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The Management of Lake Ellesmere/Te Waihora:

an assessment of the integration of co-governance and community agreements into a
nested, statutory management plan

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Master of Natural Resource Management and Ecological Engineering

at
Lincoln University
by
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Lincoln University
2016

Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of
Master of Natural Resource Management and Ecological Engineering

Strategies to manage common-pool resources vary and despite substantial scholarly and practical literature very little has been written on how communities and co-governance interact with a nested system, especially as they apply to a Treaty arrangement as is the case in New Zealand. This research compares the institutional design for managing Lake Ellesmere/Te Waihora to Ostrom's *Design principles for long-enduring CPR institutions*. The results reveal that several of Ostrom's principles are not met. Co-governance, co-management and Treaty relationships are also shown to impact the relationship between communities and nested systems through the lens of Ostrom's principles.

Keywords: Lake Ellesmere/Te Waihora, common-pool resources, co-governance, co-management, nested systems, resource management, Ostrom

Acknowledgements

This thesis turned into more of a journey than a degree and for that I am thankful. Both the careful eye of reviewers who hold the highest academic standard and the Lincoln community worked with and advised me to create a thesis of accurate scientific structure and value. Without them, I surely would not have arrived at the polished piece herein.

Attempting to gather enough understanding for a thesis as an international student studying a topic that has absorbed whole lifetimes was challenging, humbling and incredibly enriching to my life. I greatly appreciate my advisors; Bryan Jenkins, Hamish Rennie, and Thomas Hein. I admire their efforts and leadership in their field and it was a pleasure to learn from them. A particular thank you goes to Hamish, who worked with me while I was back home overseas to finalize my thesis and communicate the latest news from Lincoln. I am forever grateful!

My research also depended heavily on the local community, which welcomed a strange American into their decision making process and often, into their home, to discuss what was clearly an important and generational topic in their lives. Never have I learned so much from so few.

I am also blessed to have an incredible support structure at home through my parents, four brothers and friends; many of whom took several weeks to come visit me and learn about my life in New Zealand; thank you.

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Chapter 1 - Introduction

Water governance in New Zealand has changed over the last twenty-plus years due in part to the national level adoption of relevant non-binding United Nations agreements (e.g. Agenda 21) that have led to attempts to integrate water management strategies. New Zealand is morally obligated to enact sustainable principles of Agenda 21 as a signatory, though not statutorily bound (United Nations Conference on Environment and Development (UNCED), 1992). Specifically on the topic of this thesis, Chapter 18.5 (U.N., 1993) states, “The following programme areas are proposed for the freshwater sector: (a) integrated water resources and development.” Additionally, and relevant to New Zealand are other signed agreements dealing with rights of indigenous peoples such as the United Nations Declaration on the Rights of Indigenous Peoples (2008) to which New Zealand is a signatory. Article 19 (U.N., p.8 2008) touches on potential co-governance issues (discussed below), “States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures.” Both such agreements lend themselves to New Zealand’s evolving growth and change surrounding both water resource management and relationships with their indigenous peoples (i.e. Maori.) It was outside the scope of this thesis to determine whether New Zealand has implemented new water management strategies in regards only to the U.N. agreements. These international agreements indicate the international community is concerned about sustainable development of water resources and by signing these agreements New Zealand has indicated it will play a role to address water management and has implemented policies (discussed in Chapter 4) to that effect.

In the 1940s, catchment boards were established throughout New Zealand and then given more functions, including responsibilities pertaining to water in the 1960s (Fenemor, Neilan, Allen, & Russell, 2011). These catchment boards were eventually replaced by regional and unitary councils in 1989. Boundaries defined by catchments still exist today, but not in the exact form they did previously, as slightly different political regions were set up. Moreover, in New Zealand, “The territorial jurisdiction of regional councils, established in 1988, was purposely defined on the basis of groups of large water catchments” (Memon, Painter, & Weber, 2012, p. 35), so the integrative approach to catchment management is still followed.

Along those same lines, Integrated Catchment Management (ICM), more in line with the aforementioned 'integrated water resources' from Agenda 21, is an attempt to manage an area within a defined geographical context (Memon et al., 2012). ICM has been implemented in the Tasman Region of the South Island of New Zealand, and is an example of common-pool resources (CPR) management, but in a less complex biophysical context and without the same layering of local government and Treaty settlements. It is therefore somewhat different from this thesis' focus on Canterbury and the Selwyn/Waihora Zone (see Chapter 4).

The recognition of the significance of a catchment has allowed scientists to study nutrient flows and discharges throughout the defined area and allows for the study of downstream effects of different activities (Bowden, 1999). This is especially important in an area like Canterbury, where most catchments drain mainly agricultural land, the most-often blamed culprit for diffuse source pollution. On the regional level, however, it is more likely that a catchment plan be considered because it could include either the majority of a catchment, or contain several catchments depending on the scale.

By defining governing regions by catchment shape, it allows those people involved with and responsible for the quality and content of its water and associated ecosystem and services to make decisions that will affect their area of use. ICM in New Zealand, although implemented early on and although it is the basis for many of the regional councils, does not play as large a role as it could. Memon et al. (2012, p. 37) write that their "assessment is that ICM has not featured strongly in the way that regional councils have interpreted and implemented their devolved RMA mandate relating to water management". For ICM at the regional level, rules and regulations may fit well, but at smaller catchment levels it could prove to be more difficult. For Lake Ellesmere/Te Waihora (henceforth "Lake Ellesmere"), this is especially important, as it needs to have a plan to manage even the furthest reaches of the catchment. Managing the Lake is only half of the job, as determining the inputs from further up the catchment has become a major issue, if not *the* major issue involving the health of the Lake. Managing strictly by catchment, although not purely implemented in New Zealand, is still included, only, "the emphasis on integrated and catchment-based planning has been weakened by the broader RMA mandates and more regional focus of regional and unitary council planning than in earlier catchment-based water and soil plans" (Fenemor et al., 2011, p. 13). Water is often seen as a common pool resource (CPR), but although the catchment is an important organising concept to governing such a CPR, it may

not be the only determinant of political boundaries and, as is discussed in this thesis, is not the sole determinant for the water management zones in the Canterbury Region that have been adopted since 2010.

Lake Ellesmere, dually named Te Waihora, is located on the South Island of New Zealand, west of Banks Peninsula in Canterbury. New Zealand's fifth largest lake by area at approximately 20,000 hectares, Ellesmere has been the subject of several attempts at effective management and is a significant site not only for the local land owners and residents in the area, but also for the local Maori iwi (tribe), Ngai Tahu, who see the lake as an important part of their culture, livelihood, and spirituality.

Lake Ellesmere and its catchment is also a significant biophysical feature in the region. Among the significant management issues for the people affected and affecting the Lake is the water level the Lake is allowed to reach before it is artificially opened to the sea through a shingle barrier (Kaitorete). This channel is subsequently filled and closed by natural wave action and sediment deposition, particularly during southerly storm events. Consequently, the Lake may need to be opened several times a year, and since the 1940s has been opened at least once per year. The timings of such openings and the height at which they occur has been a source of conflict as different segments of the community are affected differently and have different needs and values for the Lake. The shallow, less than 2m deep, slightly brackish lake (Soons, Shulmeister, & Holt, 1997) has seen its nutrient levels fluctuate, a damaging large storm, and anthropological drainage throughout its management (or lack thereof) history. Specific issues surrounding the physical environment of the Lake include the flooding of local farmland, poor water quality, fisheries management, other wildlife management, recreational uses and spiritual/cultural considerations. Among these issues, the Lake is noted as "a wildlife habitat of national and international importance with the highest recorded bird diversity of any location in New Zealand" (Hughey & Taylor, 2008, p. 57) which means the, "management of lake levels is a key issue for the maintenance or enhancement of wildlife values" (Taylor, 1996, p. 201). These interests combine to form an array of interested stakeholders with divergent goals, ranging from local farmers and Ngai Tahu members to commercial fishermen, duck hunters, bird watchers and elected officials. With so many different interests surrounding one environmentally degraded, yet highly utilized area, the strategies taken to improve the Lake can cause disagreements and often slow down the necessary process for improvement.

Currently, the Lake falls under several direct management arrangements stemming from different entities. There is a National Water Conservation Order for the Lake reflecting its role as a nationally significant habitat for flora and fauna, among other reasons. Made originally by central government, this specifically constrains local government options for managing the Lake's water levels. The Canterbury Water Management Strategy (CWMS) sets the stage for smaller, more local efforts like the Regional Implementation Programme (RIP) and the Selwyn/Waihora Zone Committee's Zone Implementation Programme (ZIP)¹. These are separate from, although relate to, an agreement between the New Zealand Department of Conservation (DoC) and Ngai Tahu called the Joint Management Plan (JMP)², which allows Ngai Tahu to have a say in the management of the lake bed. A more recent agreement³ also exists between Ngai Tahu and Environment Canterbury (ECan), the regional council, which denotes a co-governance agreement between the two decision-making entities. Several other statutory instruments govern the Lake indirectly, including the Land and Water Regional Plan (LWRP), Resource Management Act (RMA), the Local Government Act (LGA), the Natural Resources Regional Plan (NRRP) and the Treaty of Waitangi (The Treaty). Another significant governance and management impact stems from the Ngai Tahu Claims Settlement Act 1998 (the Settlement Act) that awarded the tribe associated most with Lake Ellesmere, among other things, ownership of much of the lake bed. Though there were other parts to the Settlement Act (e.g. \$170 million dollar settlement) the ownership of the lake bed is impactful on the subject of this thesis.

This thesis will focus on the former, more direct and local plans within the region and catchment that apply more directly to the governance of Lake Ellesmere. Considering the amount of policy and planning involved with the Lake at present, it is important to implement an effective strategy moving forward that includes effective integration of the current non-statutory localized agreements, especially in those areas where overlap is present or the hierarchy can be confusing.

An unusual aspect to the management of Lake Ellesmere in relation to other case studies in the literature and examples from abroad is the inclusion of the tangata whenua in the decision-making process. Tangata whenua is the Maori term used to describe those Maori

¹ Can be found at: <http://ecan.govt.nz/get-involved/canterburywater/committees/selwyn-waihora/Pages/selwyn-waihora-zip.aspx>

² Can be found at: <http://www.doc.govt.nz/documents/about-doc/role/policies-and-plans/te-waihora/te-waihora-full.pdf>

³ Can be found at: <http://tewaihora.org/>

with traditional rights, status and responsibilities in a specific area, usually pertaining to their tribal history and genealogy. Not only does the study of Lake Ellesmere management give us insight into CPRs and the concept of co-governance, but also an opportunity to explore the role of Maori in how their ancestral environment is managed in a democratic society. This particular situation allows a window into Maori relations with the local or national government and the environment and how co-governance or co-management is implemented between Treaty partners. The relationship between the Treaty partners, although different, does not exclude the participation of other stakeholders elsewhere in the process. For the purposes of this thesis, the concept of 'stakeholders' and someone with 'an interest' in the Lake are interchangeable. For example, someone with a statutory interest, financial, or recreational may all be referred to as stakeholders. This is a large and diverse group of people, all of whom may want input in Lake management.

