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Integrating policy and science to improve the management of freshwater in New Zealand.



A thesis prepared in partial fulfilment of a
Masters Applied Science
in
Natural Resource Management

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In memory of my Dad

David McArthur

ABSTRACT

Water is an important resource that is degraded in many rivers, including some in New Zealand. The environmental improvements resulting from regulation to improve water quality are frequently not monitored, the effectiveness of water quality policies is typically unknown and there are often no clear measures of success built in to policy development. Two studies were selected to examine these issues in relation to regional planning in the Manawatu-Wanganui region of New Zealand. In the first study, two successive plans that used numerical limits to improve water quality were assessed. The successes and failures of the first planning approach were examined and compared with more recent use of limits in the regional plan. Seven steps to developing robust water quality limits were recommended. In the second study, the monitoring of the effectiveness of freshwater policy was considered and a regional approach to plan development which combined science and policy presented. The approach was built on a catchment-based geographic framework of water management zones, water body values and water quality limits. To measure policy success a ranked matrix method was recommended that combined plan objectives and water quality limits. Integrated and collaborative approaches to policy development, setting of water quality limits and policy effectiveness monitoring were key recommendations from both studies and will be increasingly relevant to future water resource management in New Zealand.

DECLARATION

STUDENT NAME: Kate McArthur

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I declare that:

- This is an original report/thesis and is entirely my own work.
- Where I have made use of the ideas or work of others, I have acknowledged the source in every instance.
- This thesis will not be submitted as assessed work in any other academic course.

STUDENT SIGNATURE:

A handwritten signature in black ink, appearing to read 'K J McArthur', written over a horizontal line.

DATE: 12th September 2011

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List of Abbreviations

ANZECC	Australia and New Zealand Environment and Conservation Council
BOD	Biochemical Oxygen Demand
BPO	Best Practicable Option
DRP	Dissolved Reactive Phosphorus
FARM	Farmer Applied Resource Management strategy
MCI	Macroinvertebrate Community Index
MCWQRP	Manawatu Catchment Water Quality Regional Plan
MfE	Ministry for the Environment (New Zealand)
MoH	Ministry of Health (New Zealand)
NIWA	National Institute of Water and Atmospheric Research (New Zealand)
NPS	National Policy Statement for Freshwater Management (2011)
NRRP	Natural Resources Regional Plan (Environment Canterbury)
OAG	Office of the Auditor General (New Zealand)
OECD	Organisation for Economic Co-operation and Development
PCE	Parliamentary Commissioner for the Environment (New Zealand)
RMA	Resource Management Act (1991) also referred to as “the Act”
RMLA	Resource Management Law Association of New Zealand
SLUI	Sustainable Land Use Initiative
SOS-A	Site of Significance – Aquatic
STP	Sewage Treatment Plant
WMZ	Water Management Zone