

INQUIRY INTO A SUSTAINABLE WATER SUPPLY FOR SYDNEY

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Subject:

Summary

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I am a plumber with (Clear of Works diploma) and 30 year in the trade. my submission is as follows.

The New South Wales Government is forcing the taxpayers of Sydney to spend billions of dollars on a desalination plant. This plant takes water from the sea and forces it under compression through a series of filters to extract drinkable water. The operating costs of such plants are huge. The electrical power used to generate compression could power a small city. Once contracts are signed, the construction costs on a major project such as this can blow out of control. In the case of the desalination plant, compensation may have to be paid to existing suppliers of water if water production is excessive!. It's painfully obvious that big money is made from big projects, whether it's a dam, tunnel, roadway or desalination plant. The taxpayer foots the bill for unwanted and unnecessary costly projects. In this book I put forward an alternative to Sydney's water problem.

What is the problem?

Australia has no problem with water when it rains! The dams fill up. The crops are watered. The rivers flow. No problem when it rains. When it does not rain water use becomes a problem. Droughts and floods are a fact of life in Australia. They occur regularly in cycles. In an average lifetime, most Australians experience drought or floods at least once.

Engineering solutions have been applied - drilling artesian water, damming rivers and irrigation. The problem with using engineering solutions for a water shortage is that man makes the assumption that only he owns water. The Snowy River project supplies electrical power to Sydney and irrigates the Murray River basin . The Snowy river is now a dead river. The mouth of the Murray is silting up and irrigation is causing the salt to rise to surface making agriculture costly.

Australia's population has grown. The demand for water from industry and people has outstripped supply in drought times. In a nutshell, the problem is wasteful water use by agriculture, industry and households.

In this book I will explore alternatives to the problem of Sydney's water shortage from the point of view of low impact on the environment. Low impact is a simple concept to understand. Roman engineers understood it thousands of years ago. Good engineering mimics nature. It does not block a natural system. When the city of Rome's water system was built, their engineers diverted a river through the city. Eleven aqueducts brought water into the city. This supplied drinking water free to the people, powered water wheels for industry and flushed away the sewage. I do not advocate a return to Roman times but I am illustrating a point. How much wastewater do households produce?

The amount of wastewater generated by any household varies greatly according to the number of people, their age and lifestyle. Sydney Water estimates that an average household (3.5 people) produces 586 litres of wastewater each day. 60% of Sydney's total water consumption is used in our kitchens, bathrooms, laundries and gardens. Gardens use 20% of all household water.

Businesses consume almost 20% of Sydney's total water use.

Every day Sydney Water treats approximately 1,300 mega-litres of wastewater and sewage. That's 1,300 Olympic-sized swimming pools of wastewater that comes from sinks, showers, toilets, and backyard drains.

This wastewater is treated at one of 31 sewage treatment plants. Treated wastewater is then discharged to waterways. However most of Sydney's wastewater goes out to sea. In 1930, most of Sydney's sewage farms were closed and the sewerage diverted to North Head Manly ocean outfall. It is not fully treated.

Hazardous liquids from industry and hospitals are still allowed to run down the sewer, although there has been a reduction in recent years. It's still a health hazard to fish and swimmers.

Did you know?

Of all the water on the Earth, only three per cent is fresh water. Two-thirds of this three per cent is locked in polar ice caps, glaciers, the atmosphere and soil. That leaves only one per cent of the Earth's water available for use. Australians live in the driest continent on Earth.

So remember, every drop counts.

Sydney Water is offering a rebate to customers who install a rainwater tank. Rainwater tanks have many advantages - no matter where you live. Even in urban areas where a reticulated service is available, rainwater tanks help conserve valuable drinking water and reduce stormwater run-off. Sydney Water has a Rainwater Tank Rebate Program offering customers up to \$650 to install a rainwater tank. A special Rainwater Tanks in Schools Rebate Program is also available for schools. New buildings can design rainwater tanks into the building without any real construction problems.

Save water by: 1. Rainwater harvesting.

2. Reusing grey water. Washing machines, bath/shower/ sinks

3 Reduced water use.

1 Save water by Rainwater harvesting.

In Sydney, drinkable water is provided to every house. At present there is no need to boil it before drinking. Rainwater is drinkable providing it is clean. Think of your tank as a rain harvesting system. The rain falls on the roof of your house. Then the guttering collects the rainwater. It's important to keep the gutter free of leaves. Fig: A down pipe is connected to the gutter which is directed to a tank. From the tank it can be drawn away. It's a basic gravity-feed system. There are a few rules to remember with water. You cannot make water run uphill without a pump. Water pressure depends on height, not volume. Water ebbs or spirals down a vertical pipe. In order for water to flush solid material along a gutter or a pipe, the angle must be correct. Too much fall and water will flow over the solid material. Too little fall and the material will not move. It's as simple as that. Keep the rules in mind when installing a rainwater system or building a house.

Rainwater tanks come in many different shapes and sizes. The minimum size is 250 litres.

Materials such as heavy duty plastic are sun resistant and can be recycled. Galvanized tanks are great for the country but unsightly in an urban setting unless painted. Rainwater barrels made using recycled commodities barrels (food grade) made of UV protected Plastic can be used for small amounts under 200 litres. Fig: There is a patented system of rainwater collection using an enclosed downpipe. Fig as seen on the new inventors. The system is very effective and attractive.

