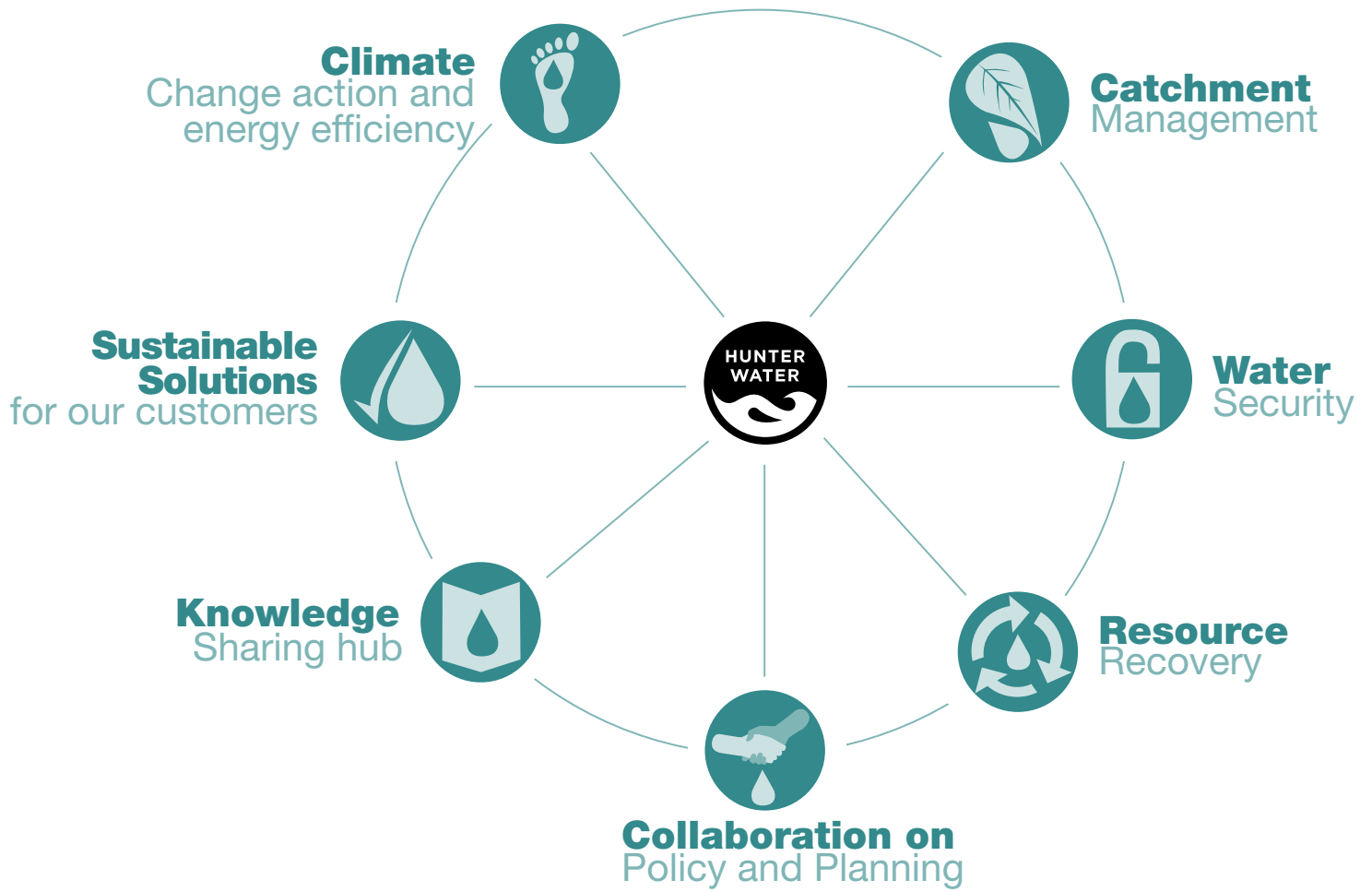




hunter water corporation
november 2011

greenprint
for sustainable urban water management



Our Greenprint for Sustainable Urban Water Management in the Hunter.

