SNAPSHOT: RAINWATER HARVESTING IN AUSTRALIA 2014

Paper Presented by:

Michael Smit

Author:

Michael Smit, *National Programs Manager,*

savewater!® Alliance

39th Annual WIOA
Queensland Water Industry Operations Conference and Exhibition
Logan Metro Indoor Sports Centre, Logan
3 to 5 June, 2014

SNAPSHOT: RAINWATER HARVESTING IN AUSTRALIA 2014

Michael Smit, *National Programs Manager,* the savewater!® Alliance

ABSTRACT

The Rainwater Harvesting Association of Australia presented material to its members in 2013/14 about the state of the industry. The changing nature of rainwater harvesting showed a complex mix of policy, environmental, economic and industry factors at work. By analysing this mix the RHAA committee hopes to identify barriers and opportunities, for the water industry and government policy makers.

1.0 INTRODUCTION

The savewater!® Alliance hosts the Rainwater Harvesting Association of Australia (RHAA). The RHAA committee set out to analyse the key factors affecting rainwater harvesting in Australia in 2014 and how the water industry can utilise the benefits of this simple technology.

Rainwater harvesting is defined as capturing rainfall from roofs, to distinguish it from stormwater harvesting which is ground runoff.

2.0 DISCUSSION

In the millenium drought the rainwater harvesting industry saw tremendous growth in Australia. By 2014 the story is a complex mix of economic, policy, population, climate, environmental and political factors. By analysing this mix, the RHAA committee hopes to identify barriers and opportunities, both for manufacturers and the water industry in general.

2.1 Integrated Water Management

Rainwater harvesting is best understood in a policy context of whole of water cycle water management. Rainwater harvesting is just one option from a range including water reservoirs, stormwater harvesting, recycled water, desalination and water efficiency. Rainwater and stormwater harvesting have an important advantage, they can be harvested in the location where they will be used, rather than needing to be transported from another location. Rainwater harvesting also has unexpected benefits for stormwater harvesting and catchment management.

2.2 Community Acceptance

Rainwater harvesting has incredible community support in Australia. Despite the water industry assessment of high capital cost, long payback periods and potential health risks, 26% of the households in Australia own a rainwater tank. Why have households installed a rainwater tank recently? 47% of respondents report to save water, and 23% to avoid water restrictions.

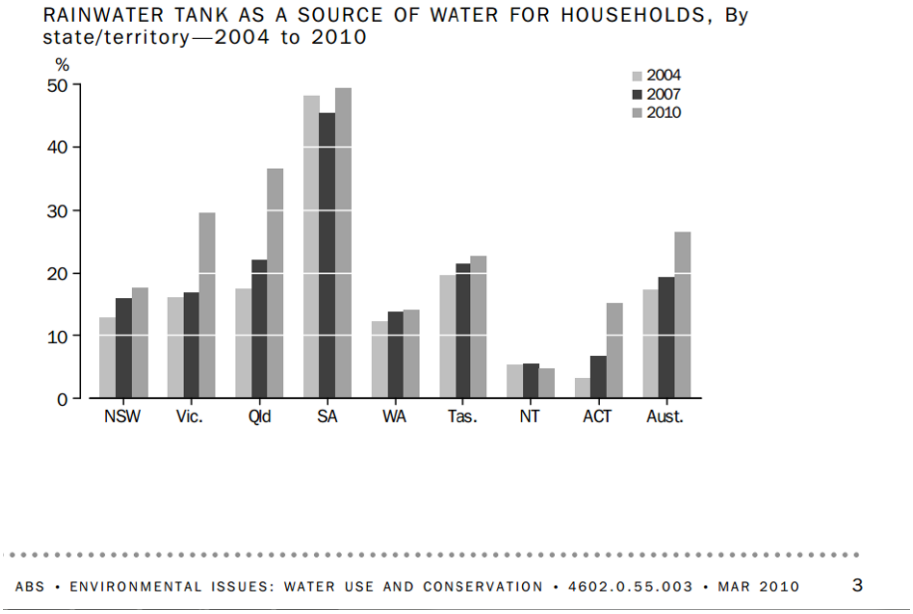

Figure 1: ***Rainwater tank as a source of water for households (ABS, 2010)***

2.3 Climate Variability

Rainwater harvesting has some unique advantages in the context of a hotter and dryer climate. As temperatures increase and if rainfall decreases catchment soil dries out, requiring more water before run off can occur. As roofing material is impervious, rainwater harvesting is a far more reliable source of water. Coombes calculates that in the event of a 50% rainfall decline, catchment runoff would decline by 70% but rainwater harvesting would only decline by 30%. This issue is likely to receive more recognition in 2014 as Australia is likely to move back to the first significant El Nino event since the millenium drought.

