Lincoln University
Te Whare Wānaka o Aoraki
CHRISTCHURCH · NEW ZEALAND
New Zealand's specialist land-based university

Waterways
Centre for Freshwater Management

UC
UNIVERSITY OF CANTERBURY

INSTITUTIONAL ARRANGEMENTS FOR MANAGING WATER –THE RMA AND THE CANTERBURY WATER MANAGEMENT STRATEGY

ECO Conference: Dialogues on Freshwater – Navigating Impasses and New Approaches, 28 -30 August 2015

Professor Bryan Jenkins

Waterways Centre: University of Canterbury and Lincoln University

PRESENTATION COVERAGE

- Institutional arrangements: the legal and governance /administrative frameworks for managing water
- Canterbury situation in relation to RMA and collaborative outcomes prior to CWMS
- CWMS approach and some key findings
- Alternative institutional arrangements for drinking water quality
- Some institutional responses in urban water and lake restoration
- Adaptability requirements to address issues such as climate change projections
- International trends in water governance research and water law
- Conclusions on how to improve institutional arrangements for sustainable water development

RMA: EFFECTS BASED LEGISLATION

- Government role as regulator defining environmental bottom lines
- Policy role for central government
- Separation of land use regulation (TAs) from water regulation (RCs)
- No central government role in water resource development
- Applicant-driven development to meet economic and social needs
- Action-forcing mechanisms: AEEs for projects; compliance with consents and plan rules

CHANGE IN CANTERBURY CIRCUMSTANCES

- Rapid increase in demand for water
  - expansion of dairying; irrigation replacing dryland farming
- Water Availability: shift from abundant to constrained resource
  - run-of-river takes on restriction
  - groundwater zones at allocation limits
- Water Quality and Freshwater Ecology: marked deterioration
  - cumulative effects of land use intensification and diminished flows

RMA DECISIONS LED TO GREATER USE

- Environment Court (Lynton Dairy) disregarded groundwater allocation limits

  - no ‘probative’ evidence of adverse effect

- Hearing Commissioners (Central Plains) allowed further intensification

  - despite expert report that effects not quantified

BETTER OUTCOMES AT CATCHMENT SCALE FROM COLLABORATIVE PROCESSES

- Orari Dam proposal: collaborative process led to offriver storage taking from Rangitata high flows
- Pahau catchment: major source of nutrients to Hurunui: collaborative process led to voluntary contaminant reduction
- Pareora catchment: collaborative process increased minimum flow and reduced allocations at low flows but giving farmers time to adjust

CWMS: COLLABORATION AT REGIONAL SCALE

- Strategy overseen by a multi-stakeholder group under the auspices of the Canterbury Mayoral Forum
- Strategic framework developed: based on stakeholder and community engagement
- Implementation programmes developed through region and zone committees
- Developed under LGA with statutory backing through Land & Water Plan (RMA)
- Shift from addressing water availability through storage on alpine rivers to targets for ten community priority issues related to water

SUSTAINABILITY APPRAISAL OF STRATEGIES

- Bottom line higher than “Business as Usual”: current situation based on the RMA is not sustainable
- Environment-led option scores well on environmental criteria but below economic bottom line
- Storage-led option scores well on economic criteria but below environmental bottom line
- Efficiency-led option scores above the bottom line on nearly all criteria

OUTCOMES OF SUSTAINABILITY APPRAISAL

- Only possible to achieve sustainable development by considering existing uses of water as well as new uses and projects
- Most economically viable source of additional water was from efficiency gains from existing users rather than storage
- Environmental requirements best met by improved land use practices of existing and new users
- No capacity for further development unless cumulative effects of existing use reduced
- Need for parallel development of environmental restoration with water development

NESTED SYSTEM OF MANAGEMENT

- National - [Tripartite Forum]
- Regional - Regional Committee and RIP
- Zone - Zone Committees and ZIPs
- Sub-Zones - Farmer Collectives and EMS
- Property - Farmers and FEPs

