Title: Water matters in New Zealand: Exploring and articulating social values

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1 Introduction

In many areas of New Zealand, councils, developers and irrigation-dependent farmers are exploring water storage options to provide reliable water supply options. These initiatives are deemed necessary to offset over or full allocation and to provide protection from drought events likely to be exacerbated by predicted climate change. This paper will outline the processes of decision-making in the Tasman and Canterbury regions, evaluating the extent to which social and cultural values of water were taken into account. It will also explore how better articulation of social and cultural values might mediate economic and environmental concerns, which tend to be seen as polarised parameters of sustainability.

The paper begins by outlining the New Zealand case study areas and research contexts. The first case study in Tasman identified and documented community values and perceptions of water management options in the Waimea Basin (Tasman), and the second case study included observations (and evaluation) of a regional reference group process that evaluated potential storage options for the Canterbury region. Although there was an initial commitment by decision-makers in both areas to meet all sustainability parameters (social, cultural, environmental and economic), we note that the impetus for participants to consider hierarchies and tradeoffs between the different parameters appears to influence how decision-making groups work together and the resultant outcomes. The paper will briefly outline how central (often referred to as the "Crown') and local governments' commitment to partnerships with Māori (indigenous peoples of New Zealand) based on the Treaty of Waitangi provides clear imperatives for engaging with Māori on water-related issues, and the difficulties faced in the course of engagement. We also explore social values in terms of Pakeha (non-indigenous New Zealanders) cultural concepts and experiences, suggesting that Pakeha still need to 'find a language' that expresses the full range of freshwater values they hold. We conclude by suggesting that improved articulation and documentation of social and cultural values has potential for creative dialogue, finding common ground, and reducing polarisation between individuals as well as different sectors and interests.

2 The New Zealand context

Until quite recently, New Zealand has been seen as a 'water-rich' country, with intermittent fluctuations in climate that have been regarded as 'normal'. Regional councils are responsible for freshwater allocation through the planning process and administration of the Resource Management Act (RMA), 1991 (Ericksen et al, 2003; Memon & Selsky, 2003). While some authors argue that the Act does enable decision-makers to take account of social, cultural, economic and environmental parameters of sustainability (Memon & Skelton, 2006), others argue that it fails to take account of cumulative effects on freshwater resources, because each application to take water is judged individually on a case by case basis (Jenkins, 2007). Additionally, while the RMA and the Local Government Act, (2002) explicitly state that in

significant decision-making, local authorities must take into account Māori cultural and traditional relationships with their ancestral land and water, this has not been consistently carried out (PCE, 1998; Tutua-Nathan, 2006). This issue is important in light of increasing pressure on water resources and the resulting public (local or regional authority-driven) and private (landowners) or public-private partnership initiatives for water harvesting and storage. In both Tasman and Canterbury, the need for water augmentation is seen as acute, resulting in a Feasibility Study into Water Augmentation (storage dam) for the Waimea Plains (Tasman) and the Canterbury Strategic Water Study (regional water storage options).