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1 Message from the General Manager System, Strategy and Sustainability



The urban water industry in Australia faces many challenges over the short and long terms. It is clear that the new paradigm for the urban water industry will be based on the concept of sustainability. This focus on sustainability will drive a fundamental change in the industry. We have already seen a fundamental shift in the way that Australian cities are securing water for their communities.

Looking forward, the uncertain impact of climate change remains the greatest challenge to ensuring sustainable urban water services. This was confirmed in a report entitled *Vision for a Sustainable Urban Water Future* issued last year by the Water Services Association of Australia (WSAA).

The impacts of climate change are broader than just variability in inflow to water storages and impacts on water demand. There are likely to be significant impacts on both the sewerage and stormwater systems and the interdependencies of all three elements of the urban water cycle need to be carefully evaluated and managed in an integrated way. New suburbs and large redevelopment sites represent a one-off opportunity to cost-effectively implement water sensitive urban development principles in our growing region. Once developments are completed it is very expensive to retrofit water sensitive design elements without disruptions to individuals and the community.

The next decade will be a period of significant change with regard to urban water management. Planning forecasts anticipate considerable growth in the lower Hunter over the next twenty years. This issue in itself will present many challenges for our region in terms of our water future however it also presents enormous opportunity for our community. It is essential that in planning for growth within our region, all the regulatory and statutory requirements are aligned to ensure that water sensitive urban design elements can be introduced in a cost effective manner. Local government and state planning agencies have an important role in this regard. There are numerous examples around Australia where water sensitive urban development has been successfully implemented with a high level of approval and satisfaction from local residents. The development industry, a key stakeholder in implementing water sensitive urban design, is generally supportive given that sustainability is a strong selling point in the marketplace.

Good planning is only possible with good knowledge and hence focusing on knowledge management that develops our staff and our relationships with external stakeholders is critical to our plans going forward. Together with our stakeholders we will look at all times for opportunities to improve and be innovative with regard to provision of water services. Community engagement will continue to be an essential component of water resource strategies and major projects.

We have a great opportunity in the lower Hunter to work together to create a sustainable urban water future that in turn contributes to creating a sustainable region. While the challenges are large, the opportunity to work in collaboration and make a difference exists.

Hunter Water has prepared this 'Greenprint' which is our plan of how we move forward with our many stakeholders to help create a more sustainable future. In 2011 Hunter Water will commence work on a revised water plan for the lower Hunter that will be developed in partnership with government agencies and will be shaped by the views and input of our community. It creates a fantastic opportunity to put our plans for sustainable urban water management into action.

Peter Dennis
General Manager System, Strategy and Sustainability

2 Greenprint Introduction

2.1 Cities of the Future

A region will be successful if it can manage its challenges and seize opportunities in a way that reduces its ecological footprint, while simultaneously improving its liveability and its resilience to the shocks of future climate change or population growth (Binney et al, 2010). The management of water is critical in this process.

Work is being undertaken under the *Cities of the Future* program which looks at how our cities can be designed better and re-plumbed to ensure that they are more water sensitive and resilient. Given climate change and population growth, it is imperative that the Australian urban water industry recognises the need to develop much stronger relationships and collaborate with all the institutions and sectors that determine the shape and style of the cities we will live in the future.

The International Water Association (IWA) and Water Services Association of Australia (WSAA) have been active in stimulating discussion and developing thinking at an international and national level on sustainable water management in our future cities. Figure 1 summarises key principles established at a national workshop that are considered to be pivotal to changing the way our cities are planned in the future.

