

Victorian Competition & Efficiency Commission
GPO Box 4379
Melbourne VIC 3001

5 October 2007

To whom it may concern,

Re: Monash University Submission to the Review of the Metropolitan Water Sector

Thank you for the opportunity to contribute to the Victorian Competition and Efficiency Commission's (VCEC) review of the metropolitan Water Sector. We believe that this review is timely given the unprecedented challenges faced by Melbourne's metropolitan water sector in relation to population growth, climate change and environmental degradation.

We understand that this review is about identifying an efficient institutional structure and 'least cost' water supply solutions. We interpret this to mean least cost to the economy, least cost to the environment and least cost to society. It is from this perspective that we believe we can make salient comments with regard to delivering infrastructural and governance solutions that will establish Melbourne as a sustainable and innovative city well into the future.

This submission has been prepared with input from almost twenty Monash University researchers working at the forefront of best practice water management, governance, climate change and sustainability. Over the past few decades, Monash University has established itself as a centre of excellence for research into the sustainable management of water resources and urban sustainability, and is host to numerous water related institutes and programs including the: National Urban Water Governance Program; Institute for Sustainable Water Resources; Water Studies Centre; Monash Sustainability Institute; Monash Climate Group; and the Facility for Advancing Water Biofiltration.

We invite the VCEC meet with us at Monash University as part of this review process, and to incorporate the lessons from scientific thinking in sustainability and urban water management.

Yours Sincerely,



Dr Rebekah Brown
Program Leader
National Urban Water Governance
Program,
School of Geography and
Environmental Science, Faculty of
Arts



Dr Jason Beringer
Senior Lecturer
School of Geography and
Environmental Science, Faculty of
Arts



Associate Professor Ana Deletic
Institute for Sustainable Water
Resources,
Department of Civil Engineering,
Faculty of Engineering



Dr Megan Farrelly
Research Fellow
School of Geography and
Environmental Science, Faculty of
Arts



Dr Tim Fletcher
Institute for Sustainable Water
Resources,
Department of Civil Engineering,
Faculty of Engineering



Dr Michael Grace
Director, Water Studies Centre,
Faculty of Science



Professor Barry T Hart
Director, Water Science Pty
Ltd



Ms Belinda Hatt
Research Assistant -
Project Leader,
Department of Civil
Engineering, Faculty of
Engineering



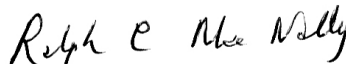
Ms Nina Keath
Research Fellow
School of Geography and
Environmental Science,
Faculty of Arts



Professor Sam Lake
School of Biological
Sciences, Faculty of Science



Professor Amanda Lynch
Federation Fellow
School of Geography and
Environmental Science,
Faculty of Arts



**Associate Professor Ralph
Mac Nally**
Associate Professor
School of Biological
Sciences, Faculty of Science



Dr Grace Mitchell
Senior Research Fellow

Institute for Sustainable Water
Resources,
Department of Civil Engineering,
Faculty of Engineering



Dr Kwame Mfodwo
Lecturer
Faculty of Law



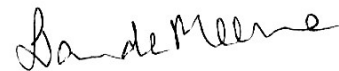
Mr Peter Morison
PhD Candidate
School of Geography and
Environmental Science, Faculty of
Arts



Dr Wendy Stubbs
Lecturer
School of Geography and
Environmental Science, Faculty of
Arts



Professor Nigel Tapper
Monash Sustainability Institute
School of Geography and
Environmental Science, Faculty of
Arts



Ms Susan van de Meene
PhD Candidate
School of Geography and
Environmental Science, Faculty of
Arts



Dr Tony Wong
Chief Executive Officer
Facility for Advancing Water
Biofiltration
Principal, EDAW

Reform of the Metropolitan Retail Water Sector

Monash University Submission

About this submission

This submission is structured in two main sections. The first provides a broad overview of leading thinking in urban water management and governance as found through comprehensive academic studies. The second section responds to each of the stated objectives of this review, which are assessed against best practice urban water management principles.

Given that this is the first step in this review process, we have chosen in this submission to focus on broad principles of sustainable urban water management. In subsequent submissions we will provide more specific recommendations as more details are made publicly available about this review process.

