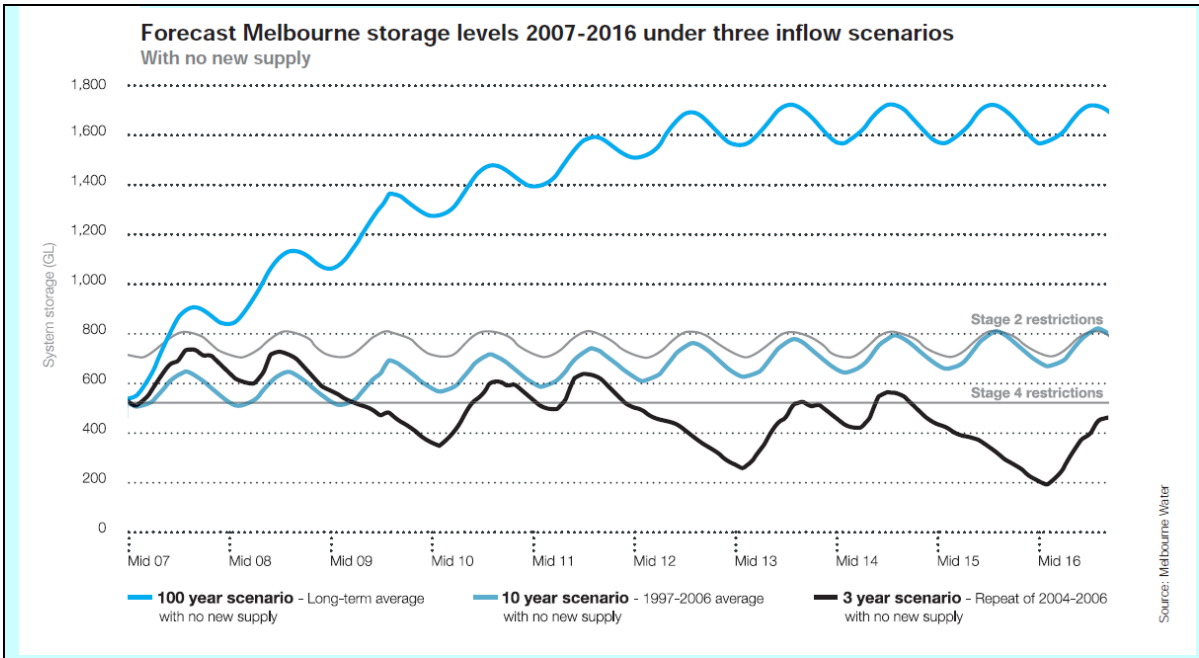
[10] Howe C, Jones RN, Maheepala S, Rhodes B (2005), Melbourne Water Climate Change Study – Implications of Potential Climate Change for Melbourne's Water Resources, CSIRO and Melbourne Water, Doc CMIT-2005-104.

[11] State of Victoria, Sustainable Water Strategy Central Region – Action to 2055 (2006), Department of Sustainability and Environment, Melbourne.

[12] The Victorian Government, Our Water Our Future: The Next Stage of the Government's Water Plan, Department of Sustainability and Environment, 2007.



The plan noted that the last scenario was relatively unlikely, but to manage the risk of very low inflows, new water supply projects would be brought forward immediately.

A subsequent report[13] in 2008 detailed the system behaviour expected with the augmentations and the impact of potential implications of climate change shifts on water supply availability. The report showed that some consideration was given to an initial size for the desalination plant of 100 GL/year. It noted that supply of 100 GL/year would bring forward the need for further system augmentation and there would be a greater risk of falling into severe restrictions. In other words, the size of the plant was determined in part to allow for further recharge of rainfall dependent sources and avoid the need for greater reliance on more severe restrictions.

3.2.1 Implications for the charter

Given the above context, Melbourne Water considers charters should focus on:

- Ensuring there is sufficient detail to provide the required clarity around governance arrangements (including accountabilities and risk allocation) and performance requirements
- Providing transparency around both the normal, business as usual, decision making processes and assessment criteria as well as the processes and

[13] Further details on the analysis of these scenarios was also outlined in the following document: Victorian Government, Augmentation of the Melbourne Water Supply System: Analysis of Potential System Behaviour, 2008

assessment criteria required for planning and major augmentation decision making[14]