A vision for the cities of the future

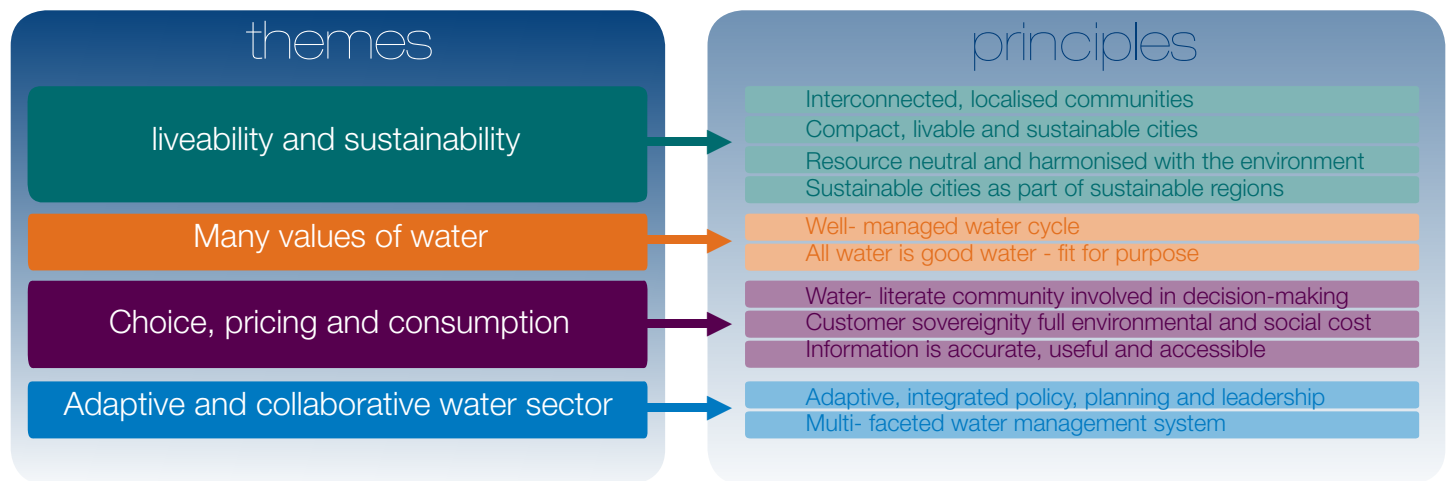


Figure 1 Principles for a City of the Future (Source: Binney et al, September 2010)



2.2 Our Vision

Working together to ensure a sustainable water future in the Hunter.

Hunter Water aims to be a leader in sustainable water services and utility solutions for our customers. This will be achieved by providing superior customer service and managing the environment sustainably, through operational excellence and a high performance culture.

We will pursue a sustainable water future in which our water supply is secure and high quality, our waterways and beaches are healthy, biodiversity is improved and we maximise the sustainable reuse of water in the lower Hunter.

Our focus is on efficient use of resources and moving towards best practice energy efficiency as we begin our journey into a more carbon constrained world.

We will develop infrastructure and processes that are resilient and can withstand the potential impacts of climate change. Our team will achieve our vision through continuing to adopt innovative approaches to asset and resource management and working collaboratively with our customers and stakeholders.

2.3 Our Challenge

Water is an essential but scarce resource - without it we cannot survive. It is crucial for a growing and prosperous region, a healthy environment and a vibrant and liveable community. Our challenge is to secure sufficient water resources for future generations and the environment in the context of climate change, a growing region and resource scarcity.

Water utilities are particularly vulnerable to the impacts of climate change and hence the industry believes that it has a responsibility to show leadership and foresight in relation to adaptation to our changing climate. There is also the need to adapt to a future where carbon will eventually be constrained either by price, taxation or regulation.

The past was defined with a view of sustainability that focused on how much water can be saved or how highly effluent was treated before discharge or reuse. The future requires a more complex definition. Sustainability needs to be considered in relation to environmental, social and economic considerations, including in relation to customers, staff, pricing and infrastructure. Our future water systems will have much greater complexity where emphasis is being placed on energy efficiency, environmental protection, maximising recycling opportunities and sustainability.

2.4 Our Stakeholders

Our stakeholders and the community will increasingly expect that our precious water resources will be managed to ensure reliability of supply and that this will be achieved in a sustainable manner.