Section 1: Moving to the Water Sensitive City: Principles for Reform

It is now well accepted that Melbourne and other Australian cities need to find new ways of managing our urban water systems (CoA, 2002), and all levels of government have made significant efforts in this area. The National Water Initiative (NWI), which is the national water reform framework for Australia, commits all states and territories to innovation and capacity building to create Water Sensitive Australian Cities (clause 92). While the attributes of a Water Sensitive City are not stipulated in the NWI, we have drawn upon leading thinking and research in the area of best practice urban water management to propose a set of fundamental principles that would underpin a Water Sensitive City. We recommend that this review should be strongly informed by the following principles:

1. Intergenerational equity – In a Water Sensitive City, communities and their governments will understand and agree that current development must not compromise the ability of future generations to enjoy secure water supplies and healthy natural water environments. This will mean that urban water managers take a long-term view when planning the technological and institutional infrastructure for supporting water services.
2. Triple bottom line approach – In a Water Sensitive City, urban water managers will measure the ‘value’ of water and water services in social, environmental and economic terms rather than financial ‘cost’.
3. Integrated approach – In a Water Sensitive City, water resources including water supply, sewerage and stormwater services will be managed as part of a total water cycle. Urban water managers will choose to invest in water supply and sewerage options that are beneficial to waterway and ecological health, and community wellbeing. The Australian Senate recognised the importance of this approach in its 2002 review of urban water management: “*Each component of the urban water management system cannot be viewed in isolation from other parts of the system and it must be integrated with the management of other urban infrastructure*” (CoA, 2002). In a Water Sensitive City, water will also be understood to be part of a larger nutrient and energy cycle and urban water managers will choose water sources that do not produce excessive greenhouse gases or nutrient discharges.
4. Diverse water sources – In a Water Sensitive City, urban water managers will invest in a diversity of water sources underpinned by a range of centralised and decentralised infrastructure providing cities with the flexibility to access a ‘portfolio’ of water sources at least cost and with least impact on rural and environmental water needs. Institutional systems will optimise the management and delivery of centralised and decentralised water sources and associated technologies. The Prime Minister’s Science Engineering

and Innovation Council Working Group recognised the importance of a portfolio approach in its recent report - *Water for Our Cities: Building Resilience in a Climate of Uncertainty* (2007).

5. City as a catchment – In a Water Sensitive City, urban water managers will minimize importing potable water, and exporting of wastewater, from and to areas outside of the boundaries of the city, and will instead optimize the use of water resources within a city in a fit-for-purpose capacity. A Water Sensitive City will be viewed as a catchment and stormwater and treated wastewater will be viewed as important water sources.
6. Ecosystem services – In a Water Sensitive City, waterways will be valued as an integral part of the city, and ecological health will be actively protected. Water managers will recognise that healthy ecosystems and waterways provide important ecosystem services that make the city more liveable and mitigate the impact of a city on the environmental values of aquatic systems within and downstream of the city. For example, vegetated stormwater treatment technologies (often referred to as WSUD¹) will not only cleanse polluted stormwater, but will also provide micro-climate and amenity benefits. Waterways will be integral to the provision of food webs supporting recreational and commercial fishing, passive and active recreation and the processing and assimilation of pollutants (Meyer et al., 2005).
7. Resilience to climate change and variability – A Water Sensitive City will be resilient to the effects of climate change and variability. Diverse water sources (point 4) will ensure that the city can adapt to both water scarce and water abundant conditions. Because waterways will be protected, these will also be resilient, helping to provide amenity for the community. WSUD (section 6) will also provide micro-climate benefits and act as heat sinks which will be particularly important under projected global warming conditions and the extreme variability of Australia’ climate and streamflows.
8. Social capital – a Water Sensitive City will be home to a smart, sophisticated and engaged community, living a sustainable lifestyle that is sensitive to the inter-dependent nature of the built and natural environments. Communities will be actively (as opposed to passively) engaged in decision-making and will respond to signals in their urban environments regarding responsible water use. Social capital will extend to the professionals and practitioners in the water sector, in relation to their capacity for innovation and sustainable management of the city’s water resources, and to all levels of government in relation to the underpinning regulatory and administrative framework. Technologies, infrastructure and urban form will be designed so that they reinforce sustainable practices and social capital.
9. Business case – In a Water Sensitive City, governments, businesses and the private sector will have the institutional and economic incentives to invest in sustainable solutions.

Metropolitan Melbourne is often informally acknowledged as one of the leading international cities in advancing sustainable urban stormwater management, and in particular WSUD.