This thesis is an attempt to follow and assess the transition between community-based agreements into newly designed nested, statutory plans because "Institutional infrastructure is also important, including research, social capital, and multilevel rules, to coordinate between local and larger levels of government" (Dietz, Ostrom, & Stern, 2003, p. 1909). Despite the adoption in 2013 of the Selwyn/Waihora Zone Implementation Programme (ZIP) recommendations and continued efforts at co-management, the Lake continues to fall under several different management plans and institutional stewardship arrangements. As will be discussed in Chapter 2, these different plans also reveal the variety of governance theories surrounding the management of this one location. In her book, *Governing the Commons*, Elinor Ostrom (1990, p. 23) asserts that, "a set of rules used in one physical environment may have vastly different consequences if used in a different physical environment". There have been a number of restoration programmes concerning the Lake (e.g., Whakaora Te Waihora), but the degree to which these are integrated with the various governance arrangements and frameworks of the Lake is unclear.

The newer frameworks surrounding the Lake such as the CWMS and the local ZIP attempt to guide the management of the Lake in a way previously not attempted. Due to the diverse range of interests, shared ownership, and often complicated responsibilities surrounding the Lake, Elinor Ostrom's (1990) *Design principles illustrated by long-enduring CPR institutions* has been selected as a model against which to assess the newer efforts at managing the Lake. Ostrom's design principles were developed through observation and research into CPRs that have endured for long periods of time. By comparing the frameworks surrounding

Lake Ellesmere to other resources with shared interests and ownership that have endured for long periods of time, we can work to understand the future of the Lake and also critique the work of Ostrom as her framework is either shown to be effective or ineffective.

Internationally, Pinkerton & John (2008) have led research on the processes of transition from open access type arrangements to shared or co-management of natural resources. However, the mechanics of the process of transition from one, or multiple overlapping and conflicting, management frameworks to new governance arrangements for commons has been little studied in the New Zealand context.

In order to best assess this management transition and identify key principles of the process, this thesis reviews the literature surrounding the governance of CPRs, identifying the benefits and drawbacks to co-governance, and seeks to explain impacts of community involvement on CPR management, especially the implications for Ngai Tahu and Lake Ellesmere. Interviews with stakeholders and decision makers engaged with Lake Ellesmere (and its catchment) from different parts of the governance framework help to locate the areas where the transitions are more difficult and provide a base for explaining how the process has evolved. Interviews also enable a better understanding of the cultural aspects involved in the Canterbury region, as they apply to the thesis. At a practical level this thesis is an attempt to add to the years of work and input on streamlining effective management arrangements for the Lake in the form of an effective assessment of the transition period from local community and co-management agreements to nested, multi-level statutory management, through analyses of documents, observation, and interviews. Programmes and policies concerning the Zone Committee (ZC) will be the main focus due to their potential for major impacts on the Lake, with other issues pertinent to the catchment included where appropriate.

Lake Ellesmere is used as a focal point because of the characteristics that identify it as a CPR and because there are a number of mechanisms that intersect and overlap throughout the management of the Lake. These include, for instance, an existing Joint Management Plan (JMP) between the Crown's Department of Conservation (DoC) and the tangata whenua represented by Te Runanga o Ngai Tahu (TRONT).

The decision-making processes and frameworks through which such decisions are made are part of the institutional regime examined in Chapter 4. It is this grouping of regimes that manage the Lake that the thesis seeks to compare to Ostrom's design principles. If the new

frameworks (e.g. ZIP) are found to be similar then a case can be made that the new governing framework will result in an effective and enduring management scheme for Lake Ellesmere. If the opposite is true, then it will take time to reflect on the outcomes that may occur due to the deviations from Ostrom's design principles. A future further critique of the Lake after the implementation or lack of inclusion of Ostrom's principles will be necessary, though that is beyond the scope of this thesis.

The result of this research seeks to answer three main questions:

- How does co-governance and community involvement affect CPR management?
- Is the new framework surrounding the management of Lake Ellesmere designed in a way that is consistent with relevant literature on long-enduring CPRs?
- To what extent does the origin of government rules affect the level of community involvement?

The questions will focus on the local case of the governance of the catchment of Lake Ellesmere and will be discussed in relation to the international literature on CPR management and what this specific case can add to the discussion.

Chapter 2 – Theoretical Context

2.1 Management of CPRs

What is referred to as a common pool resource (CPR), has been defined similarly by several authors. Ostrom defines a key characteristic of a CPR as being “sufficiently (large enough) that excluding potential beneficiaries from using them for consumptive or non-consumptive purposes is non-trivial” (Ostrom, 2008, p. 24), and notes that, “benefits are sometimes distributed in an unequal fashion among community members” (Ostrom, 2008, p. 27). Edella Schlager uses examples in her interpretation where, “Natural resources such as forests, groundwater basins, grazing lands, and fisheries are common pool resources. But so too are human constructed systems, such as irrigation...” (2002, p. 803). Broadly, however, CPRs have two main defining features. First, the difficulty of exclusion, and second, the subtractability of resources (Pomeroy & Berkes, 1997). Lake Ellesmere is of a large enough size that excluding resource users is difficult, and many of the resources it provides cannot be returned for others to use again. These qualities allow us to identify the Lake as a CPR and hence, apply Ostrom’s Principles as a guide to the future management of the Lake.

A major issue surrounding the management of larger CPRs is the complexity associated with their size. Lake Ellesmere includes several smaller CPRs within its boundaries and some, such as fisheries, extend beyond those same boundaries. In contrast to an open-access resource, such as an ocean, where anyone can benefit and where boundaries are more difficult to define, CPRs have defined boundaries within which to operate, even if those boundaries delineate a considerably large and difficult to monitor area. Often, defining boundaries can prove a difficult task especially when applied to hydrological catchments. In the case of Lake Ellesmere, its catchment and political boundaries, it is affected by inputs from approximately fifty kilometres away from the Lake edge. These inputs make defining the physical boundaries for the management of the CPR beyond the edge of the Lake essential, especially as many stakeholders who benefit from access to the Lake are dependent on the control of the Lake opening, the quality and quantity of inputs into the Lake and corresponding nutrients or contaminants from elsewhere. Simply defining the boundaries of the Lake CPR as its shoreline is not sufficient; it must include the entire catchment.

In order to involve essential resource users, a more impactful group of stakeholders who interact with the Lake beyond just having a casual interest and who play a role in the consequences of a CPR such as Lake Ellesmere, some links must be established. An essential resource user, for the purposes of this thesis, does not exclude stakeholders, rather, it represents those stakeholders who may have the biggest impact on the Lake. Those impacts vary depending on the stakeholder. The first link, and one of the defining characteristics of a CPR, is the defined boundary by which it can or will be governed. Since these boundaries are a key factor in separating a CPR from an open-access resource, they need to be defined in a way that makes them manageable, with rules attached that are enforceable and attainable. If there are no boundaries and a management group or institution wants to monitor or regulate entitlements or access to a resource, they have no way to enforce their wishes (Ostrom, 1990). These boundaries provide not only physical areas where exclusion can occur, but also political areas where specific groups may have an impact.

Beyond the specific use of Lake Ellesmere, CPRs and their management have been the subject of much research and debate, especially since Garrett Hardin's "Tragedy of the Commons", where he made famous the idea that, "Ruin is the destination to which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons" (Hardin, 1968, p. 1244). Hardin's article highlighted a serious issue in the late 1960s and asked questions about our management motives and our nature as human beings that we are still trying to answer today, over fifty years later. The issue of the commons, and how we as people decide to govern them, has become more and more pronounced as the environmental, social and economic impacts on and of commons have increased throughout the decades following Hardin's article.

In order to examine the governance surrounding Lake Ellesmere and the unique agreements involved with it, we must first understand the broader literature surrounding the governance of CPRs throughout the world and what strategies have been successful or ineffective in solving Hardin's "Tragedy".

2.1.1 Entitlement and Resource Rights

As CPRs differ, so too do their entitlement schemes. The very defining quality of a CPR, the difficulty of excludability, deals directly with the rights of users (Schlager and Ostrom, 1992). This variability provides an important aspect for CPR management because deciding *who* is entitled to *what* can be the start of user rights and appropriator participation. Entitlements

are considered to be the rights a user could have, not necessarily what they should have (Leach, Mearns, & Scoones, 1999). Entitlements are also a way of legitimizing ownership and represent, “a set of alternative commodity bundles that a person can command in a society” (Sen, 1984, p. 497). These rights can be considered either legal or moral. Some types of entitlements exclude certain management strategies. For the case of Hardin’s pasture, the entitlement to the resource is not well defined and so each individual user seeks to maximize their personal benefit to the detriment of other users. This detriment also works against the individual. For the purposes of this thesis, the concepts of rights and entitlements are used interchangeably and relate to the broad set of explicit or implicit claims, recognized or not, to access, use, manage, control, appropriate or transfer common pool resources.

A resource user of a CPR, known as an *appropriator*, is anyone who ‘removes’ units from the resource or subtracts from the resource by adding something. For example, an appropriator may remove fish stocks or water but can also benefit from adding to the resource. A resource user who adds to the care of the resource, like planting native trees or improving irrigation, is called a *producer*. Much of the literature focuses on the types of CPRs that have local producers who manage and improve their resource for their personal benefit but also for other appropriators. This is no coincidence, and the literature shows that producers play an important role in CPR management. Ideally, and most effectively, the users would be both producers and appropriators. Who is entitled to the resource and who will take responsibility for being a producer often differs and how entitlements are determined becomes problematic.

For Hardin’s pasture and many other CPRs, the resource rights or entitlements are not defined well enough, or at the least, not effectively. If some rules do exist they are very difficult or impossible to enforce amongst the many appropriators involved. Producers and CPRs also fall prey to *free-riding*, when an appropriator benefits from the resource and improvements from the producer because they cannot be excluded from the resource. As Ostrom puts it, “whenever one person (appropriator) cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort” (1990, p. 6). This is a major issue whenever confronted with a CPR. The ways to handle free-riding vary depending on the relatively unique nature of the situation.