Our key stakeholders in our journey towards a more sustainable future are our customers, the traditional owners, other urban planners, land owners, our regulators and developers. They and our strategic partners including other water utilities, design and construction partners and researchers, help us achieve our objectives.

2.5 Our 'Greenprint'

To deliver our vision we have developed seven focus areas and established intentions, goals and success indicators for each. Clearly there is a high degree of interaction between the focus areas which highlights then need for a planned and integrated response. The goals and success indicators align with our strategic business plan. (See inside cover for a diagram)

3 Catchment Management

3.1 Intent

To protect the lower Hunter's water supplies through sustainable catchment practices.

3.2 Goals

- Maintain healthy catchments for safe highly reliable drinking water
- Minimise risks via effective regulation, monitoring and surveillance
- Application of water sensitive urban design principles within catchment areas
- Conserve and improve biodiversity and ecosystems within catchment areas we manage
- Work with stakeholders to deliver improved catchment outcomes
- Develop a good knowledge of our catchments so we can make informed decisions about their future management
- Resilient catchments and systems that can cope with incidents and adapt to climate change effects.

3.3 Strategic Directions

- Tree planting opportunities for carbon sequestration and biodiversity outcomes
- NSW biobanking scheme offers opportunities to conserve areas of catchment land in perpetuity
- Using advanced decision support models to help understand and prioritise our ongoing management effort
- Opportunities to link up with larger conservation programs that may attract Government funding.

3.4 Success Indicators

- Improved water quality in our drinking water storages
- Improved biodiversity and carbon sequestration outcomes
- Strong partnerships with our catchment stakeholders
- Reduction in catchment risk over time
- Research demonstration projects implemented
- Robust response plans to cater for emergencies and incidents.



3.5 Links and Supporting Information

- Hunter Water's *Catchment Management Plan*, July 2010

4 Water Security in the Hunter

4.1 Intent

To secure the lower Hunter's water future to meet the forecast water demand and ensure there is enough water during drought.

4.2 Goals

- Ensure adequate water supplies during extreme climate conditions.
- Provide a secure and sustainable supply of water to meet the forecast water demand for sustainable growth.
- Recognise the importance of water in creating a sustainable and liveable region.
- Develop the right balance between new water source augmentation, water recycling, water efficiency, and water loss minimisation; ensuring the adopted portfolio of options is flexible and adaptable over the long term.
- Develop a strategy that is resilient against potential impacts of climate change.
- Provide water that is affordable and safe to drink and minimises costs to the community.
- Help protect the health of our rivers and aquifers and the ecosystems that rely on them.
- Allow citizens to influence water management as both customers and members of an informed and responsible community.

4.3 Strategic Directions

- In collaboration with Metropolitan Water Directorate, government agencies and our community develop a new water plan for the lower Hunter
- *Lower Hunter Recycled Water Initiative* will double the amount of recycled water used in the region
- Helping our customers be efficient in how they utilise water.

4.4 Success Indicators

- Lower Hunter continues to be a highly desirable place to live with a water supply that is secure, affordable and used efficiently.
- Water is available for sustainable growth in our region.
- Lower Hunter Water Plan adheres to national urban water planning principles adopted by COAG.
- The lower Hunter community is protected against drought and the future impacts of climate change.
- Water conservation, water recycling and system loss targets are met.



4.5 Links and Supporting Information

- *Position Paper: Water Security in the Lower Hunter*
- *Lower Hunter Recycled Water Initiative*
- *Hunter Water website*

5 Climate Change Action and Energy Efficiency

5.1 Intent

Prepare our organisation, (our people and assets), for a carbon constrained future as well as building resilience to adapt to the impacts of a changing climate.

5.2 Goals

- Embed energy efficiency best practice into our business
- Comply with all relevant energy and greenhouse gas related regulation
- Explore and better understand the energy-water nexus so we make the right decisions
- Assess and understand system vulnerabilities to climate change so we can make it more resilient
- Mainstream climate change adaptation into our business planning
- Ensure new assets are energy efficient and resilient to climate change impacts.

