

# **Water Consumption Patterns in Australian Aboriginal Communities**

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by  
Emma Yuen B.E. And B.A. (Hons.)  
Remote Area Developments Group  
Murdoch University

I declare that this thesis is my own account of my research and contains, as its main content, work that has not been submitted for a degree at any tertiary educational institution

.....  
Emma Yuen

Publications arising from this thesis are:

**Reviewed Conference Papers**

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## Abstract

Aboriginal Australians have a significantly lower health status than their non-Aboriginal counterparts. To facilitate healthy living practices necessary for good health, a high level investment is currently made in water services, on the assumption that there is a relationship between the volume and quality of water supplied with health outcomes, despite the high economic and environmental cost. This thesis investigates whether the current design supply criteria of 1000-1200 litres per person per day of water, meeting the Australian Drinking Water Quality Guidelines, is both sufficient and necessary to improve the health of Aboriginal Australians. The scope of the thesis is limited to the sufficiency of design guidelines although it necessarily also touches on the broader issues of Aboriginal health.

Both qualitative and quantitative methods were used to explore current water consumption patterns of consumers at multiple hierarchical levels (community, household and individual) and hence the requirements of physical infrastructure on which consumers depend. Multiple linear regression was used to consider factors correlated with supply volume, while metering was used at both the domestic and appliance level to determine where and how water was used. Meters were installed on fixtures in two houses in a community near Alice Springs. This was then complemented by qualitative information obtained through focus group discussions, key informant interviews and observation in the field. The appropriateness of the supply of high quality water for all uses was addressed by considering the volume of drinking water intake and its impact on the derivation of water quality guidelines. This was achieved by a face-to-face survey involving 57 volunteers. Fieldwork was conducted predominantly in three communities near Alice Springs although some additional data was collected in other communities in Western Australia and the Northern Territory.

The results showed that the factors influencing water consumption were highly complex and variable between communities and individuals. However, there were some culturally specific needs identified in Aboriginal communities, such as the need for temperature and dust control, as well as the reduction of losses. The unique characteristics of each community made it difficult to provide a more precise estimate for design supply. As a result, overly conservative guidelines such as those already used are necessary in the short term despite there being no guarantee of improved health. In the long term, issues of community governance and capacity building will start to be addressed, and the realisation that social systems are both complex and dynamic will need to be reflected in policy. These issues were represented in a systemic conceptual model at the end of the thesis, which also highlighted inadequacies of reductionist approaches such as design supply guidelines. The thesis concluded that complex problem situations such as that of health, require a systems approach.

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