For some CPRs, entitlement is spread across many stakeholders including recreational users, visitors, and commercial interests (e.g. commercial fisheries). Some of these entitlements are legal, some are assumed, and some are inherited. These entitlements have been handed down through families, economic transactions and even court settlements. Determining the owner of the resources is only one step to understanding entitlements. This question is more accurately answered through determining *who* is entitled to *what* and *when*. There is a distinct group of appropriators who make decisions on certain CPRs that choose to exclude stakeholders or interest-based communities for different times or reasons. However, it is important to discern who those appropriators are, what they are entitled to, and whether or not they are or will become producers. It is apparent that in most cases all of the appropriators are not involved with the government or else they would not require the recognition of the government to operate as Ostrom (1990) discusses in her book *Governing the Commons* and as will be discussed later in Chapter 3. In a representative democracy, one or several representatives are supposed to speak for their constituents, but this does not mean the constituents are all involved directly. It has been the design in the past, though, for governments to implement top-down management approaches (Prystupa, 1998) and where there are systems of legal appeal available in the planning process, government approaches may be challenged in the courts.

Simple set-the-limit plans and adjudication management strategies, though, have not proven to be the best way forward for complex resources. Even as far back as 1986, Robert Sugden, based on the economies and situations of the times, wrote,

“Most modern economic theory describes a world presided over by a government (not, significantly by governments), and sees this world through the government’s eyes. The government is supposed to have the responsibility, the will, and the power to restructure society in whatever way maximizes the social welfare; like the US Cavalry in a good Western, the government stands ready to rush to the rescue whenever the market “fails,” and the economist’s job is to advise it on when and how to do so. Private individuals, in contrast, are credited with little or no ability to solve collective problems among themselves” (Sugden, 1986, p. 3).

By focusing on only the governmental top-down and/or regulatory approach, there is an absence of more community-oriented inputs and the local communities and involvement of other stakeholders is often overlooked or ignored. As Ostrom states on the opening page of

her book, “neither the state nor the market is uniformly successful in enabling individuals to sustain long-term, productive use of natural resource systems” (1990, p. 1). Ostrom highlights that the two extremes portrayed most often in Western political democracies; total public control on one hand and full private control in the other, are not on their own a successful solution to CPR management. And yet, we do need some governing body to be involved and we do need land owners and other stakeholders within the area to play a role in developing policy, transitioning from mere appropriators to producers and finding ways to police their plans, all while realizing it is close to impossible for everyone to be a member of all the decision making groups all at once.

It is evident however, that the answer to our resource management issues does not rest in the poles of full exclusivity or total public entitlement rights. As Thomas Dietz puts it, “no single broad type of ownership – government, private, or community – uniformly succeeds or fails to halt major resource deterioration” (Dietz et al., 2003, p. 1908). In his case, he is referring to forest management in several different countries, but his findings still align with Ostrom and Agrawal, in that entitlement plays a major role in the solving of CPR management and that full ownership by either private or public factions as a result of that entitlement is not the best way forward. Ostrom points out that there are two major risks involved when a community is entitled to the full ownership of a resource: the resource is destroyed due to a lack of exclusion, or the costs of setting allocation limits will be too high (Ostrom, 1990). The aforementioned authors identify an aspect not previously mentioned; that a community cannot often fully own a resource and prevent its deterioration. This is a subtle call for monitoring oversight and also is a basic form of evidence that some communities may be able to handle larger responsibilities more sustainably than others.

2.1.2 Institutions

The setting aside of public and private extremes within the research literature has established what Agrawal refers to as the “New Commons”, where, “the increase in the stakes of communities has meant a resurgence of interest in community and communal management” (2003, p. 245). This resurgence could not have been possible if one person were to own a large resource via some entitlement, or if the government were to make all the decisions about a publicly owned CPR that did not involve the local knowledge.

To help with the integration of communities and other stakeholders into the decision making process, “Institutions come into being as consequences of actions of humans and allow

specific individuals and groups to reap advantages from altered social circumstances...” (Agrawal, 2003, p. 245). These institutions play a major role in the governance of CPRs because they create forums for coordination and conflict management and are often capable of providing funding, spreading awareness, and contributing knowledge to the overall debate over resource management. Institutions with more support are often able to negotiate and make claims much more effectively than an individual stakeholder or loosely gathered groups of individuals. Often, some institutions will contribute knowledge and work outside of the traditional governing framework. More importantly, though, institutions have the capability to develop non-statutory rules, plans, and agreements that can help to manage certain resources when the government does not have a specific plan, or even during the transition period between the development and implementation of a government document.

It is important to define institutions in the context of the current research. Although in some cases the term institution may apply to societal norms or values, in the case of this thesis, an institution is considered to be an organization (that may or may not include societal norms or values) of which resource-users are a part. Some such institutions may foster discussions with and between Non-Governmental Organizations (NGOs) and private land owners before the government is involved. Their plans can tend to be non-statutory in nature, although they can play a role in forming statutory policy.

As much of a role that institutions could possibly play, they do pose some possible negative qualities. Their written plans are often not legally binding and require some backing from the government and, “the proliferation of institutions has sometimes led to conflict and competition rather than cooperation” (Larson & Soto, 2008, p. 225). Institutions also can, by nature, act to remove smaller interests and “disadvantage marginal and less powerful groups” (Agrawal, 2003, p. 257). This possibility suggests that even institutions, like governments, often need a check on their power or influence. For resource management, checks and balances of institutions, stakeholders, and appropriators can often come in the form of monitoring.

2.1.3 Monitoring

In order for an institutional, local, or government plan to be successful an effective monitoring system is essential (Ostrom, 2008). The same is true for any resource management plan. If a plan or programme is implemented and there is no way to tell if

appropriators are following the rules or if there is improvement during the course of the implementation, all the work done on the policies could be for naught. One way to monitor is for the appropriators to monitor their activities amongst themselves, and it is argued that, “commitment and monitoring are strategically linked and that monitoring produces private benefits for the monitor as well as joint benefits for others” (Ostrom, 1990, p. 59). No matter the strategy taken, any rules without monitoring cannot be enforced, nor could there be knowledge generated for further deliberations.

It is easier to determine the best way to monitor a resource if money were not an issue because any path could be chosen on an unlimited budget. But as is always the case, there are limited funds for projects and limited time, resources and people to take care of all the monitoring. Gibson (1999) asserts that perfect monitoring would be so expensive that it would not be able to be completed. This means there must be an effective strategy developed during and after the planning process to observe and enforce the rules in a cost effective, legitimate way.

How is an institution or government to keep monitoring costs down? One answer is to monitor size, as the larger the resource, the larger the group of people who probably need monitoring and the more area of resource that needs management (Agrawal & Goyal, 2001). When an area is large it is logically more likely to be difficult to exclude all appropriators or free-riders and (like many CPRs), it causes unreported usage to increase and resources to be lost (assuming free-riding is occurring). To keep costs down, larger groups could be split up, or they could try to keep the users to as small a number of people as possible in order to make it manageable, say, in the form of small resource user groups. That would, however, not work or be highly difficult to enact for larger resources where there are higher numbers of users who put managers in the situations that would require a cutting-down of resource users anyway. This could then lead to a divvying up of the resource itself into smaller sections for monitoring, but this would likely not result in lower costs although it could help with monitoring accuracy.

No matter the size, though, it is important that those who are entitled to the resource play a role in its monitoring. This inclusion of locals and/or stakeholders and users facilitates ensuring the monitoring programme is perceived as fair, active and adjustable if necessary (Ostrom, 1990). When done in this way, amongst local appropriators, it adds a moral

legitimacy to the process, one that is consistent with the CPR and community in question (Pinkerton & John, 2008).

2.1.4 Community Involvement

As Ostrom (1990, p. 21) asserts, “As long as analysts presume that individuals cannot change such situations themselves, they do not ask what internal or external variables can enhance or impede the efforts of communities of individuals to deal creatively and constructively with perverse problems such as the tragedy of the commons”. For this thesis, a community is considered to be the appropriators of the CPR. Communities, when desirably and financially equipped, can deal creatively and constructively with resource management at least on some levels, and beyond that, they have a major role to play in the governing of the commons. A community of one person dealing with a resource the size of the ocean could not be expected to be effective as that person, barring unlimited personal wealth, would need to cede much of their managing of the resource to another entity (e.g. a government or international partnership of governments). The presumption toward effective community involvement stems from the idea that, “markets or private property arrangements and public ownership or state management do not exhaust the range of plausible institutional mechanisms to govern natural resource use” (Agrawal, 2003, p. 244). Specifically for the purposes of this thesis, the focus will be on the transition from these community and local groups into the written, statutory documents of larger governing bodies. If communities are to play a role in a system where neither the state nor private industry dominates, there must be a period and process during which the community transitions their ideas, rights, monitoring, or management into the larger plan. It is important to explore the point where the community involvement becomes the government in and of itself, and if it is the origin of the government rules that matter to community involvement, and for example, whether those rules come from the top or the bottom.

Communities do vary, however, and there are some cases where small, local groups do a poor job of maintaining a resource and larger nomadic groups are more effective, and as discussed previously we cannot rely on location as the only definition of a community (Agrawal, 1999). By falling into this locational trap, false conclusions may be reached about how communities work and interact. The same is true for looking at communities that are only based on a homogenous social structure. Today, there are online communities, communities of religious believers or non-believers and even tribal communities that share

social norms; all members of which may be located in several different places some distance apart. More commonly, there are communities in one location made up of people with many beliefs or lifestyles. For the sake of this thesis, the focus remains on the relationships of individuals to the resource. This relationship forms its own sort of community, and one that is important in the process that may mold a community to its resource at least on some level, instead of the community existing in other forms (as previously discussed above and further discussed below); like location, interest, or belief systems. Looking at all aspects of a community may reveal some large differences.

However, “highly differentiated communities may be able to take steps to use local resources sustainably” (Agrawal & Gibson, 1999). It is possible for people with shared norms (e.g. eating healthily or treating the environment with care) to have an overall positive impact on resource management by prohibiting certain actions and having better communication amongst themselves (Agrawal & Gibson, 1999).

Communities, which often vary in their spatial, social, and behavioural constitution, must be included in the resource management process if they share in the appropriations of the CPR. Each community is often as unique as the resource it is attached to. Communities are important to involve in the process because they are often the appropriators *and* producers of the CPR in question, they have a stake in its success and they bring a local knowledge set to the policy discussions. The relationship between a top-down policy written by outsiders, that perhaps must be challenged in court if it is to be changed, is much different from a local policy built in part by the local factions and community members who are most involved with the CPR. When and if resource appropriators design their own rules and take part in monitoring, Ostrom (1990) believes that the experience of such deliberations and activity can allow future rules to be more effective and realistic.