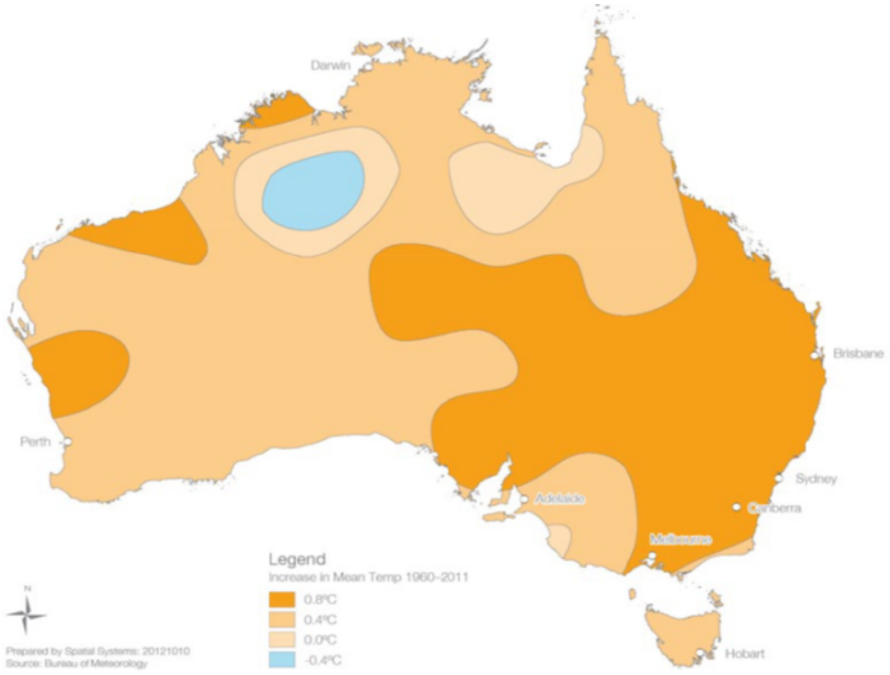

Figure 2: ***Increase in mean temperature 1960-2011 (BOM, 2012)***

2.4 Population Increase

The Australian population is set to double by 2056 to over 60 million. Alternative water sources will be required, and demand will also increase by the increasing proportion of aged and one person dwellings. This will put pressure on all sources within integrated water cycle management, including rainwater harvesting.

2.5 Desalination and Energy Use

Rainwater harvesting often has energy use associated with pumps to use the water locally, unless of course you can design a gravity fed system. Energy costs for rainwater harvesting are generally considered to be similar to traditional potable water from about $0.20/kL. Desalination energy costs are considered to be over $0.80/kL. The increased energy costs of using desalinated water are a powerful argument for increased investment in rainwater harvesting.

2.6 Government Policy

Government policy has had a major impact on the rainwater harvesting industry through either requiring rainwater harvesting tanks as part of housing development or providing rebates for households wishing to purchase a rainwater tank. Withdrawal of the housing development requirement in Queensland has prompted a fierce and unresolved discussion about the economic costs and benefits of rainwater harvesting in the community.

2.7 Economic Costs and Benefits

The RHAA commissioned Peter Coombes to present a systems based economic assessment to the Queensland government. Coombes calculated the potable water savings associated with each household having a rainwater tank and the capital works deferral of supply augmentation and operational savings associated with reduced potable water. Coombes also calculated savings related to improved stormwater quality, less stormwater capital costs and reduced flooding due to rainwater harvesting runoff reduction. Coombes calculated Queensland water savings from the rainwater harvesting requirement at 57-107 GL/year and economic benefits to the government of $1,500 to $4,500 from each household. These savings were largely not accepted by the State Government. To put this in perspective the cost of 50GL additional annual water supply in Victoria from the desalination plant was $1 billion.

2.8 Rainwater Harvesting Household Water Savings

An important assumption of the government position was a recognition of the likely water savings to the household – 50kL/hh/year. Coombes suggested this figure was closer to 90kL if both indoor and outdoor uses were connected to the rainwater tank.

2.9 Industry Assessment

The RHAA conducted an industry survey of its members in 2013 and made the following assessment. The market is generally flat and the industry is contracting to fewer players. Government regulation is the major driver for rainwater tank and pump demand, followed by sustainability and cost pressures. The industry is estimated at wholesale $400M annually in Australia. Recent trends are towards more underground tanks, submersible and variable speed pumps and more intensive use of tanks for mulitple uses.

3.0 CONCLUSION

Rainwater harvesting is a simple concept, with surprisingly sophisticated benefits when considered in the whole of water cycle management context. Rainwater harvesting has strong community support, is a valuable source of additional water with a relatively low energy cost, allows capital deferral of additional water supply infrastructure and has superior climate change resilience and stormwater quality and cost benefits. These qualities translate to significant economic benefits for government and a strong rationale for government regulation.

4.0 ACKNOWLEDGEMENTS

To the work and members of the RHAA committee, particularly the Chairman, Colin Nash.

To the systems analysis work of Peter Coombes, patron of the RHAA.

5.0 REFERENCES

Australian Bureau of Statistics – *Environmental Issues – Water Use and Conservation 4602.0.55.003* (2010)

Bureau of Meteorology *Annual Climate Report 2012* (2013)

Coombes P, *Effectiveness of rainwater harvesting for management of the urban water cycle in South East Queensland* (2013)