LIVING MELBOURNE, LIVING VICTORIA ROADMAP

MINISTERIAL ADVISORY COUNCIL FOR THE LIVING MELBOURNE, LIVING VICTORIA PLAN FOR WATER

State Government Victoria

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FOREWORD

The Minister for Water, the Hon Peter Walsh, MLA, appointed the *Living Victoria* Ministerial Advisory Council (the Council) to provide recommendations on strategic priorities for reform in the water sector to support the *Living Melbourne, Living Victoria* policy. The Council's full Terms of Reference, the Council membership and the work program are shown in Appendix A.

This report to the Minister presents the findings from the Council, including strategic reform priorities and the high-level changes required to deliver the objectives of the Government's *Living Melbourne, Living Victoria* policy, which are to:

- establish Victoria as a world leader in liveable cities and integrated water cycle management
- drive generational change in how Melbourne uses rainwater, stormwater and recycled water
- drive integrated projects and developments in Melbourne and regional cities to use stormwater, rainwater and recycled water to provide Victoria's next major water augmentation.

Melbourne faces a number of key challenges to the way we source and use our water. These include:

- a rapidly growing population
- the changing urban form needed to accommodate more and more people
- increased climate risk and variability
- valuing and using water in a way that fully supports the continued development of Melbourne as a great place to live, work and play
- growing community concern about the rising costs of water.

The intensive work program underpinning this report has provided the Council with compelling evidence that Melbourne can and must make major changes to the way we manage and use all our water resources; and that, excitingly, there are reforms to the way we think about and use water that will put Melbourne on a more sustainable, productive and liveable path. The Council has been struck by the need to move quickly. In response to Melbourne's rapid growth, opportunities for more sustainable water options will be foreclosed by the application of traditional approaches to water management and associated built form.

If implemented, these reforms will deliver a more resilient and adaptable water system for Melbourne and a city much better able to live within its existing water supply resources. Importantly, the analysis suggests that such a paradigm shift would delay – for decades, or perhaps even indefinitely – the need for large scale and costly augmentation of Melbourne's supply via traditional means.

The main elements of these reforms are very clear. Building on the strengths of the existing system, we need to:

- diversify our water sources through integrated water cycle management
- empower customers through greater choice
- integrate water planning with urban planning in a way that allows all sources and uses of water to be considered.

These key directions for reform relate to greater Melbourne, but the Council considers that many of the recommendations will guide reform across Victoria's cities and towns.

The main elements of the reforms are clear, but as this report also indicates, there remain important design issues that we believe warrant further examination before making definitive recommendations for institutional, regulatory and structural changes as they relate to water. We are therefore seeking the Minister's agreement to undertake further targeted analysis to underpin more detailed recommendations for change.

Finally, I would like to acknowledge my fellow Council Members, the Council Secretariat and the consultants and experts who have contributed to this report. The work has been undertaken to a very tight timescale, involving working very long hours. My thanks to everyone for the effort, insight and good humour they have brought to the task. I should also like to thank all those stakeholders who we have consulted in the course of our work – I have been struck by both the important insights they have offered and the enthusiasm for moving the water sector into a new and exciting era of reform.

Mike Waller
Chairperson,
Living Victoria Ministerial Advisory Council

INTRODUCTION

Water has a key role to play in supporting a liveable, sustainable and productive Melbourne and Victoria.

Water services in Melbourne are provided by four water utilities (Melbourne Water, City West Water, South East Water and Yarra Valley Water). The water industry is substantial – in 2009–10 these utilities together generated $2,329 million in revenue, expended $1,381 million in capital works and serviced 3.9 million people.[1] In addition, local government, the State Government and the private sector play significant roles in aspects of water management and invest substantially in the sector. Water forms an important part of Melbourne's economy and it is essential to ensure future investments maximise benefits to the broader community.

Melbourne potable water use in 2010 was 356 GL[2] comprising:

- Residential: 63 per cent
- Non-Residential: 27 per cent
- Unaccounted for water: 10 per cent

Stormwater and recycled water can play a much larger part in meeting Melbourne's water needs. Consider that in 2009–10:

- only 10 GL of the 463 GL of available stormwater[3] that could be reused, was reused
- only 21 GL of the 297 GL of sewage[4] available for use in parks and gardens, for example, was actually used for that purpose.

Three factors related to water service provision are captured in this report: the supply of water; the impacts of urban development on water quality; and the role of water in supporting more liveable communities.

Historically, Melbourne has been well served by its water supply arrangements. A legacy of long-sighted investment in basic water and sewerage infrastructure supported by strict health and environmental regulations has delivered safe, abundant and low cost water. More recently, however, this model has come under increasing strain as a result of prolonged drought, record low inflows and rapid population growth. Water saving measures introduced voluntarily by customers together with mandatory water restrictions have helped the community through the drought, but they have also damaged our parks, gardens and sporting fields.

The recent focus on large-scale supply augmentations has led to community concern over urban water price increases and the way in which major water resource decisions are made. It has also highlighted the need for us to be better prepared and more resilient should there be a repeat of the record low inflows of 2006–07.

Urban development is generally associated with an increased volume of stormwater runoff. The increased level of contaminants in this runoff degrades our streams, rivers and bays. Significant work has been undertaken in Melbourne over the past decade to improve the way stormwater is managed in order to reduce these effects. Complementing this work has been an increasing desire in the community to make better use of stormwater and recycled water as valuable water sources, for example, through the use of rainwater tanks and greywater systems. Despite some progress, stormwater runoff remains a key threat to urban waterway health.

As our understanding of the urban water cycle has evolved, so too has our understanding of the role water plays in supporting the liveability of our cities and towns. By better recognising these links, we can use water in our environment to deliver multiple benefits. This needs a paradigm shift in the way we think about and manage water, and capture opportunities. In particular, this involves managing water in a way that:

- better integrates our urban development planning processes and our water planning processes
- acknowledges the full costs and benefits of water services within our cities and towns
- creates market based incentives for more adaptive, innovative and productive water management
- embeds water efficiency within the community
- puts our currently under-utilised stormwater and recycled water resources to better use
- focuses on decentralised, local solutions, whilst using our existing large-scale augmentations as efficiently as possible.

A water management approach based around the above components is often referred to as *integrated water cycle management* (IWCM). The Melbourne water industry is well placed to build on the exploratory work that has been done to improve our management of water resources (for example, the large amount of work undertaken by many local councils to implement best practice stormwater management). Figure 1 illustrates the key elements of IWCM that support more liveable cities. In this context, the water sector includes the water utilities and all other stakeholders that have an active role to play in implementing aspects of IWCM, including local and State governments, developers, industry and the community.

