



Sustainability Appraisal of Water Management Strategies for Canterbury

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PRESENTATION COVERAGE

- Inability of effects-based management to address water resource management in Canterbury as sustainability limits were reached
- New paradigm developed based on strategic resource management using a collaborative governance approach
- Sustainability appraisal of strategic options was a key component of new approach
- Presentation covers the water management issues, the strategic approach and the sustainability appraisal process and its outcomes

SIGNIFICANCE OF WATER IN CANTERBURY

- 58% of NZ's allocated water
- 70% of NZ's irrigated land
- 65% of NZ's hydro storage
- High quality untreated water for Christchurch
- Braided rivers, high country and coastal lakes, and lowland streams
- Driest region in terms of Potential Evapotranspiration Deficit

SUSTAINABILITY LIMITS

- Rapid increase in demand for water
 - expansion of dairying
- Water Availability
 - run-of-river takes on restriction
 - groundwater zones at allocation limits
- Cumulative Effects of Water Use
 - water quality impacts from intensification
 - ecological health effects from diminished flows

NZ LEGISLATIVE FRAMEWORK (1)

- Regional Councils formed in 1989 with geographical boundaries based on catchments
- Regulatory body for resource management with elected council
- District councils responsible for land use planning
- Resource Management Act (1991): effects-based management to promote sustainable management
- Ministry for the Environment established with powers to produce national policies and standards
- Appeals to the Environment Court with ability to review technical merit

NZ LEGISLATIVE FRAMEWORK (2)

- Local Government Act (2002)
 - enables sustainable development
 - emphasis on achievement of community outcomes through partnerships of government, communities and industry
 - take into account four well beings of sustainability: social, economic, cultural and economic
 - regional council role as facilitator of sustainability

FOUR STAGES OF STRATEGY DEVELOPMENT

1. Initial study of water availability
 - further availability would require storage
2. Investigation of potential storage sites
 - storage options identified
3. Multi-stakeholder evaluation of storage options
 - need for integrated water management
 - need to address land use intensification
4. Integrated water management strategy
 - framework with principles, targets for multiple objectives, governance arrangements, infrastructure options

STAGE 4 OF CANTERBURY WATER MANAGEMENT STRATEGY

- Stakeholder and community engagement on options and principles
- Definition of strategic options by Steering Group
- Community consultation on option preferences
- Strategic investigations of likely outcomes
- ***Sustainability appraisal of options***
- Strategic approach to water management

STRATEGIC OPTIONS

- Option A: Business-as-usual (base case)
 - current RMA approach: effects-based, applicant driven
- Option B: Advance environmental protection then infrastructure development
 - set limits, initiate restoration, improve efficiency
- Option C: Reconfigure consents and infrastructure to improve reliability and enhance environment
 - redistribution for integrated water management
- Option D: Advance infrastructure development with environmental repair and protection
 - storage incorporating environmental mitigation

SUSTAINABILITY APPRAISAL OF OPTIONS

- Consideration of intergenerational and intra-generational equity
- Focus on change in “capital assets” i.e. natural capital, economic capital, social capital, and cultural capital
- Definition of sustainability bottom lines across all criteria (quadruple bottom line)
- Definition of objective-led top lines across all criteria (quadruple top line)
- Deliberations by multi-stakeholder group with technical support

STEPS OF SUSTAINABILITY APPRAISAL

1. Select sustainability level for option evaluation
2. Define capital assets
3. Consider spatial and temporal scales
4. Review evaluation criteria
5. Define quadruple top and bottom lines
6. Score the strategy options against criteria
7. Consider sub-regional options

NATURAL CAPITAL

Surface water flow variability and quality
Groundwater relatively free from contaminants
Biodiversity: native bird habitat
Wetlands, coastal lagoons, and springs
Braided rivers as an international resource
Ecosystem resilience

ECONOMIC CAPITAL

Schools, community facilities, marae and housing
Farm irrigation and stock water
Roads, bridges and transportation industry
Capacity to support population
Access to clean drinking water
Hydro-electricity generation and plant and lines

SOCIAL CAPITAL

Trust in institutions and processes
Scientific knowledge
Sense of community
Collaborative governance and participation
Confidence around futures
Social cohesion

CULTURAL CAPITAL

Sense of experience
Whakapapa – pride in place
Mahinga kai (food gathering)
Regional identity
Town-country connection
Recreation