To be eligible for a Sydney water rebate, the minimum requirement is 2000 litres - one tank of 2000 litres or two tanks of 500 litres.

What can we use rain water for?.

In an existing house the best use of rainwater is on the garden, washing windows, and cars (on the lawn) - anything to do with the outdoors. Depending on the layout of the existing house other water services could be connected to rainwater tanks. eg. The toilet cistern.

If you are building a new house it is possible to connect the rainwater to all your services and have only one drinkable water pipe to the house. Using a gravity-fed system would eliminate the use of pumps unless pressure is needed.

???In theory you only need town water for drinking water but in practice in an urban setting, ???bathing and washing clothes require town water. In that case water-efficient showerheads and taps should be installed.

In both existing and new buildings, water use needs to be carefully understood and designed into the building.

2. Reusing grey water- black water

The toilet.(Black water).Average toilets use 186 litres per day In times gone by, the toilet was a wooden box with a metal bucket under it. Your “stools” were covered in sawdust and removed and deposited in a pit hole, where they decayed into the soil. Today your stools are transported by the flow of water from a cistern via sewage pipes, then partially treated and pumped out to sea or recycled at a sewage farm. It’s enormously expensive and wastes a lot of water.

In a new house it would be better to install a dry system composting toilet and use no water. In an existing house the control button of the cistern should be the type that is not only one full flush but controlled to dribble enough to wash away a urination. Control of the water flow is a way of saving water.

In country areas, septic systems are fine, providing the outflow does not flow into river systems. Sewage systems can be designed to totally eliminate waste. Michael Mobbs’ sustainable house in Sydney is fine example of this. But most of us are stuck with the existing sewage system. We should try and cut down water use in the household and lobby the government to improve the treatment of sewage and cut water use in industry.

Grey water: The kitchen sink uses on average 44 litres per day. The sink waste is not really suitable for garden use because of its grease and chemical content. While dishwashers are great in commercial kitchens and come with a power rating, they use a lot of water and power. It has been proven that a double sink hand wash is the most efficient use of water in a home kitchen. Laundry tubs, washing machines (use 135 litres per day). Their waste water should be directed to garden trees such as bananas, fruit trees and other trees but not on edible leafy or root plants. A bit of creative plumbing can direct the water to any part of the garden.

The rule is never store grey water because it putrefies and sewage must never be used unless it totally treated. The trick in using grey water on the garden is to mulch under the trees to allow the grey water into the soil without stagnant pools forming and never use grey water on edible plants. You can water your garden with grey water and save around 400 litres of fresh water each day. Keep an eye on how your plants react when you start using grey water, and consult your nursery if you notice any changes. Using untreated grey water in your garden means you may need to cut back on the amount of fertiliser you use.

3 Reduced water use.

Inside the house, the bathroom hand basin hand uses on average 28 litres per day ?is a waste water maker?.

Personal habits such as teeth cleaning and shaving are a major water waster because people leave the tap running. Excess hot water from the kitchen can be kept in a thermos for later use at the bathroom hand basin. In Japan they make folding hand basins above the toilet Fig; . Cold water drawn off the shower/ bath (use average 193 litres per day,) should be directed into a bucket and used to flush the toilet or wash windows. Shower heads with a AAA rating reduce

the amount of water use in a shower. Creative use of a clean bucket in the house will reduce water use. Stop any dripping taps. Learn a bit of basic plumbing. It will save you money and save water.

Outside the house, in Sydney a drip irrigation is now allowed only on Wednesdays and Sundays before 10am and after 4pm. No other watering systems or sprinklers are to be used at any time. A permit from Sydney Water is required to fill new or renovated pools bigger than 10,000 litres. No hosing of hard surfaces including vehicles at any time. No hoses or taps to be left running unattended, except when filling pools or containers. Fire hoses must only be used for fire fighting purposes – not for cleaning.

Recycled water, bore water (can be contaminated) and water used for testing fire systems, fire fighting and related activities are excluded from restrictions.

Always refer to NSW Health's guidelines for the use of grey water.

Dew utilization

Dew is a source of pure water not often collected. Any one who leaves their car overnight knows how much dew is in the air even in dry weather. Dew is not an easy thing to collect in an urban setting. Dew collectors could be built if designed into a building. In the country dew ponds could be built. There are a few places on earth where dew collection keeps small communities from leaving. In the cities of today collection of dew would only be an indication of air pollution. Global warming exists. The earth is getting hotter with more unstable weather. Plans for big projects, such as the desalination plant, are used as propaganda by failed governments whose only interest is self interest. There are plenty of alternatives to the desalination plant until the rain comes once more to fill the dams and water crops. In this book I have only dealt with what ordinary people can do. Industry and agriculture can also make changes to reduce their water use.

USEFUL WEBSITES

<http://www.rexresearch.com/1index.htm>

http://www.opur.u-bordeaux.fr/angl/objectifs_opur_ang.htm

(International organization for dew utilization)

http://www.irrigationwarehouse.com.au/category232_1.htm

<http://www.dancingrabbit.org/newsletter/Newsletter0701-floors.php>

<http://www.sydneywater.com.au/SavingWater/>