¹ Water Sensitive Urban Design (WSUD) reflects a new paradigm in the planning and design of urban environments that is ‘sensitive’ to the issues of water sustainability and environmental protection. As defined by Wong (2006a), WSUD is focussed on the synergies within and between the urban built form and landscape, and the urban water cycle, recognising that community values and aspirations play an important role in urban design decisions and water management practices. Therefore, it challenges conventional urban water servicing by inter-linking the management of urban water streams (potable supply, wastewater and stormwater) with the goals of minimising and treating pollution discharges, reducing potable water use, and efficiently matching different water sources (such as recycled water and stormwater) to fit-for-purpose uses. These aims are met through the urban design process (the planning and architectural design of urban environments) by: the provision of integrated urban water management infrastructure; reintroducing the aesthetic and intrinsic values of waterways back into the urban landscape; and promoting new forms of urban design and architecture with the built environment. (Wong, 2006b)

Figure 1 below shows the trajectory of Melbourne in its progress towards the Water Sensitive City. A recent study by Brown and Clarke - *Transition to Water Sensitive Urban Design: The Story of Melbourne, Australia* (2007) reveals that Melbourne has made significant progress in institutionalising the ‘Waterway City’, and the authors argue that Melbourne is the most advanced Australian city in this area.

Based upon past achievements, this review provides a timely opportunity to create the right set of institutional drivers for Melbourne to become an international leader in creating a Water Sensitive City.

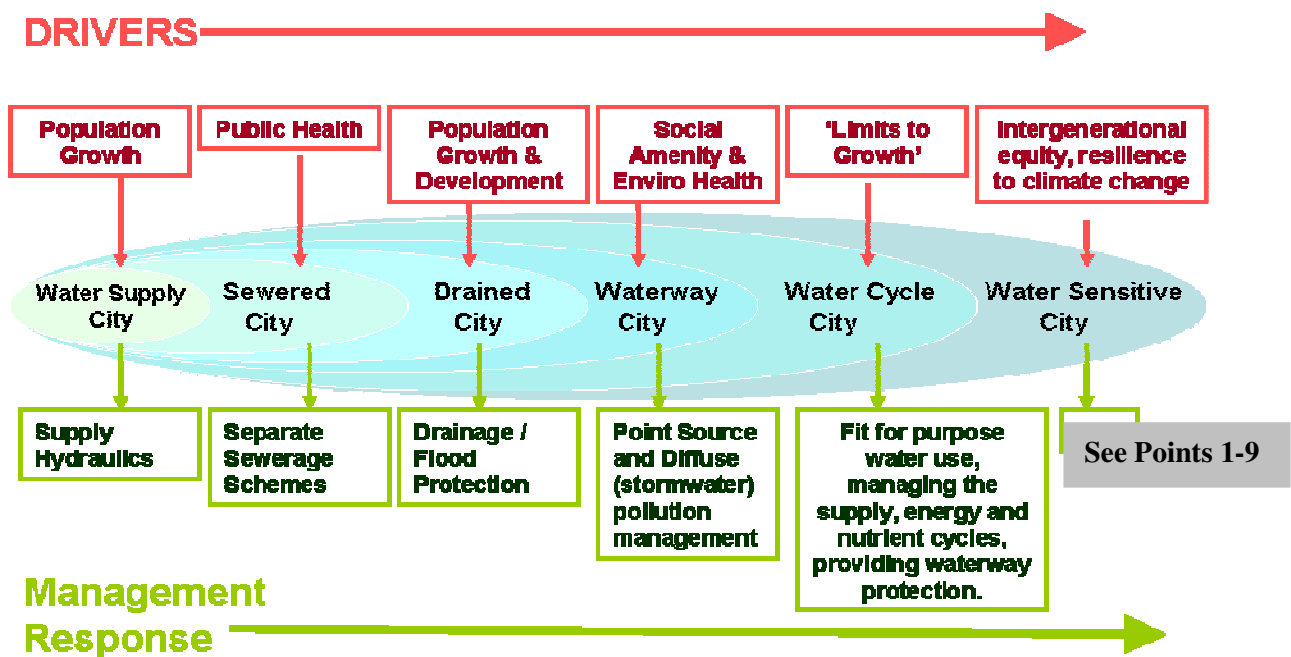


Figure 1: Urban Water Management Transitions Framework (Brown et al, forthcoming)

Section 2: Responding to the Terms of Reference

This section draws on leading thinking and academic research around best practice urban water management to assess and respond to the stated objectives of this review. Each objective is highlighted in bold.