It may seem that community management could result in more effective management of a CPR, but avoiding pure private or pure public ownership and monitoring is only part of the problem - there are some weaknesses and possible failures to a community managing an entire CPR on its own. Two major downsides exist to full community management. First, the resource may be destroyed because no one can be excluded (possibly due to lack of funding or participants) and second, the costs of monitoring and allocating will be too high to manage (Ostrom, 1990). Berkes (2006) also adds that there are existing competing groups within communities, the resource may not fit the spatial area of the community and

that by defining the resource management at the community level it leaves many other institutions and people out. In other words, if a community were to handle all of its own resource management, our aforementioned nesting of vertical and horizontal levels would not be fulfilled. More directly, “research has shown that community-based resource management is vulnerable to external drivers and is often insufficient by itself to deal” (Berkes, 2006, p. 1702) with all the issues surrounding a CPR.

All these negatives of community involvement now call into question the three main ways we have discussed managing a CPR: with public, private, and communal management. Individually, each pose their own problems in management, but with the right links between the vertical and horizontal relationships and between the public and private sectors, they may begin to form a much more supportive network that enables a more effective management strategy. The community may be a great place to start for managing CPRs, but it also must include higher levels of governance and institutional or horizontal support that can help to bolster the local aspects (Berkes, 2006). Defining those communities that have a role to play in managing the CPR is important, as location, interest, and function may involve different groups entirely. However, developing an effective management arrangement that facilitates people’s interactions is also extremely important.

For local communities to play a role, it appears it must be within some governing framework. For the government to be effective, it similarly appears it must include some private stakeholders, community members and local knowledge of the resource and social networks. This nesting of relationships both vertical (between levels of government) and horizontal (amongst stakeholders) must be intertwined in the right way, or the nest will not support the necessary weight (Ostrom 1990).

2.1.5 Co-Management and Co-Governance

One of the more prominent approaches to the issues surrounding resource management in recent years has been to develop a co-management strategy between private, public and/or communal factions involved with a specific CPR. Berkes (2008, p. 1692) describes co-management as, “the sharing of power and responsibility between the government and local resource users”. Co-management is a strategy of resource management different from what we have previously discussed, as neither the government, nor private companies or individual communities take full authority for a resource, but those responsibilities are shared amongst the different entities. Co-management may be between a government and

any other combination of two or more of the parties, or a private company and a community. The strength of a co-management arrangement is that local, public, and scientific knowledge could, theoretically, all be used in one management situation.

In theory, co-management parties work together to create a management approach or plan, to monitor and enforce the plan, and to follow up in coming years. Co-management plans also often allow for a collaborative learning process over time, yet they may or may not require it. Berkes (2008) believes that if those involved in co-management are not learning along the way, either through monitoring or adjustments, then it is a failed experiment. This 'learning-by-doing' process is sometimes referred to as adaptive co-management, which is a "flexible community-based system(s) of resource management tailored to specific places and situations, and they are supported by and work with various organizations at different levels" (Folke, Hahn, Olsson, & Norberg, 2005, p. 448).

There is some variation in the amount of power and authority that governments are willing or able to share with local communities and other stakeholders. Pomeroy and Berkes (1997) developed a simple figure to highlight key terms and show where those strategies fit on a graph of high to low government involvement, inversely related to high and low community involvement. As the exchange of information between entities improves, the role and empowerment of the community rises. The hierarchy in Figure 1 does not advocate for a certain level of involvement, but shows that there is a large range of options ranging from just informational exchange to joint action and partnership.

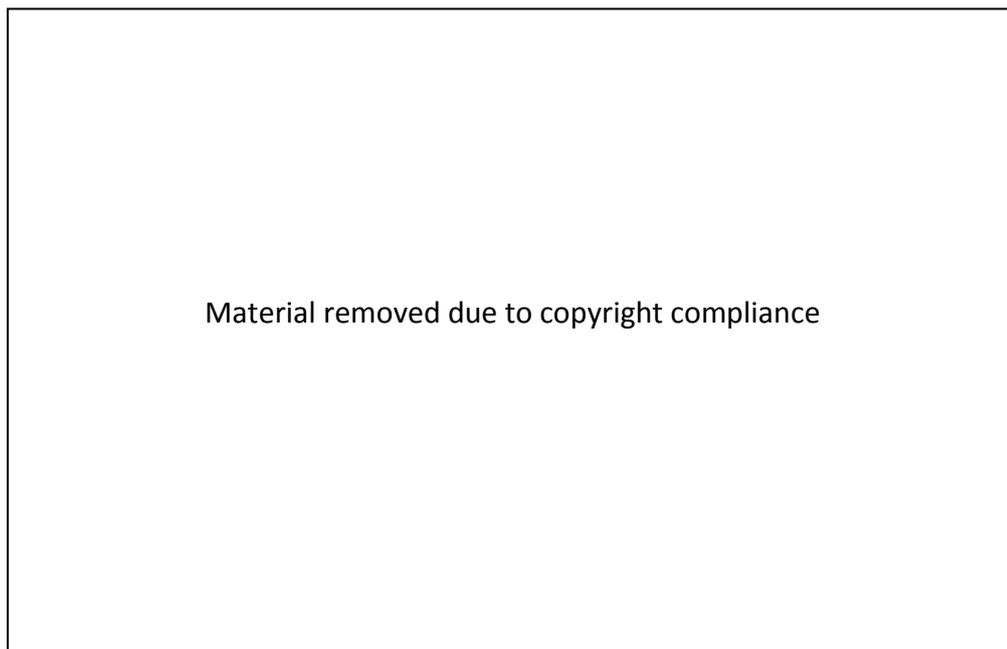


Figure 1: A hierarchy of co-management arrangements (Berkes, 1994)

As several authors have highlighted (Ostrom, 1990; Pomeroy & Berkes, 1997), there is no specific management plan for every resource, each one is unique in its strategy and some may share certain characteristics with other solutions. This is also true for the amount of government involvement and how much power and responsibility is to be shared amongst different factions in a co-management situation. For some locations, where the community infrastructure, funding, and participation is weak, it may be beneficial for the local government to retain most of its governing power and responsibility, whereas on the contrary, a strong, knowledgeable, and well-funded community may be able to take on more of a management burden. Some communities already have institutions and networks set up for this type of co-management, where others may need several years to develop the proper setting. Pomeroy (1997) offers several examples of time scales for establishing the necessary networks for co-management on a localized level ranging from three to fifteen years. With this amount of time necessary for a community to organize itself accordingly, co-management must be a process rather than a single one-time decision. So, a major factor in the ability of a community to have sway in a co-management arrangement is whether or not that community can actually play a role in controlling the resource.

Co-management has evolved as an alternative to regulatory approaches towards unsustainable resource management, allowing public institutions to seek out collaboration to manage conflict and form partnerships amongst local members. A community with an abundant resource may not need this strategy, but those that have dwindling resources may seek a solution. This is a much different approach from older policies where the government sets the environmental loads or limits, and locals confront them in a court of law. Co-management also alludes to the growing amount of people involved with resource decision making and the larger shift in resource management for example, from easy to handle point-source pollution to much more complex and difficult to manage diffuse-source issues (Parker, Margerum, Dedrick, & Dedrick, 2012). It is easy and effective to shut down a point-source with one government law or load limit, but managing sources that cover entire watersheds and span generations is a much more complicated task. In many situations, some of the problems date back through generations of nutrient or pollutant input into catchments, and many of these will take several generations into the future to correct. This is an example of diffuse-sources on a large scale that must be managed through a number of strategies. The strategies taken, however, may differ in their community involvement and/or success rates.

Co-management also acts to fill in weaknesses discussed previously with the different rights and management strategies. It allows local communities to use the government to better exclude and regulate access to a CPR (Pinkerton & John, 2008) and allows larger governments to gain some local knowledge and input that is often lacking in their policy. It also allows for the development of legitimacy, which is an integral part of resource management, especially when different levels begin to mix.

Legitimacy is the social, scientific, and regulatory acceptance of a set goal, plan, or policy by those who must abide by the rules. Co-management is an excellent way to achieve legitimacy because, “to be considered legitimate, regulations must be perceived to be effectively and fairly enforced, and that the results of regulations are also perceived to be effective and fair” (Pinkerton & John, 2008, p. 681). If co-management is included, and used properly, it gives legitimacy to the policies developed because of the collaboration between private, local, and government authorities. If a statutory document is written that lacks credibility, either scientific or social, it can signal a poor future for compliance with the plan. With co-management, legitimacy can be obtained because local communities can publicly declare that their ideas and desires be included in the formation of documents consistent with the science and public discourse (Pinkerton & John, 2008).

Another term similar to co-management, yet whose definition is often blurred with it, is *co-governance*. For this thesis, the definition used is a combination of several authors, and most importantly, it is a definition that can provide a contrast to co-management. Co-governance is an agreement between parties to mutually accept responsibility to govern a resource or CPR. Co-governance relies more on power sharing amongst entities, where co-management can occur between those who have more or less power. The term “governance” has a meaning associated with the implementation of something other than top-down control (Folke et al., 2005), where the actual power to make decisions is shared. Co-governance consists of the collaboration between different actors (Berkes, 2008). Although co-management may appear in some situations, it does not necessarily mean that the government is power sharing, or identifying a stakeholder as an equal in regards to the CPR decision making process. There is also doubt over whether or not governments, which exist for the sake of gathering power and resources, would “be willing to devolve some of their own powers to local governments” (Lele, 2000, p. 2) in co-management. But, if co-governance is established, then that power is already willingly shared, if not fully ceded in some areas to another entity, and co-management can occur on a platform where the

question of power has already been addressed, considering an agreement has already been put in place. Co-management is best summed up as, “a problem solving *process* (rather than a static arrangement)” (Berkes, 2008) where co-governance is more of a static, written agreement formulated out of a slightly different theoretical sphere. The interaction between the two is as important as their differences. Co-governance is more broad, seen as a way beyond the traditional state-centred model and co-management is often more local, seen as an applicable solution. Co-governance may set up the framework for policy or action, but management is the carrying out and implementation within that framework. Both play a role in the literature and as we shall see, both of the ideas are used in the management of Lake Ellesmere.