5.3 Strategic Directions

- Work with our customers and regulators on how best to position the organisation with respect to abatement of greenhouse gas emissions that we generate in doing business.
- Investigate and trial alternative mechanisms to achieve our corporate greenhouse gas emission targets including utilising waste to generate energy, using or producing renewable energy and carbon sequestration.
- To work with our industry partners to better understand wastewater fugitive emissions and how they can be reduced
- To better understand the opportunities for intelligent networks to more sustainably manage water and improve resilience of our system
- Develop a prioritised response plan to address assessed vulnerabilities and ensure we have a resilient system that can adapt to a changing climate.

5.4 Success Indicators

- Meet our greenhouse gas emission targets
- Energy efficiency and smart systems are built into assets
- Robust system resilience including response plans to cater for emergencies and extreme events
- New infrastructure that can cater for the impacts of our changing climate.

5.5 Links and Supporting Information

- *Hunter Water's Greenhouse Gas Abatement Strategy*
- *Energy Efficiency Project Plan*
- *Climate Change Adaptation Project Implementation Plan*



6 Resource Recovery

6.1 Intent

Within the context of sustainability Hunter Water will optimise the reuse and recovery of resources as part of its operations and activities.

6.2 Goals

- Continue to pursue sustainable water recycling opportunities as a substitute for potable water and as a way of managing effluent discharges from wastewater treatment plants
- Maximise the sustainable beneficial use of biosolids
- Optimise resource efficiency with a focus on minimising and eventually eliminating waste disposal

6.3 Strategic Directions

- To develop an updated masterplan that identifies sustainable and affordable opportunities to recycle water
- Develop a biosolids management plan which includes exploring opportunities for energy and nutrient recovery from our wastewater system
- For each new project explore opportunities to recycle construction material wastes.

6.4 Success Indicators

- Strategic approach to recycled water opportunities to ensure the most cost effective and environmentally sustainable water recycling schemes proceed
- Pilot projects established for energy and nutrient recovery
- Materials are reduced, reused and recycled during construction, operation and decommissioning of assets
- Long term *Biosolids Management Strategy* completed by end of 2012.

6.5 Links and Supporting Information

- *Lower Hunter Recycled Water Initiative*
- *Hunter Water Biosolids Strategy*
- *Hunter River Effluent Management Masterplan*
- *Recycled Materials Strategy*





7 Collaboration on Policy and Planning

7.1 Intent

To work in collaboration with our customers, policy makers, local government, scientists, other utilities and developers to create a water sensitive region that contributes to the regions vision for a sustainable urban environment.

7.2 Goals

- Policies and planning approaches to guide sustainability are appropriate for our region and adaptive to changing future needs
- To undertake proactive long term planning to inform decisions we make today ensuring that they are consistent with a sustainable future in the lower Hunter
- To secure external funding to support our regions investment in sustainable infrastructure
- To create a sense of urgency for change
- To facilitate successful relationships with local and state planners to ensure sustainable planning decisions for our region
- To influence government policy to encourage sustainable outcomes and development.

7.3 Strategic Directions

- Develop decision making tools that provide a good framework for making the right decisions for our future and include external stakeholders in our decision making process
- Explore the use of multi-scale integrated water management approaches to improve the resilience and sustainability of urban water system
- Develop an agreed vision for the role water will play in our future
- Continue to develop GIS mapping tools to provide an effective platform for sustainable regional water resource planning.

7.4 Success Indicators

- Policies and planning approaches to guide sustainability are appropriate for our region and adaptive to changing future needs
- An integrated approach with other planning organisations to future planning exists in the Hunter with a forum that meets regularly with other planners to discuss and resolve policy and planning issues
- Innovative ways of using water in our urban environments.