- Potentially including reference to trigger points so that if Government control over decision-making on how best to deliver water services is warranted (e.g. the type, timing and size of major augmentations), the trigger points make it clearer when this is the case (e.g. that 'emergency' decision making powers have been invoked). This should ultimately culminate in a Ministerial direction to the water businesses should the Government want the industry to take tangible actions, although the process will likely vary by State
- Potentially including some additional protocols and processes in these 'emergency' circumstances to provide more transparency and clarity around how decision making is being undertaken and who is accountable. In principle, these are not too dissimilar in intent to Community Service Obligations. This could include protocols that would subject those decisions to at least some degree of external scrutiny by third parties, without delaying them unduly
- Potentially requiring the suite of available augmentation options to be already defined (see section 4.3 for the basis on which this could be done), to narrow the range of options that ought to be considered in such cases (particularly in respect of the type and size of augmentations).

If these matters are to be addressed in charters, there would be some additional questions the PC should consider:

- Who is required to have a charter (e.g. is it just the utilities or any licensed entity, such as a supplier of re-used water)?
- Would there be generic components of a charter that apply to all utilities (and potentially key stakeholders, such as regulators), which are then supplemented with specific articles that apply to particular types of utilities?
- Would charters apply to privately owned businesses that are active in the industry (e.g. a desalination operator)?
- How would these charters operate if more competition was also introduced (e.g. into the wholesale water market)?

To deliver on the PC's recommendations in respect of the charters, the PC's implementation plan will need to address in some detail how those charters will or should be developed, reviewed and updated. Further, the implementation plan should also consider arrangements to ensure that States have an incentive to develop and apply them.

[14] What constitutes a major augmentation would need to be defined, as presumably the industry should be left to make more conventional operational investment decisions.

4. Decision making frameworks

Melbourne Water is broadly supportive of the PC's findings and recommendations in respect of decision frameworks as they relate to the basis on which decisions should be made and the options that should be considered. In particular, Melbourne Water agrees that all options should be considered on a consistent basis.

Melbourne Water considers that benefits will be achieved from a co-ordinated approach, across multiple scales and sources, to integrated water planning and augmentation decision making.

Melbourne Water provides some additional comment on aspects of the PC's findings and recommendations that might assist in developing its final report.

4.1 Framework for decision making

In general, Melbourne Water considers that for good decision making to occur the following is required:

- Clear industry objectives
- Clear and transparent governance arrangements (including accountabilities and risk allocation), performance requirements and decision making processes and assessment criteria
- Governance arrangements and performance requirements that create incentives to achieve industry objectives
- Consideration of all possible options (e.g. demand, supply, price)
- Sufficiently detailed data on which to base complex decisions.

Of key importance in this framework are clear industry objectives. As noted in section 3.1, Melbourne Waters considers that there are multiple industry objectives that include cost, security of supply, water quality (public health and aesthetic), sewage quality, waterway health and social outcomes. These should all be explicitly recognised in the water industry's objectives. This approach has been articulated by the National Water Commission in a way which is consistent with the concept of Integrated Water Management (see section 7 of this submission for further details).

4.2 Assigning the augmentation decision to retail-distributors

The PC recommends that the retail-distributor be assigned responsibility (under a charter) for making augmentation decisions as well as procuring water supply and meeting security of supply standards. This is based on the view that the retailer-distributor ultimately bears the consequences and risks associated with major augmentation decisions.

It is worth noting that, in the Melbourne system, the bulk entitlements held by the retail water businesses, and the associated operating arrangements in place, are intended to provide the retail water businesses with control over the utilisation of their pooled entitlements, within the capacity of the existing supply system, on advice from Melbourne Water. System augmentation decisions are currently made by the Government via public strategies. The case study in section 3 of this submission illustrated how centralised decision-making by Governments on major augmentations has occurred in Victoria in recent times.

There are various decision making models which could be applied to the major augmentation decisions. These range from the Government making the decisions, through to the retailer-distributor making the decisions, or a collaborative approach which involves all water businesses across the water cycle. The decision making model put in place should best enable achievement of industry objectives.

Melbourne Water believes that in order to best support the industry objective as articulated by the National Water Commission and consistent with the concept of Integrated Water Management, there is a need for a co-ordinated approach to city and catchment planning and water supply augmentation decision making.[15] In the context of a co-ordinated decision making approach, and the need to make tradeoffs between the various industry objectives, it will be extremely important that there are clear governance arrangements, including decision making processes and assessment criteria.