For all of these co-management and co-governance variations and subtle differences, none would be effective without, “flexible, multi-level governance systems designed to enhance institutional interaction and experimentation to generate learning” (Berkes, 2008, p. 1699). For either agreement to be effective they must involve several stakeholders, interaction between various levels of government both horizontally and vertically and be designed in a way that allows for learning and adaptive decisions to be made in the future.

The weaknesses of co-management and/or co-governance are that they often enforce the status and control of the local elite, reinforcing their hold on certain resources (Berkes, 2008), and the amount of power sharing can have a large range (See Figure 1). If a stakeholder, for example, a large publicly owned company or influential interest group, were to use its local power and pull to influence decisions more than other stakeholders involved, it may still leave out some members who had trouble with their input before the co-management agreement was even decided. There may even be specific people within communities that benefit from the co-management design by trying to grab the newly available power away from the government, and in turn, the public. This local social network within communities is important to discuss and evaluate. Within New Zealand, this is especially important, because the debate over inclusion, especially in regards to Maori and/or tangata whenua is still an often contested issue.

2.2 Nested Governance Systems

A nested governance system is another strategy taken to deal with resource management issues. Nesting allows for subsidiary decision making and allows different levels of government governing different parts of the country to collaborate (Ostrom, 1990). The

actual “size” of government does not necessarily have to change. The effectiveness of a nested system depends on its subsidiarity and whether or not problems can be dealt with at the smallest possible level that can deal with them. For example, a community can make decisions about a small stream fully enclosed in their town so that a regional council or central government group does not have to. Without this concept, the nested system becomes much less effective. Although it can occur, and some may lobby for it, nested governance is not the growth or multiplicity of government power, it is merely the *rearranging* of that government structure or power. This is the key concept of a nested system, and one that must be re-evaluated throughout the process of implementation, much like adaptive governance, if there is to be long term success.

Nested governance allows for broader plans to solve problems through local knowledge and input, and it allows local communities to play a role in the decisions on larger catchments or areas. Today, “the emerging role for the state in regional governance is to put in place coordinative frameworks and set standards that specify a range of expected or required policy outcomes” (Lockwood, Davidson, Curtis, Stratford, & Griffith, 2009, p. 170).

Lockwood et al.’s identification of the role of government in this situation could be fulfilled through a nested governance system.

Nesting smaller, lower-level governance groups is beneficial because it is more likely for those groups to develop a trust amongst one another as often there are pre-existing relationships already involved (Marshall, 2008). As a group gets smaller, its ability to perform collectively increases (Baland & Platteau, 1999). When trust is established on lower levels, it can continue out both horizontally and vertically. As smaller groups establish goals and agreements, higher level groups can support those ideas. If a small group knows it has the backing of a larger plan or council, then it can act to spread horizontally amongst the extended community and stakeholders. For example, this is possible because a local council could not assure the local level monitoring of a CPR without some monetary funding or physical support from higher up. When this support is present, it allows others on lower nested levels to buy into the plan because they know it is backed either through statutory policy, funding, or both. Without vertical support, a nested system cannot spread nor continue to work effectively. In this way, nesting is beneficial throughout the hierarchical scheme of the system.

Critiques of nested governance often cite the growth of too much government, and wasted, often repeating plans, policies, and efforts towards the same thing (Marshall, 2008). This may be true in some circumstances, but the design of the nested system must be taken into account when discussing the failures of the theoretical. Nesting, when designed poorly can add overlap and excess to a governance system, but when done correctly, can streamline governance and allow decisions to be made on more local levels. There is potential that local co-governance can become confused with co-management as the tools for delivering co-governance may be plans that are effectively a form of implementing co-management. As will become apparent, the nature and relationship between local co-governance and co-management may be significant in the transition from a single dominant governance body to a co-governance and co-management situation.

The challenges associated with this transition are especially evident in New Zealand, where, “the failure of successive New Zealand governments to recognize the rights and interests of the Maori as acknowledged in the Treaty, and to ignore and dispute Maori interpretation of those rights, has been the source of ongoing political tension...” (Lane and Hibbard, 1990, p. 178). The tension associated with this relationship makes the design of a nested system in a traditionally western-dominated decision making system that includes indigenous peoples particularly difficult due to the varying rights associated with those peoples (e.g. the Treaty). As discussed in Chapter 4, varying arrangements between resource users both indigenous and otherwise provide conflicting authority and responsibility around one CPR, in the case of this thesis, Lake Ellesmere. It is outside the scope of this thesis to delve into the indigenous structures (beyond the nested systems of study) due to the necessity of understanding indigenous language and acceptance by indigenous people, both of which, given the time frame of this thesis, would have been difficult and likely inappropriate to attempt to gain a full understanding. The research has therefore followed a more traditional western analytical framework while focusing on how indigenous relationships may impact on that framework.

2.3 Conclusion

Given the complex nature of CPR management and the varying definitions of associated concepts (e.g. entitlement) the thesis will not attempt to develop new specific definitions, rather, the focus will remain on the relationships of communities to co-governance and co-management of a CPR. Due to the unique nature of New Zealand’s natural resource history

and the case of Lake Ellesmere (see Chapter 4) the thesis can observe and analyse a new CPR management strategy that has not been used before. Comparing the common themes and designs from the literature (e.g. Ostrom, 1990) to the actual implementation of those designs provides a basis on which to answer the primary research questions.

The questions that drove this research are, generally:

- How does co-governance and community involvement affect CPR management;
- Is the new framework surrounding the management of Lake Ellesmere designed in a way that is consistent with relevant literature on long-enduring CPRs; and
- To what extent does the origin of government rules affect the level of community involvement?

In examining these questions it was decided to focus specifically on the process of decision-making transition from engaging community and local groups into the written, statutory documents of larger governing bodies. Additionally, the theoretical literature provided a comparison to the case study and a standard against which to compare the new co-governance and co-management policies being sought by local communities and their respective governments.

The next chapter sets out the methodology used to address these questions.

Chapter 3 - Methodology

The questions that drove this research (Chapter 2) required a rich understanding of the issues and processes involved. From the outset a case study approach was chosen because it provided a better opportunity to examine the complex nature of a CPR, and the processes of community empowerment, through direct observation than would alternative – post-hoc assessments or comparative studies based on more general criteria and statistically valid survey techniques (Yin, 2014). The range of agreements and governance/management processes occurring (Chapter 1) made Lake Ellesmere and its management scheme a convenient (close to University) case that was also identified early on as particularly rich, with several layers of communities and governance frameworks, but unclear inter-relationships and complex interactions. To gain a more complete understanding of the case, several primarily qualitative methods were used in order to gain more perspectives, including; institutional analysis, document analysis, observations and interviews. In such a complex case, qualitative methods were beneficial because they, “help provide rich descriptions of phenomena” and, “enhance understanding of the context of events as well as the events themselves” (Sofaer, 1999, p. 1102). The case study was also an effective tool for contributing to general knowledge because, while each situation is unique, there are (as Ostrom (1990) has demonstrated) several common themes of successfully managed CPRs that can be drawn from comparing across other cases.

3.1 Case Study Approach

A case study was chosen rather than other research methods for several reasons. Most importantly, in the case of CPR management, the issues involved cover so many disciplines that it would be difficult to combine all of those in an effort to analyse a CPR case without having to do many individual controlled experiments with purely quantitative data and whose very controls might invalidate their applicability to the practise of commons management. CPR studies in the literature most often tend to be case studies, as breaking apart small pieces of a CPR study would mean not studying the CPR in its entirety at all. Case studies in general can involve numerous levels of analysis and different data collection methods like interviews and observations (Eisenhardt, 1989). Using only one data collection strategy or studying only one aspect of a CPR would leave out valuable information. As complex as CPRs and their issues are, it is worth noting that, “The highest levels in the learning process, that is virtuosity and expertise, are reached only via a person’s own

experiences as practitioner of the relevant skills” (Flyvbjerg, 2006, p. 223). Unless one is actively engaged in action research or in reflecting on one’s direct experience of being involved in the management of a CPR, one is largely left to less ideal mechanisms of data gathering and interpretation. In the context of the current research this meant interviews and participant observation became critical tools. But the framing of the investigation drew on Ostrom’s (1990) design principles. The extent to which the management relationships could be matched to her framework was expected to provide insights as to the nature of the transitions, if any, occurring.

3.2 Ostrom’s Design Principles

In seeking ways to develop successful management systems for CPRs Ostrom (1990) offered a set of what she called, “*Design principles illustrated by long-enduring CPR institutions*”, which can be used as an analytic guideline for arranging management systems around CPRs. Her eight principles can provide the basis for a successful CPR management strategy because they had been found amongst several enduring CPRs in the past. Again, this is not a blueprint for a CPR as each situation differs, but it is a valid set of principles that can help guide the designing of CPR management plans that fit within Ostrom’s scope. Each principle is briefly discussed below.

Clearly Defined Boundaries - A CPR by nature must have boundaries, but it is important to make them clear. These boundaries include both the physical aspects and appropriator rights. If there are no boundaries, free riding becomes more likely and to have no boundaries at all would mean the CPR is actually an open-access resource. This would pose a much more difficult situation to manage and monitor.

Congruence between appropriation and provision rules and local conditions – This principle is directed to the local level, so that rules about allocation, infrastructure, and environmental aspects are tailored to the specific localities instead of a larger region.

Collective-choice arrangements – As a plan moves forward, the people most directly involved with the land and the decision making process must be able to use their vantage points to make changes or group decisions on their localities.

Monitoring – Monitors must be accountable to appropriators, or must actually be appropriators involved in the process.

Graduated sanctions - Penalties for those people who break the rules of a CPR should be disciplined on a graduated scale depending on the offense. These punishments must not be conducted by external monitors, but by those appropriators and producers involved internally.

Conflict-resolution mechanisms – When conflict amongst appropriators arises, there must be a forum or plan to settle the differences in an effective way.

Minimal recognition of rights to organize – The ability of appropriators to create their own institutions must not be challenged by external authorities or government.

Nested enterprises - For CPRs that exist within a larger system of governance or environment, there must be a nested system which allows for such autonomy and discussion that does not clash or contradict other policies in the system.

These principles are found to be aligned in sustainably managed CPRs whereas the, “difference in the particular rules take into account specific attributes of the related physical systems, cultural views of the world, and economic and political relationships” (Ostrom, 1990, p. 89). The principles above provide a framework to examine the current situation surrounding the governance of Lake Ellesmere and its catchment.