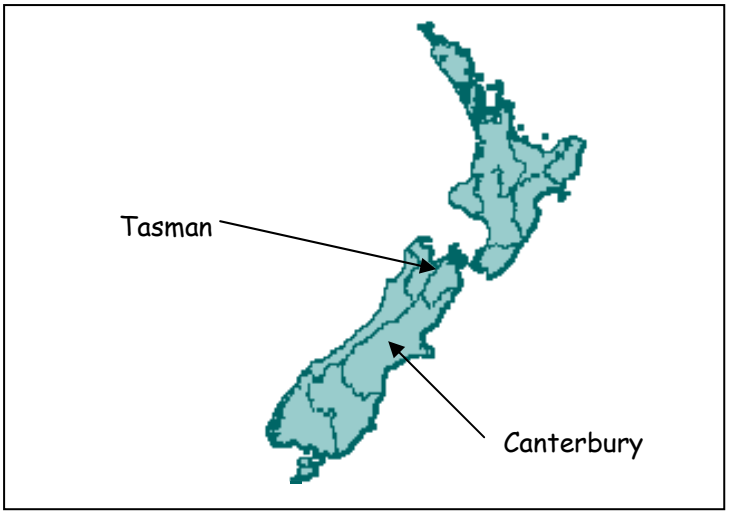

Figure One: Map of New Zealand and locations of case study areas

3 The Tasman Case Study Context

In the Tasman district of the South Island, N.Z., irrigation allocation forms 85 % of the consumptive water use in the productive Waimea Plains with the rest used for urban, industrial and private domestic supplies. Recent droughts (2000, 2001) highlighted the low security of these water supplies where severe restrictions were applied to maintain flows in the rivers and to prevent seawater intrusion along the coastal margins. Groundwater/river modelling work demonstrated that the water resource was over allocated by 22% for a 1:10 year drought security (Lincoln Environmental et al, 2003). When the decision was made to explore water augmentation options (end of 2003), the Waimea Water Augmentation Committee (WWAC) was established. This included members of the Water Users Committees (these water user committees are made up of irrigators who take their water from different aquifer or river-based zones. For example the delta zone refers to those irrigators taking their water from the aquifer nearest to the coast, while the Waimea East zone refers to those irrigators who take their water directly from the Wairoa River); Tasman District Council councillors and water resource staff, representatives from Nelson City Council, Fish and Game (Fish and Game are a statutory organisation responsible for the licensing of anglers. While their mandate is to protect the recreational opportunities for anglers, they have a strong interest in protecting the freshwater bodies in which the fish live and breed), Iwi (Iwi are the Māori tribal groups and in the Tasman area there are several different iwi. Natural resource issues are addressed by members of the Nelson and Motueka Iwi Resource Management Advisory Komitis (committees), and the Department of Conservation (DoC). The WWAC was tasked with finding long-term solutions to the Waimea water problems, hence the Feasibility Study. This study was very much a locally-defined project enabled by clear geographical and population boundaries where the interaction between surface and groundwater had been mapped. Moreover, the water users committees historically provided an organisational (social) structure conducive to council-community dialogue. Because of the

multiple interests, roles and values of Waimea residents (partly related to lifestyles in the area) there are overlapping social networks, making it relatively easy to keep people informed and engaged in an issue such as water augmentation. From the beginning, the Feasibility Study was designed as an holistic study in which relevant social, environmental, cultural and economic issues and values would be considered alongside the technically oriented exploration of potential water storage options.

4 The Canterbury Case Study Context

The Canterbury Strategic Water Study (CSWS – see www.ecan.govt.nz) was initiated in 2000, by the Canterbury Mayoral Forum (The mayoral forum consisted of the mayors from district councils, the Christchurch city council and the CEO of the regional council), to assess the ability of the Canterbury region to meet long-term requirements for water. Stage 1 identified that storage was required to meet future water demand (primarily for irrigation). Stage 2 was a technical hydrological study focussed on major water storage options. Stage 3 involved a community-based reference group process to evaluate the storage options identified in stage 2 through developing and applying a sustainability framework that accounted for environmental, social, economic and cultural concerns. Stage 4 is in a preliminary phase but will include wider public consultation as well as work relating to water quality in Canterbury. The Canterbury Strategic Water Study is focused on regional water need where there are complex surface-groundwater systems, and while much is known about these systems there remain many uncertainties about the impacts of increasing abstraction and land use intensification. The reference group process therefore needs to be seen in context of a regional (rather than local) strategy for water augmentation and storage, and in relation to a community engagement process that was preceded by technical exploration of potential storage sites.

5 Why Consider Social Values?

In both research contexts the need to consider social values was explicitly articulated by the research 'sponsors'. (Research 'sponsors' refers to those people in Tasman and Canterbury with whom the researchers entered into negotiation about the content of the research and who were prepared to engage in either formal (WWAC) or informal (organisers of the Canterbury Reference Group) agreements). This need had three dominant drivers. The first was the drive for a working definition of sustainability that took environmental, social, economic and cultural concerns into account. The second driver was the potential for time-consuming conflicts if both the problems and solutions were not jointly defined by affected stakeholders, or affected stakeholders were not provided with information as the studies progressed. Thirdly, there was a need to be consistent with the consultative ethos relating to natural resources planning (on which the RMA depends) and long-term council-community planning (required by the Local Government Act 2002). Both these pieces of legislation identify the requirement for consultation with the affected community or communities and with Māori given The Treaty of Waitangi partnership agreement between the Crown and Māori.

5.1 The Tasman case study social values

Social values were articulated in a variety of ways throughout the Tasman case study: through workshops; focus group meetings; individual interviews; and a family survey. In the two workshops participants were asked to identify individual values that were important to them. Workshop one participants were crop and dairy farmers on the Waimea Plains; while the participants of the second workshop represented individual or collective interests.