NITRATE LIMIT IN HURUNUI CATCHMENT

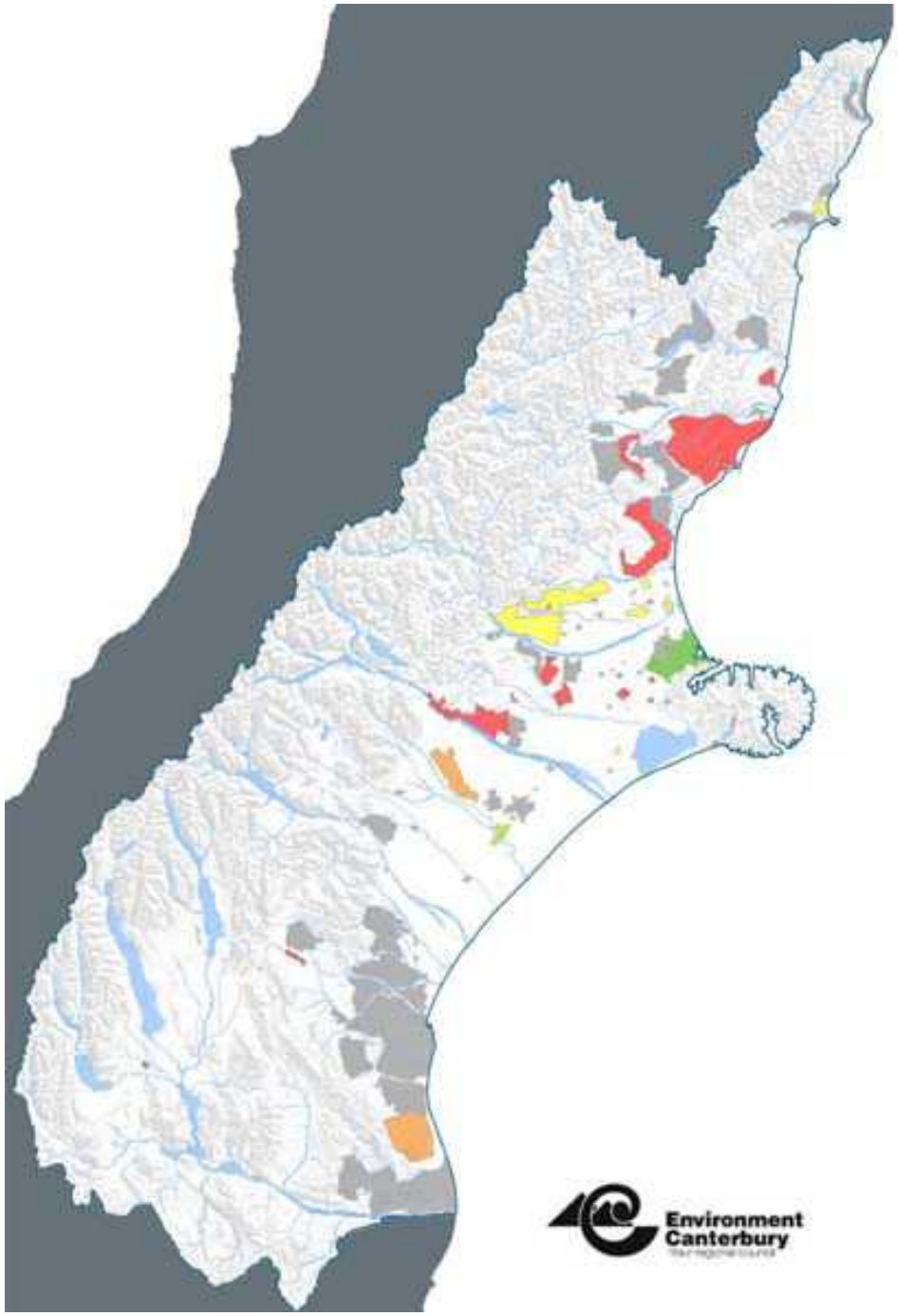
- Estimate of current load (2005-2010) 693 t/y
- Scientist advice to Zone Committee 693 t/y
- Zone Committee draft recommendation 693 t/y
- ECan Commissioners' decision 832 t/y
- RMA Hearing decision on HWRP 963 t/y

LIMITS ARE A NECESSARY BUT NOT SUFFICIENT PROVISION FOR SUSTAINABILITY

- National Objectives Framework is helpful
  - bar is low, time frame long, coverage incomplete
- Sustainability also requires:
  - system resilience
  - recovery when limits exceeded
  - adaptability to changing circumstances

ARRANGEMENTS FOR DRINKING WATER

- DHB-owned public health units
- Mixed model DHB governance (4 appointed, 7 elected)
- Central government (D-G Health) oversight of regulatory functions
- Water supply, treatment and distribution mainly by territorial authorities
- Drinking water standards, grading of supplies and distribution, water safety plans, asset management plans



Waterways
Centre for Freshwater Management

Drinking water status in Canterbury

Drinking Water Status

GRADE

- a - Completely satisfactory, extremely low level of risk.
- b - Satisfactory, very low level of risk
- c - Marginally satisfactory, moderately low level of risk.
- d - Unsatisfactory level of risk
- e - Unacceptable level of risk
- u - Not yet graded

N

Data obtained from Environmental Science & Research (ESR)