In this regard, all water businesses could have an obligation in their charters to plan and make augmentation decisions on a co-ordinated basis in consultation with each other and relevant stakeholders, including local and state Government and the community. This would be done consistent with clear industry objectives and based on a transparent decision making processes and assessment criteria (this would be essential to ensure that joint decisions are made). In effect, this would be similar to the current Water Supply Demand Strategy process currently undertaken by

[15] Melbourne Water submission to the Ministerial Advisory Council, February 2011.

Melbourne Water and the retail water businesses in consultation with the Government and the community.

It would also be important to ensure that water businesses have appropriate incentives to make augmentation decisions across the entire water cycle, including all possible sources, regardless of the ownership of that option. This will be necessary to ensure that water businesses do not favour the sources for which they have ownership rights or the potential to generate revenue streams. For example, the retail water businesses may favour recycled water sources whereas Melbourne Water may favour stormwater sources. Further, as set out in the following section, it will be important to ensure that all option assessments accurately reflect the true cost and benefits of supply, including incorporation of externalities.

4.3 A real options approach to augmentation decisions

The PC has expressed the view that a more rigorous adoption of the real options / adaptive planning approach to planning and delivering augmentation of supply would have lowered the cost of supply augmentation in Melbourne and Perth. The PC considers that this could have been achieved by not committing to projects earlier than absolutely necessary or by incorporating sufficient flexibility to delay projects in the augmentation decisions.

The PC has cited increasing interest in a real options approach to augmentation planning in Australia as evidenced by a range of submissions that it has received.

Melbourne Water agrees that there is benefit in incorporating adaptive management approaches and thinking into augmentation planning and decision making. This has been recognised by the Melbourne water industry based on the lessons learned from the experience of managing scarce water resources during recent times of extreme drought. In this regard, the industry is currently developing an adaptive management approach, where it is proposed that the need to take action – be it a short-term drought response initiative or a long-term augmentation investment – will be reviewed on a regular basis and decisions will be made based on the best available information as it comes to hand. This includes the publication of various forward looking projections based on scenarios.

The key elements of any adaptive management approach for Melbourne could include:

- Water Supply Demand Strategy – sets out supply and demand measures needed to manage growth and climate change over the next 50 years
- Drought Response Plan – sets out how to respond to water shortages if they arise in the immediate to short-term, for example, if inflows are worse than expected

- Water Security Outlook – forward-looking projections on a scenario basis that help to identify when actions, scoped up in either the Water Supply Demand Strategy or the Drought Response Plan, need to be implemented to ensure water security
- Contingency Plan – provides for consultation on options that could be pursued in the event of extreme, and essentially unforeseeable, events.

In practice, however, it is noted that beyond examples such as the above practical application, the quantitative analysis underpinning real options can be challenging given the amount of data compilation, processing and modelling which is required. Melbourne Water also notes that there have only been a few published examples of the real options approach being used in water resource planning and none in Australia. Most early applications of real options were in the private financial sector with increasing interest in applying the concept and methods in the public sector, such as airports, energy facilities and roads in recent years.

For real options to be adopted fully in the urban water context, the Water Services Association Australia notes that, *"...acceptance will be required at all levels of the water utility, government and community at large. This includes planners, managers, government departments (the Departments of Sustainability and Environment, and Treasury and Finance in Victoria), ministers, economic regulators auditors, consumer and environmental groups, and the broader public*".

Given the application of real options is relatively new in the water sector, particularly its technical / quantitative application, Melbourne Water considers that further research is required to fully understand how it can be appropriately used. This should also include the ability of real options analysis to take into consideration non-market environment and social costs and benefits.

It is considered important that the framework used for augmentation planning and decision making is based on a well specified and transparent methodology that reflects an assessment of the costs and benefits of all options, including those costs and benefits that cannot be monetised. These are likely to vary according to the particular augmentations under consideration.

In this regard, given its current application and the level of understanding in the industry, a triple bottom line approach that incorporates externalities is favoured. Such an approach should, however, be applied consistently across the industry, including the treatment of environmental and social externalities. These should include amenity, public health, stormwater quality and river health objectives. A well designed research program to better understand and quantify these externalities should be a priority for the industry and Government. Such an approach will enable, rather than hinder, Integrated Water Management.

In effect, Melbourne Water considers the key issue is to ensure that the decision making framework is correctly specified and to then ensure that the correct tools and data are available to support the framework.