7.5 Links and Supporting Information

- Action Plan for Supporting Sustainable Urban Water Management in the Hunter – under development
- WSAA/IWA outcome documents
- Hunter Water Sustainable Decision Making Framework



8.1 Intent

To develop the right organisational structures, culture and access to information that provide our people with the right knowledge to make good decisions, to take advantages of new opportunities and address emerging areas of risk.

8.2 Goals

- A targeted R&D plan that addresses the needs of each Greenprint focus area
- Develop champions in our business that are able to achieve the desired vision and outcomes for the Greenprint focus areas
- To develop position papers on the role of water in a sustainable Hunter future that can provide a point for engagement with our customers and stakeholders as well as informing our joint decision making
- To invest in well targeted science, sociology and engineering that enables sound and informed decisions.

8.3 Strategic Direction

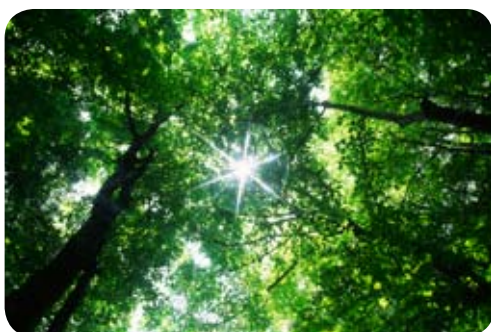
- To develop a knowledge sharing plan that provides coverage for all of the focus areas in the Greenprint
- To establish an education facility for sustainable urban water management in the lower Hunter
- To identify demonstration projects that help provide knowledge and information for future decisions
- To use tools like scenario planning to assist how understanding of what the future might look like and hence inform the decisions we need to make today.

8.4 Success Indicators

- Informed and knowledgeable staff that lead and guide our work in the all focus areas
- Able to deliver innovative solutions
- Successful demonstration projects that showcase how a city of the future manages its water.

8.5 Links and Supporting Information

- *Hunter Water Research and Development Plan 2009-2013*
- Knowledge sharing plan



9 Sustainable Water Solutions for Our Customers

9.1 Intent

To understand the needs of our customers and work with them to develop product options and tailored processes that creates innovative solutions and improved sustainable outcomes.

9.2 Goals

- Understand our customers aspirations including providing them with individual choices for how they use water
- To give our customers greater choice and information in relation to the way they use water
- To provide a range of product options that allow our customers to choose how they manage their water at a household level
- Allow citizens to influence water management as both customers and members of an informed and responsible community
- Work more closely with developers on sustainable water solutions for new developments
- Understand our customers preparedness to pay for more sustainable solutions.

9.3 Strategic Directions

- Engage directly with our customers to understand their needs and preferences
- To investigate how smart meters can be used for sustainable urban water management
- To understand what motivates our customers to save water
- Provide clear and accessible information on the financial, social and environmental costs associated with different water supply choices both at a regional and household scale
- Seek opportunities to work with and support community groups to improve the sustainability of our region.

9.4 Success Indicators

- Policies and planning approaches to guide sustainability are appropriate for our region and adaptive to changing future needs
- Informed and knowledgeable citizens that contribute to sustainable urban water management in our region
- An integrated approach to future planning exists in the lower Hunter
- Our customers are supportive of our visions and plans
- A high level of understanding and community awareness of the 'context' of sustainable urban water management in the lower Hunter.
- Development that aligns with the sustainability vision or goals of the region.

9.5 Links and Supporting Information

- *Hunter Water Sustainable Decision Making Framework*
- *Hunter Water Communication and Consultation Guidelines*

10 References

Peter Binney, Alieta Donald, Vicki Elmer, Jamie Ewert, Owen Phillis, Rob Skinner (Chair) and Ross Young. *The Spatial Planning and Institutional Reform Working Group of the IWA's Cities of the Future Program*. IWA Cities of the Future, Spatial Planning and Institutional Reform Conclusions from the World Water Congress, September 2010.

Water Services Association of Australia (January 2009) *Vision for a Sustainable Urban Water Future* Position Paper No.3