0 20 40 60 80 Km

WATER BOURNE DISEASE AND DRINKING WATER GRADE

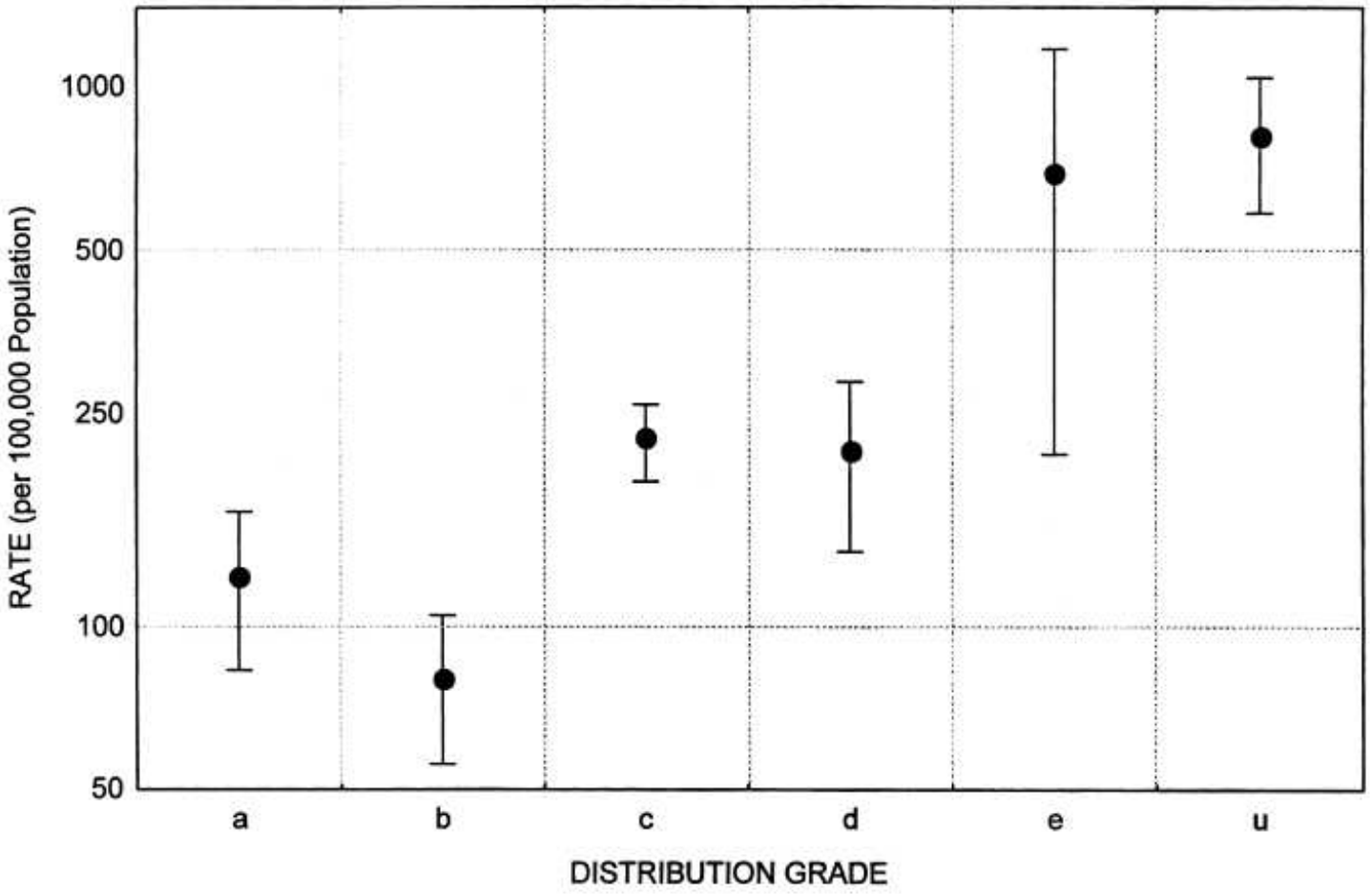
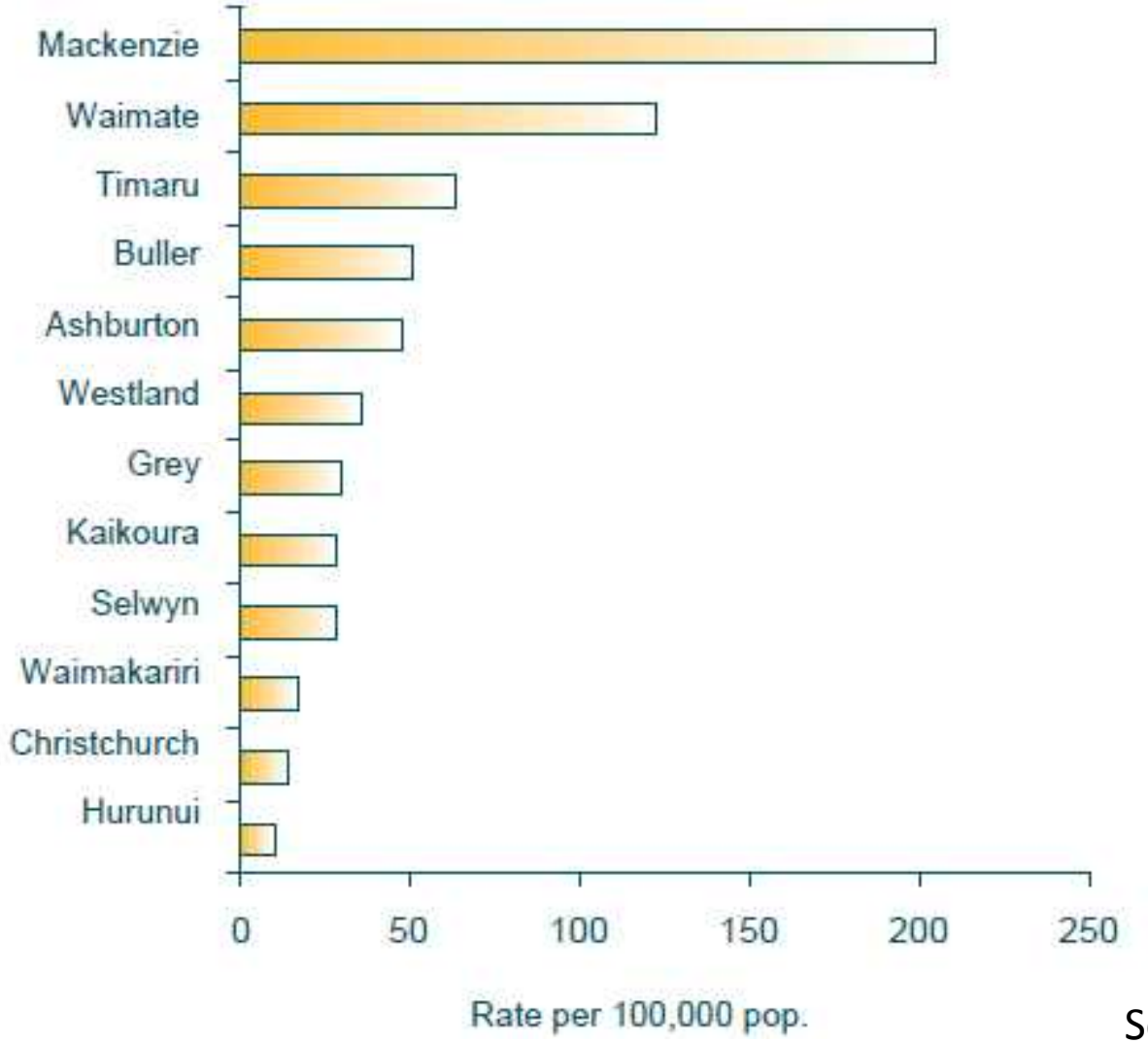