5. Industry structure

Melbourne Water is broadly supportive of the PC's findings in respect of industry structure and the priority it assigns to structural reform.

Melbourne Water provides some additional comment on aspects of the PC's findings and recommendations that might assist in developing its final report.

5.1 Industry structure and the Melbourne water system

The PC recognises that significant structural reform has already occurred in Melbourne (and delivered significant benefits) and competition reform has been examined in more detail by the Victorian Government than the PC could appropriately cover given the nature of its report.

The Melbourne water system is already vertically separated and contains a degree of horizontal separation (in essence close to the PC's Option 4). What does not currently exist across the board is horizontal separation in the:

- Headworks of the water system (e.g. the bulk entitlements are jointly held by the retail water businesses and all sources of supply are operated and managed by Melbourne Water on behalf of the bulk entitlement holders. Although this horizontal separation will occur to a degree with introduction of the Victorian Desalination Plant as provided by a private sector operator)
- Bulk treatment end of the wastewater system.

It is noted that in this regard the PC finds that:

- Horizontal separation of the bulk water supply function and of the wastewater treatment and discharge function warrants further consideration. It sees potential for efficiency gains from introducing these reforms, although notes they are likely to be more significant in the former case than in the latter case
- There are potentially significant risks and costs associated with establishing a fully competitive, decentralised market for urban water services (Option 5) at this time and it is unlikely that the benefits justify the costs.

As the PC is aware, the Victorian Department of Sustainability and Environment has been examining these options in considerable detail. Aspects of the work program include:

- A process for determining how best to optimise the operational management of the Melbourne headworks system
- An investigation of the most appropriate bulk water management arrangements for an expanded Melbourne water grid
- The option of establishing a separate grid manager to the asset owner and operator.

Melbourne Water believes the extent to which competition can be introduced in the bulk water and wastewater functions is a complex issue that should be based on clear objectives and a detailed and practical assessment of the costs, benefits and risks of various reform options. This is because if its introduction is not properly managed it may increase risks in providing long term secure supplies, safe drinking water, sewage treatment, meeting environmental requirements and Integrated Water Management. The essential trade-off is between the benefits and costs of:

- More integrated headwork system long term planning and investment, and shorter term operation and management (e.g. for water the benefits include running the headworks as an integrated system to optimise the use of resources across a variety of supply and demand management options, while for wastewater the benefits include the ability to divert flows across the integrated system)
- A decentralised decision making model based on competition (e.g. the extent to which different sources of supply or wastewater treatment can in practice compete and the costs of creating additional industry entities).

The rationale for taking structural reform to the decentralised model would be to introduce more competition and thus decentralise decision making into the process. Moreover, it is also difficult to see how a mixture of these two approaches can be effective, as an in-principle decision needs to be made between them. Further policy implications of competition including, urban rural water trade, security of supply and pricing issues, would need to be resolved before moving to a more competitive structure.

As the PC has identified, given the cost structure of the industry, the key focus from an efficiency perspective should be on getting the major augmentation decision making process more consistent with best practice.

6. Regulation

Melbourne Water supports some of the PC's findings and recommendations in respect of industry regulation. Melbourne Water considers that health regulation of drinking water provides a good example of accountable and transparent processes that should surround regulatory decision making.

Melbourne Water understands the PC recommendations regarding the need for economic regulation in the urban water sector. The PC's proposed approach would, however, place a high burden on the charters achieving the objectives the PC sets out for them, of which ensuring cost recovery is a subset.

6.1 Environmental and health regulation

The PC notes that environmental and health regulators should be more transparent and accountable in their decision making (i.e. in transparently assessing the costs and benefits of new standards etc.), and operate within the context of stronger and clearer policy guidance from Government (i.e. so they are not 'making' policy decisions).

The PC also notes that regulators should publish the reasons for their decisions in a similar manner to economic regulators and Governments should consider the development of appropriate decision review mechanisms (e.g. so they are transparently assessing the costs and benefits of meeting Government policies and these processes are accessible to the community).

Melbourne Water considers that health regulation of drinking water provides a good example of accountable and transparent processes that should surround regulatory decision making. The basis on which health regulations are set reflect the nature of the risks present (i.e. low probability but potentially extremely high impact events that affect public health). The limits on risk exposure are set primarily by reference to achieving international reference levels of (low) level of risk.