Table 1: Core values identified in workshops

Workshop One *Core values identified by 33 participants(Crop and dairy farmers)*	*Numbers subscribing to core values*	*Workshop Two* *Core values identified by 28 participants (individuals and or collective interests)*	*Numbers subscribing to core values*
Reliability (water quality and quantity)	30	Habitat/Environment	27
Aquifer protection	30	Potable Water	26
Sustainability	30	Protect aquifers	24
Best knowledge used to make decisions	29	Efficient Use	23
Retain water rights	28	*Mauri* (defined as the (intrinsic) 'life-force' of the river)	20
Maintain economic livelihood	25	Contribution to coast	18
Employment in the wider community	24	Recreation	18
Reasonable cost of water provision	24	Public access	17
Efficient use of water	21	Volume (river flows & aquifer levels)	14
Retain intrinsic (environmental) nature of rivers	21	*Wairua* (defined as the 'soul' or 'spirit' of the river. It appeared that most participants identified with the concept of *mauri*, but *wairua* was a more difficult, or different, concept for pakeha)	12
Retain water quality	21	Scenic	12
Retain recreational activities and opportunities	5	Close to home	10
		Productive use	9

There were identifiable similarities and differences between workshops 1 and 2 (See Table 1). For example, ensuring reliable (sustainable) quality and quantity of freshwater was seen as important for people in both workshops, with aquifer protection playing an important role in maintaining this resource. However, for individual and collective interests, sustainable aquifer protection was related more to the provision of drinking water, while farmers were more concerned about the ability to maintain their (and others') economic livelihood through reliable supply for irrigation. Workshop 2 participants valued the habitat/environment (of the rivers) very strongly (27/28) compared to farmers (21/33), and closely associated with the environmental values was the need to protect the *mauri* and *wairua* of rivers as well as river flows and the quality of river water, with most participants clearly understanding the river and aquifer system as an interlinked whole. The higher relative values attributed to environmental integrity in workshop 2 reflected participation in the workshop, with representatives from 'environmental' organisations such as the Department of Conservation, Fish and Game, Forest & Bird (a non-governmental organisation that has mandate, on behalf of it members, to advocate for the environment), and individuals who identified themselves as 'environmentalists'. The value of water for productive use was expressed by only nine workshop 2 participants (9/28) compared with those in workshop 1 (25/33) who focused more on the relationship between access to water and economic livelihood (Winstanley et al, 2005).

Focus group meetings with residents from the Wairoa and Lee River Valleys (one of these river catchments was likely to be chosen for the storage dam) respectively included the collective production of a "rich picture" (Checkland & Scholes, 1990) that included what they knew of the uses and values of the rivers, from the mountains to the sea, and their feelings about the rivers (See figure 2 below).

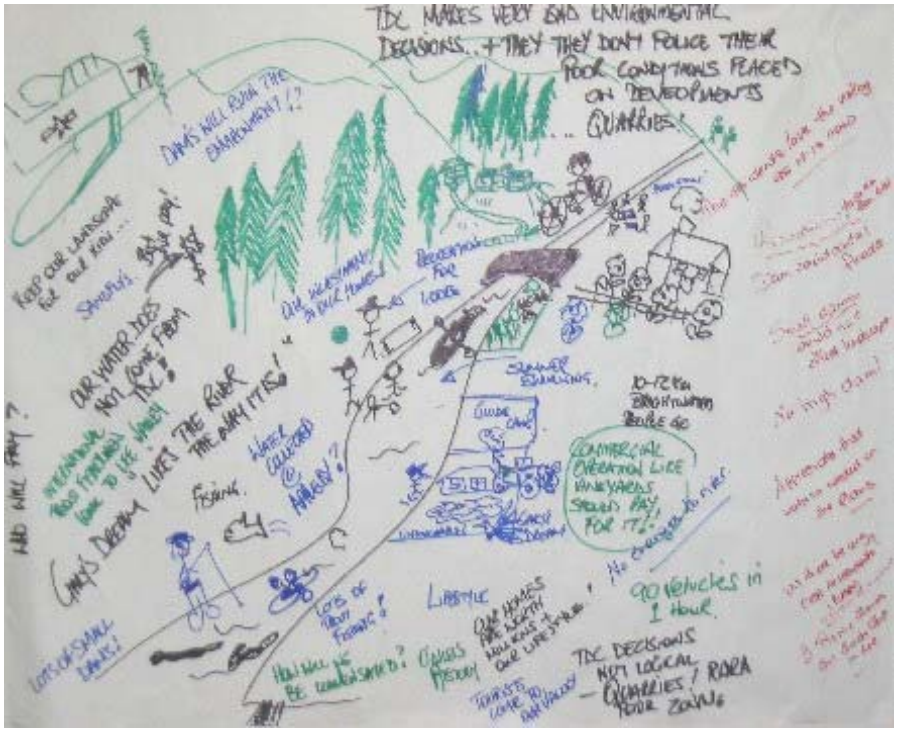

Figure 2: 'Rich picture' drawn by Lee Valley Focus Group Participants

The analysis of the 'rich pictures" was merged with data from the other research activities. The emergent themes are outlined below:

Intrinsic attributes of the rivers, such as the "*sounds of the water flows*," "*river breezes*," "*change – the element of surprise*," "*river mists*."
Ecological attributes of the rivers, such as "*a wildlife habitat and corridor," "trout and native fish," "unique geology," "wildlife – frogs, native birds returning."*
Aesthetic/scenic values, as articulated by a Lee Valley resident: "*We love that the Lee River is part of our property – we enjoy watching it change with the seasons and the weather – it's a big part of our lives."*
Sense of place and identity as expressed in the following quotes: "*The river is the life of the place, it's why we're here, it's the centre of the valley," My daughters' cleansing ritual – whenever they come home from being away first they jump in the river," "The Lee River is a fantastic learning source – it is playing a major part of my family growing up."*
As a contrast to urban environment: "*Wind down – time out from city,*" "*Its peace and quiet," "Restful quality for relaxation."*
Recreational values and uses, including having picnics, swimming, rafting and kayaking. "*It's safe to swim in the main holes," " Rafting and tubing down the river," " Parts of the river are shallow, parts are deep – all people can use it," " It's one of the best reaches of river in the Nelson area and it's right there in your back yard, one of the few river sections close to an urban area."*
Enabling social interaction, a key theme expressed by families and teenagers. "*Good meeting place for friends and family for picnics," "Having raves at Wairoa picnic site."*

The benefits of collating the social values articulated by research participants were conveyed by members of the Waimea Water Augmentation Committee and the Tasman District Council to the researchers.

- Decision-makers gained a better understanding of the social values that would need to be taken into account in progressing the Feasibility Study.
- In terms of process, the report provided evidence that the voices of those affected were both sought and documented, and therefore contributed to meeting procedural justice requirements.

As a result, WWAC set up processes to enable ongoing community-committee interaction dialogue throughout the life of the water augmentation project.

5.2 The Canterbury case study social values

This section of the paper explores linkages between representation in a community-based reference group and how social values were – or were not – included in developing a 'sustainability framework' for evaluating regional water storage options in Canterbury.

The Canterbury Strategic Water Study (CSWS) reference group was not set up to make decisions, but rather to go through a process of debate and discussion based on well-informed views of potential water storage sites in Canterbury. The group was tasked with developing its own 'sustainability framework' to identify the range of social, economic, environmental and cultural issues associated with water storage sites. The outcome sought was a framework for evaluating the water storage options that included all the issues the members of the group thought important, and that would contribute to consensual scoring of each option. At the same time, differences in scoring were allowed as long as the reasons for those differences were recorded. The sustainability framework was used to determine whether each storage option had major drawbacks, required more information, or was able to meet environmental, social, cultural and economic 'bottom lines". While participants were invited in a personal capacity, most were also affiliated to an organisational interest associated with environmental, farming, rural irrigation, academia, recreational and local authority interests. The criteria for representation in the reference group were: (i) geographical spread (stakeholders from across Canterbury); (ii) a range of interests, involvement and experience with water resource management; and (iii) individuals who demonstrated the ability to engage with multiple perspectives.

In developing the sustainability framework the list below represents the topics for inclusion identified by the group. Questions relating to these topics were subsequently devised along with an appropriate (evaluative) ranking or scoring scale for each question.

Table 3: Topics that formed the basis of Evaluation Framework questions

In-stream impacts	River ecosystems impacts	Surface water quality
Groundwater quality	Land use	Legal and planning conditions
Recreation	Storage area acquisition	Local, regional and National
Co-generation and electricity	Town impacts	community support
use	Tourism impact	Affordability
Kaitiakitanga	Impacts on wetlands and springs	Economic benefits
Wider hydrological impacts	Cultural values	Societal benefits
Water availability and use	Impact on other options	Flood and flow impacts
		Reliability of water supply
		Equity

Interviews with twelve key members of the reference group indicated that throughout the process of developing and applying the sustainability framework, social values were missing, despite reaching agreement on the final framework employed. *"… social issues have not been covered as well* [as other issues]." One interviewee identified the need to ensure that the

concerns of all relevant stakeholders were being addressed through the process so that it could not be interpreted as a regulator-driven exercise. Other interviewees identified missing interests and missing voices that included interests of community members who consistently interact with natural resources but who may not be part of a recognised group such as anglers represented by Fish and Game. "*People who live in rural towns that aren't part of the farming – and they've often got quite a big stake in a river - but they're not easily captured; those people might just go for a kayak, or a stroll along the river. They're often the major user of the river, they probably value it more than the guy from the city who probably goes there to use a $1000 fly rod, there's a far less financial investment but they're the major users of the river*."