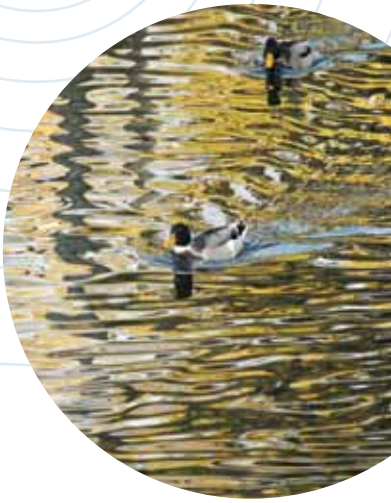
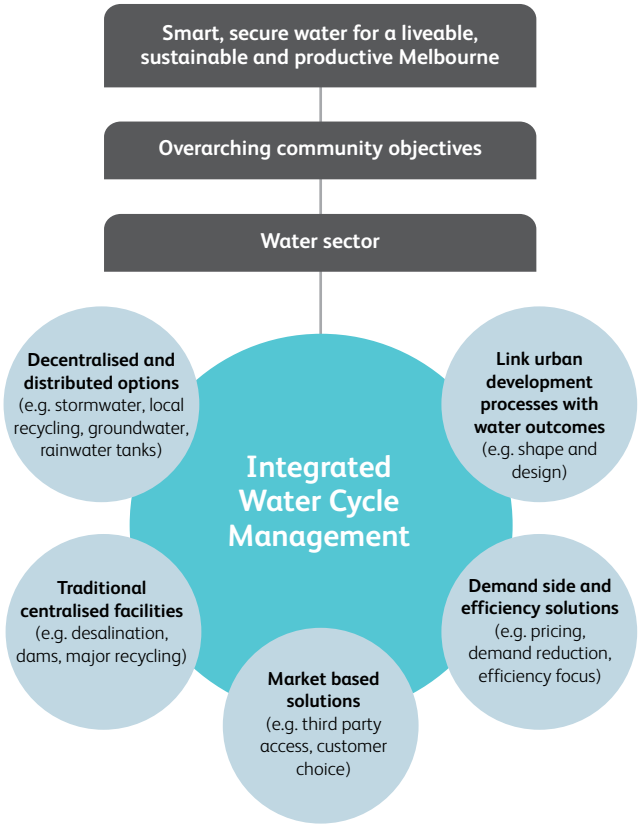


Figure 1: Integrated Water Cycle Management[5]



As Melbourne continues its rapid growth, we need to act quickly to ensure we become much smarter about the way we value and manage Melbourne's water. If we fail to introduce an IWCM approach across Melbourne, we are at serious risk of locking in a pattern of city design and development that will bring with it further costly augmentation of our water supply and increased environmental damage.

1.1 THE LIVING VICTORIA MINISTERIAL ADVISORY COUNCIL

The Government's *Living Melbourne, Living Victoria* policy has the following objectives:

- establishing Victoria as a world leader in liveable cities and integrated water cycle management
- driving generational change in how Melbourne uses rainwater, stormwater and recycled water to provide better water services and reduce Victoria's footprint with regard to energy and water use
- driving integrated projects and developments in Melbourne and regional cities to use stormwater, rainwater and recycled water to postpone Victoria's next major water augmentation.

The Ministerial Advisory Council was appointed by the Minister for Water, the Hon Peter Walsh MLA, as part of the *Living Melbourne, Living Victoria* policy to recommend key priority areas for reform and the associated changes that will need to be made to address these priorities.

The Terms of Reference, membership and work program for the Council are provided in Appendix A.

1.2 WHY WE NEED A NEW APPROACH

The Ministerial Advisory Council (the Council) has identified five key drivers for a shift in the way we manage and use water within Melbourne.

1. A rapidly growing population

Between 2010 and 2056 greater Melbourne's population is projected to increase from 4.1 to 6.4 million, with 39 per cent of this growth (930,000 people) occurring by 2026. Of that 930,000, approximately 60 per cent of this growth is expected to take place in new growth areas[6], while some 10 per cent is expected to occur within a 5km radius of the Central Business District (CBD). At the same time, our population will age, significantly changing the structure and pattern of demand for housing and services. With existing patterns of water use and supply, demand for potable water in Melbourne could increase from 356 GL[7] to in excess of 534 GL[8] per calendar year, requiring a major investment in new supply as early as 2024[9].

2. Pressure on the natural and built environments from population growth

More buildings, concrete and roads in Melbourne alter the stormwater flows into our urban water habitats. Increasingly, our urban waterways and bays are being expected to accept greater quantity and rates of stormwater and to absorb a variety of pollutants.

The choices made when master-planning the structure for urban development of greenfield sites significantly affects the water cycle, amenity of public spaces and urban heat. These choices influence the outcomes that can be achieved later at the subdivision, or allotment stage. There is now an opportunity to integrate urban and water planning objectives to set a new standard for the urban growth that will be delivered over the next couple of decades.

3. Increased climate risk and variability

For more than a decade, Melbourne experienced a prolonged period of drought. More recently, there were significant weather related events, especially bushfires and floods, which affected water availability and demand. Figure 2 shows historic inflows into our major dams over the period 1913 to 2010, including the recent period of extended low average inflow (1997–2010) and the projected inflows for 2010–11 as a result of recent above average rainfall. It is important to note that whilst rainfall in the Melbourne area was above average, total streamflow runoff into the major reservoirs was still below the long term average for these catchments. This highlights the challenges of climate variability in planning for a secure water future.

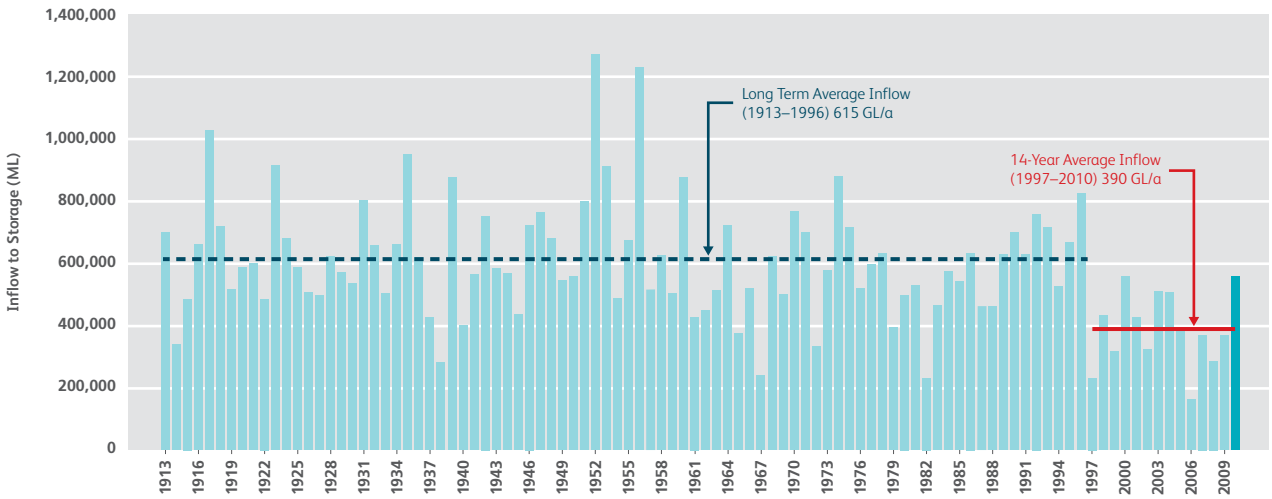
Climate variability will be an enduring feature of Melbourne's water supply, which is expected to be exacerbated by the longer-term impacts of climate change. In order to operate efficiently and effectively into the future, the water industry needs to develop its resilience, adaptability and flexibility to extreme weather events, including consideration of the interrelationship between water consumption and energy use. The potential for rapid change means that Melbourne requires a strong portfolio of diverse options to ensure it is prepared for a range of eventualities.