Fig. 2. Rates of notified cryptosporidiosis per 100,000 population in New Zealand June 1996–August 1998 by distribution zone component of the public health grading of community drinking water supply where a = very satisfactory, b = satisfactory, c = marginal, d = unsatisfactory, e = very unsatisfactory and u = ungraded. Log scale on Y axis. Error bars indicate standard error. Data source NZ Ministry of Health.

Source:
Ball 2006

WATER BOURNE DISEASE AND DISTRICT SIZE



Crytoporidiosis Notification Rate by Local Authority July 07 – June 08

Source: Public Health Information Quarterly July 2008

WATER SAFETY PLAN

Based on “hazard analysis and critical control points”

- Conduct hazard analysis for contaminants in source, treatment and distribution
- Determine critical control points for management
- Establish critical limits for intervention
- Establish preventative measures (to reduce risk), corrective actions (for minor events), and contingency plans (for major events)
- Establish verification procedures that HACCP is effective
- Establish documentation for risks, actions, monitoring and performance

-

IMPLEMENTATION ASPECTS OF WATER SAFETY PLANS

- Small communities excluded despite being the most vulnerable
- Problem of affordability for small districts
- Already in place for large communities
- Improvements in small centres after amalgamations

INSTITUTIONAL RESPONSES FOR URBAN WATER

- WaterCare established as CCO for Auckland region
- Wellington Water as CCO for city councils and regional council in Wellington region
- England: privatisation and creation of 10 water and wastewater companies
- Scotland: amalgamation of small providers into one government statutory corporation
- No empirical evidence that privatisation is more efficient
- Findings that there are economies of scale but there is a critical level of output where scale economies are exhausted

