SA WATER SUBMISSION TO REVIEW OF THE SOUTH AUSTRALIAN CLIMATE CHANGE STRATEGY

- How can South Australia be the innovator in climate change action?

SA Water recycles around 30% of its treated effluent through a number of recycled water schemes. The Glenelg to Adelaide Parklands (GAP) scheme was implemented toward the end of the Millennium Drought to provide a climate independent water source for irrigation of Adelaide's iconic Parklands that was not subject to the tight water restrictions in place at the time. Other non-potable water supply schemes, being mainly stormwater, were also being developed across Adelaide at this time for the same reason, to provide fit for purpose water for irrigation and other non-potable uses that was independent of water restrictions and at a lower cost to Councils (for irrigation of open space) than traditional potable water supplies.

Whilst there was a mild increase in annual rainfall since the end of the Millennium Drought, the amount of "effective" rainfall has not returned to the pre-2000 levels. This is evident in both the volume of run-off that has been captured in SA Water's drinking water supply reservoirs over the past two years, and also in the soil moisture reserves in soil profiles across Adelaide. Further, the number of hot days exceeding the critical threshold continues to increase. This has given rise to greater emphasis being placed on providing water for both private and public open space, and also to address the increasing urban heat island (UHI) effect from the built environment. This has put emphasis on the need to ensure open space remains green throughout the dry summer and autumn period, and has driven current research into UHI reduction projects using recycled water. The main aim of this research is to quantify the benefits associated with irrigation of open space using recycled water. The benefits include amenity, social interaction, stable property prices, reduction in air temperature and hence a reduction in energy use for air conditioning, and the holistic benefit associated with a reduction in recycled water discharge to the marine environment (due to the increased use through irrigation of open space). Two major research projects are underway, one being in the Adelaide Parklands (using the parklands to cool the city) and the other at the Adelaide International Airport (aiming to demonstrate the potential energy savings for the cooling towers in the airport terminal).

Adelaide has a number of characteristics which make it a suitable location for reuse of both recycled water and stormwater. The rainfall period is predictive, being winter dominated, the topography is relatively flat along the Adelaide Plains, the Plains are underlain by a suitable aquifer system for storage of stormwater and recycled water, and the two largest wastewater treatment plants are located close to agricultural areas. The topography and aquifer system has enabled the wide scale implementation of Aquifer Storage and Recovery (ASR, which is a method of Managed Aquifer Recharge) for stormwater, and to a lesser extent

recycled water. Over 10 Councils and a number of other open space irrigators (e.g. Golf clubs) have installed stormwater reuse schemes, all of which involve ASR. A potential concern with these schemes is the reliance on rainfall to generate stormwater, and the subsequent inability to guarantee supply to customers from these schemes. There are current investigations occurring into the blending of stormwater with recycled water, on a medium to large scale, to enable these alternative water supplies to be both climate independent, and to also reduce the salinity of the recycled water, making it more suitable to a greater range of uses (i.e. increased industrial and commercial use, plus use on salt sensitive vegetation). It is considered that this next phase of alternative water blending will enable Adelaide to move toward a water sensitive city.

South Australia should continue to position itself to lead research and further develop and expand the climate change actions described above. SA Water has the technical knowledge and capability to contribute significantly in this area.

- How can government, communities, businesses and individuals work together to prioritise and fund activities that build our resilience to climate change?

SA Water has been involved in a number of regional adaptation planning workshops to determine key vulnerabilities and prioritise adaptation actions in areas most vulnerable to a changing climate. The next step is to develop plans to support the implementation of actions within, and across, the different regions.

SA Water has recently renewed our Climate Change Sector Agreement with the State Government. Although many other sector agreements have now lapsed, they are one option of formalising governance arrangements and facilitating partnerships across government and business around adaptation responses. They could also be used to provide cross-sector partnerships, and even cross-regional governance arrangements, as there are many aspects of climate change adaptation, such as water resources, that cross regional boundaries.

- What actions could government, industry and the community take to reduce greenhouse gas emissions from the City of Adelaide and create economic opportunities for the State?

The main barriers to implementing carbon reduction measures in business and industry are primarily financial. To facilitate the transition to a low carbon economy, government could provide financial incentives to pursue low carbon options, thereby discouraging businesses from pursuing more carbon intensive, cost-effective activities that meet business needs.

Globally, energy efficiency is proven to be one of the most economical ways to reduce carbon emissions. The repealed Australian Energy Efficiency Opportunities

Act and legislation proved very successful in delivering cost effective energy and carbon emission reductions across many industries over many years. Other countries, including across Europe, have now adopted very similar schemes. SA Government should support business and lead in this area of energy optimisation to stimulate efficiency measures and reduce carbon emissions.

State governments and industry should ensure consistent and cooperative policies and agreements to encourage a national approach to energy issues, ranging from co-digestion, co-generation, community energy, energy generation, energy recovery, smart networks, demand management, waste to energy and energy supply. This could be facilitated through a harmonised approach to the currently ad hoc state-based energy certificate schemes. The schemes should be able to be utilised by both the residential and business sectors to provide greater opportunities for carbon reduction.

An economy-wide, national approach to carbon pricing, such as an emissions trading scheme, is a cost effective way to incentivise investments in clean energy and emissions reductions. If feasible, a State(s) based scheme could be a first stage to a national approach. There are now around 50 carbon trading systems in operation around the world, covering 40 percent of the global economy. China has announced that it will introduce a cap-and-trade scheme in 2017 which would overtake the European emissions trading system (EU ETS) as the world's biggest carbon market. The time to consider a trading scheme for Australia seems to be opportune as our main trading partners are already involved or plans are in place to operate one in the near future.

If the state energy demand is set to increase, then renewable energy such as advanced solar, wave and other innovative renewable energy solutions should be investigated for inclusion in the supply mix. Other non-carbon based technologies with proven baseload capacity such as nuclear should continue to be investigated. If SA can grow the economy, including mining and water resource security from low or zero carbon energy, then this will benefit the whole state and country in terms of job security, investment, engineering excellence, innovation etc.

Collective power purchasing could be led and adopted by government and agencies and cost savings achieved could be re-invested in future low carbon energy and efficiency projects in South Australia.

The government should have an understanding of future energy and carbon demand and focus on the big issues and opportunities for major shifts. It is recognised that smaller "feel-good" projects have a place in developing technologies and raising awareness however they have little real impact. The real costs and benefits of achieving a low carbon economy should be fully explored, understood and communicated to the SA community, along with clear action plans addressing the greatest potential for sustainable change.