In terms of health regulation, drinking water health risk guidance is set out in the form of guidelines. There are two sets of guidelines:

- Australian Drinking Water Guidelines (ADWG)
- Australian Guidelines for Recycled Water (AGWR)

Both these guidelines are managed and developed by the National Health and Medical Research Council (NHMRC). The NHMRC applies a rigorous evidence-based approach to guideline development using a 9 step process that is outlined in the National Health and Medical Research Council Act (1992). Guideline development includes the following:

- Expert panels of research and medical scientists with international experience in guideline development
- Working groups including representatives from medicine, research and the water industry
- Extensive industry targeted consultation – with state-based workshops on guideline development and implications for water supply
- Public consultation process

Each set of guidelines takes 18 months to 2 years to develop and they are reviewed on a rolling basis. The ADWG were used to inform the World Health Organisation Guidelines for Drinking-water Quality. Both sets of guidelines are accompanied by supporting documentation and associated guidance documents.

The ADWG and AGWR are approved by a national process through the National Resource Management Ministerial Council (NRMMC) and are signed off by each State and Territory. These guidelines are then applied by each State. In Victoria the former have resulted in the creation of regulations (the *Safe Drinking Water Act 2003*), which are subject to regulatory impact statements to assess the costs and benefits of any proposed changes.

6.2 Economic regulation

The PC argues that economic regulation is primarily required to ensure monopolies do not charge excessive prices. It should not be used (or is not necessary) to ensure full economic cost recovery. It argues that cost recovery can be achieved by the use of charters requiring Government owned businesses to ensure full cost recovery and price monitoring can be used to ensure that they do not charge excessive prices.

Melbourne Water understands the basis for the PC's recommendations regarding the need for economic regulation in the urban water sector and is fully aware of the costs it imposes, which are significant.

The success of the approach proposed by the PC would, however, be largely dependent on the success of charters more generally, particularly in enabling full cost recovery. As a result, Melbourne Water considers it would be prudent, therefore, to

ensure that the charters are operating effectively before removing full economic regulation.

If the charters are not effective in setting roles and accountabilities, water businesses could be left in a position of being unable to at least recover costs. In this respect, economic regulation has been at least partially effective in managing to achieve this objective. (There are instances of businesses in the electricity sector that because they are not subject to economic regulation are less able to recover their costs). Economic regulation might therefore be assisting in this regard even though it is not its primary purpose.

There could also be a more focused approach to economic regulation which could be applied in the interim in order to reduce the associated costs. This would require the regulator to focus on addressing particular issues that are challenging the urban water sector over a particular period of time. For example, during times of significant capital expenditure, the focus may be most appropriately placed on capital delivery mechanisms. Or, where particular service provision is largely delivered via an outsourcing model, there may be less value in focusing on those expenditures given they are subject to competitive market pressures. This could reflect the emphasis that is placed in the charters on these matters given the medium term outlook.

It is worth noting that a charter that required cost recovery, but no more, could also subtly but importantly shift the focus of water utilities:

- From ensuring they maximise financial performance, subject to meeting other objectives
- To maximising the degree to which they meet other objectives, subject to meeting a minimum level of financial performance.

This could arguably weaken the focus on efficiency over time.

A further issue is the need to ensure that the economic regulator is working closely and effectively with the health and environment regulators, as well as the water businesses and the community. This will enable outcomes to be delivered that are consistent with the various needs in the community (e.g. better environmental outcomes as supported by a capacity and/or willingness to pay for those outcomes).

In this regard, in Victoria there are currently Memoranda of Understanding that exist between the Essential Services Commission and the Environmental Protection Agency and the Department of Human Services. These seek to ensure that the regulatory and decision making processes are closely integrated and informed, while avoiding any overlap or conflict, and ensuring these is appropriate information sharing.

7. Integrated resource management

Melbourne Water supports some of the PC's findings and recommendations in respect of integrated resource management. Melbourne Water agrees that all options should be considered on a consistent economic basis and that there are instances of where certain activities conducted within the context of integrated resource management have not been compared consistently with other options (e.g. re-use targets).

Melbourne Water does not accept the PC's views in respect of it inferring that the industry's approach implies that alternate source projects are "always" in the community's interests. However, Melbourne Water believes that, an integrated approach to water planning is likely to be in the community's interest. Nor does Melbourne Water necessarily accept the PC's views in respect of the inefficiency of restrictions and water conservation programs.

