SUSTAINABLE URBAN WATER SYSTEMS:
POLICY AND PROFESSIONAL PRAXIS

by

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This thesis is presented for the degree of
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Declaration

I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for degree at any other tertiary education institution.

Michael John Mouritz
ABSTRACT

The provision of water, wastewater and stormwater infrastructure is an essential ingredient of cities. However, questions are being raised about the type and form of urban infrastructure, for economic and environmental reasons. Traditionally these technologies have offered linear solutions, drawing increasing volumes of water into cities and discharging waste at ever increasing levels, causing escalating stress on the environment. In addition the costs of water infrastructure provision and replacement, both in the developing and developed world, is becoming prohibitive. In response, a new paradigm has been called for and new solutions are emerging that have been labelled as Integrated Urban Water Management (IUWM). This concept can be considered to consist of both technical and philosophical dimensions, and represents a new form of professional praxis. However, the adoption of these techniques and concepts is constrained by the inertia of the existing urban water systems. It is therefore argued that the introduction of any change must occur across a number of dimensions of the technoeconomic system of the city. These dimensions - artefacts and technical systems (i.e. the technology and knowledge systems), professional praxis and socio-political context (i.e. institutions, culture and politics) and biophysical realities and world views (i.e. the environment and underlying values) - provide a framework for analysis of the change process - both how it is occurring and how it needs to occur. This framework is used to illustrate the link between environment values and the process of technological innovation, and points to the need for the emerging values and innovations to be institutionalised into the professional praxis and socio-political context of society. Specifically, it is argued that a new form of transdisciplinary professional praxis is emerging and needs to be cultivated. A broad review of the literature, an evaluation of selected emerging technologies and three case studies are used to illustrate and argue this position. These examples show the potential economic, social and environmental benefits of IUWM and provide some insight into the potential which this approach has to influence the form and structure of the city and at the same time highlighting the institutional arrangements required to manage urban water systems.
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I hope this document provides a contribution to an evolving sustainability of the urban water systems, natural and human made. However, as Christopher Titmus suggests in his inspirational book - The Green Buddha:

*So we must ask: What will awaken the heart? Rather than concentrating on gaining knowledge, we must explore different routes to realising the intimacy of human beings with each other and with the Earth. It is futile to shuffle between knowing a little and appearing to know a lot. Both are deceptions. It is not knowledge that we are short of but the inspiration to transform our life, to break out of the mould of mechanical existence, and live on the edge of simplicity with others in a communal respect for the ordinary (p 31).*

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Mike Mouritz
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