RESTORATION REQUIRES PROACTIVE ROLE FOR GOVERNMENT: LAKE RESTORATION IN NZ

- Intergovernmental partnerships
- Iwi-government governance and management agreements
- Strategy groups of key stakeholders
- Community engagement mechanisms
- Zone/catchment implementation committees
- Technical advisory groups
- Funding trusts and financial Deeds of Agreement

Source: Jenkins 2015

ADAPTABILITY NEEDS TO ANTICIPATE CHANGING CIRCUMSTANCES: CLIMATE CHANGE EXAMPLE

- Increased PED – increased irrigation demand
- Decreased winter rainfall on the plains – reduced aquifer recharge, reduced lowland stream flows
- East Coast drier – lower flows in foothill rivers
- West Coast wetter and warmer in winter – reduced snow, increased winter flows and reduced summer flows in alpine rivers

FRESHWATER ADAPTATIONS

- Increased demand for water with less reliance on run-of-river and groundwater
- Need to increase water use efficiency and resource productivity
- Potential role for storage and inter-basin transfer (if sustainable)
- Resilient solutions: Harvest higher alpine river winter flows for groundwater recharge; Conjunctive use of groundwater and surface water
- Infrastructure co-ordination needed (no institutional mechanism to achieve this)

INTERNATIONAL RESEARCH IN WATER GOVERNANCE

- Self managed communities more appropriate for managing water resources at sustainability limits
- Nested systems where decisions made at smallest geographical scale
- Distributed network structures rather than hierarchies or markets for complex systems with multiple interests and many interdependencies
- Collaborative processes rather than adversarial processes for conflict resolution
- Deliberative democracy rather than representative democracy

INTERNATIONAL TRENDS IN WATER LEGISLATION

- Water is a public good held in trust by the governing body (public trust doctrine)
- Allocation process to incorporate environmental assessment, water plans and ecological needs
- Pursuing opportunities for water efficiency gains without neglecting equity and third party effects
- Capturing the land-water connection
- Ensuring user participation in decision making and implementation
- Empowering users to shoulder greater responsibilities
- Addressing the interface between customary and statutory water rights

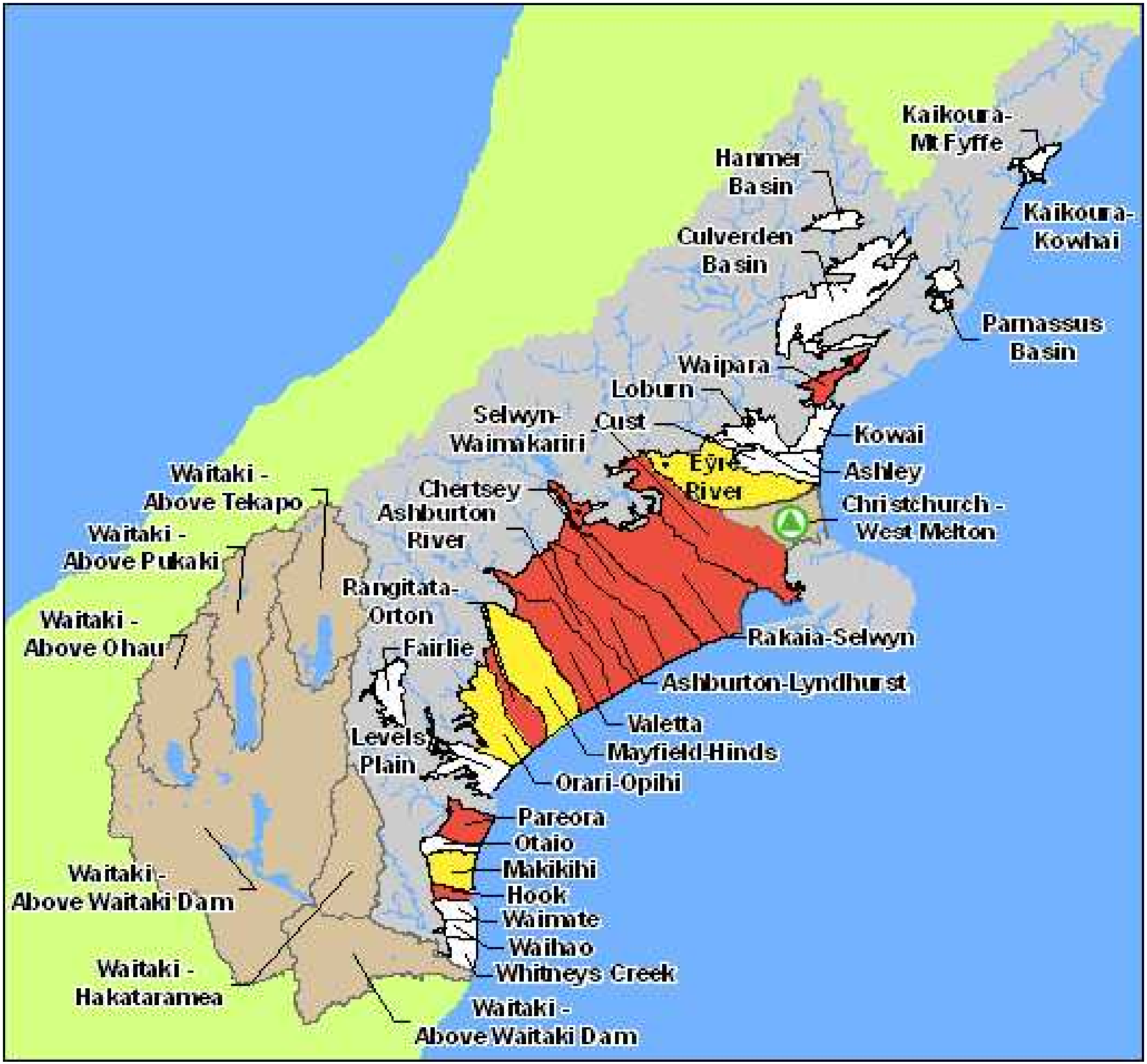
(Source: Burchi, 2012, 2015)