7.1 Mandated approaches to integrated resources management

The PC finds that there are broadly two types of efficiency gains to be realised from better integrated and coordinated water management. First, they identify gains from removing unwarranted impediments to water use and recycling. The impediments include, unclear property right arrangements for stormwater and wastewater and failure to factor in financial costs and benefits accruing across the entire water cycle or to put an economic value on changes in environmental and social outcomes. Second, they refer to gains from redesigning or eliminating Government actions that promote inefficient water reuse and recycling.

The PC notes that reforms in this area would need to go hand in hand with the development of property rights for wastewater and stormwater and an improved analysis and community awareness of costs and benefits. They cite the use of rainwater tanks as an example of what appears to be inefficient water conservation.

Melbourne Water agrees that all options should be considered on a consistent economic basis. But it also believes that integrated resource management is the appropriate vehicle through which to identify options for meeting the community's water services needs, through a clearly defined strategy (as in the Water Supply Demand Strategy and the Central Region Sustainable Water Strategy).

At present there is no single, concise definition of Integrated Water Management and this has been identified as an issue that creates confusion amongst stakeholders and the community. Definitions also vary nationally and internationally. For example in the United States integrated water management typically refers to supply and demand planning around traditional supply sources.

Terms such as Integrated Water Management, integrated water cycle management, water sensitive cities and cities of the future, amongst others, are used to represent aspects of the same concept.

In lay terms, Integrated Water Cycle Management is a process that brings together all facets of the water cycle — water supply, sewage management, river health and stormwater management — and combines them with urban planning to achieve strong financial, environmental and social benefits in an urban context.

The Victorian Ministerial Advisory Council's *Living Melbourne, Living Victoria Roadmap* proposes a model of integrated water cycle management that emphasises the role that different elements can play in supporting more liveable cities (see Figure 1).[16]

[16] Victorian Government, 2011, Living Melbourne, Living Victoria Roadmap, Ministerial Advisory Council for Living Melbourne, Living Victoria Plan for Water.

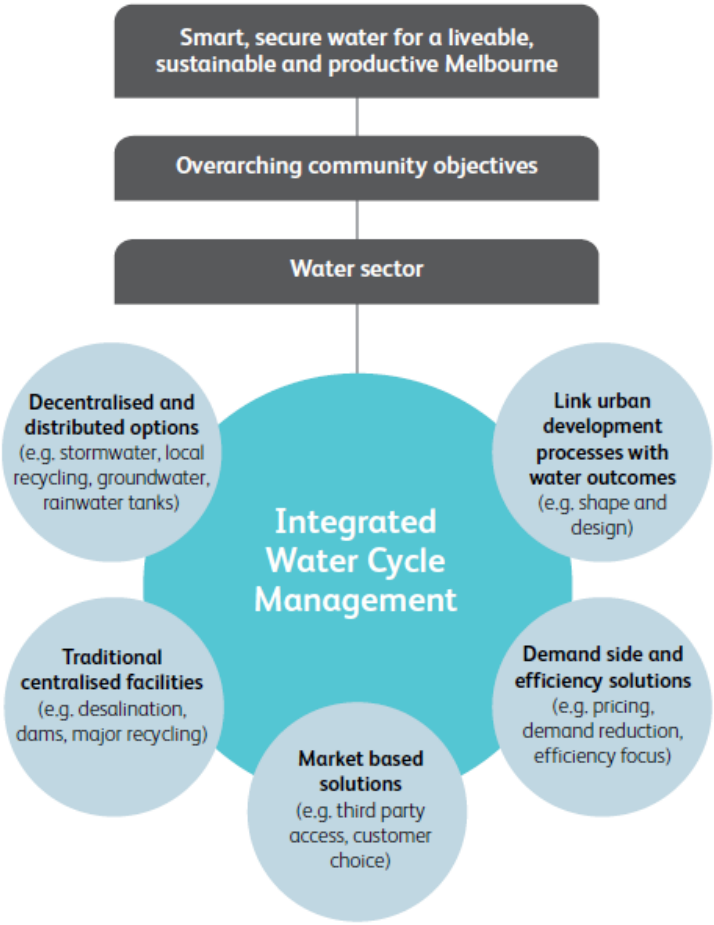


Figure 1 – Integrated Water Cycle Management

Integrated Water Management is a response to "traditional" water management approaches where these have perverse implications – such as single-source water supply systems that are exposed to climate change risk and the environmental impacts from the discharge of sewerage and stormwater that could otherwise be treated as a resource.