4. The need for safe and secure water to support resilient and liveable communities

As outlined above, the significantly lower inflows into Melbourne's reservoirs over the past 13 years and associated water restrictions has led to significantly changed water consumption patterns that in turn have compromised the liveability features of our cities and towns. While community water savings efforts and, at times, water restrictions have helped us through drier periods, they have constrained the community's use and enjoyment of public open space, private gardens and many sporting fields. This has reduced the community's sense of well-being and quality of life.

Additionally, healthy waterways provide not only environmental benefits, but also opportunities for both passive and active recreation. Urbanisation has generally degraded Melbourne's urban waterways and there is an increasing awareness of the need for a new approach that will deliver healthier waterways.

Figure 2: Total Annual Water Flowing Into Melbourne's Main Water Supply Storage Reservoirs[10]
(Thomson, Upper Yarra, O'Shannassy and Maroondah Reservoirs)



THE ROADMAP

5. Growing community concern about the rising costs of water

The community is experiencing significant increases in their water bills at a time of rising utility prices generally. This raises important social equity issues in addition to the increased community focus on how water is supplied and managed.

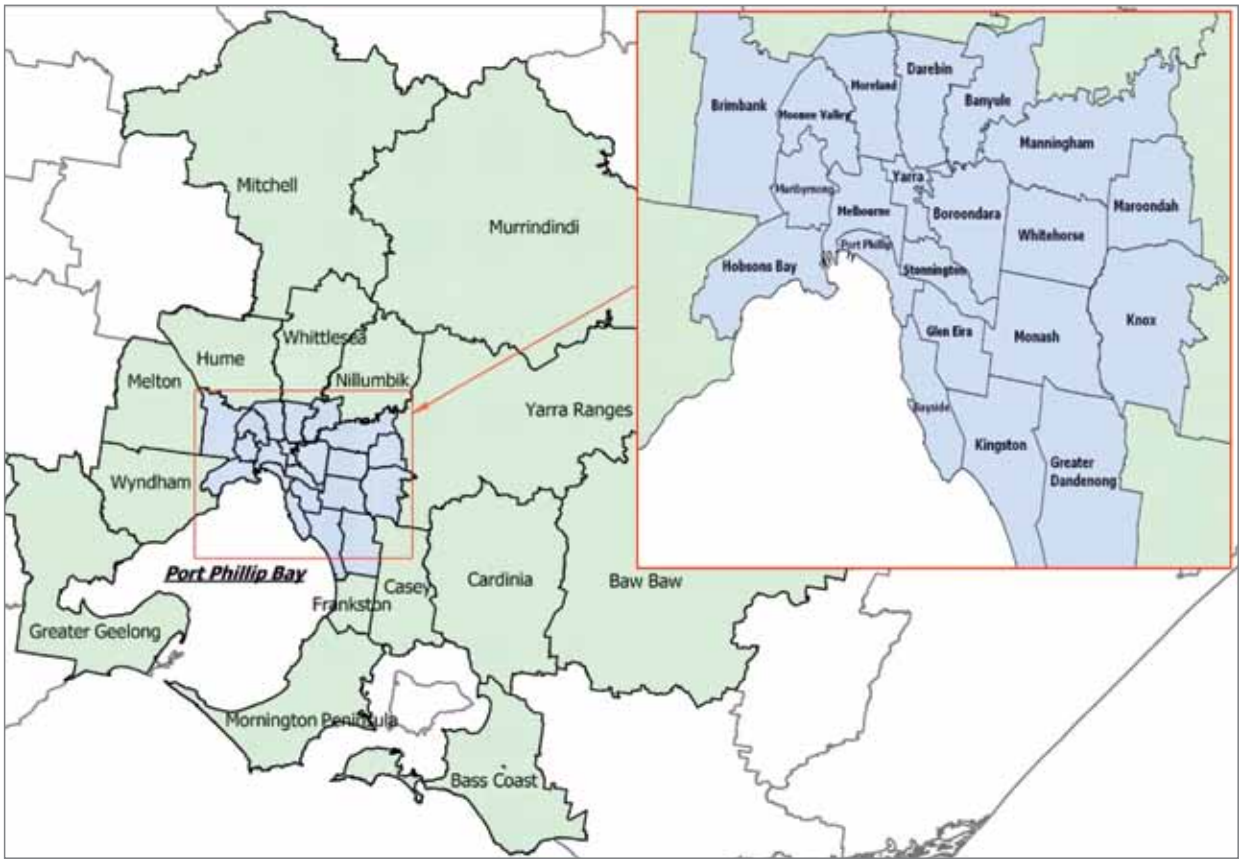
Recognising and understanding these drivers will assist in ensuring that the next era of water reform is designed to achieve maximum benefit to both the water services industry and the wider community. The provision of a major new source of potable water into the supply network gives the water sector time whilst storages are recovering to review existing regulatory and decision-making frameworks, and build capacity across the water and related sectors. It will also need the involvement of all relevant stakeholders – the water utilities, State and local government, and the wider community – and increased levels of coordination and cooperation between them.

The rest of this document sets out the Council's roadmap to achieve our proposed vision, including:

- a vision for how water will help support *Living Melbourne, Living Victoria*
- outcomes for delivering smart and secure water
- principles underpinning *Living Melbourne, Living Victoria*
- reform priorities
- next steps to progress the reforms.

The roadmap deals specifically with Melbourne (see Figure 3), but it is intended that our recommendations will guide reform across Victoria's cities and towns.

Figure 3: Map of Greater Melbourne by Local Government Area[11]



2.1 OUR VISION

The Council's vision for *Living Melbourne, Living Victoria* is:

Smart, secure water for a liveable, sustainable and productive Melbourne.

2.2 LIVING MELBOURNE, LIVING VICTORIA OUTCOMES

The Council considers that the achievement of the following outcomes will support a more sustainable, productive and liveable Melbourne.

Liveable Melbourne

Attractive landscapes that support healthy communities

Safe, fit-for-purpose water supplies

Improved flood protection

Sustainable Melbourne

Resilience of urban landscapes to natural disasters and climate variability

Smaller environmental footprint for Melbourne

Healthy waterways and bays

Productive Melbourne

Water security for the future

Affordable water services

Clear, transparent and contestable investment climate

Economic prosperity

Malmö, in Sweden, provides an example of the liveable, sustainable and productive outcomes that can be achieved through our vision for integrated water cycle management.

Malmö – City of the Future

In Malmö in southern Sweden, a district known as Bo01, is recognised as one of the most sustainable districts in Europe.