CONCLUSIONS (1)

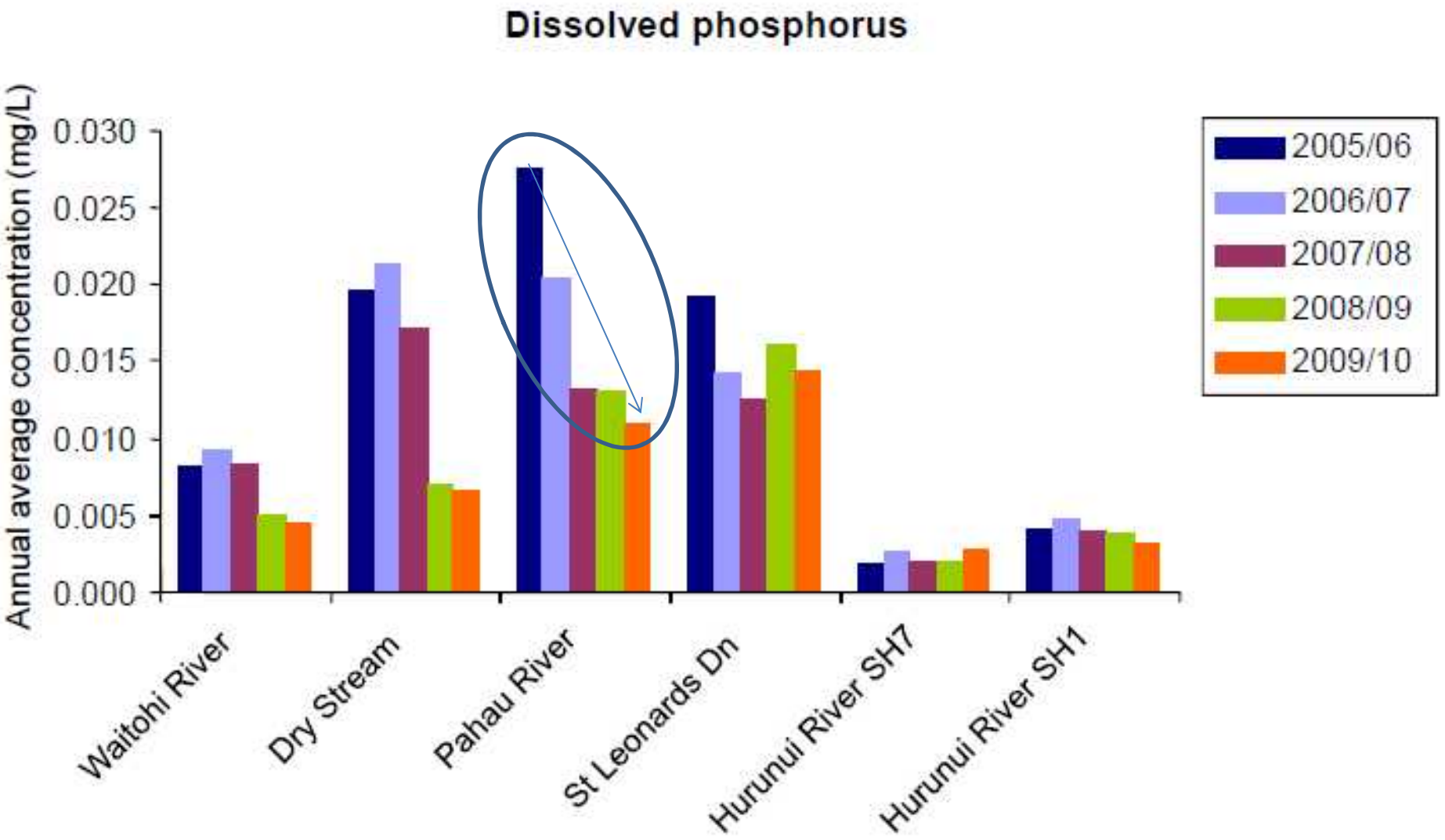
- Current institutional arrangements in NZ based on issues of the 1980s
- Circumstances have changed: need to consider alternative institutional arrangements
- Effects-based within environmental limits is not sufficient when resource at sustainability limits
- Risk-based approach an improvement but not sufficient for recovery and adaptability
- Reactive regulatory role for government not sufficient: need proactive role for recovery