Women's voices were a distinct minority despite interviewees and those responsible for the reference group process acknowledging that women do have particular - and often family-related - interests in the sustainability of natural resources, and are often significantly involved in farm management decision-making. "… *there's a lot of women in the farming business but they don't seem to get involved with politics, they're – farmers are always saying how much their partners do but when there's important stuff they never seem to get invited, so I guess that was a bit of an issue*."

It was also suggested that women's voices could have contributed to better inclusion of 'social interests' although this suggestion could be underpinned by the assumption that women may not be interested in or able to engage with the more technical information. Interviewees also regretted that Ngai Tahu (iwi) representation was inconsistent, recognising that the issue of water resource management is important to Ngai Tahu in terms of cross-cutting all four parameters of sustainability.

6 Important issues raised by the case studies

6.1 Seeking consensus or recognising difference?

Both case studies illustrate the need to consider who contributes to decision-making, and how their participation is achieved. One interesting point of difference between the Canterbury reference group and the Waimea Water Augmentation Committee (WWAC) was that those in the Canterbury reference group consistently referred to economic and environmental interests as opposing sides and early discussion included questions about differential weighting and trade-offs (Winstanley et al, 2007). In contrast, WWAC aimed to accommodate environmental, economic, social and cultural needs in a non-hierarchical way (Winstanley, 2007). It may be that different decisions emerge depending on whether the decision-makers can keep environmental, economic, social and cultural needs and values in creative and constructive tension with each other or whether they employ a trade-off approach focusing attention more on mechanisms for justifying trade-offs than a balance between the four parameters.

The possibility of keeping different parameters or values in constructive tension appears to be related not just to the personal characteristics of participants but also to the processes used. For example, the Canterbury reference group process was aimed at achieving consensus, and a number of what could be called 'contentious issues' were set aside. These were issues on which it was unlikely to reach agreement, and included definitions of 'community' and 'sustainability'; whether 'community' referred to local, regional or national groupings and which should carry more weight. Water quality issues associated with the cumulative impact of farming intensification were also 'parked', along with questions about whether there should be relative weighting of topics in the evaluation framework. While there was heated discussion and debate at times during the reference group meetings, it appeared that the need to reach consensus did constrain participants' ability to articulate certain values and views (Winstanley et al 2007).

In contrast to consensus-seeking processes, the WWAC meetings provided opportunities for dialogue that included tacit rules about fairness, as illustrated in the comments below: *"There is a diversity of interests sitting round the table, and all have a requirement for water; no one group takes precedence",* and *" Inclusiveness involves risks to all parties, and that's sometimes uncomfortable, but the outcome is you get high level agreement and you deal with the detail later … if there were [contentious issues] everyone was sitting round the table to debate it"* (Winstanley, 2007).

WWAC was also accepting of the multiple methods of community engagement employed by the researchers and the argument that depth, rather than breadth in relation to the methods used, would provide the committee with more relevant (though not necessarily easy to accommodate) information. As stated by one of the committee members, inclusiveness involves risks, and more than one committee member talked about this risk when the researchers evaluated the research process.

An overview of the literature on participation in water resource management indicates that there is a broad distinction between the authors advocating for consensus decisions (Painter, 2006, Schneider 2003; Ostiani and Warren, 1997; Blaxter et al, 2003) and literature focusing on recognition of difference and conflict and the possibilities for generating 'new' solutions (Lach et al, 2005; Van der Kerkhof, 2006; Stratford et al, 2003; de Marchi et al, 2000; Lebel et al, 2006). This distinction clearly has ramifications for approaches to and methods for participative processes. Both Van der Kerkhof (2006) and Lach et al (2005) argue that consensus-based decisions may lack processes that take account of key stakeholder differences and possible conflict.

Van der Kerkhof argues that a "serious drawback of the consensus-building approach is that it seems to be based on the assumption that the participants in a dialogue process … are aware of the different positions of the other stakeholders that are involved in the process" (2006: 282), whereas "deliberation refers to a process of argumentation and communication in which the participants engage into an open process in which they exchange opinions and viewpoints, weigh and balance arguments, and offer reflections and associations" (Ibid). She identifies four constraints with consensus-building processes. These constraints include (i) possible bias in selection of participants; (ii) the tendency to focus on tractable problems; (iii) consensus relies on "agreement over imprecise or general principles rather than concrete operational results, and that they reflect the lowest common denominator" (296); and (iv) consensus orientation does not work well in problem situations where participants have different 'truths', assumptions and hold different concepts regarding a certain issue. The consensus-oriented reference group process, with its 'parking space for contentious or difficult issues, and the participants' interview data, seems to bear out the critiques offered by Van der Kerkhoff and Lach.