The 175 hectare artificial island of Västra Hamnen was bought by the Municipality of Malmö in 1996 to develop a new eco-district.

The area has been developed with an emphasis on aesthetics, ecology, high-quality housing, architectural diversity and urban spaces. It achieves environmental adaptation and social sustainability in a densely built-up area.

The focus has been on the use of resources, human interactions and the aesthetic appeal of the development. Private investors developed the district in small packages and were guided in providing quality solutions for the district.

Rainwater is collected and greywater is treated in the city's purification plant. Water is a key element in the district and flows through a system of ponds, open channels and moss-covered roofs. The implementation of an open rain water management system supports a very high level of biodiversity.

The use of a green space factor resulted in the construction companies increasing the amount of rain water infiltration.

Biodiversity has been one of the primary drivers with the creation of habitats for many different plant and animal species in green open space, green roofs and walls.

Wind turbines provide 100 per cent of the district's electricity. Solar panels on the roofs provide 20 per cent of the heating for the district with the balance coming from an existing, super-efficient district heating system. Recyclable and organic materials are collected to contribute to energy production by the city's biogas plant. The biogas is then used to heat homes and power vehicles. The residents are able to monitor their energy consumption on information panels in each home.

Paths and cycle tracks are a feature of the district.

2.3 LIVING MELBOURNE, LIVING VICTORIA PRINCIPLES

The Council considers that the following core principles underpin the reform priorities in this report:

1. Water resources should be managed for multiple benefits

Decisions will be made to achieve socially optimal water investment, which involves maximising the benefits to the community at the least cost to the community. A comprehensive framework for investment decisions will be used to fully reflect and quantify, wherever possible, the societal costs and benefits so that informed, robust and transparent decisions can be made.

2. Social equity

Water services should be accessible to all as an essential service and Government should transparently ensure this is supported by an effective concessions policy.

3. Cities and towns planning to meet their own water needs

Water services will be planned so that cities and towns can meet their water needs from their existing catchments.

4. Engaged and empowered communities

Customer values and preferences will inform enhanced service provision. Water users will be provided with greater choice in the services they receive and pay for through greater contestability in the provision of water services.

5. Water management integrated across all components of the water cycle

Urban water planning, management and infrastructure investment will be undertaken to protect, maintain and enhance the multiple benefits and services of the total urban water cycle that are most valued by society.

6. Protecting and enhancing public and environmental health

Regulations will protect public and environmental health, while supporting the use of fit-for-purpose water.

7. Water resources and services valued, managed and used efficiently

Water resources will be planned for, managed and used in ways that reflect the full value of the resource.

8. Transparent, adaptive and flexible decision-making involving consideration of all options

Information about opportunities for investment in the water sector will be consistent, comprehensive and widely available for debate and consideration. Information produced from independent sources will support a level playing field for existing and potential investors.

2.4 REFORM PRIORITIES

The following reform priorities comprise a set of high-level actions that are consistent with the outcomes and principles detailed in sections 2.2 and 2.3 respectively and will best support delivery of the reform priorities for *Living Melbourne, Living Victoria*. The reform priorities and their relationship to the outcomes and principles are summarised below in Figure 4.

More detailed analysis is required to identify and prioritise specific actions to give effect to the reform priorities: the actions and the proposed further work to be undertaken by the Council are identified below. This will involve both more detailed option analysis and additional stakeholder consultation.

Figure 4: *Living Melbourne, Living Victoria* Objectives, Principles and Reform Priorities

	Outcomes	Principles	Reform Priorities
Liveable Melbourne	Attractive urban landscapes that support healthy communities	Water resources should be managed for multiple benefits	Agree to a vision for the contribution of water to urban liveability
	Safe fit-for-purpose water supplies	Social equity	Facilitate greater customer choice and innovation
	Improved flood protection	Cities and towns planning to meet their own water needs	Improve the integration of urban and water planning
Sustainable Melbourne	Resilience of urban landscapes to natural disasters and climate variability	Engaged and empowered communities	Optimise the use of all available water sources
	Smaller environmental footprint for Melbourne	Water management integrated across all components of the water cycle	Establish clear environmental and health outcomes
	Healthy waterways and bays	Protecting and enhancing public and environmental health	Establish a common approach to economic evaluation
Productive Melbourne	Water security for the future	Water resources and services valued, managed and used efficiently	Review approaches to the pricing and valuing of all water resources
	Affordable water services	Transparent, adaptive and flexible decision making involving consideration of all options	Strengthen the current institutional and governance arrangements
	Clear, transparent and contestable investment climate		
	Economic prosperity		
Community Engagement, Knowledge Sharing and Innovation			

1. Agree to a vision for the contribution of water to urban liveability

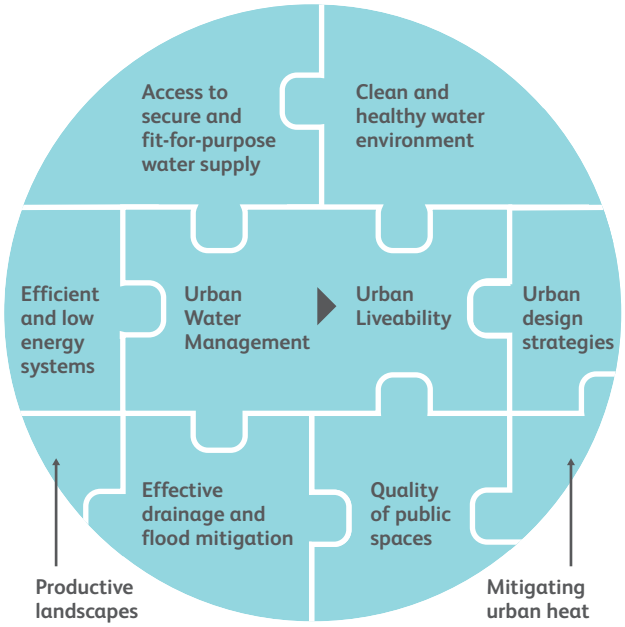
As noted in section 2.1, the Council has proposed a vision as the starting point for the State Government and the community to work together to agree on as a basis for improving the way our water resources are managed and used for a more liveable, sustainable and productive Melbourne.

The recent drought, and more recent floods, have shown what a major impact water can have on the liveability of our cities and towns. Water management plays an important role in underpinning the vitality and prosperity of the city through:

- the provision of safe, secure, affordable water supplies
- supporting green landscapes that significantly enhance urban amenity and help to combat the impacts of the urban heat island effect
- improving the health of urban waterways and providing opportunities for active and passive recreation
- protection from flooding.

The linkages between urban water management and urban liveability are shown schematically in Figure 5.

Figure 5: Linking Urban Water Management to Urban Liveability[12]



A resilient, adaptable and flexible water system is a prerequisite for a liveable city. Within this broad framework it is important to be clear about who is responsible for delivering these benefits, and for whom.

Further work to support this reform is required to:

1. engage the community in refining the vision for *Living Melbourne, Living Victoria*
2. identify the most critical linkages between liveability and integrated water cycle management
3. provide clarity regarding responsibilities for delivering the water-related components of liveability – who owns the benefits and who bears the costs.