The principles do fall short in some instances in that they do not account for CPRs that have major differences in allocation rights, world views, ethnic backgrounds and major changes in behaviour, among others. These parts of a CPR must be aligned, at least on an agreed baseline level before discussing the management plan. An understanding must exist, especially in the case of Lake Ellesmere, which has two notably different world views involved amongst the community between the Maori and Pakeha (Maori name for a non-native New Zealander), which is an issue driving the current research. It is possible that more powerful interests can derail these principles by averting a consensus on different issues. So, although differences do exist and competing ideas are common and healthy to the process, some basic standards must be assumed for Ostrom’s principles to be applied to a system.

Assessing the situation against these principles is a form of institutional analysis.

3.2.1 Institutional Analysis

The first step to evaluating the policy surrounding the governance and management of Lake Ellesmere was to recount a short history of the policies and understand the evolution from earlier plans to the current model. It was also pertinent to explain to the reader the hierarchy, nesting, and role of each type of plan, policy, or agreement that applies to Lake Ellesmere. This evaluation started broadly on a national level and moved closer to the case in an attempt to discuss the most relevant policy within the targeted scope at a more detailed level.

In order to analyse the institutions surrounding the Lake and its policy context, Ostrom's *Design principles illustrated by long-enduring CPR institutions* (1990) were used to assess the viability and possible lifespan of the current governance arrangement. These principles are not a 'cookie-cutter' answer for every situation, but were used to provide insight by provoking questions about how the arrangements observed worked to address the principles found and if they differed, suggesting the need to explore why that might be the case. As discussed in the previous section, these principles argue that clearly defined boundaries, congruence between appropriation rules, collective choice arrangements, monitoring, graduated sanctions, conflict-resolution mechanisms, minimal recognition of rights to organize and nested principles all are characteristic of a long-standing CPR institution (Ostrom, 1990).

3.2.2 Document Analysis

Included in a case study is the analysis of documents pertaining to the case. Specifically for Lake Ellesmere this included government documents, informational hand-outs, presentations, and online material. Specific documents were selected based on recommendations from participants that these were useful for the understanding of different institutional arrangements and scientific results and also for better understanding of participatory involvement, like relevant local focus group results. This ranged from documents essential to the founding of New Zealand such as the Treaty of Waitangi, to current drafts of new implementation plans and policies. Scope was a major factor and acts and other documents that were not directly involved with the current iteration of Lake management were not reviewed as in-depth as some of the newly released, more directly relevant documents such as the ZIP and new Water Conservation Order (WCO). In the Results Chapter, several documents were analysed for this research (see Appendix E).

The document review was undertaken with three main goals in mind. First, the review was performed in the interest of understanding the historical and current events, acts, policies and strategies that surround the management of the Lake. Reviewing these documents also helped to identify the essential elements that more directly manage the Lake and that should be taken into consideration for further in-depth review in this thesis. Second, the review sought to identify the presence of Ostrom's design principles throughout the management scheme of the Lake. Third, depending on the presence or lack of Ostrom's principles, the review hoped to identify where the differences occurred and how the unique setting of the CPR changed the application and understanding of the principles.

The document review served as a base on which to understand the management of the Lake, how it compared to other long-enduring CPRs as identified by Ostrom (1990) and provided material that helped to develop further methods such as interviews. Document review also sought to identify policies that may inhibit or hinder the acceptance or implementation of Ostrom's principles. A document review was essential to the thesis as a substantial amount of historical information was needed to understand and elucidate legally binding portions of Lake management goals, policies, and strategies.

Documents were analysed to locate and highlight specific issues (e.g. Ostrom's Design Principles). The strength of the document analysis was the availability of information in the public sphere and the ability to find official points of view, as well as that of individuals and stakeholders who had made their views known. Limitations to the document analysis were mainly based on time constraints. There was no digging for unofficial correspondences or the historical build up to the broader, older plans or policies surrounding the Lake that were not directly involved in its current management. There was also a lack of information comparing other Zone Committees (ZC) in the region to Selwyn/Waihora, which could have added needed contrast and comparison, largely due to this catchment being somewhat ahead of most of the others in process and the lack of significant amounts of information or analyses of the highly contentious contemporary situation at the Hurunui River Catchment.

3.2.3 Observation

Observation was directed at the targeted governance transitions being employed by the stakeholders, mainly at Selwyn/Waihora Zone Committee meetings between March 6, 2012 and November 6, 2012. Structured observation was used when a specified subject was known because this had been found "invaluable in providing investigators with a direct

experience of the ways in which actors interact in a setting” (Sofaer, 1999, p. 1111). The goal of the observations was two-fold. First, there was an emphasis on the acceptance or rejection of Ostrom’s Design Principles as it applied to the management of the Lake and its catchment. For example, if boundaries, a principle identified in the document review, were neglected or accepted in a meeting, it would help to further identify that principle’s presence in the management of the Lake. Second, a strong emphasis was put on observing the relationships that the Treaty influenced. For example, this may have been in the form of a cultural discrepancy, a side-effect of a Treaty-driven policy, a culturally-driven disagreement, or a situation where the cultural shift was beneficial to the process on a micro level between participants or in a macro level as it pertains to governing the Lake. Meeting notes were taken by the researcher and official minutes and hand-outs were evaluated against the same criteria. Difficulties with observations often came down to the movement of the ZC into ‘in-committee’ time, which excluded the public from what seemed to be the more difficult to solve issues. Time also played a role in meeting attendance, as only a short amount of time relative to the entire Zone process was observed, and only at the ZC level. Meetings observed were during 2012, where much of the discussion focused on limit-setting for the sub-regional chapter of the LWRP. The Zone Committee was established in October of 2010, so observations must be taken in context and with an understanding of the scale involved. However, the limit setting process for the LWRP was the most significant process in terms of controlling what land and water uses would be allowed or controlled, and how, within the catchment. They therefore focussed the ZC discussions to the nub of issues over rights and their management that are at the heart of this research.

3.2.4 Interviews

Interviews were also included in the study and focused on those located in different places both horizontally amongst stakeholders and vertically through public officials. The interviewees were chosen based on their relationship to the Lake via the ZC or other involvement, and although an effort was made to have equal numbers of cultural representatives from both Maori and Pakeha, availability of ZC runanga (tribal units) representatives proved difficult. Only two iwi members were interviewed, although several other interviewees tried to communicate iwi views. The selection of interviewees was based mainly on involvement in the Selwyn/Waihora Zone Committee due to the ZC’s direct role in developing recommendations for the governance of the Zone and consequently, the Lake. Further, several interviewees were selected due to their historical involvement with the Lake

both professionally and personally. Eight ZC members, one Lincoln University (LU) professor and two staff members of ECan (EC) were all selected based on the above criteria to be interviewed, for a total of eleven interviews (see Figure 2).

Figure 2: Interviewee Categories

*Eight Zone Committee Members (ZC): Included members and residents with ties to the dairy industry, agriculture, consulting, local government, academia, regional government and iwi.

Two Environment Canterbury Staff (EC): Interviewees consisted of two ECan members; one administrator and one scientist, both familiar with the Lake and its environs.

One Lincoln University Professor (LU): Professor with scientific and local knowledge of the physical and historical aspects of Lake Ellesmere.

*In several cases, interviewees admittedly wore several 'hats' and went to a great effort to identify which hat (e.g. role) and perspective they were using to answer a question both in personal interviews for the research and during ZC meetings.

The interviews asked questions surrounding the transitions between local groups and institutions to larger plans and policies. The questioning was broken up into four main parts: an introduction of the subject's involvement with the Lake; a set of questions designed to identify the presence of Ostrom's design principles and with thought given to the relationship the Treaty and co-governance has had on the governance process. The questions listed included follow-up questions if an answer was not sufficient. The full list of questions is located in Appendix D. A selection concerning boundaries is shown below.

- *What is the geographical area that needs to be considered in developing a Lake management plan?*
- *What do you think about the conflicting/varying boundaries offered by different policies?*
- *How do those varying boundaries affect the policy or ZIP recommendations?*

Each interview was recorded using an Olympus Digital Voice Recorder and transcripts were transcribed to better evaluate the responses and provide a record of the interview. Full names were not used, only an identification of the interviewee's general relation to the

Lake, for example, 'ZC1', and quotes used only with the interviewee's permission. Answers to the questions have been weighed against the aforementioned design principles in an effort to complement the observations and document analysis.

3.3 Conclusion

A case study approach allowed the complex topic of Lake Ellesmere to act as a focal point for the theories and methods described above. Without a case study, a broad range of information would not have been able to be captured and assessed in the designated time of research for the thesis. Nor would information critical to the thesis that occurred before the research period have been captured. Ostrom's principles are applied to long-standing institutions that are also complex. By using a more narrow point of research and not a case study, much of the proposed comparisons would have been invalid.

Chapter 4 - Case Study: Lake Ellesmere/Te Waihora

Chapter 4 describes the historical, physical, social and legal environment of the Lake. An overview of the bio-physical Lake helps provide a common understanding of its health and environs. Chapter 4 also describes the various national, regional, and local plans and programmes that have an impact on the Lake in outcomes, control and decision-making. Though much in-depth exploration of this overview was outside the direct scope of the thesis, it is necessary to provide an understanding of the context for the reader.

4.1 The Bio-Physical Lake Ellesmere

The Lake's bio-physical aspects make it rare and unique in the world, and so the ecological history and trajectory must be in the minds of those who wish to protect and conserve it for the future.

The Lake is situated just west of the volcanic Banks Peninsula on the South Island, and in its current form is much lower and takes up a smaller area than historically due to drainage for access to agricultural land. The Lake was originally opened by Maori and later opened more frequently by Europeans to dry the rich, heavy soils previously inundated by water (Taylor, 1996). Currently, it covers approximately 20,000 hectares, nearly 7% of the total catchment area, but despite its size it has an average depth of only approximately 1m and an estimated maximum depth of 2m (Taylor, 1996, p. 29). This means that the generally muddy bottom of the Lake is frequently disturbed by wind driven wave action, adding considerably to the turbidity (lack of clarity) of the water. The anthropogenic opening of the Lake, at least once each year, is done in main to manage its depth (and related surface area), and if not completed the Lake could flood much of the surrounding Lake margins, threatening nearby farmland with negative economic consequences. Notably the fluctuations in Lake level also adversely affect habitat for birds (including rare species such as the wrybill) when the Lake is higher than average.

The biophysical status of the Lake at the time of the thesis varies between an enclosed body of predominantly fresh water or a brackish lagoon, although it is rarely naturally inundated by seawater without the help of the artificial openings. Salinity is most directly a result of the mixing of sea water and outgoing freshwater (Hughey & Taylor, 2008). The salinity can increase when there are more Lake openings, salt water incursion from rough seas, or drought, as evaporation of water leaves higher concentrations of salt in the Lake.