However, there are significant differences between the Tasman and Canterbury processes and contexts that need to be considered in light of these critiques. The CSWS reference group process, for the first time, brought a number of people together who had not previously worked together, or if they had interacted previously it was in relation to environment court proceedings on notifiable resource consent applications. (Notifiable resource consent applications refer to those applications in which affected stakeholders need to agree to the consent being granted, or can ask for certain conditions to be met. Failing agreement the consenting process can enter into a mediation process or be taken to the environment court in order to reach a decision). By comparison, members of WWAC had known each other personally for a number of years, and several of them had long-standing relationships with Fish and Game and/or the Department of Conservation. Additionally, an earlier ten year water augmentation project (the Kainui dam in another catchment) had alerted some of the WWAC members to the need to engage community and iwi members early in such projects. It is

likely, then, that the kinds of issues that were 'parked' in the Canterbury reference group process had already been dealt with in Tasman.

Also, a number of the spatial scale issues – several of which were 'parked' - arising in the reference group process would not have been relevant in Tasman with a considerably smaller geography and population than that of Canterbury. Linked to the issue of scale are the resources required to undertake community engagement in which water-related values are taken into account, in terms of time, financial investment, and skills required.

Finally, there was a major difference in that the Canterbury reference group process was preceded by technical exploration and this technical information (for example, hydrographs and modelling of environmental flow requirements and water availability for future irrigable land) provided the basis of discussion for developing the sustainability framework and the subsequent evaluative process. In contrast, the Tasman exploration of technical, economic, environmental, social and cultural facets of potential water storage options occurred more or less simultaneously. The CSWS reference group process provided an intermediate step between the technical exploration and community engagement on the viable regional water storage options, and it may well be that the further community engagement provided for in stage four will enable a more comprehensive discussion of values to be considered in future planning and decision-making.

6.2 Stakeholder mapping, procedural justice and shared values

Stakeholder analyses usually entail mapping the stakeholders who 'should' or could be involved in any participative process (Mitchell et al, 1997). Both representative and participatory democracy principles contribute to stakeholder analysis, which, if built on can go some way to ensuring procedural justice requirements – that is, how participation is enacted during the decision-making process (Beierle & Konisky, 2000; Marks, 2004; Syme & Nancarrow, 2001; Nancarrow & Syme, 2004; Smith &McDonough, 2001; Webler & Tuler, 2001). Smith and McDonough (2001) argue that meeting procedural justice criteria is a key element in building trust between affected stakeholders and territorial and local authorities, and between these authorities and their constituent communities. They state that the "body of theory and research on distributive and procedural justice demonstrates that people's satisfaction with decisions and support for authorities largely rests on whether or not they feel they have been treated fairly and/or received fair outcomes" (Ibid 2001:239). Similarly, Marks (2004) and Beierle and Konisky (2000:587) link participation to the need to improve "the substantive and procedural quality of decisions". They argue that this is required in order to develop or improve trust between 'the public' and authorities, an essential ingredient of participative or deliberative democracy.

While it is important to identify stakeholders, interest groups and those affected by potential outcomes of decision-making, it is also important to recognise that individuals hold multiple perspectives or values on issues. This was illustrated by the multiple values identified in the Tasman case study workshops, as well as accounting for the differences between the 'analytical' and subjective (gut feeling) evaluations in the CSWS reference group process. As members of WWAC pointed out, each of them has multiple interests, roles and values.

"We have a long family connection with Tasman area; the family has been farming in this area since 1963. And we go kayaking, walking, swimming in the rivers" and *"We need to be able to see the big picture - I'm both an irrigator and a fisherman. The rivers are part of the community and the future".* A keen kayaker said that probably 80% of kayakers also get their income directly, or indirectly from the plains, and that it would be "*great if we can get a win-win situation. We don't want this to be confrontational. We understand the people who want and need augmentation – it's their livelihood*."

Given this understanding, providing multiple opportunities for dialogue (over time) - whether structured in terms of methods or facilitated in some other way - that enables articulation of the diversity of both individual and group values is more likely to result in shared understanding. This provides a basis for building trust and so contributes to meeting both procedural and distributive (outcome) justice requirements. In other words, shared understanding about values provides a base from which consensus can emerge and/or acceptance of decision-making outcomes. Without articulation of these, the situation of "protect and defend" may consolidate competition and conflict rather than provide creative resolutions.