2. Facilitate greater customer choice and innovation

Urban water customers generally have very little choice in the water services they receive. Many water utilities across Victoria use a 'one size fits all' approach to pricing and service offering. Recently, this has been accompanied by restrictions on water use.

Opportunities are now emerging for customers to have greater choice in:

- the water products on offer
- the water charges they pay
- their level of service.

Water users can therefore be much more informed about the water cycle and make decisions that best suit their budget and lifestyle. These choices can be made by individual customers or by local communities. The outcome will be much better use of *all* our water resources.

Greater customer choice requires greater transparency and access to clear and consistent information about resource availability, the costs and benefits of options and service providers' performance.

Clear and consistent information empowers customers to make better decisions about their water use and reveals opportunities for greater private sector involvement in the delivery of water services. This helps drive water sector innovation and productivity.

Innovation also requires targeted research and development and knowledge sharing.

Intelligent water networks are an example where innovation can improve the way we manage and use water. Advanced metering and data processing enables utilities to measure and monitor flows within the water distribution system. This can also give customers improved information in real time about their water use, service and price/costs. This provides significant opportunities to improve the way water utilities and the community manage and use our water resources.

Greater innovation within the water sector also requires greater contestability. Without a value assigned to the resource, the ability to reward customers for water saving through prices is lessened, and there is a lack of signals for investment in alternative water sources.

The Council is of the view that greater choice and contestability is most effectively delivered within the broad context of government owned water utilities. Increased participation and innovation from the private sector is expected to be delivered through involvement in decentralised and greenfield water projects.

The Council also considers that under-investment in alternative water sources has occurred due to the absence of:

- decision-making that adequately accounts for all externalities (benefits and costs) associated with alternative water sources
- coordination across government and its agencies in identifying and funding externalities
- clarity over rights to alternative water sources
- a wholesale price or a shadow price for water resources
- the introduction of a private sector licensing and third party access regime.

Further work to support this reform is required on:

1. the role of information in facilitating continuous customer engagement through choice
2. the drivers of innovation in the provision of services to customers
3. the governance and institutional framework needed to support greater customer choice and innovation.

3. Improve the integration of urban and water planning

The provision of water services needs to be much more closely integrated into the way we plan the development of our city.

Melbourne's rapid growth is being accommodated through greenfield developments and the redevelopment and infill of existing areas. We can use water much more efficiently by designing new communities and developments to minimise water use and to maximise other benefits, such as amenity of open spaces and sporting facilities, and cooling effects of green streetscapes and healthy waterways.

This planning needs to be tailored to the scale, and physical and social character of an area, because these determine the scope for innovative approaches and water saving opportunities. Regional and precinct scale planning, for example, provides an opportunity to address a range of water, energy and sustainability issues that are more difficult to address at smaller scales (e.g. single buildings). Precinct scale planning is also an effective scale for considering the impacts of extreme weather events.

Urban and water planning need to be better integrated. Water efficiency needs to be considered in the early stages of land use planning and development with exploration of all options and scales. Retrofitting integrated water cycle management features later can be very costly, and is often not feasible.

We need to act quickly if we are to capture the benefits of more water efficient development in the forward planning for Melbourne's newest growth areas. Major opportunities for smarter water use are lost with every new development that is not designed with this as a critical design requirement. This in turn brings forward the point at which we need to build costly new dams or desalination plants.

We need to identify the best way to deliver this integrated approach. This may involve changes to processes, institutions and standards. Such a review must be supported by:

- a more multi-disciplinary, coordinated approach including engagement between all levels of Government, the water utilities and the development industry
- capacity building programs for local government and the water industry.

This line of work needs to be coordinated with work being undertaken by the Department of Planning and Community Development on the Melbourne Metropolitan Strategy, broader planning mechanisms and liveability audits.

Further work to support this reform is required on:

1. outcomes-based integrated water cycle management standards
2. planning and building regulations to improve the application and integration of integrated water cycle management across all planning scales
3. mechanisms that allow flexibility in delivering integrated water cycle management outcomes
4. approaches to building capacity and knowledge sharing across the water and urban planning industry.
5. testing the impacts of various built form models on water efficiency.

4. Optimise the use of all available water sources

We need a water planning framework that considers all options – water efficiency, centralised and decentralised approaches – with a particular focus on encouraging fit-for-purpose use of all available water sources. With a diversified portfolio of options, we should be able to defer the next major supply augmentation and the resulting costs.

We also need to design approaches to water supply and demand that are resilient, flexible and robust to climate variability and shocks like natural disasters. The starting point for making the right choices is a 'whole of system' view which takes account of all sources of water. We can then assess all options on a transparent and consistent basis, acknowledging the full costs and benefits to society of different water uses.

Figure 6 presents an integrated water balance for Melbourne. Alternative water sources are relatively 'untapped' compared to more traditional sources of supply (surface water storages). Whilst it may not be feasible or economic to utilise all available alternative water, currently only 10 GL of the 463 GL of available stormwater is used, suggesting that alternative water sources represent a significant opportunity.

We need a water planning framework that enables optimisation of all available water sources to ensure that we do not need another large-scale augmentation for decades to come.

Further work to support this reform is required on the development of a water planning framework that:

1. considers all available options
2. considers the whole water cycle
3. supports an adaptive and resilient water system
4. encourages fit-for-purpose use of all available water resources.

Figure 6: Melbourne Region Water Flows 2010[13]

