ISBN: 978-0-620-45068-3

The Sustainable Water Resource Handbook
South Africa Volume 2
The Essential Guide

# Importance of healthy dams for South Africa's socio-economic development

**Rationale:** South Africa is an arid country with a near-total dependence on water stored in dams. As of 2010, approximately 30% of the stored water is seriously impaired due to poor water quality - with all of the dams in the economic heartland (Gauteng/ Northwest) falling into this group. A further 31% is on its way to becoming a problem. Currently South Africa has no active programme to evaluate and manage its dams as multiuse (water supply, irrigation, recreation, property values, aquaculture). If this situation is not addressed and if civil society does not recognize the problem, our economy stands to be severely and negatively impacted.

**Aim:** To inform and empower government, industry and civil society to understand the role that dams play in the South African socio-economic framework.

**Editor:** Dr WR Harding
**Review Editor:** Dr JA Thornton

## Chapter 1
**Title: Dams and the Water Crisis**
**Author:** Dr Bill Harding (confirmed)
Sets the theme for all 10 chapters. Details the threat posed by poor water quality in South African dams.

## Chapter 2
**Title: Importance of dams as multifunctional ecosystems**
**Author:** Dr Anthony Turton (confirmed)
Explains why dams cannot be viewed as "water tanks" but rather as semi-natural ecosystems that provide a suite of economic and social services.

## Chapter 3
**Title: Eutrophication threats to surface water quality in South Africa**
**Author:** Dr Bill Harding (confirmed)
Details why our water resources are in the condition that they are in - mostly as a consequence of inadequate attention to the treatment and reuse of wastewater.

## Chapter 4
**Title: Wastewater treatment in South Africa**
**Author:** Dr Nicola Rodda (confirmed)
Why South Africa ignores phosphorus removal from wastewater, despite the longstanding and obvious need and international precedent.

## Chapter 5
**Title: The value of phosphate-free detergents**
**Author:** Dr Chris Dickens/Mr. Leo Quayle (confirmed)
Leads from 4 & 5 and explains how this could alleviate a significant percentage of the phosphorous loading to wastewater treatment works.

## Chapter 6
**Title: Endocrine disruptors and pharmaceuticals in wastewater**
**Author:** Dr Irene Barnhoorn/Dr Bettina Genthe (confirmed)
EDCs are not removed adequately by current wastewater practice. They pose a major threat, already evident, to the ecosystem health of dams and user-health.

## Chapter 7
**Title: Cyanobacteria and cyanobacteria toxins**
**Author:** Dr Tim Downing (confirmed)
Cyanobacteria are widely mentioned yet poorly understood. As a result there is a lot of mythology attached to them. As with the subject of eutrophication, South Africans need to understand this issue.

## Chapter 8
**Title: Institutional constraints to water resource management**
**Author:** Dr Mark Dent (confirmed)
A strengths and weaknesses analysis of why we are where we are in terms of water resource management.

## Chapter 9
**Title: Floating wetlands technology**
**Author:** Bruce kania (confirmed)
BioHaven floating islands provide an unparalled technology for instant creation of biofilm and plant-based nutrient and toxicant sequestration in a variety of polluted environments.

## Chapter 10
**Title: Options for information and skills transfer**
**Author:** Dr Steve Mitchell (confirmed)
Spells out the role that all sectors of society need to adopt in order that our dams are sustainably managed.