2.1 Review Objectives

To review and recommend to the Victorian Government options to improve the structure of the metropolitan retail water sector to ensure it continues to provide secure and reliable water services at least cost to the community.

Objective 1: the best structure to allow for the efficient and least cost provision of Melbourne’s water supply upgrades, as well as ongoing safe, reliable and sustainable water and sewerage services to Melbourne;

Safe and reliable - It is likely that the most reliable and sustainable solution to Victoria's water shortages will revolve around an integrated set of diverse water sources, including rainwater, stormwater, greywater, sewage and seawater. The importance of a diverse 'portfolio' approach has been recognised by the Prime Minister's Science, Engineering and Innovation Council, in their recent report - *Water for our Cities: Building Resilience in a Climate of Uncertainty* (2007).

"Water supplies to Australia's cities need to move from reliance on traditional sources to an efficient portfolio of water sources which can provide security through diversity. Like a share portfolio, flexible and cost effective access will be underpinned by diversity, including centralized and decentralised water infrastructure. Like a share portfolio, the composition of water source portfolios also needs to be reassessed as new information on costs, prices, climate, environmental objectives and impacts, and risks becomes available." (pg. 11)

A management structure should be able to facilitate progress towards this objective. The structure needs to allow water organisations to be responsive to local communities (and encouraging sustainable water use behaviours), deliver and manage water services at differing scales (from on-site facilities, and precinct through to regional schemes) while also meeting the demands of the broader water system within which it operates.

Each of the diverse water sources have unique supply reliability, environmental and public health risks, and cost profiles. In a Water Sensitive City, these would be optimised (even on a short term basis) through the availability of diverse infrastructure associated with the harvesting, treatment, storage and delivery of the water sources. Centralised and decentralised water supply schemes can range from the on-site rainwater tank for non-potable use to city-scale indirect potable reuse schemes and the 'pipeline grid' linking regional reservoirs.

Melbourne has largely invested in centralised solutions as part of the water supply portfolio with existing dams and reservoirs. More recently, the government has focused its supply security agenda upon other centralised initiatives such as the proposed desalination plant and the North South pipeline. However, there are a number of concerns about their environmental and social costs, which we would like to discuss in more detail with VCEC. We also strongly encourage the review to consider institutional mechanisms that realise a diverse portfolio of sources and technologies. While traditional centralised sources have provided a degree of reliability in the past, the impacts from climate change such as reduced yields to reservoirs will require the adoption of other supply solutions. As part of ensuring reliability and resilience to climate change, it is critical that Melbourne has a level of redundancy in the system. This will be essential if we are to be prepared for future extreme events.

If Melbourne is to become resilient to the effects of climate change and future extreme events, and to ensure supply security for growing populations into the future, it is important that future institutional mechanisms are designed to support co-investment in the remaining part of the supply portfolio. This will require sophisticated structures that govern the co-existence of multiple technology types operating at different scales in future water poor and water rich conditions, and the host of scenarios in between.

If Melbourne is to move to the Water Sensitive City, it will be important that any institutional structure facilitates linkages and coordination between water supply and sewerage with other

important water related functions. These functions include land use planning, stormwater quality management, waterway health protection, and reducing greenhouse gas emissions. Creating such linkages will allow for solutions with multiple benefits and this will reduce overall costs.

Least cost - We understand ‘least cost’ to mean least cost to society, least cost to the economy and least cost to the environment. The current urban water system currently has a number of adverse environmental costs. This includes i) over-extraction of potable water from upstream catchments; ii) pollution of waterways from the disposal of wastewater into downstream environments; iii) polluted stormwater loads discharged to waterways; iv) high energy use from treatment technologies.

To provide a ‘least cost’ solution, Melbourne will need to find the most efficient water supply options that also deliver environmental and social benefits. To assess the most efficient option, this review must include consideration of the financial costs associated with existing and projections environmental degradation from existing urban water practices.