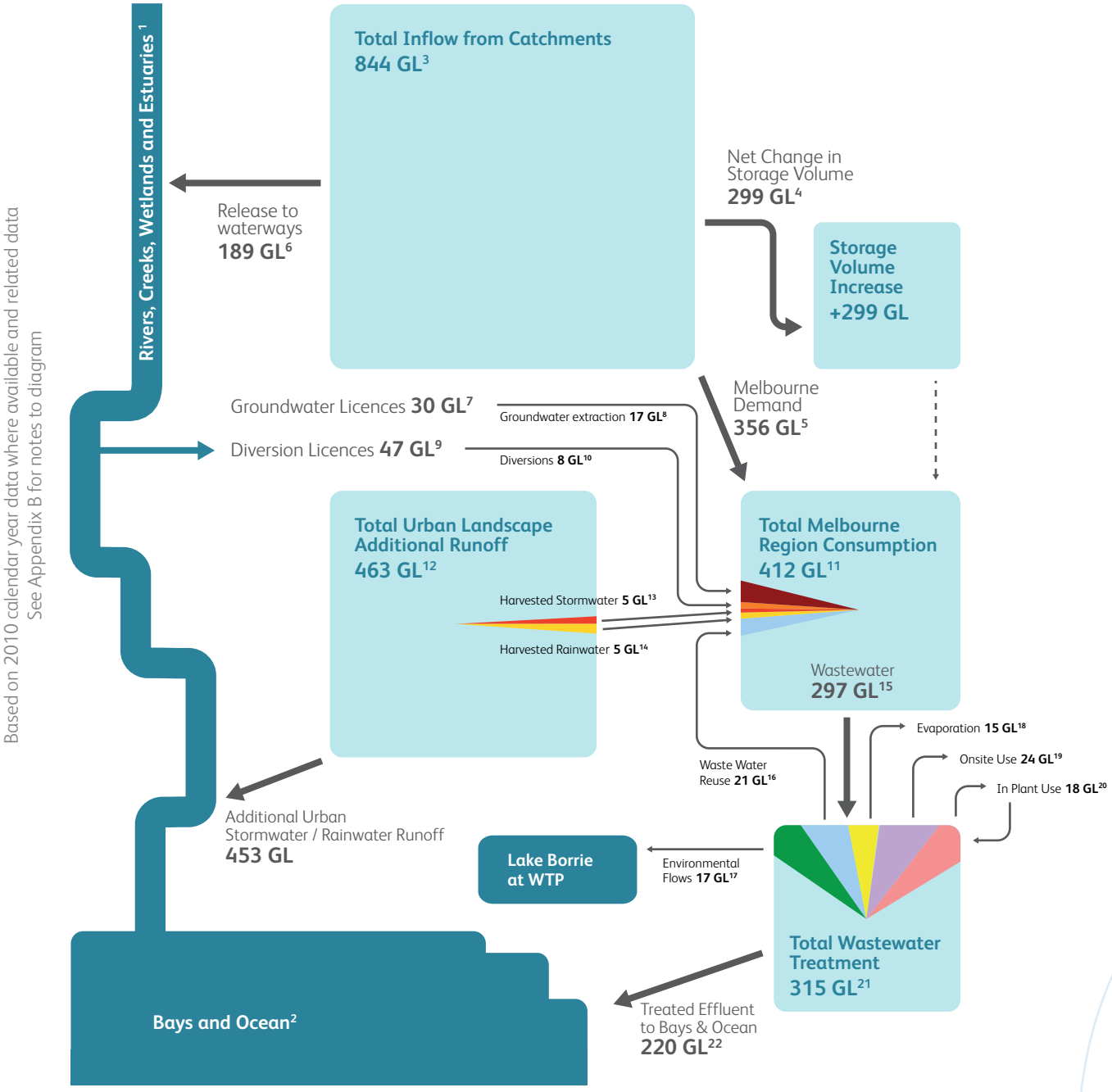
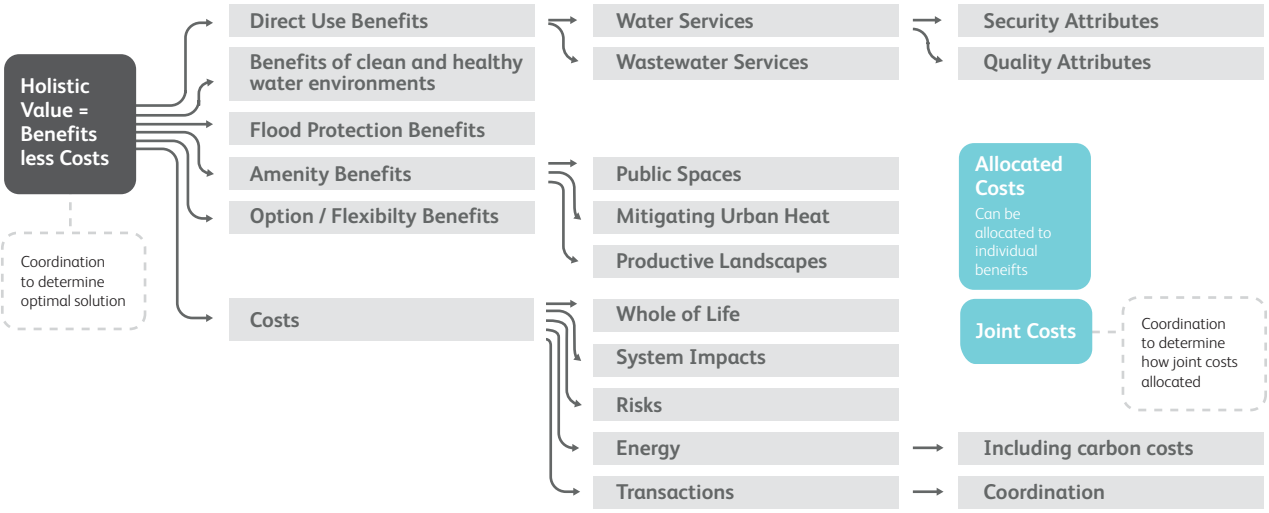


Figure 7: Holistic Value Assessment[14]



5. Establish clear environmental and health outcomes

Liveable cities are places where waterways are valued as an integral part of those cities, and the ecological integrity of waterways is actively protected and enhanced.

Under the existing public health and environmental protection regulations, water service providers must meet stringent standards for certain aspects of water resources, including safe drinking water, harvesting water from natural waterways and discharging treated wastewater back into the environment. However, there are current gaps in the regulatory system, particularly in relation to stormwater management and the use of alternative water sources.

Regulation of stormwater requires attention, including the need to address gaps related to runoff resulting from a range of developments. In addition, existing regulations are sometimes not adequately adhered to or enforced, limiting their effectiveness.

The current regulatory framework is not well equipped to deal with the increasing demand from a range of sectors and end-users to make greater use of alternative water sources. As the private sector plays an increasing role in the provision of water and sewerage services in Victoria, it is important to ensure that these services continue to be regulated to protect customers and the environment.

We need a modern, comprehensive regulatory system that provides appropriate protections and that treats all service providers on an even-handed basis. This could occur through the creation of a licensing regime to ensure that private sector service providers comply with obligations relating to health and safety, water quality and customer and environmental protection including the provision of 'last resort' supply.

Further work to support this reform is required on:

1. identification of desired environmental and public health outcomes
2. setting of clear regulations that deliver the outcomes within the context of the broader economic regulatory framework
3. the implications of the expanding role of alternative supplies, products and services.

6. Establish a common approach to economic evaluation

Integrated water cycle management provides multiple benefits to the community. These include improvements to downstream water quality, reduced urban heat, reduced risk of flooding and improved urban amenity. These benefits accrue to the general public, rather than water providers and users, and are often not considered in investment decision-making.

Negative impacts of some projects are not borne by the project owner; rather, they are felt more broadly, for example, stormwater pollution leading to degraded urban waterways. Decision-making often does not account for the full costs and benefits of different options.

Many of these costs and benefits sit outside the scope of economic regulation by the Essential Services Commission.

The risks of climate variability and the increased availability of water supply options point to the need for more holistic economic assessments of water projects including real option and insurance values associated with different investment choices. Option value captures the benefits of deploying a diversified portfolio of water sources, including the value of deferring large supply augmentations. Some of these sources will be more expensive than others (in terms of cost per kilolitre) but the combination of varying inflows and reliability across these alternative sources means that better customer value is delivered through more certain supply and reduced frequency of restrictions.

Figure 7 illustrates what such a holistic assessment framework might look like.

As the diagram indicates, we also need to address the question of who pays. In some cases, the external costs and benefits of water projects should be paid for by water customers, while the costs of other projects that involve broader costs and benefits should be more widely shared.