To stimulate investment and thus innovation in these Integrated Water Management approaches, targets and other incentives are often used. It is important to recognise that such mechanisms can be appropriate at a specific point in time (i.e. in the early, start up phases) and for specific reasons, and must be periodically reviewed thereafter.

For example, in Melbourne targets have been used to promote recycled water projects. This target was designed to stimulate innovation and to encourage investment during the 'start up' phase when the technology and management of such systems carried significant investment risk. The intention of this target was to encourage investment in and promotion of water recycling projects. Over time,

targets have moved from output (recycled water) to outcome (potable substitution) based targets.

Increasing water recycling has a range of public and private benefits. It is however difficult to quantify the overall benefits of achieving the water recycling target, because they are different for each recycled water scheme and include direct financial and more intangible benefits such as amenity and public health benefit of maintaining sporting grounds during drought. An assessment based on a short term $/KL basis may therefore lead to incorrect conclusions about the economic value of such projects or targets.

Mandated approaches to Integrated Water Management can be a response to a number of issues, including for managing climate change and variability, and have a range of public and private benefits. These need to be considered on a case by case basis against the costs and benefits of other options.

In the Victorian case, the use of targets and other tools to promote stormwater schemes has been used to stimulate investment in novel areas of water management, where the multiple benefits are not always captured in traditional financial or economic assessments. The on going use of such measures should always be reviewed and projects must still be assessed for prudence and efficiency relative to other ways to achieve the same range of benefits. Rather than preclude the use of mandated mechanisms, it is suggested that the PC acknowledge their role in stimulating innovative investment, particularly in the short term, and support the development of more robust assessment frameworks that reflect the full range of benefits of the projects being proposed by industry and community (see section 4).

7.2 Restrictions and scarcity pricing

The PC finds restrictions are a costly and inefficient way of managing demand, although apparently reasonably well accepted by the community. It recommends that the use of water restrictions should be limited to emergency situations and that consumers should instead be able to exercise choice in their water consumption behaviour through a more efficient price mechanism.

Melbourne Water can confirm that research indicates that there is a strong degree of customer acceptance of restrictions, including when they have been in place at reasonably severe levels over a long period.

Melbourne Water also notes that restrictions were never meant to be used on a permanent basis, but are rather a legitimate tool to manage extreme situations. Restrictions are a common approach around the world and reflect the extremely

'lumpy' nature of investing in major water supply augmentations. Unlike most other resources (e.g. gas, coal, oil), water has the unique characteristic that the supply side is extremely unpredictable.

While there have been criticisms of the 'blunt' nature of restrictions, the context in which they have most recently been used, is the rapid and extended shift in climate conditions. Previous restriction periods, notably in the 1967/68 drought and the 1982/83 drought were of shorter duration. Climate change and increased variability presents increased uncertainty in managing water resources and requires a consideration of the full range of supply and demand management tools to manage long term security of supply and drought response, including the shift to more climate independent sources, diverse supply options, and economic instruments to provide appropriate signals for supply investments and demand management.

The PC finds that more closely reflecting the opportunity cost of supply, flexible (scarcity) pricing of bulk water would facilitate a more efficient allocation of water resources and more efficient supply augmentation decisions. The PC recognises that scarcity pricing at the retail level could also assist in reducing the cost of supply in the long run, but is of the view that the benefits of mandating this approach for all customers may yield little benefits relative to other policy responses given that consumer demand is not responsive to changes in price in the short term.

Melbourne Water considers that scarcity pricing is a concept that needs to be considered further in order to better understand why it is being used, how it could be applied (e.g. at the bulk level only, or at the bulk and retail level), how the price would be determined and how effective its real world application would be. This would require ongoing research, tariff specification and potentially application on a trial basis.

The PC has found that application at the bulk level would facilitate more efficient allocation and investment decisions. However, Melbourne Water notes that the key issue which must be considered is the responsiveness of the supply side to emergency situations and scarcity prices (i.e. will the response be timely enough to generate adequate supply). In times of serious water scarcity, water resource managers and system operators require increased certainty as to the expected demand reductions of outcomes and to this end restrictions provide an effective, and community supported option for conserving available supplies.

