

**GENERAL PURPOSE STANDING COMMITTEE NO. 5**

**INQUIRY INTO A SUSTAINABLE WATER SUPPLY FOR SYDNEY**

**SUBMISSION BY**

**Ian Kiernan, AO, Chairman  
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## **SYDNEY'S WATER MANAGEMENT**

The purpose of the General Purpose Standing Committee No 5 is to “inquire into a sustainable water supply for Sydney”.

Embedded in the organisational objectives of Clean Up Australia is the environmental objective of “conserving water and energy and reducing greenhouse gas emissions”. In addition Clean Up Australia’s stated commitment is to “implement positive action to address critical environmental issues both locally and globally by co-ordinating practical action, educating the community, advocating community concerns and facilitating partnerships with Government’s, Industry and Community Groups”.

As Chairman of Clean Up Australia, my personal commitment, within the parameters of our stated objectives, is to fearlessly pursue matters of public concern for the betterment of our environment. To that end, I am delighted that the Government has abandoned its policies concerning the Shoalhaven area with respect to raising the wall on Tallowa Dam and especially its decision to curtail the building of a desalination plant at Kurnell in order to explore alternative methods of supplying Sydney and its rivers with the water they need for the future. We at Clean Up Australia applaud this decision, and now it is time to look to the future, not the past, in determining a sustainable plan that will secure the water supply and the health of its waterways for Sydney into the future. Our proposals, if adopted, will mean that there is never a need for an insurance policy of a desalination plant, because dam levels will not drop below 30%.

The strategic direction of Clean Up Australia with respect to Sydney’s water resource management is to ensure that Sydney is seen as a global city that brings to its

citizens a safe and healthy lifestyle and that it manages its natural environment for the benefit of the current and future population. To this end, Clean Up Australia, through this submission, seeks to assist the Parliament and the Government in mapping out a long term sustainable plan for the management of the water resource.

We support the Government's initiatives in encouraging recycling by industry. Industry has exhibited a willingness to recycle where it receives encouragement and where it is not blocked by a plethora of regulations. Clean Up is willing to help in any way it can to ensure that industry is assisted in changing its water management methods.

The Government has also said that it will continue to work with the residential community to show it how to use water more wisely. Clean Up applauds this initiative and is willing to work with the Government on the program.

The announcement that the Government will adopt dual reticulated systems for the new release areas in the north-west and south-west will address much of the growth in demand caused by population increases. The changes in approvals for development of other new housing and at the time of selling a house (BASIX) will also help deal with growth. New growth centres and existing City infrastructure must be sustainably developed and redesigned to deal with the changes in climate and the acknowledgement of the scarcity of resources.

The Government has also announced a plan for the better utilisation of the water assets. Access to unused sections of water storage reservoirs and increased activity on leak reduction are a good start to better water management. The challenge is to use sewerage assets in a more effective way to save our waterways and to produce

more water for recycling. Clean Up believes that the potential for the reuse of sewage and stormwater has not yet been fully realised.

The Government's announcements are a welcome step towards a more imaginative approach to managing Sydney's water resources. What is now needed is a plan that focuses on the use of the wasted water resources and builds on the Government's announced strategies so that Sydney's long term future is assured. A proposed plan for the rescue of Sydney's water resource management is attached.

We know that Sydney's climate will be drier, and rainfall patterns less certain, but the effects of global warming have not yet been fully quantified. It is imperative that we look to the long term and consider the reuse of recycled water for indirect potable reuse. Clean Up Australia believes it is incumbent on Government to establish a high level scientific panel to thoroughly investigate the health and safety aspects of eventually utilising potable reuse through high quality recycled water being delivered into the storage reservoirs. This State has a leadership opportunity to embrace the future and invite other Australian States to participate in a scientific and educational forum to reach, what Clean Up Australia believes is the inevitable conclusion that wasting resources is an anathema to sustainable living.

We believe that if the Government follows the attached programs outlined by Clean Up Australia , then Sydney's dams will never drop below 30%. The proposal for a safety net of a desalination plant will therefore be removed forever from the city's agenda.

Ian Kiernan AO

Chairman

Clean Up Australia

# **A Water Resource Management Plan for Sydney**

## Education and awareness

The Government has already raised awareness of the precious and scarce nature of water in Sydney through its advertising and the water restrictions. An improved pricing regime that introduces higher charges for excessive usage has also been proposed. These measures have created a platform for further water awareness program.