Once the investment framework is established, a challenge will be to maximise the coordination of the delivery of these costs and benefits across the water industry, local government and other stakeholders.

Further work to support this reform is required on development of an economic framework that:

1. is capable of internalising total societal costs and benefits of water-related activities
2. assesses the option value of different projects
3. incorporates a mechanism to coordinate the funding of societal costs and benefits
4. is well specified, consistent and transparent.

7. Review approaches to the pricing and valuing of all water resources

Consistent with an effective market, the allocation of water to users is optimal when the value of the water to a customer is reflected in the prices they pay. In the rural water sector, water markets are effective in distributing water to where it is valued most, as indicated by the prices paid in trading the water.

Currently, urban water prices are set to reflect the cost of infrastructure and not the value of the water resource itself, with the exception of manufactured water from desalination and recycling plants. The volumetric component of tariffs reflects the portion of costs that varies with use, and the fixed component is set to ensure revenue adequacy. The majority of costs borne by the water authorities are fixed, and hence make up a greater proportion of a customer's bill than the variable component. Under these arrangements, customers receive little monetary return for conservation, although some customers conserve water for broader social and environmental reasons.

A more efficient valuation of water would provide an opportunity to reward customers for conserving water. This could be achieved through a variety of approaches, for example:

- including an administered resource value in prices
- water utilities offering combinations of prices and services that reflect the value individual customers place on the water, for example, water security or freedom from restrictions

Incorporating value into prices does not automatically result in price increases for customers. Prices more closely aligned with value would result in prices changing for various segments of customers based upon the choices they make. The economic regulatory regime could also be reformed to accommodate a shift in revenue recovery between infrastructure and resource provision, while maintaining a sustainable revenue stream for water utilities.

Water is an essential service. Important social equity issues need careful consideration when thinking about pricing reforms. Consideration must be given to low income and vulnerable customers, and to the particular needs of large families, concession holders, and others with special needs. Safe and secure water must be easily accessible to all at an affordable price, supported as necessary by an effective concessions policy.

Further work to support this reform is required on:

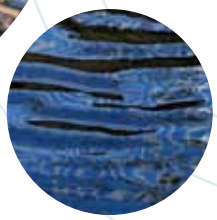
1. options for including the value of water resources into prices
2. ways for customers to reveal the value they place on service
3. the role of the current pricing arrangements in incentivising or inhibiting integrated water cycle management
4. social equity impacts and the design of concessions.

8. Strengthen the current institutional and governance arrangements

The efficient and innovative provision of water related services is dependent upon the incentives facing service providers and the framework that supports those incentives. The current framework involves the separation of policy-making from regulation and service delivery. Whilst the Government is clear that water utilities will be retained in public ownership, effective governance requires that monopoly service providers are held to account for their performance. This is greatly enhanced by contestability for services that enables customers to do this in the choices they make, particularly if they seek alternative service providers.

We need to strengthen institutional and governance arrangements to improve service delivery, deliver affordable and efficient pricing and support broader liveability outcomes for Melbourne.

Opportunities exist to clarify and strengthen roles and responsibilities by reviewing the various legislative and regulatory instruments that govern the management and operation of water service providers. Potential investors need certainty as to the legislative and regulatory obligations that apply to their investment.



A keystone of efficient investment choices and service delivery options is transparent, reliable and timely information. Information on resource availability, network capacity and project approval processes should be publicly available and updated regularly to support an adaptive management framework. Publishing information from an independent source will ensure that a level playing field exists for all parties.

This information gathering role, together with other areas of reforms listed in this report, suggest there is a range of roles and functions that could be brought together in an independent organisation of government (possibly the Office of Living Victoria). These include:

- managing the conversation around the vision and facilitating debate about future water policy as it relates to a liveable Melbourne and Victoria
- monitoring and reporting on resilience, water security and other performance measures from the outcomes listed in section 2.2
- creating a knowledge hub that supports innovation and capacity building by capturing and disseminating information on the state of the water market
- being a 'one stop shop' for water projects, bringing together project proponents and beneficiaries
- preparing a 'statement of opportunities' that covers resource availability and demand for services
- reporting on system operation constraints, including network capacity and environmental constraints
- participating in the development of growth area plans and water utility business cases prepared under Clause 56 of the Victoria Planning Provisions against a set of integrated water cycle management principles and uniform investment criteria
- managing the arrangements for the access, use and trade of alternative water sources.

The current legislative and regulatory framework lacks effective coordination as different parties have control of water resources (for example stormwater) at different stages of the system. Therefore, in exploring the above functions, the focus should be on effective governance to deliver coordination across governments (state and local, departmental, regulatory bodies), across different disciplines (urban planning, energy, transport and so forth) and across the water sector (wholesale, retail etc.) in order to facilitate efficient investment in innovative water solutions.

Further work to support this reform is required to amend the current governance and institutional arrangements including:

1. deliver integrated water cycle management outcomes
2. develop market-based incentives
3. establish the enabling framework to support investment
4. determine the need for a new entity (possibly the Office of Living Victoria) and, if a need is confirmed, the specific objectives and functions and what other machinery of government changes might be required.

Conclusion

The Ministerial Advisory Council's findings to date indicate there is an urgent need for a new phase of reform in the way water is valued, planned for and managed in Melbourne. Otherwise we are at serious risk of locking in a pattern of city design and development that will bring with it further costly augmentation of our water supply and increased environmental damage.

The good news is that there are smarter ways of using water in new developments, whether infill, renewal or greenfield, that will significantly improve the liveability of Melbourne.

We have the capacity to use water in a much smarter way to keep Melbourne green, to provide a secure water supply for all of us well into the future, and in turn avoid the need for major and costly augmentation of our water supply. We have to act now.

This report charts the major elements of reform required and a targeted program of further work to validate the current initial findings and flesh out the detailed institutional regulatory and organisational changes required.

Appendix A
The Ministerial Advisory Council

Terms of Reference

The *Living Victoria* Ministerial Advisory Council will provide strategic advice to Government on delivering a more sustainable Melbourne and Victoria consistent with the objectives and principles of *Living Victoria*.

The Council must report by 11 March 2011 outlining the scope and scale of *Living Victoria*, confirming the policy's intent, providing details on the investigation required, an overview of the policy and legislative changes required and a high level analysis of the nature and impact of these changes across government, service providers and community.

This includes, but is not limited to, advice on:

- the strategic priorities in delivering *Living Victoria*; and
- the role and functions of the Office of Living Victoria, including transitioning these strategic priorities into detailed advice to the Minister for Water

The Council's recommendations must have regard to:

- the Victorian Liberal Nationals Coalition Plan for Water, in particular the initiatives outlined under *Living Victoria*;
- the estimated costs and benefits of various proposals including the impact on customer affordability.

The Council's recommendations should be prioritised in terms of their contribution to supporting the objectives and principles of *Living Victoria*, and include a project timetable for implementation. The Council may also consider recommendations that, whilst initially considered for Melbourne, would benefit in their application across Victoria's regional cities and towns.