CONCLUSIONS (2)

- Institutions for proactive change emerging in NZ
- Integrated water management can't rely on applicant-driven development
- Infrastructure co-ordination needed to adapt to changing circumstances
- Research indicating: self-managed communities, collaborative processes, nested systems, networked structures, and deliberative democracy
- Legislative changes for sustainable water management emerging internationally

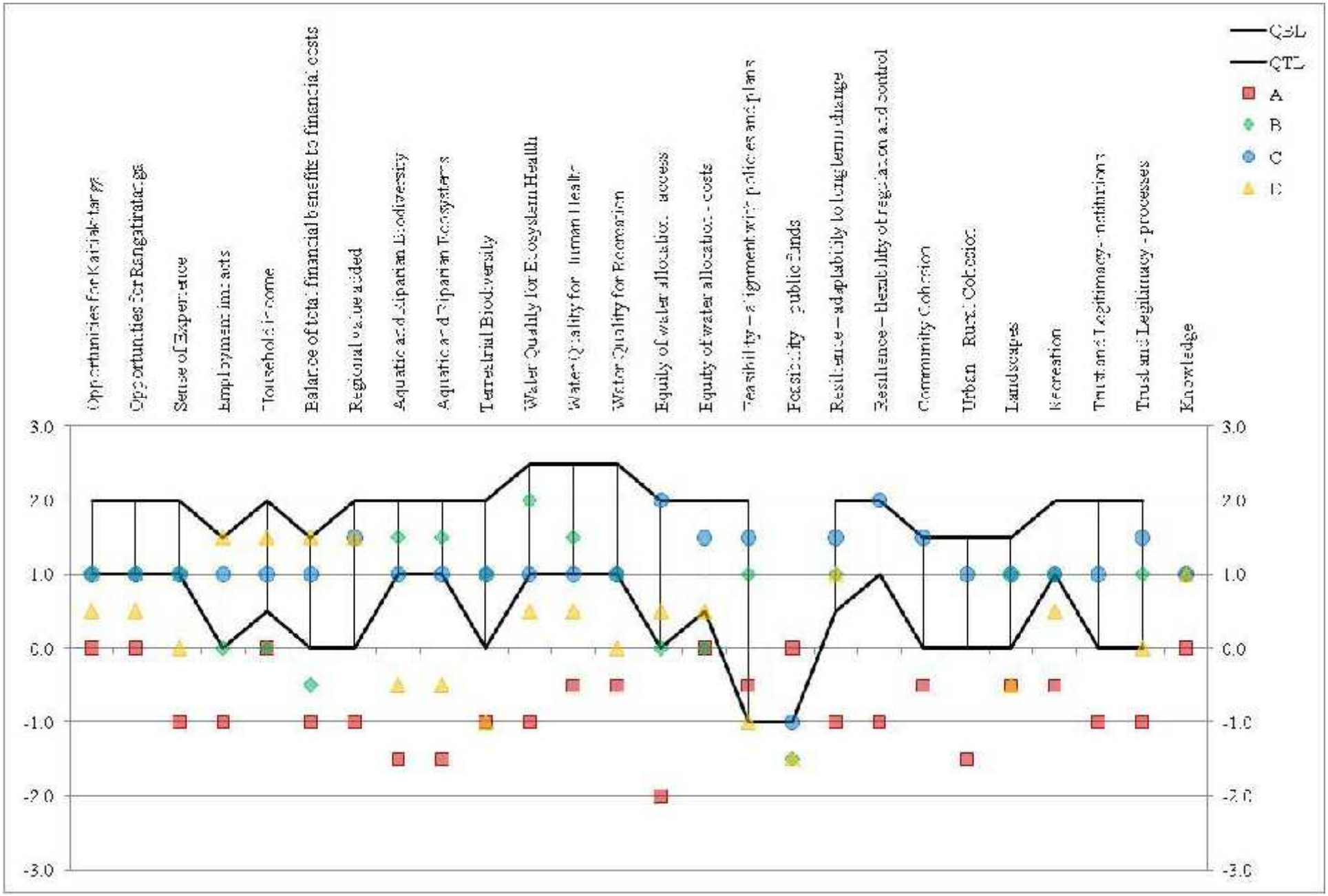

Kaikoura-
Mt Fyffe
Hanmer
Basin
Kaikoura-
Kowhai
Culverden
Basin
Pamassus
Basin
Waipara
Loburn
Selwyn-
Waimakariri
Cust
Kowai
Eyr
River
Ashley
