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**A RESOURCE INVENTORY FOR THE  
RUAMAHANGA CATCHMENT, WAIRARAPA,  
NEW ZEALAND**

A thesis presented in partial fulfilment of the requirements  
for the degree of  
Masters of Applied Science  
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## Abstract

Currently, there is concern around various water management issues in the Ruamahanga Catchment, Wairarapa. This concern has prompted discussion among the stakeholders of the catchment about implementing an Integrated Catchment Management (ICM) Plan in the area. A prerequisite of an ICM plan is to have a detailed resource inventory that documents the current state of the catchment, the level and areas of research already carried out in the catchment, and the specific problems occurring in the catchment. This report constitutes the Resource Inventory for the Ruamahanga Catchment and will serve as a discussion document that can be used by the stakeholders to implement an ICM plan.

This Inventory organises information under twelve topic headings that range from land and climate, water resources and land use, to freshwater ecology and public perceptions on the state of the water resources in the catchment.

Significant issues identified in the catchment include; deteriorating water quality in the Ruamahanga River as it flows southwards; a significant increase (~14,000 kg/year) in dissolved reactive phosphorus (DRP) loading in the Ruamahanga River segment between Te Ore Ore and Gladstone, which in most part, is a result of the Masterton Sewage Treatment Plant discharge; unsatisfactory bathing water quality at some sites on the Ruamahanga River; a lower diversity of freshwater species than the rest of the Wellington Region; current and future land use intensification which is leading to increasing demands for water; and fully allocated surface water zones and groundwater aquifers.

Recommendations are provided on how to improve the quality of data in this inventory, and also on how to proceed in the future with the findings of this report in mind. Faced with similar water quality issues as the Manawatu Catchment, stakeholders of the Ruamahanga Catchment should be aware of the outcomes of Horizon Regional Council's One Plan, and observe any success and failures of the One Plan when implementing an ICM Plan in the future.

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## Abbreviations

ANOVA	Analysis of Variance
asl	Above sea level
BOD <sub>5</sub>	Biochemical Oxygen Demand
CDC	Carterton District Council
CHI	Cultural Health Index
CINZAS	Central Index of New Zealand Archaeological Sites
ClIDB	National Climate Database
CMS	Conservation Management Strategy
Cumecs	Cubic metres per second
DEV	Daily Effluent Volumes
DO	Dissolved Oxygen
DoC	Department of Conservation
DCDC	Digital Cadastral Database
DRP	Dissolved Reactive Phosphorus
DSIR	Department of Scientific and Industrial Research
<i>E. Coli</i>	<i>Escherichia coli</i>
ED	Ecological District
ENSO	El Nino – Southern Oscillation
ER	Ecological Regions
FC	Faecal Coliforms
FFNZ	Federated Farmers New Zealand
GWRC	Greater Wellington Regional Council
GWSOE	Groundwater State of Environment Monitoring
GV	Guideline Value
HCA	Hierarchical Cluster Analysis
IBI	Index of Biotic Integrity
IGNS	Institute of Geological and Nuclear Sciences
IPO	Interdecadal Pacific Oscillation
LCDB	Land Cover Database
LINZ	Land Information New Zealand
LRI	Land Resource Inventory
LUC	Land use capability
LWDS	Lower Wairarapa Development Scheme
LWW	Lake Wairarapa Wetlands
MAF	Ministry of Agriculture and Forestry
MALF	Mean Annual Low Flow
MAV	Maximum Acceptable Value
MCI	Macroinvertebrate Community Index
MDC	Masterton District Council
MfE	Ministry for the Environment
Mn	Manganese
MSRL	Maximum Species Richness Line
N	Nitrogen

NGMP	National Groundwater Monitoring Program
NH <sub>4</sub> -N	Ammoniacal Nitrogen
NIWA	National Institute for Water and Atmospheric Research
NNN	Nitrate-Nitrite Nitrogen
NO <sub>3</sub> -N	Nitrate Nitrogen
NO <sub>2</sub> -N	Nitrite Nitrogen
NRWQN	National Rivers Water Quality Network
NSD	National Soils Database
NTU	Nephelometric Turbidity Unit
NZAA	New Zealand Archeological Association
NZBS	New Zealand Biodiversity Strategy
NZFFD	New Zealand Freshwater Fish Database
NZHPT	New Zealand Historic Places Trust
NZLRI	New Zealand Land Resource Inventory
NZSC	New Zealand Soil Classification
P	Phosphorus
RAP	Recommended Areas for Protection
REC	River Environment Classification
RMA	Resource Management Act (1991)
RPS	Regional Policy Statement
RSoE	River State of Environment
SO <sub>4</sub> <sup>2-</sup>	Sulphate
SQMCI	Semi-Quantitative Macroinvertebrate Community Index
SWDC	South Wairarapa District Council
TA	Territorial Authority
TDS	Total Dissolved Solids
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
WELA	Wairarapa Engineering Lifelines Association
WRIT	Wairarapa Regional Irrigation Trust
WWD	Wairarapa Wetlands Database
Zn	Zinc
%EPA	% Ephemeroptera, Plecoptera and Trichoptera Taxa

ha	Hectare
L/s	Litres per second
m <sup>3</sup> /day	cubic metres per day
m <sup>3</sup> /s	cumecs
L/s/km <sup>2</sup>	litres per second per square kilometer
Ma	Million years ago
ka	Thousand years ago

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