There has been little opposition by the public to the water restrictions. Citizens of the city have demonstrated they are willing to assist in reducing water consumption. Many have modified their plumbing, installed rainwater tanks or sunk bores in areas where shallow aquifers are available. This change in attitude is a wonderful resource that should be built on.

Restrictions on the hosing of hard surfaces and excessive garden watering should remain. These restrictions send a message that water is a scarce commodity. They should be supplemented by a program, including further incentives, that shows households how they can continue to reduce water consumption. The Royal Botanic Gardens, the plant nursery industry and the plumbing industry should be asked to contribute to the education and awareness program.

Those people wanting to modify plumbing, install rainwater tanks or sink spearpoints into shallow aquifers should also be given assistance. The costs of these subsidies are justified easily because they defer large infrastructure and they modify attitudes.

## **Recommendations:**

That the Inquiry recommends to the Government that:

- The Government conducts an education and awareness program that assists households in understanding how to reduce water consumption;
- The Government continues water restrictions on the hosing of hard surfaces and excessive garden watering; and
- The Government increases or introduces subsidies for water saving devices such as modified plumbing, rainwater tanks and bores into shallow aquifers.

### Working with industry

The Government has been working with industry in Port Kembla to improve water recycling. It has announced an amplification of this proposal by extending the water recycling to other plants in the area. Another large recycling scheme is also proposed for the Shell Refinery and other industries at Rose Hill-Camellia. The water available from the processing of groundwater at the Orica Plant at Botany represents another significant opportunity for water harvesting.

Many smaller industrial installations can benefit from a grouping of industries together to solve water management problems. Some commercial properties or groups have improved water efficiency, but there is still significant scope for improved water management. The program should include recycling of sewage (sewer mining) where appropriate.

It is sometimes difficult for industry to bring about water savings. Different Government agencies and regulators have different agendas and few approach

water through the concepts of the total water cycle or what is best for the individual business. Regulatory reform is necessary if the full potential of savings by industry are to be realised.

A concerted program of awareness and assistance, similar to the one proposed for households, should be implemented with industry.

Many abandoned coalmines within the Warragamba Catchment contain large quantities of water that have come from groundwater. There is no incentive scheme for the owners of these mines to pump them through a treatment process and into the streams of the catchment. Similar disincentives mean that the methane emanating from these mines is not channelled into the energy cycle. Investigation of an incentive scheme to tap these resources should be undertaken.

Some operating coalmines also have groundwater that could be diverted into the storages of Sydney's water supply catchments or be polished to potable water standards and taken directly into the distribution grid.

**Recommendations:**

That the Inquiry recommends to the Government that:

- The Government conducts an education and awareness program that assists industry, including commercial properties, in managing their water resources;
- The Government encourages private enterprise to invest in commercial and industrial recycling projects removing existing regulatory impediments and provides subsidies where there is a price differential between potable water and recycled water.

- The Government investigates sources and processes for releasing groundwater trapped in abandoned coalmines or discharged from existing mines.

### Redesigning the Global city of the future

One of the inhibitors to better water resource management in Sydney is the existing urban design. The existing design does not take into account a limit to the water resources of the city or the impact of climate change and global warming. The predicted growth of the metropolis poses the threat of spiralling consumption, and there is an opportunity to alter the design of the city to deal with the expected climatic conditions.

The Government has identified this opportunity and has announced that the proposed releases in the north-west and the south-west of the city will adopt water sensitive urban design principles and have a dual reticulated water supply system. The Rouse Hill Development Area and the Olympic Village Site already have such systems, which are world's best practice. Dual reticulation means fresh potable water and highly treated recycled water will be supplied to each household.

The BASIX program is designed to address new housing development proposals outside the release areas mentioned above. The extension of BASIX so that it applies to the existing housing, commercial and industrial lands will help to modernise the city's design so that these lands too are redesigned to make better use of water and energy resources. BASIX at the present only covers some of these lands. It should be extended to all sales of land in the metropolitan area and the Warragamba water supply catchment.

Any long term plan for Sydney's water resource management should be cognisant of the long term plans for the extension of the housing footprint of Sydney. This means planning to supply long term growth and manage the health of rivers in the Sydney-Canberra corridor. The water management plan for Sydney should include plans for water management in the Warragamba Catchment,<sup>1</sup> which basically covers the Sydney-Canberra corridor and Lithgow.