Waitaki -
Above Tekapo
Chertsey
Ashburton
River
Christchurch -
West Melton
Waitaki -
Above Pukaki
Rangitata-
Orton
Waitaki -
Above Ohau
Fairlie
Rakaia-Selwyn
Ashburton-Lyndhurst
Valetta
Levels
Plain
Mayfield-Hinds
Orari-Opihi
Pareora
Otaio
Makikihi
Waitaki -
Above Waitaki Dam
Hook
Waimate
Waihao
Whitneys Creek
Waitaki -
Hakataramea
Waitaki -
Above Waitaki Dam

PAHAU LIVING STREAMS OUTCOME - PHOSPHORUS



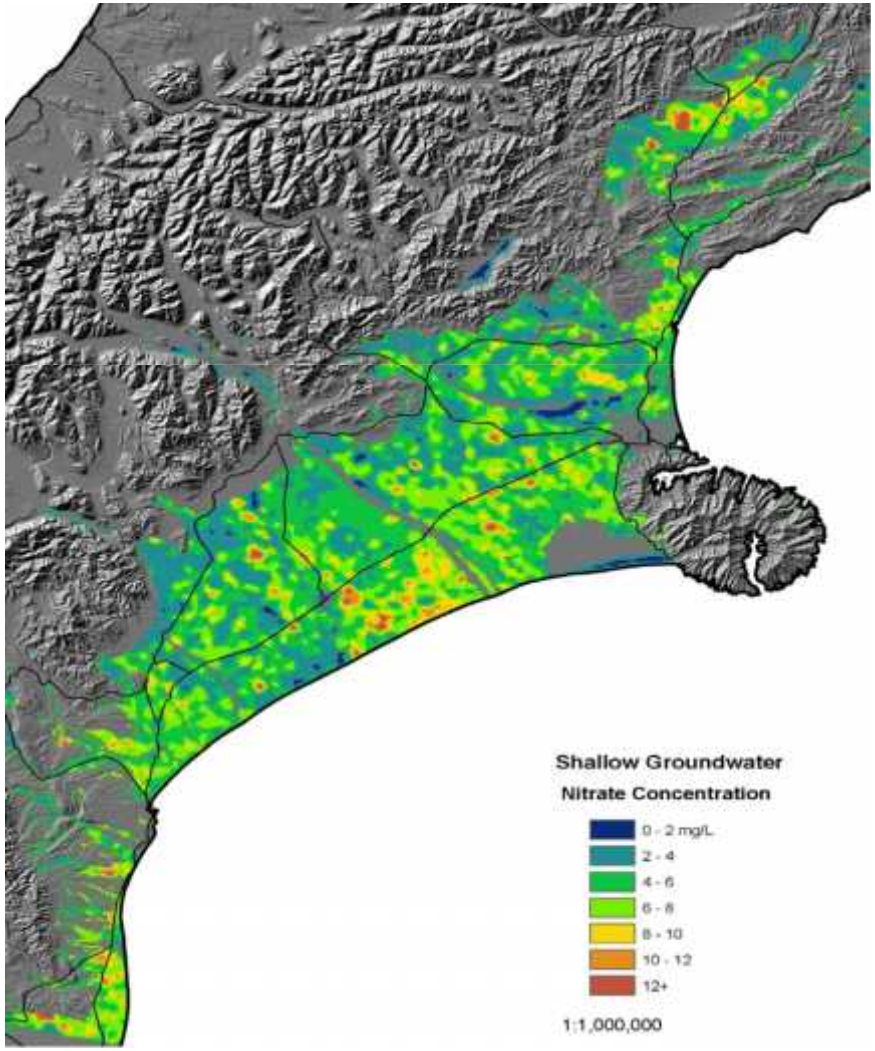
STORAGE UNDER CONSTRUCTION

FIGURE 6: COMPARISON OF SUSTAINABILITY PROFILES FOR ALL OPTIONS



NITRATE MODELLING IN SHALLOW GROUNDWATER

Current Land Use



Full Intensification