The Council was appointed on 19 January 2011.

Process for developing advice

Members of the Council

Mr Mike Waller (Chairperson)
Professor Rob Adams AM
Ms Sue Holliday
Mr Rob Skinner

Stakeholder Consultation

1. *One-on-one meetings with Government bodies, water industry participants, and industry groups*

Department of Planning and Community Development

Department of Treasury and Finance

Department of Health

Department of Business and Innovation

Environment Protection Authority

Office of the Commissioner for Sustainable Development

VicUrban

Essential Service Commission

Department of Primary Industries

Yarra Valley Water

City West Water

South East Water

Melbourne Water

Western Water

Barwon Water

VicWater

Water Services Association of Australia

Plastics and Chemicals Industry Association

Victorian Farmers Federation

Victorian Employers' Chamber of Commerce and Industry

Alternative Technology Association

2. *Roundtable discussions with community groups, environmental groups, development associations and local government*

Municipal Association of Victoria

City of Manningham

City of Stonnington

City of Yarra

City of Port Phillip

City of Dandenong

Yarra River Keepers

Australian Conservation Foundation

Alternative Technology Association

Environment Victoria

Victorian Council of Social Services

Consumer Utilities Advocacy Centre

3. *Public submissions*

City of Port Phillip

City West Water

Melbourne Water

South East Water

Western Water

Yarra Valley Water

Appendix B
Notes on Melbourne Region Water Flows 2010

1. Includes all streams within the Melbourne Metropolitan Region.
2. Includes Port Phillip Bay, Western Port Bay and Bass Strait.
3. Catchment Inflows to whole Melbourne Water supply system (including Goulburn transfers).
4. Total net increase in Melbourne Water storage volumes over 2010.
5. Annual volume supplied by Melbourne Water to Retail Water Authorities (including Western Water).
6. Releases and spills to Waterways from Melbourne Water reservoirs and weirs for both environmental and operational purposes.
7. Groundwater licences for the following areas: Wandin Yallock, Deutgam, Kooweerup, Frankston, Kinglake, Nepean, Moorabain and Cut Paw Paw.

   Source: http://groundwater.geomatic.com.au/Main.aspx
8. Groundwater metered use for the above areas in 2009.

   Source: http://groundwater.geomatic.com.au/Main.aspx
9. Diversion licences amount to a combined annual entitlement of 47GL:
   - 23.5 GL for consumptive uses in Yarra Basin
   - 1.1 GL for consumptive uses in Maribyrnong Basin
   - 14.5 GL for non-consumptive licences in Yarra Basin (e.g. water users who return all water used for cooling back to the Yarra River)
   - 7.5 GL from catchment dam licences in Yarra Basin

   Of the total allocation, 27.8 GL (61 %) is metered.
10. Metered use in 2009-10 for those licences greater than 5ML/year was 14GL. This is made up of 7.6GL extracted from waterways, 0.4 GL from registered catchment dams, and 6GL of non-consumptive uses which are returned to waterways. Since non-consumptive uses are returned to the waterway, the total net diversions volume is 8GL.
11. Includes potable supply; licensed waterways diversions; groundwater extraction; and alternative sources.
12. Estimated average 'additional' stormwater generated annually as a result of urbanisation in Melbourne. This is the estimated urban 'excess flows', and does not include a further 145 GL that is estimated to be lost as infiltration. The value assumes a long-term average annual rainfall of 650mm applied across the entire urban landscape of Melbourne. For further details refer to: http://www.urbanstreams.net/Rpad/melbrunoff.html
13. Stormwater reuse values for 2009-10 taken from 'Alternative Sources in Melbourne' (Melbourne Water, Feb 2011).
14. Rainwater harvest determined for 2009-10 using ABS data and rainwater yield data from various Melbourne Retail Water Authorities. This figure also includes 0.1 GL from permanent greywater reuse systems. Summary compiled by DSE (Feb 2011).
15. Wastewater delivered to Eastern Treatment Plant, Western Treatment Plant and all local treatment plants. (Note: all wastewater values reflect the 2009-10 financial year, ie notes 15 to 22.)
16. Recycled water provided to other infrastructure operators for non-potable uses. Includes recycled water (not used in-process/on-site) from local treatment plants.
17. Environmental Flows are flows for Lake Borrie at Western Treatment Plant.
18. Evaporation from the Western Treatment Plant.
19. Onsite reuse at Western Treatment Plant.
20. In-plant reuse at Eastern Treatment Plant and local treatment plants.
21. Total water treated at Eastern Treatment Plant, Western Treatment Plant and local treatment plants in 2009-10.
22. Treated effluent to bays and ocean from Eastern Treatment Plant, Western Treatment Plant and local treatment plants.

References

[1] Water Industry Revenue, Expenditure and Customer figures obtained from the 2009–10 Annual Reports of Melbourne Water, City West Water, South East Water and Yarra Valley Water

[2] Refer to Figure 6 Melbourne Region Water Flows 2010

[3] Refer to Figure 6 Melbourne Region Water Flows 2010

[4] Refer to Figure 6 Melbourne Region Water Flows 2010

[5] Adapted from Skinner, R. (2010) *Adaptation to climate change in Melbourne: Changing the fundamental planning assumptions* Paper presented to the Climate Change Impacts on Water Supply: An International Adaptation Forum, Washington DC 27 January 2010

[6] DPCD. (2008), *Victoria in Future* (Figures may not add up due to rounding)

[7] Refer to Figure 6 Melbourne Region Water Flows 2010

[8] 534 GL is based on 174 L per person per day and a population of 6.4 million plus 2009–10 non residential and non-revenue water; Coombes, P., Bainstow, J., Colegate, M., Lucas, S., McBride, J., Want, S., Wilkinson, B. (2011), *Transitioning to a resilient, liveable, and sustainable greater Melbourne*, p156 presents Business as Usual forecast in excess of this amount at 2050

[9] Coombes, P., Bainstow, J., Colegate, M., Lucas, S., McBride, J., Want, S., Wilkinson, B. (2011), *Transitioning to a resilient, liveable, and sustainable greater Melbourne*, Final Draft Response to the Living Victoria Ministerial Advisory Council, p5

[10] Courtesy of Melbourne Water (2011)

[11] Coombes, P., Bainstow, J., Colegate, M., Lucas, S., McBride, J., Want, S., Wilkinson, B. (2011), *Transitioning to a resilient, liveable, and sustainable greater Melbourne*, Final Draft Response to the Living Victoria Ministerial Advisory Council, p15

[12] Wong, T., Allen, R., Deletic, A., Griggs, D., Hodyl, L., McIlrath, B., Montebello, T., Smith, L. (2011), *Transitioning to a resilient, liveable and sustainable greater Melbourne (localised case studies)*, final draft report prepared for the Living Victoria Ministerial Advisory Council, p4

[13] Courtesy of Melbourne Water (2011)

[14] Farrier Swier Consulting, *Socially Optimal Allocation of Water Resources*, Final Draft Report to the Living Victoria Ministerial Advisory Council, 2011, p10

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