### **Recommendations:**

That the Inquiry recommends to the Government that:

- The Government extends the BASIX program to cover all housing, industrial and commercial land in the Sydney Basin and the Warragamba Catchment.
- The Government extends the education and awareness programs for households and industries in the Sydney region to similar properties in the Warragamba Catchment.

### River Health

Sydney's excessive water consumption has depleted flows in the rivers that supply Sydney with water. High levels of nutrients are also entering these rivers and this is often the result of discharges from Sydney Water's sewage treatment plants.

Consequently, river health has suffered. Apart from the environmental damage, the poor river health has economic and social consequences for those rivers and the communities and industries that rely on them.

River health would be much worse, but for the national parks and farmlands that make up parts of the catchment. The preservation of farmland in proximity to major

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<sup>1</sup> The Warragamba Catchment is that part of the Hawkesbury-Nepean Catchment that drains into Warragamba Dam.

water courses is essential for the management of river health. Any consideration for the development and redesign of urban areas must consider the preservation of farmlands and natural areas close to major water courses.

It is obvious that provision of environmental flows for the Hawkesbury-Nepean and Shoalhaven Rivers and their tributaries must be part of any water plan. The Government has acknowledged this in its planning to date. The environmental flows plan has been backed by extensive scientific investigation and community participation, which is essential for any proper planning regime.

What is not clear is what is to happen with the excessive flow of nutrients into these same river systems. The science and community participation that was used to determine environmental flows also showed ways of removing excessive nutrients to improve river health. The preferred method was to remove nutrient-loaded flows from the river and use those effluents for recycling. This would remove stresses in the rivers, such as weeds and algal contamination, and employ the water and nutrients beneficially on farmlands or in industry.

**Recommendations:**

That the Inquiry recommends to the Government that:

- The Government includes plans for improvement in river health in its water management strategy and that these plans include both environmental flows and nutrient management;
- The Government gives a priority to recycling highly treated sewage effluent and stormwater that is presently being discharged into the Hawkesbury-Nepean River system.

### Improved utilisation of water assets

The program of releasing inaccessible water from water storages, which has been commenced by the Government, is an excellent one. The setting of new targets and the improvement in the leakage management program of Sydney Water that has been announced by the Government will also contribute to water savings.

The decision not to raise the height of the wall of Tallowa Dam is also supported. What is needed is a plan that allows pumping from Tallowa during high flow periods so that the health of the Shoalhaven River and the Shoalhaven Water Supply are protected. This would include for example the planned, industrial and tourism south in the Nowra area

This pumping can result in excessive flows down the Wingecarribee River or through Glenquarry Cut. Both options have an adverse effect on local streams. The proposal for a pipeline from Wingecarribee Reservoir to the back of Avon Dam is a more environmentally sensible approach and it also helps minimise water losses during the transfer of bulk water.

Very little has been done to utilise sewerage and drainage assets in the quest for more water resources. It is disappointing that Sydney Water and some local government councils still regard these resources as waste products, although many councils have a positive approach to recycling and water management. These authorities have extensive assets that could be better utilised to improve water management in the metropolis. Lack of funds and the maze of regulatory processes stand in the way of improved performance from this substantial asset base.

There have been attempts recently by the councils in the South Creek sub-catchment to obtain funds from Commonwealth and State authorities for the recycling of sewage

and stormwater and for a comprehensive education program to be part of the project. This proposal is still under consideration by the governments. Goulburn-Mulwaree Council has been successful in obtaining funds for a comprehensive sewage recycling scheme. These are illustrations of the forward-looking attitude of councils in the catchment to get to grips with both water supply and water pollution problems. It is the correct time to harness these attitudes to address the city-wide problems of water management.

**Recommendation:**

That the Inquiry recommends to the Government that:

- The Government requires water supply and drainage management organisations in the Sydney Region and the Hawkesbury-Nepean catchment to investigate how their sewerage and drainage assets can be used to contribute towards water supply and river health management.

Governance

Just as Sydney's housing was designed at a time when water was regarded as plentiful; so too was the regulatory system that is used for water management in the city. The housing problem is being addressed by improved urban design in new housing releases and through the application of BASIX. There needs to be a similar overhaul of the regulatory system for water management in the city and its water supply catchments. Without this overhaul, councils, industry and even state agencies will continue to be frustrated by the labyrinth of regulations that prevent them doing the right thing with water.