Figure 2 below shows that, while the largest source of water supply for Melbourne is from inland reservoirs, there are significant amounts of redundant stormwater and wastewater being generated within the Melbourne catchment. Under current rainfall conditions, the equivalent of 110% of Melbourne’s water supply needs is washed down Melbourne’s stormwater drains. In addition, more than 70% of Melbourne’s water supply needs are returned to the wastewater stream. While these figures represent a missed supply opportunity, they also represent an ongoing economic and environmental liability. In 2006, Melbourne Water spent approximately \$35million on stormwater quality management and waterways rehabilitation and this is predicted to increase to approximately \$60million by 2013. Any review should investigate institutional opportunities for exploiting these sources for improved economic, social and environmental outcomes.

For example, stormwater reuse will have multiple benefits. In addition to providing water supply, recycling stormwater, in conjunction with implementation of WSUD principles, will result in significant improvement to Melbourne’s urban and periurban waterways. Improving the ecological health of these streams not only directly addresses the key goal of environmental sustainability, but will

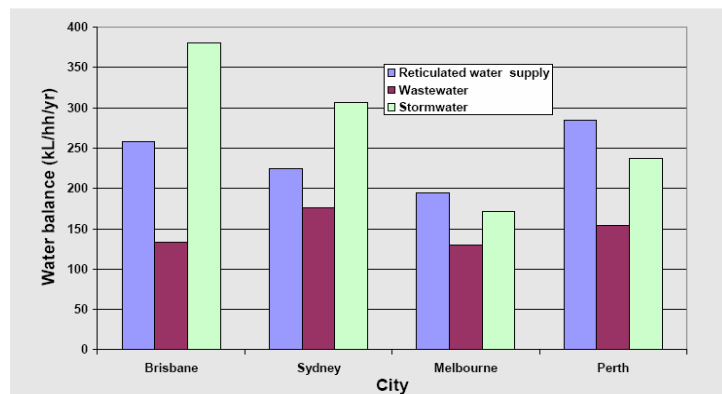


Figure 2. Cities as Catchments: Average Annual water balances from households – Brisbane, Sydney, Melbourne, Perth (Source: Coombes and Barry, 2007 cited in PMSEIC, 2007, pg 10)

enhance provision of critical ecological services, including pollution mitigation and control. In particular, reduction of nutrient (nitrogen) loads to Port Phillip Bay (Harris et al., 1996) continues as a major management driver. The ‘urban stream syndrome’ (Meyer et al., 2005) describes a series of assaults on the ecological condition of waterways, arising from both poor water quality and highly flashy hydrology emanating from direct connection of the streams to the urban catchments via drainage networks. WSUD and stormwater reuse will ameliorate the

drastic, adverse effects of this syndrome, resulting in improved ecological health and more efficient and effective ecosystem services.

Efficient and sustainable - When measuring efficiency, it will be important that both short-term and long-term efficiency are considered. By incorporating sustainability principles into the review processes, the sector will be increasing the likelihood of achieving long-term efficiency.

The Terms of Reference for this review state that “significant efficiency and performance gains have been extracted by the retail companies in the past decade.” However, there is no publicly available evidence demonstrating that the sector is currently ‘inefficient.’ There is also an absence of available evidence to support an assertion that further structural reform will indeed increase efficiency. In fact, there is evidence that there have been a number of ‘inefficiencies’ as a consequence of the previous efficiency reforms in the mid 1990s.

Brown and Keath (2007), in their review of institutional drivers and barriers to sustainable urban water management, identified widespread concern from urban water professionals about the ‘costs’ associated with the efficiency focus of the last two decades (since the National Competition Policy reforms). Over 250 in-depth interviews with middle to senior level urban water professionals revealed a commonly held perception that the recent focus of governments upon delivering short-term economic efficiency has reduced incentives for investment in long-term public policy and infrastructure investment. In the interviews, the majority of urban water professionals believed that while there were some efficiency gains, many of these were offset by a number of unanticipated inefficiencies. The key issues raised by interviewees included the erosion of in-house technical and scientific knowledge and expertise, and the adoption or promotion of a ‘management culture’ lacking a scientific underpinning thereby reducing the capacity to promote best practice. The focus on short-term economic efficiency was also perceived to have limited incentives for innovation and the trialling of new approaches, including those that were not competitive in the current market.

In a period where the sector is faced with new challenges arising from population growth, drought and climate change, it will be important that institutional arrangements are flexible, adaptive and open to innovation, with industry professionals being equipped with the requisite knowledge and expertise. Short-term efficiency must not be prioritised at the cost of long-term sustainability.

When considering organisational or institutional structure in this review process, the scope for structural reform can vary from rearranging administrative/organisational arrangements, through to introducing new coordination mechanisms and organisational learning processes.