6.3 Multiple meanings of water

McCallum et al (2007) and Strang (2004) focus on the multiple meanings that come into play in relation to water bodies, many of which are related to social constructions of nature and sustainability. McCallum et al (2007) explore five New Zealand case studies and argue that the social constructions of different actors are more complex and variable than commonly portrayed in normative descriptions. As a result, resource management decision-making is characterised by competing claims for dominance and legitimacy. Strang (2004) comes to similar conclusions, but through a different methodological approach – an ethnography of the Stour River, U.K. She writes:

> The meanings themselves – water as the spirit, as life, as social, connective substance, as wealth and power, as generative source and regenerative sea, as nature, id, emotion and unconscious – all of these permeate the interactions that people have with water. Sometimes near the surface and visible, sometimes deeper and out of sight, they seep into every decision made about water use, wash over every aesthetic, religious or acquisitive vision of water, and swirl in powerful under-currents in every quarrel about ownership, access and control of water resources.

This distinctly metaphorical writing draws attention to the subjectivity of meanings people attach to water, and the strength of people's feelings about water, that may not surface – or be 'allowed' to surface - in 'rational' decision-making contexts.

Syme and Nancarrow (2001) also argue that there are discrepancies between what are seen as rational choices – or decisions – and the multiplicity of values, knowledge and community concerns that impact on how people frame or present their views and values. They suggest that individual "rational choice plays very little place in people's decision making in that they are as much concerned about the viability of the whole community's future as they are about their own" (4-5). Differences between 'rational choice' and 'other' kinds of evaluation in the CSWS reference group process emerged when participants working in small groups gave the group's scores for water storage options (using the sustainability framework), that, in some cases, were different to individual 'gut feelings'. There were variable responses as to why there were differences between the group and individual evaluations which makes attributions of community versus individual interests difficult. For example:
"Well, it could be their personal experience – for example if you lived in the X area you might do all the analytical stuff (for wider community benefits) *and you might say yes, you support it* [the option] *but my gut feeling* (personal feeling) *is 'don't touch X'".*
"From a development point of view, you might see that [option] *as being quite useful* (personal point of view)*, but the gut feeling* (wider community interests) *at the end of the day is that you're never going to get it past the residents and therefore it's a no-goer".*

One interviewee also stated that the consensus-based approach makes it difficult to include the points of conflict that could well impact on community acceptability of storage options. "*As a group we're tipping towards the middle and this is tripping us up*." This comment

resonates with the claims of Van der Kerkhof (2006) and Lach et al (2005) articulated earlier that consensus-based processes can reflect the lowest common denominator.

The above examples of interviewees' explanations for group and individual differences does support claims that the settings and/or processes employed to bring different kinds of knowledge into decision-making will affect what people choose to foreground or share. The separation of 'analytical' (or objective) knowledge from subjective knowledge – and the hierarchies accorded these divisions - clearly impacts on approaches and definitions of water resource issues as well as solutions. This is especially relevant for engagement with indigenous peoples, internationally (for example, Boelens, 2003; Jennings & Lockie, 2002) and in New Zealand (Crengle, 1993; Haywood, 2003; McIntosh, 2003; Tipa, 2002). The importance of this issue will be discussed in the following section.

6.4 Everyone has 'culture'

One of the issues that indigenous people face is that they are seen as 'having culture' while other groups (eg pakeha) do not. If indigenous peoples are seen as the 'repositories' of what are deemed cultural interests, then it is important for them and decision-makers to take these cultural values into account. How inclusion of indigenous cultural values and knowledge occurs is, in itself, a problem worthy of further (preferably bi-cultural) research. As stated earlier, participants of the second Tasman workshop identified with the Māori concept of protecting the *mauri* of the water systems, but found the concept of *wairua* more difficult. One of the iwi representatives pointed out how the lack of understanding of Māori language and concepts in a setting such as the workshop may well contribute to marginalisation of Māori views and perspectives, even though he appreciated hearing the views of the wider public.

Pakeha lack of knowledge about Māori concepts, customs and language means that Māori input is often ignored in favour of more familiar Western scientific approaches to a particular issue or action – "*how does Māori knowledge have the same status as science information*?" And Tutua-Nathan (in Haywood, 2003) argues that acceptance of Māori-focused environmental management and decision-making processes by those who have statutory authority is difficult to understand, given they have little or no understanding of Māori cultural belief systems. He states that there are problems in taking account of different forms of knowledge and there is no open debate about what knowledge is seen as 'legitimate'.