In addition, greater reliance on scarcity pricing at the retail level would almost certainly require some complementary measures (including education and hardship policies) to assist customers in adjusting and responding to the new and much sharper

price signals sent. In establishing what the 'right' mix of price and non-price based tools is, the following factors must be considered:

- The responsiveness of customer demand to changes in price (i.e. the price elasticity of demand)
- The practical considerations of creating a stronger link between price and demand, such as updating billing systems and cycles and educating customers
- Customer impacts of higher water prices and/or price shocks, particularly large families and low income and vulnerable customers
- Investigating options that provide consumers with more flexibility to respond to price signals (e.g. smarter metering).

If inappropriately applied, the use of scarcity pricing might prove to be unsustainable (e.g. exacerbate the concerns regarding utility prices that are evident currently).

It is worth noting that water restrictions are highly effective for demand management (even if they are not particularly cost effective as the PC argues). This is illustrated in Figure 2 below. Moreover, they rely on broad community acceptance that there is objective merit in preserving water supplies. Moving to scarcity pricing might weaken this acceptance over time and make restrictions less effective.

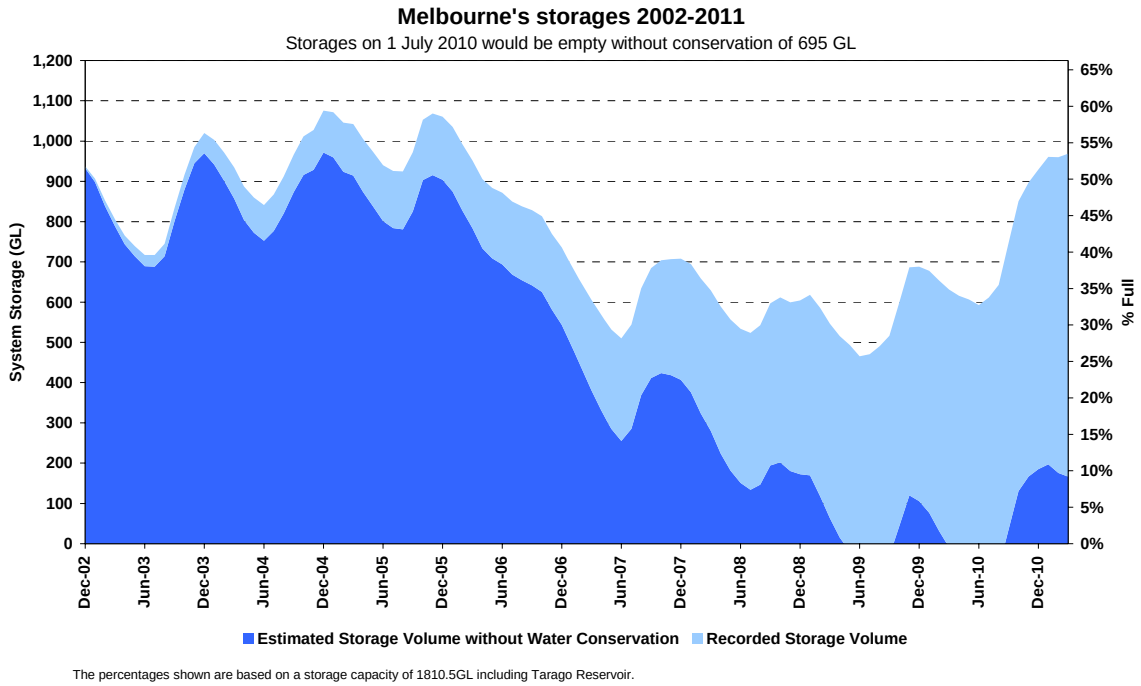


Figure 2 – The impact of water restrictions

Melbourne Water also acknowledges that the move to more rainfall independent water sources is likely to lead to questions being raised about the rationale for tools such as scarcity pricing and restrictions outside of emergency circumstances, because at these times there will be a clear option to increase consumption for a given price of water.

7.3 Other demand management

The PC also finds that demand management schemes are inefficient and recommends that neither Governments nor regulators should mandate water use efficiency and conservation activities, unless there is a market failure present and it is clearly established that the social benefits of intervention exceed the social costs.

Melbourne Water is of the view that a real options approach in the face of profound uncertainty is likely to recommend that a range of options is used to provide the water services community wants. Over time, some of those are likely become more widely used as their merits are revealed, while others are likely to become less used where they prove to be less cost effective. It would seem to be inconsistent to rule out options that may be immature at present (and therefore higher cost). The use of targets seems to be a widely used method of incentivising trialling these options.

Demand management has been an effective tool in managing the supply demand balance and is also widely accepted by customers.