While it is well recognised that contemporary administrative arrangements are fragmented over the water cycle (including land use-planning and management), current research indicates that there is no optimal ‘structure’ because ‘culture’ is an equally critical variable to the effectiveness of an administrative regime. Indeed, Mitchell’s (2005) review of structural reforms in the water sector over the last 30 years found that there are always issues with any structural arrangement, and that structural reforms ultimately only ever displace these issues. Mitchell suggests that reforms should be focused on minimising the consequences of edge and boundary issues between organisations by developing effective organisational cultures and mechanisms that encourage collaboration and coordination. This is further supported by the research of Meadowcroft (2002: 179) who advocates for institutional pluralism,

suggesting that sustainability issues are ‘messy real-world problems’ that require ‘messy institutional frameworks’. He goes on to suggest that:

“in an uncertain world ... robust, flexible and continuously evolving mechanisms, attuned to perturbances at different scales, will be required to cope with the management of environmental challenges in the years ahead.”

Similarly, other urban water industry commentators have also called for a shift away from purely centralised operations to incorporate decentralised structures (institutional diversity) that may overlap (Ferragina *et al.*, 2002; Plummer *et al.*, 2005). Indeed, Connor and Dovers (2004) recommend that radical change in structures is required to flatten hierarchies and adopt greater community consultation.

It is essential that this review investigates the current and future links required between the retailers and other relevant stakeholders such as state government agencies, local government, developers, consultants, and the community. It will be particularly important to identify how these arrangements can be effectively coordinated.

Objective 2: options to reduce costs of the metropolitan sector whilst maintaining and improving the level of service over time and ensuring it remains innovative and financially viable;

Reduce costs - In the absence of objective and publicly available data showing the implied ‘un-affordability’ of current and future water services, it is difficult to adequately respond to this objective. This is further compounded by the lack of available evidence of the community’s willingness to pay.

In 2005, Wolff and Hallstein from the *Pacific Institute for Studies in Development, Environment and Security* conducted a review about how to improve the effectiveness of water delivery services in the United States, with a particular focus on water utility restructuring. This review identified that when considering the performance of water utilities, current and future service prices are one of the indicators. They observed that in many cases, when regions were claiming that prices were too high, this was a “*problem of perception rather than an objective statement about costs or prices relative to other communities*” (pg. 27). They argued that “*people who claim existing rates are not affordable should be required to explain what threshold they are thinking of and, for whom they think rates are unaffordable, lowest income families, medium income, etc. Only by developing such numbers can one later judge whether a solution option is working or not.*” (pg. 28)

Frameworks for reducing costs and improving service will need to take a triple bottom line approach which ensures that reducing financial costs does not increase environmental and/or social costs.

A current example of a water sensitive initiative based on the triple bottom line approach that successfully addresses affordability for those vulnerable in the community is the Yarra Valley Water and the State Government Smart Homes Program. This offers a home audit and retrofit service, which has been shown to achieve an average 22% reduction in water consumption, thereby reducing water demand and improving overall affordability for the homeowner. This program has been the recipient of national awards and now forms the basis of hardship programs for other utilities across Australia.

Level of service – On the issue of ‘levels of service,’ we commend the Melbourne water retailers in their proactive approach to water restrictions and community engagement over the last four years. For example, the retailers have been successful in developing important relationships with key community stakeholder groups (such as sporting associations) and local businesses to address increasing risks and to reduce water consumption practices.

In comparison to other Australian cities, Melbourne has been successful in achieving a level of behavioural change (i.e. use of water in more sustainable ways by the community) with the successful introduction of permanent water conservation measures (not restrictions). This is not about restricting demand or end-use, it is about encouraging long-term water-wise behaviour. This potentially has enormous benefits for broader sustainable consumption behaviour. It would be remiss if the Government set the objective of future ‘levels of service’ at an unrestricted level of water consumption given not only the significant investment in achieving this social capital gain, but perhaps more importantly, a unique success in behavioural change and community awareness and knowledge of the water cycle.

As stated in the issues paper, the goal for water restrictions includes moving to “*low level or no water restrictions by 2013. Restrictions would be lifted earlier if inflows closer to the average of the last 10 years are restored.*” Given climate change and population growth projections, and continuing degradation to the natural environment from existing water management practices, sustainable water stewardship is essential. This must include the proactive practice of permanent water conservation measures as well as water restrictions when needed as an important component of an overall water conservation approach. A water conservation approach should not just apply in times of crisis but should build upon the good social capital already developed around water conservation and individual responsibility.