The Government, through the Hawkesbury-Nepean Catchment Management Authority, is conducting a case study on water management regulatory processes in

the Nepean River. This case study should be used as the basis for an overhaul of the regulatory processes affecting water management. The outcome of the regulatory review should be focussed on better environmental, health and water use outcomes.

Clean Up Australia has serious doubts about the governance arrangements for Sydney Water. The functions of commercial boards include ensuring that long-term plans are in place that will sustain the business. Many in the community knew that global warming and a cyclical drought regime were imminent and that this would mean water supply difficulties for Sydney. It would be expected that management plans were in place to manage both supply and demand in such circumstances. Instead, the board appears to have relied solely on regulatory processes imposed by IPART being enough to manage demand. But even these regulatory targets have not been achieved by Sydney Water. On the supply side, very little work appears to have been put in place to address recycling of sewage or stormwater. In fact, the board appears to have been preoccupied by a defensive action against the private sector that did recognise the impending drought. There is clearly something wrong with the governance arrangements at Sydney Water. The Government should not have been forced into a reactive move, like the desalination plant, if Sydney Water's board had its long term planning in place to deal with the expected drought.

**Recommendation:**

That the Inquiry recommends to the Government that:

- The Government reviews the regulatory and governance arrangements for the management of water in the Sydney metropolis and its water supply catchments.

### Recycling of sewage and stormwater: the long-term future

This plan has addressed recycling of sewage, stormwater and rainwater within each of its sections. In essence, that represents a sectionalised approach to recycling and reuse of the water resources of the city. That approach is entirely appropriate for the current social attitudes and the present water supply infrastructure.

However, community attitudes are changing and will continue to change as water becomes identified as a precious resource by all members of the Sydney community. Many members of that community are well aware that a bigger picture of water management is required if Sydney is to continue its prosperity in a time of drought and global warming. The Government's actions and the revelation of the science of climate change are bringing the community to these new levels of understanding.

These are the reasons why business leaders are designing water and energy sensitive buildings for their corporations well ahead of any regulatory processes. It is the reason why many Sydneysiders have altered their water use habits whilst maintaining their lifestyle and cultural preferences. It is why developers accept the modern approaches to water sensitive urban design and dual reticulation. Some dual reticulated systems have been in place for over a decade. Residents in these areas have no opposition to recycled water. Those residents being supplied from the Hawkesbury-Nepean River through the North Richmond-Windsor water supply have been drinking recycled stormwater and sewage effluent shandied with river water without any ill effects to their health. They are no different from most households in the rest of the State.

It is now time for the Parliamentary Committee to address the big picture and close the loop in Sydney's water cycle processes. Sydney's rainfall is constant enough, even in drought times, and sewage flows are voluminous enough to maintain the

present lifestyle if we could only capture most of these flows and divert them back into our storage systems instead of letting them flow to the ocean. Our dams are large enough to take recycled flows, it is just the vision that has been lacking and an uncertainty about public attitudes. We believe those attitudes are ready for the large-scale visionary approach.

What we are proposing is that the Government includes a commitment to potable reuse in its long term water management strategy. The longer view of things gives planners, scientists, engineers, and public health official's time to get the infrastructure and systems in place to progressively take more recycled water back into our system. We understand that a large number of international cities already have recycled water in their drinking water systems. These have often been not planned, but are a circumstance of geography and history. Unlike those cities, Sydney has an opportunity to plan for its future water needs so that the science is right and the controls are right and the infrastructure is in place to bring about a gradual transition to potable reuse.

Such a planning process with a clear objective of potable reuse will mean that Sydney Water can plan its future infrastructure. Its plans should direct sewage flows away from ocean disposal and towards treatment and discharge into the storage reservoirs. Any delay only places more infrastructure in the wrong place facing the wrong way. The quicker the Parliament and the Government embrace the inevitable consequences of global warming and Sydney's attractiveness to potential settlers the quicker we can all plan for Sydney's long term water future.

**Recommendation:**

That the Inquiry recommends to the Government that:

- The Government includes potable reuse in its long term water management plans for the Sydney Region and the Sydney-Canberra corridor and that the planning of all infrastructure associated with stormwater and sewage management take this into account.