We argue that the issue of incorporating indigenous cultural values into decision-making is probably made more difficult when a dominant culture does not see itself as having a 'culture' but expresses its values through other social, environmental or economic frames or parameters. This process has the effect of seeing difference as 'other' which, in western culture, tends to set up hierarchies thereby lessening chances of being able to integrate different kinds of knowledge into decision-making. Returning to the example of the Tasman workshop, a council observer thought that understanding could have been enhanced through spending more time on trying to 'translate' Māori concepts into an English 'equivalent', but for many concepts there is no exact translation. This raises the question of whom – or what group – should take responsibility for mutual learning?

People in the workshop, however, did connect with the concept of *mauri* – the life force of the river, suggesting that there are inter-subjective feelings in common that in the English language are expressed differently; that Pakeha have different, but not dissimilar cultural constructs. For example, the concepts of 'intrinsic values' and 'sense of place' appear to bring together a number of different values and activities expressed by Tasman research participants that have some resonance with the concepts of *mauri* and *wairua* (the soul or spirit of the river). While the ways in which indigenous peoples claim or experience 'sense of

place' is different to those who are not indigenous, finding ways for people to articulate their individual and collective cultural connections with the natural environment may go part way to improving cross-cultural understanding without the need to try to translate 'non-translatable' concepts.

6.5 Can social and cultural values provide a mediating influence?

The case study research outlined above suggests that opportunities for the expression (and documentation) of social and cultural values provides potential for mediating competition or conflict engendered by the common reduction of sustainability parameters into environmental versus economic interests. We suggest that this is easier to achieve in local rather than regional contexts, where relationships between the water resource and those using it are established through informal as well as formal means. In order to achieve this mediating influence the research suggests a number of factors that need to be considered in water resource decision-making. These include:

- The need for a good fit between process and outcomes that enables articulation of social (and other) values. This entails an understanding of representative and participatory democracy and an appreciation of different methods that can be applied.
- The need to be aware of the extent to which parameters of sustainability definitions are seen in a hierarchical way by those involved compared to those who manage to keep the different parameters in a constructive, but non-hierarchical tension with each other, and how this is likely to impact on relationships and decision outcomes.
- The need to recognise that everyone has 'culture' and to find ways of exploring and articulating the depth and breadth of that culture that includes social, economic and environmental beliefs, and ethnicity-linked customs and values.

7 Conclusions

This paper has provided a brief context of natural resource decision-making and management in New Zealand that is supported by specific pieces of legislation. We have presented the research from two case studies - Tasman and Canterbury – which demonstrated that even where communities share issues in common, such as the need for water storage to deal with scarcity, different processes of, or methods for, including and hearing stakeholder voices impacts on how sustainability parameters are defined and addressed.

The Tasman case study demonstrated that the work carried out by the researchers in exploring and documenting social values contributed to the ability of members of the Waimea Water Augmentation Committee to keep the four sustainability parameters in constructive tension with each other. The way in which the Feasibility Study was designed, whereby exploration of technical, social, environmental and economic parameters of sustainability occurred in tandem from the very beginning of the study, also meant that these different kinds of knowledge and understanding could be integrated into decision-making throughout the various stages of the project.

We have argued that the design of the CSWS process, where development of the sustainability framework was preceded by the technical information focusing on economic benefits of irrigated land use and environmental impacts of water storage options, was likely to have contributed to the construction of an environmental-economic binary that was repeatedly seen in terms of a hierarchy, with consequent marginalisation of social and cultural values in the development of the sustainability framework. We have also argued that the consensus-oriented reference group process is likely to have further contributed to this marginalisation in that a number of values-based issues were 'parked' thereby acting against participants fully appreciating the range of water-related values held by each participant,

especially when the group may not have been representative of the range of affected and interested groups or populations.

Finally, we have claimed that recognising that everyone 'has culture' enables better articulation of what may be seen as social values, reducing the tendency to discriminate against different forms of knowledge. This means acknowledging that the 'cultural' parameter does not just refer to indigenous peoples, or other ethnically-defined groups. Improved understanding of both social and cultural values, through employing appropriate means and methods to enable these to be articulated and shared, we argue, has the potential to mediate the construction of an environmental-economic binary pair which tends to lead to hierarchical positioning with discussion focusing on rationales for positioning, ranking and trade-offs. This, in turn, creates a potential for situations where there are winners and losers, reducing the likelihood of meeting procedural justice requirements as well as compromising decision-makers' ability to achieve sustainable water resource outcomes.

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