Innovative – As discussed in section 2 above, we have concerns about the potential implications of reducing expenditure, on the capacity of the sector to innovate. In this time of significant uncertainty about future water conditions, it will be particularly important to foster organisational cultures and regulatory environments that encourage innovation. Given that urban water professionals believe that the efficiency approach has diminished institutional incentives for innovation, it will be important that this review identifies opportunities for providing greater institutional incentives for innovation. It is widely accepted that new technologies will rarely be competitive in the existing market until they are refined. Therefore any proposed governance arrangement will need to provide a protective space from market competition so that new technologies can be adequately developed and trialled, and associated institutional learning is actively facilitated.

Brown and Keath’s (2007) research highlights how Melbourne’s urban water professionals perceive the importance of competition and comparison amongst organisations in driving innovation and best practice thinking. In particular, interviews with staff in the retailers reported that the work of other retailers influenced their thinking and practice and that the dispersed responsibilities allowed for local experimentation at a smaller scale that could then be replicated by other retailers if successful. This was seen as important to innovation and creativity in the sector.

Objective 3: the broad staging and timing of any proposed structural reforms to the metropolitan water sector;

While we are unable to comment on the timing, as a reform has not been scoped, it is our position that this review is too narrow and time-restricted. We recommend the following process to be followed as part of this review, which should be based on working towards

Melbourne as a Water Sensitive City at least cost, economically, environmentally and socially.

1. It is important that the first step in the review process includes setting a shared vision for urban water management, beyond economic efficiency, to assist in providing future directions (what is it we are trying to achieve – i.e. Water Sensitive City), as well as a future goal to benchmark against. This is an important element in determining the necessary trade-offs (if any) that will be required over the short and long term. This vision should be developed collaboratively involving all relevant stakeholder groups.
2. A shared agreement needs to be reached regarding the expected ‘levels of service’ required for a) the community b), the business community, and c) the environment (maintenance of natural waterway health for anthropogenic and intrinsic ecological benefits).
3. A review of the regulatory and administrative regime is required to determine what changes to current legislation and policy is needed to further promote the vision established in the first step of this review (i.e. Water Sensitive City).
4. An assessment of the institutional and human capacity is needed within and across organisations to deliver: a) the level of required service, b) innovative technologies, policies and programs to promote sustainable (efficient) water use and c) the necessary social capital to help actively engage with the community.
5. A review and assessment is needed of existing mechanisms for collaboration and coordination to promote competition and innovation.
6. Finally, it will be important to assess what are the required resources (financial, human, technical) to make the necessary changes.

Objective 4: any related improvements to governance and industry structure in the context of the Government’s Water Plan and climate change.

As identified in section 1, Melbourne is recognised for its leadership in sustainable urban water management and WSUD and has the potential to lead the world in becoming a Water Sensitive City. This review is at the right time to investigate the strategic governance mechanisms required to bring this about.

Sustainable solutions will require an integrated approach to the total water cycle across water supply, wastewater, stormwater, groundwater and waterway health, as well as the social and amenity aspects of water. Therefore, understanding the links to land use planning and local conditions and opportunities will be essential to ensuring opportunities are maximised.

If Melbourne is to become a Water Sensitive City, the key point that must be addressed is the links between the water retailers with Melbourne Water and local governments. Indeed, local government actively controls 30 - 40% of the urban landscape and has planning control over much of the remainder. They are also a major water user and manage much of the urban open space that Melbourne's value. They are also central to stormwater management in both the treatment and prevention of pollution as well as the harvesting of stormwater for reuse. Also, for all non-centralised sources and technologies, local government is likely to play an important role in identifying projects, engaging with the community and implementing processes.

Furthermore, in recent doctoral research conducted by Mr Peter Morison, officers within the thirty-eight local governments in metropolitan Melbourne frequently acknowledged the valuable role of the water retailers and cited examples of strong regional partnerships with the

retailers to reduce local potable water demand. Strong relationships and mutual respect between these organisations is necessary – local governments act as local liaisons, facilitating community enquiries regarding many retailer services and providing feedback to the service organisations on local needs and issues. According to the interviewees, residents are not concerned with who manages the water systems; they just expect good service and advice. The inter-organisational collaborations between retailers, local governments, and Melbourne Water take time to develop as officers learn about each others' roles and grow in their trust of one another (Koontz et al 2004). This research reveals that the retailers and local governments are clearly building the essential networks and social capital that underpin efficient and effective community services. This relationship and progress made so far, needs to be protected and further enhanced by any future reforms.