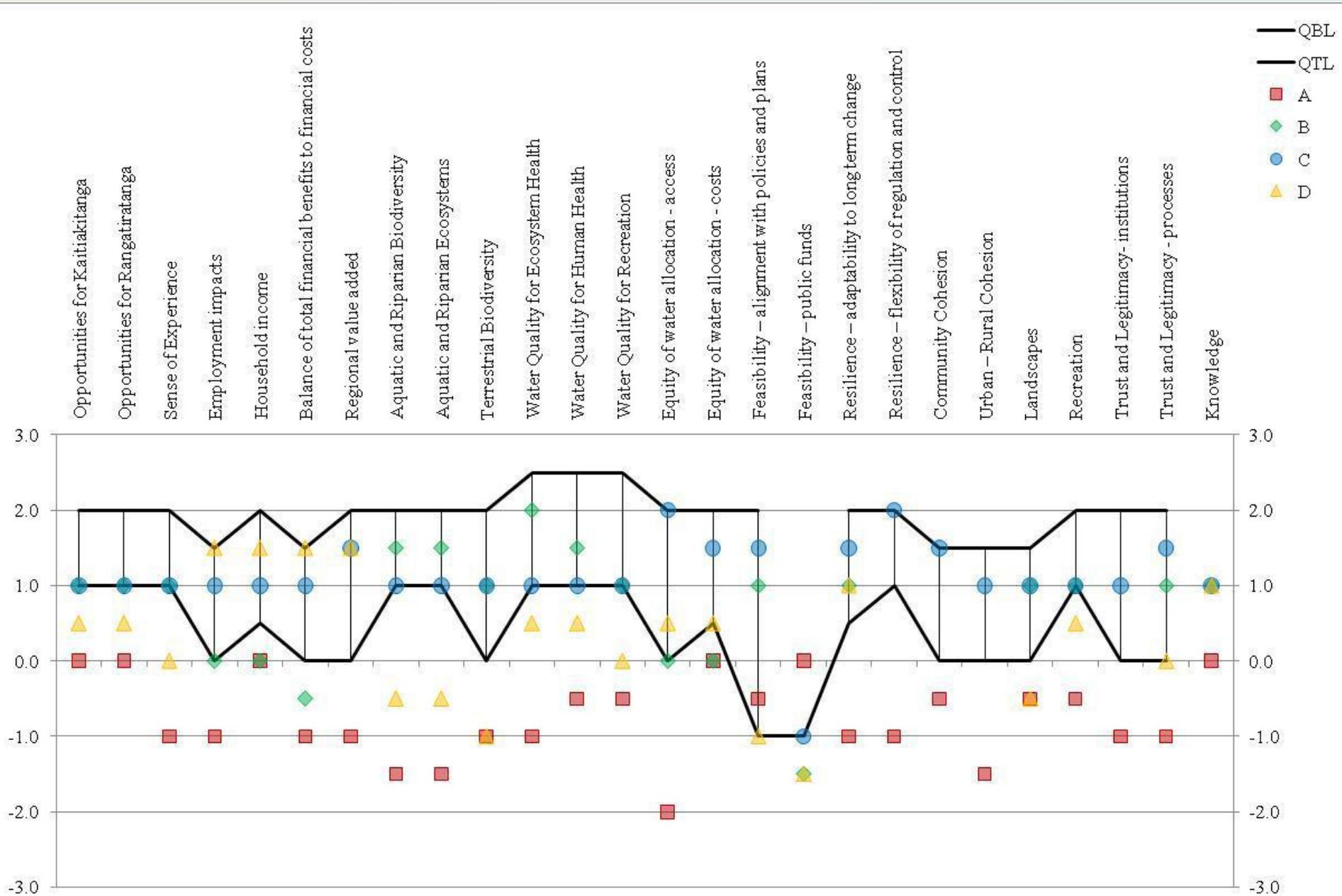
ENVIRONMENTAL EVALUATION CRITERIA

- Aquatic and riparian biodiversity
- Aquatic and riparian ecosystems
- Terrestrial biodiversity
- Water quality for ecosystem health
- Water quality for human health
- Water quality for recreation

EXAMPLE OF SCALE DESCRIPTOR

Brief description	Scale descriptors for impacts (vis-à-vis current state)				
	Strong negative impact	Moderate negative impact	Neutral impact	Moderate positive impact	Strong positive impact
	-2	-1	0	+1	+2
Aquatic and riparian indigenous biodiversity, including key species	Rapid or extensive reduction of biodiversity including loss of key species	Reduction of biodiversity in some areas and/or loss of key species	Biodiversity and key species maintained at current levels	Recovery of biodiversity in key areas and for key species	Extensive and sustained recovery of biodiversity and survival of all key species ensured

FIGURE 6: COMPARISON OF SUSTAINABILITY PROFILES FOR ALL OPTIONS



FINDINGS OF SUSTAINABILITY APPRAISAL

- Bottom line higher than “Business as Usual”: current situation 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

DISCUSSION OF SUSTAINABILITY APPRAISAL

- EIA has been focussed on new projects
- Sustainability appraisal focussed on resource management rather than project management
- Only possible to achieve sustainability by changing existing uses
- Acceptability criterion was to meet all sustainability bottom lines
- Focus on achievement of community outcomes rather than mitigation of adverse effects
- Collaborative multi-stakeholder approach changed debate and produced constructive solutions