In the past, the Lake has been, “a major discharge point for the Waimakariri River; a relatively quiet tidal estuary; and a freshwater lake” (Williams, 2008, p. 10). The geologic variability of the Canterbury Plains, including the braided rivers, groundwater and even ocean currents and tides have all played a role in forming the current iteration of Lake Ellesmere. Surrounding the Lake and throughout its catchment is mostly farmland, some of which is nutrient-intensive dairy production. The scale of the Lake in relation to the Banks Peninsula and Christchurch City can be seen in Plate 1.

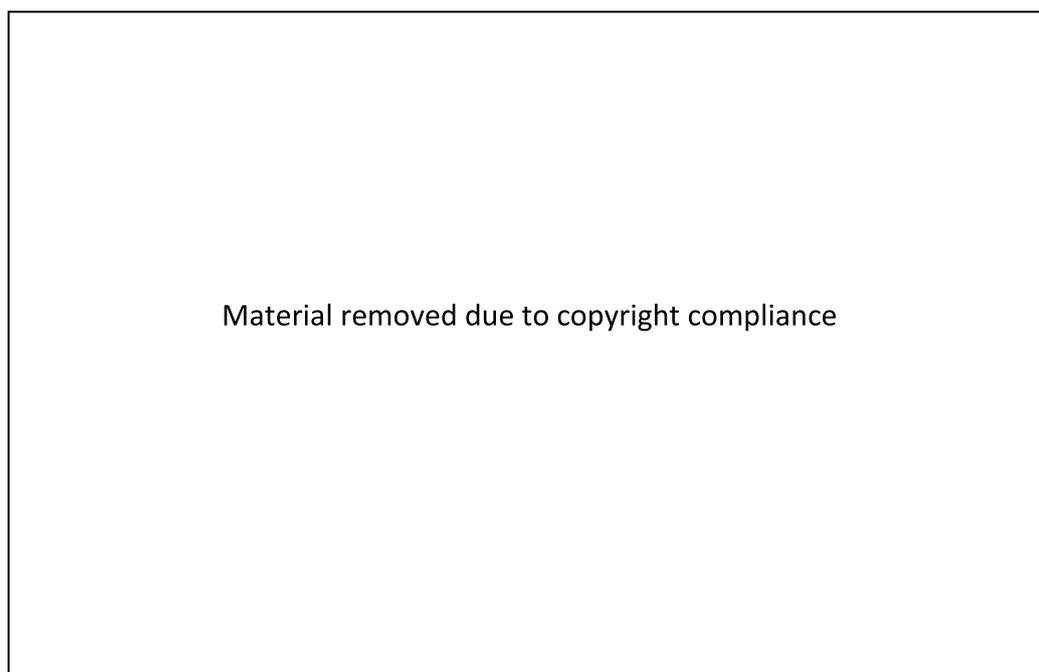


Plate 1: Lake Ellesmere/Te Waihora (*Waihora Ellesmere Trust, 2013*)

Within the catchment of the Lake there are several hydrological characteristics that help to make it unique. Two large, braided, alpine rivers, the Waimakariri and the Rakaia form two of the boundaries of the catchment and a portion of the Southern Alps, Banks Peninsula and the Pacific Ocean make up the other physical boundaries. Streams flow in from the Port Hills of Banks Peninsula either directly or via the spring-originating Halswell River. There are also rain-fed streams originating in the foothills of the Southern Alps that often run dry in their middle reaches during the warm summer months (e.g. the Selwyn River). As you move down the catchment from the Southern Alps, towards the coast, however, the groundwater meets the surface in the form of smaller streams that flow directly into the Lake and in the lower reaches of the catchment extensive land drainage and flood prevention schemes have been implemented over the last one hundred years. However, Williams (p.9, 2008) has noted “A marked decrease in groundwater levels over the last decade has been caused by drier than average conditions, in combination with large increases in groundwater

abstraction". This is in contrast to, "the last few thousand years at least, the lake has been largely fed by water that has spent much of its time underground-groundwater" (Williams, 2008, p. 10). Present water inflows to the Lake are variable (Figure 3) and are dominated by stream/river and direct rainfall rather than direct inflows of sea or groundwater.

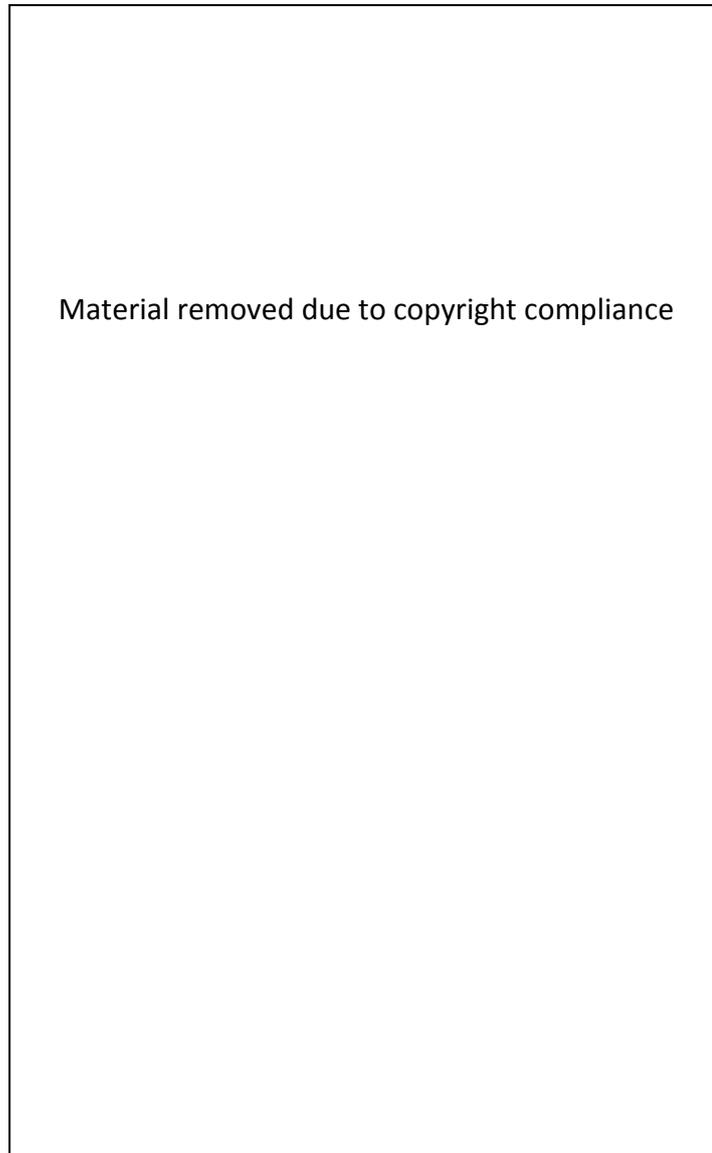


Figure 3: Lake in-flows and out-flows (Horrell, 2011a)

The management of both the groundwater and surface water within the catchment is essential to a healthy Lake. Lack of rain and/or groundwater can cause streams to run low and lose habitat for both aquatic and terrestrial wildlife and create less of an input overall into the lake. Although the, "dependency of the lake on the groundwater system in its catchment cannot be reduced," Hughey and Taylor have argued that "the output from the system to the Lake will be maintained at a level that ensures protection of Te Waihora/Lake Ellesmere (Hughey & Taylor, 2008, p. 18)." As Hughey is a Trustee on the Waihora Ellesmere

Trust (WET), a community non-government organisation (discussed below) and Taylor is a senior manager in the Canterbury Regional Council (aka ECan) this view appears to represent both local government and community expectations.

The quality of the water in the Lake is monitored by nine different monitoring stations in the nearby tributaries, including four major stations within the Lake boundaries (Hayward & Ward, 2008). The major aspects of note are light, nutrient levels, phytoplankton biomass, clarity and salinity. Typical results of nutrients like inorganic nitrogen and phosphorus which could lead to large algal blooms are often limited by the turbidity of the Lake and the resultant lack of light for photosynthesis. It is possible however, on rare occasions where the Lake is calm and the clarity increases, that nitrogen becomes the limiting factor for algal growth (Hayward & Ward, 2008).

Currently, the Lake is rated as hyper-eutrophic, meaning it has a very high concentration of nutrients, the highest on the eutrophic scale (Hayward & Ward, 2008). Different nutrients enter the Lake through different means. The two most relevant are nitrate, which is soluble in water and so can enter the Lake through either groundwater or surface water and phosphorus, which clings to other particles and enters the Lake through surface water. As of the timing of this thesis and according to the *Living Lake Symposium* in 2009, the dissolved inorganic nitrogen (DIN) over the previous fourteen years was seen to be decreasing while dissolved reactive phosphorus (DRP) was increasing (Hayward & Ward, 2008). The high nutrient presence and eutrophic rating however, have not resulted in major fish kills from toxic or oxygen depleting blooms that are often seen on similar hyper-eutrophic systems (Hayward & Ward, 2008). The trophic load index (TLI) of the Lake also varies but stays steadily in the hyper-eutrophic category, as shown by Figure 4.

Water clarity is one of the most difficult problems to solve in the Lake and can affect the feeding habitats of the wildlife and block sunlight from entering the lower levels of the water column. Poor water clarity is also unattractive to most recreational users. The Lake margin habitat has a major impact on the biophysical characteristics of Lake Ellesmere, especially the wading birds who migrate to and feed there. As farmland often comes in contact with the lake edge, an adequate riparian strip is not always present. The riparian zone, around tributaries as well as the Lake, provides filtration, shade, protection from harsh conditions and habitat. Improving a riparian zone is often one of the first steps taken to improve an aquatic ecosystem, and groups like WET have organized volunteer plantings within the

catchment. DoC has also been buying land in the Lake margins and so less is now privately held. The vegetation is currently near 80% brackish wetland and 12% freshwater wetland, with a few other types mixed in (Grove & Pompei, 2008).

