Submission
No 47

INQUIRY INTO A SUSTAINABLE WATER SUPPLY FOR SYDNEY

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Subject: Submission to Inquiry into a sustainable water supply for Sydney lodged by Greg Leslie

Summary

THE UNIVERSITY OF
NEW SOUTH WALES

School of Chemical Engineering
and Industrial Chemistry

Thursday, February 15 2006

Committee Secretary
General Purpose Standing Committee No. 5
Legislative Council
Parliament House
Sydney NSW 2000

Thank you for the opportunity to provide comments to General Purpose Standing Committee No. 5 on the matter of *A Sustainable Water Supply for Sydney.*

There is no question that the development of a sustainable water supply for the Sydney will require the implementation of a suite of solutions. To this end I agree with the recent progress report on the Metropolitan Water Strategy that presents a range of solutions to Sydney's water crisis. However, I submit to the committee the proposition that more emphasis should be placed on the development of recycling schemes that use large volumes of water to augment both environmental flows in the Hawkesbury-Nepean and supplement the storages in Warragamba dam or prospect reservoir.

The development of these schemes will be contingent upon the adoption of a water policy that embraces the following three concepts.

- Recycled water can be introduced to surface or groundwater supplies without compromising the health of the public or the environment;
- Existing wastewater infrastructure is a community asset that should be used to create additional water supplies rather than dispose of surplus waste; and,
- Regional Governments have successfully implemented legislation that supports water recycling.

The remainder of this submission contains additional information on these concepts.

Recycled Water is Safe: Recycled water has been safely used for more than 30 years to restore environmental flows and augment ground and surface water supplies that are abstracted for use in potable water systems. Modern water recycling schemes utilise the best available water treatment technology including, membrane processes such as microfiltration and reverse osmosis, disinfection with ultraviolet irradiation and advanced oxidation. A two year study conducted in Singapore between 2001 and 2003 to evaluate water quality and possible acute and chronic health effects concluded that the quality of the recycled water was superior to existing potable supplies and that the acute and chronic health risks posed by the recycled water was no different than the existing potable supply. These findings were consistent with studies conducted in Denver, Colorado (1994), San Diego, California (1998) and Orange County, California (1999).

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Notwithstanding these studies, recycled water has been used since 1976 to augment groundwater supplies in Orange County and 1978 to supplement surface water supplies in Washington D.C. Similar schemes have recently been implemented in expanding urban areas in Virginia (Loudon County) and Georgia (Gwinnette County). Consequently, there is no technical reason preventing the treatment of water at Sydney's inland or coastal wastewater treatment plants to a standard that can be returned to our rivers or surface water supplies.

Wastewater Infrastructure is a community asset: The development and management of infrastructure associated with the collection and treatment of municipal wastewater has required, and will continue to require, significant public expenditure. Consequently, these public assets should be fully utilised as a vehicle to create a new source of water that is essentially independent of rainfall. According to New South Wales Treasury figures, the average annual capital improvement budget for Sydney Water in the period 1996 to 2006 was approximately 600 million dollars. The government is to be commended for this investment which protects both the environment and public health through improvements and upgrades to coastal and inland sewage treatment works and the network of sewage pump stations. However, with or without large scale water recycling, this pattern of expenditure will continue, as these assets have the same lifetime as the city itself. Given that water is a valuable resource and that wastewater treatment may be upgraded to produce water that exceeds the quality of existing potable water supplies, it follows that future investment in these assets should be made with the objective of producing a new source of water rather than disposing of surplus waste. The infrastructure required (in addition to the additional treatment processes) is a pipeline to return the water to the environment. In the context of Sydney, the construction of a pipeline for the delivery of recycled water is no more complex an undertaking that the proposed pipeline to transfer excess flood waters from the Shoalhaven and would be an asset that would serve the water needs of Sydney for generations to come.

Water Recycling Legislation. The NSW Government is to be commended on its efforts to streamline the accreditation process for small recycling projects, however, it needs to go further to create a legislative environment that encourages large scale recycling. The committee should consider the feasibility of introducing legislation similar to that which exists in the United States that supports the development of water recycling schemes by both prohibiting the unreasonable use of water resources and encouraging the use of recycled water. For example, a unique feature of the California State Constitution is the uniform prohibition on the wasteful use of water[1]. Article X, Section 2 of the Constitution contains the express proclamation that "the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented". The legislature has expanded on the Article X, Section 2 to define reclaimed water is a valuable resource. The Porter-Cologne Act, Division Seven of the California Water Code, defines reclaimed water as water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would otherwise not occur and is therefore a valuable resource[2]. The tenet of Article X, Section 2 is reiterated in California's "Reasonable Use Doctrine" so that under California Law it is possible that the use of potable water could be considered a waste, or unreasonable, if reclaimed water is available and the water quality is appropriate for a particular use[2]. This legislative language has been cited in support for many large scale urban water recycling schemes including the Orange County Groundwater Replenishment System (www.gwrsystem.com) which will recycle 20% of the water consumed by 2.5 million people in Orange County California.

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1. California State Constitution , Article X §2, 1928

2. McLaggan, P. Water Reclamation: A summary of California Laws and Regulations, 1995 Argent & Schuster, Foresthill, CA.: §3 pp 5-6

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I am aware that large scale water recycling options have been canvassed by the government through different entities under the Department of Utilities and Sustainability. Also, I am aware that private interests are promoting schemes to recycle large volumes of water for environmental flows as well as industrial reuse. I reiterate my agreement with the Government's position that recycling is only part of the solution to Sydney's water problems, however, given that large scale recycling has been deployed in cities with demographics similar to Sydney and that our investment in wastewater infrastructure leaves assets that serve multiple generations, I submit to the committee that it is prudent to explore the feasibility of large scale recycling for Sydney with the same resources and urgency that was recently devoted to the desalination option.

Please do not hesitate to contact me on 0414 234 345 if you have any questions concerning this submission or require additional information on large scale recycling.

Yours truly,

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