References / Bibliography

Below is a list of the academic and grey literature that has been drawn upon to support this submission.

- Brown, R. R. & Clarke, J. M. (2007) *Transition to water sensitive urban design: the story of Melbourne, Australia*, Melbourne, Report No. 07/01, Facility for Advancing Water Biofiltration, Monash University, June 2007, ISBN 978-0-98030428-0-2.
- Brown, R. R. & Keath, N. A. (2007) *Stakeholder perceptions of institutional barriers and drivers to sustainable urban water management in Australia*, In press.
- Brown, R. R., Keath, N. A., Wong, T. (2007) *Transitioning to the Water Sensitive City: Historical and Future Transition States*, In Press
- Carson (2002) Community Consultation in Environmental Policy Making. *The Drawing Board: An Australian Review of Public Affairs*, 3 (1): 1–13.
- Colebatch, H. K., 2006: Governing the use of water: the institutional context. *Desalination* 187(1-3): 17-27
- Commonwealth of Australia (CoA) (2002) *The Value of Water: Inquiry into Australia's management of urban water*, Report of the Senate Environment, Communications, Information Technology and the Arts Reference Committee, Commonwealth of Australia, December 2002, ISBN 0 642 712107
- Connor, R. and Dovers, S., 2004: *Institutional Change for Sustainable Development*. Edward Elgar Publishing, Cheltenham, UK: 241
- Ferragina, E., Marra, M. and Quagliarotti, D., A. L., 2002: *The role of formal and informal institutions in the water sector: what are the challenges for development?* Plan Blue Regional Activity Centre, United Nations Environment Programme, p35
- Harris, G., Batley, G., Fox, D., Hall, D., Jernakoff, P., Molloy, R., Murray, A., Newell, B., Parslow, J., Skyring, G. and Walker, S. (1996). *Port Phillip Bay Environmental Study. Final Report*. CSIRO, Canberra, Australia.
- Koontz, T. M., Steelman, T. A., Carmin, J., Korfmacher, K. S., Moseley, C. & Thomas, C. W. (2004) *Collaborative Environmental Management: What Roles for Government?* Washington, DC, RFF Press.
- Meadowcroft, J., 2002: Politics and scale: some implications for environmental governance. *Landscape and Urban Planning*, 61(2-4): 169-179
- Meyer, J. L., Paul, M. J. and Taulbee, W. K. (2005). Stream ecosystem function in urbanizing landscapes. *Journal of the North American Benthological Society* 24(3): 602-612.
- Mitchell, B. (2005). Integrated water resource management, institutional arrangements, and land-use planning, *Environment and Planning A*, 37, pp 1335-1352.
- Plummer, R., Spiers, A., FitzGibbon, J. and Imhof, J., 2005: The Expanding Institutional Context for Water Resources Management: The Case of the Grand River Watershed. *Canadian Water Resources Journal*, 30(3): 227-244
- Prime Minister's Science Engineering and Innovation Council Working Group (2007), *Water for Our Cities: building resilience in a climate of uncertainty*, a report of the PMSEIC Working Group, June 2007. [http://www.dest.gov.au/sectors/science_innovation/publications_resources/profiles/water_for_our_cities.htm]
- Walsh, C. J., Leonard, A. W., Ladson, A. R. and Fletcher, T. D. (2004). *Urban stormwater and the ecology of streams*. Melbourne Water Studies Centre, CRC for Freshwater Ecology, CRC for Catchment Hydrology.

- Wolff, G., and Hallstein, E. (2005) *Beyond Privatisation: Restructuring water systems to improve performance*, Pacific Institute for Studies in Development, environment and Security, December 2005, ISBN: 13 No 978 1 893790 12 4
- Wong, T. H. F. (2006a) Water Sensitive Urban Design - The journey thus far. *Australian Journal of Water Resources*. Special Issue on Water Sensitive Urban Design, 10(3): 213-222.
- Wong, T. H. F., (2006b) Introduction. *In: T. H. F. Wong (ed.), Australian Runoff Quality: A Guide to Water Sensitive Urban Design*, Engineers Australia, Canberra.