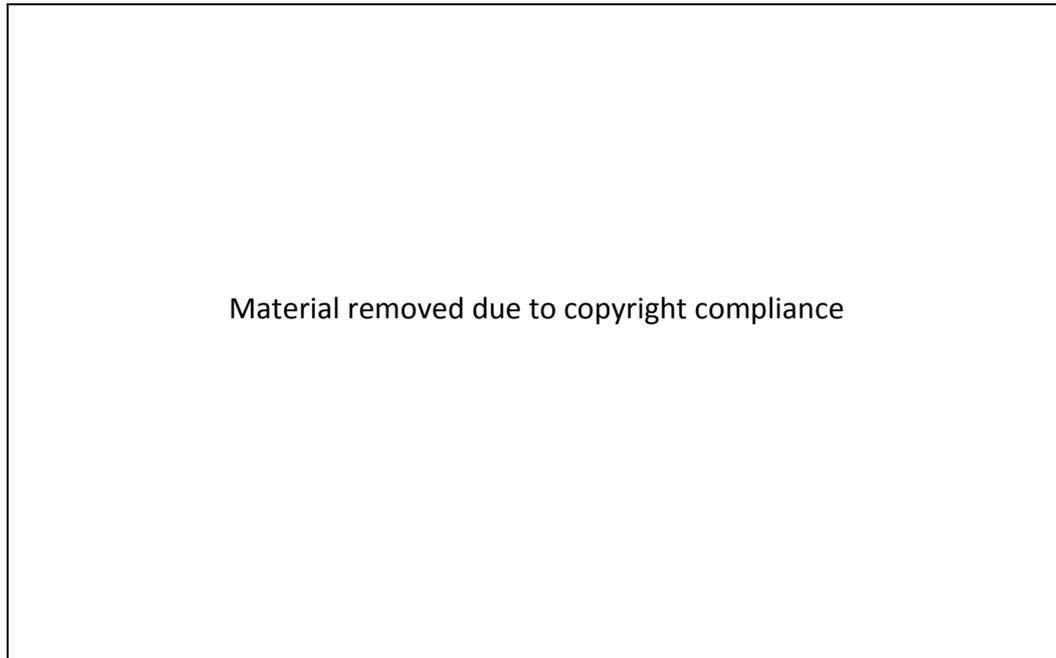


Figure 4: “Water Quality Trends – TLI” (Meredith, 2011)

In earlier years, macrophytes played a large role in the Lake’s ecology as they helped to provide habitat and secure sediments. In 1968, many of these plants were damaged in a large storm known as the Wahine Storm, and have yet to recover (Gerbeaux, 1993). The Lake is now dominated by algae and whether it is possible, and if so is it desirable, to re-establish the macrophyte beds that were historically more prevalent is one of the issues under ongoing investigation by organisations with an interest in the Lake (e.g., Canterbury Regional Council). Water levels and salinity have a high impact on these types of plants, as many of the brackish species require lower salinity to germinate (Gerbeaux, 1993). Historical Lake openings and the current shallow state of the Lake do not provide optimal habitat for the plants to grow and, “with no established populations of macrophytes left in the Lake, the assessment and understanding of regenerative strategies is essential in the planning of future lake management” (Gerbeaux, 1993, p. 126).

The Lake is regarded as a Maori taonga, or treasure, because of their historical connection both spiritually to the Lake, its water, and as a source of ‘mahinga kai’, described as, “natural resources and the areas where they are located” (Taylor, 1996, p. 145). Of the fish species in the Lake, three stand out as being significant. First, the flounder fishery was commercialized

upon the arrival of the Europeans (Taylor, 1996), climaxing with thirty-five boats fishing the Lake (Jellyman 2008), and yet it now supports only eight fishers (Jellyman & Smith, 2008). This is due in part to the fishery being placed under a quota system in 1986 in response to dwindling stocks. Second, long-finned and short-finned eel, or the Maori 'tuna', which was gathered for many years by Maori as a food source but also comprises an important commercial export industry survived only a short time as an open commercial fishery between the years 1970 and 1980, after which it also had to be controlled under the quota management system to ensure future stocks were available (Taylor, 1996). Both species were also harvested recreationally. An example of early eel harvesting and the size of eels then caught is shown in Plate 2.



Plate 2: Lake Ellesmere/Te Waihora Eels, 1947 (Waihora Ellesmere Trust, 2013)

Third, when the Europeans arrived they brought with them their own native brown trout (*salmo trutta*), which they introduced into the Lake Ellesmere system. This originally was, and still remains a large source of recreation on the Lake and its tributaries, although the fishery itself has declined in recent decades along with the recreational activity (Taylor, 1996). According to Millichamp (2008, p. 49) "The Te Waihora/Lake Ellesmere brown trout fishery is one of the most degraded in New Zealand", and further, "Restoration of the fishery is possible given the will to do so, but the target for restoration needs to be carefully considered". Trout as a group are often referred to as an indicator species, meaning their presence or health is a good barometer for a body of water, in this case, the return of more

4.2.1 National Policy Level

The Treaty of Waitangi and the Ngai Tahu Claims Settlement Act

New Zealand's relationship with its indigenous population is unique among westernized countries. Several documents and agreements have given Maori and/or tangata whenua different relationships with policy and rights than occurs in other countries, particularly in regards to natural resources.

The major document that establishes the governance relationship between the Maori and the Pakeha is the Treaty of Waitangi (The Treaty), which was signed in 1840 by Maori chiefs and the Crown. Effectively establishing New Zealand as a sovereign nation, the Treaty set out the rights surrounding land and resources between the indigenous Maori and the settling British Crown. Mainly, it gives Maori, in general, the rights of citizens, cedes their sovereignty to the Crown, and retains certain natural resource rights to the tangata whenua. The interpretation of the Treaty as it applies to natural resources has been under debate for some time, but many settlements of alleged breaches of the Treaty by the Crown continue to be settled (Prystupa, 1998). Directly relevant to this thesis has been the settlement of a number of Ngai Tahu (iwi) land and water claims to Lake Ellesmere and its Catchment (as well as most of the South Island). The Ngai Tahu Claims Settlement Act of 1998 (the Settlement Act) set the stage for several other decisions surrounding the Lake, to be discussed later in this chapter.

Among other matters in the Settlement Act, Ngai Tahu; as tangata whenua (people of the land) with mana whenua (authority over land or territory) were granted ownership of the crown-owned portions of the lake bed and a few surrounding areas (Memon & Kirk, 2011). This settlement was based in large part on an earlier court decision on Lake Omapere, from 1929. According to the *Interim Report on National Freshwater and Geothermal Resources* (pg. 50, 2012) the decision was based on the idea that, "A lake is land covered by water, and it is part of the surface of the country in which it is situated, and in essentials it is as much a part of that surface and as capable as being occupied as is land covered by forest or land covered by a running stream". Although ownership of water is not currently granted to anyone, Maori or Pakeha, the rest of the decision provided the grounds for lake bed ownership at Lake Ellesmere to be vested in the iwi.

Ngai Tahu

Ngai Tahu is a major player in the management of Lake Ellesmere. Te Runanga o Ngai Tahu (TRONT) was created to administer the implementation of the aforementioned Settlement Act and represents the eighteen Maori runanga, several with historical connections to Lake Ellesmere in a politically and financially based way. The Settlement Act awarded ownership of most of the lake bed to Ngai Tahu and all of the rights that go with that ownership. This is not only a collection of Ngai Tahu interests; it has commercial and cultural ties to the Lake and its surrounding area, most of which now have statutory recognition. TRONT's commercial arm, Ngai Tahu Holdings Corporation Limited, controls several business ventures including Ngai Tahu Seafood, Property, and Tourism. TRONT also deals with the social and statutory side of iwi management. Ngai Tahu plays a major role in the governance of Lake Ellesmere largely as a consequence of the Settlement Act, Conservation Act and the Resource Management Act (RMA), but it has not always been this way.

Maori beliefs in water stem from the idea of 'mauri' which allies water with having its own life-force (Williams, 2006). This belief leads the Maori to see water and their resources in a different way from traditionally westernized cultures. Mainly, this means that their natural resources ought not be altered to a state where the mauri is unrecognizable from the original natural state of the resource (Williams, 2006). Mauri is interpreted in the English language as an essential life force or principle; a quality inherent in all things both animate and inanimate. This life force of water aligns with different flow levels that are associated with the management of streams and surface water. While relying on resources like Lake Ellesmere for food, the Maori have an inherent view of stewardship towards their resources. This is heightened even more by their spiritual connection to the water as a life-force. Culturally, this places a high value on the environment and the resources it provides for the Maori. The Maori term 'kaitiakitanga', in its most simple sense considering it has no equivalent in the English language, represents the stewardship by locals of natural resources and is embedded in their attitudes towards water, including Lake Ellesmere/Te Waihora.

The Resource Management Act

The main act concerning the management of resources in New Zealand is the Resource Management Act (RMA) 1991. The purpose of the RMA is the sustainable management of natural and physical resources. This act, "was hailed as far sighted and distinctive in seeking to achieve sustainable management through regional governance" (Holley & Gunningham, 2011, p. 316). The RMA gave regional councils (e.g. ECan) direct authority to develop

regional plans and policy statements consistent with the RMA's goal of promoting the "sustainable management of natural and physical resources" (RMA, s.5). The regional councils' authority is limited to addressing resource management issues relating to the use of commons such as water, air, biodiversity and marine areas, whereas district council rules address the use of land. The integration provided between regional and district councils is present due to an overlap between the effects that land use may have on water, air, and other regional issues.

The RMA's power sharing aspects are based on its goal to solve problems at the most local level of community where the resource is utilized (Memon, 1997). Under the RMA, which includes amendments from 2005, district plans have to give effect to national and regional policy statements and not be inconsistent with regional plans. The same district plans also must take into account the provisions of any planning document prepared by an iwi authority (e.g. TRONT) that has been formally lodged with the council.

Although the RMA led to some success under its regionally oriented plans (Fenemor et al., 2011) it has also taken criticisms. Fenemor et al. (2011, pp. 13-14), comment that "the legalistic statutory hearing processes imposed by the RMA and the time required to make plans operative have attracted criticism" and note the view that, "both planning and consent decision making is dominated by... a reliance on legal and statutory planning processes". The RMA also poses some complications over consents which have been approved for extended periods of time, up to a maximum of 35 years, which, because they were approved, make it difficult to alter different aspects that may need adjusting, like water allocation (Fenemor et al., 2011).

Figure 6 shows the framework around the RMA. The RMA provides statutory backing for the Regional Policy Statements and Regional Plans as well as Water Conservation Orders (WCO) and Resource Consents.

The Local Government Act

The Local Government Act (LGA), originally passed in 1974 and substantially amended in 2002, is to enable democratic representation through local government and facilitates the local, regional and district councils to participate and help to create policy together. It also provides general powers to achieve community outcomes. Figure 7 shows the district councils within the region of Canterbury and notably relevant to this research is that the

catchment of Lake Ellesmere, and the Lake itself, is split between Selwyn District and Christchurch City councils, but lies fully within the regional council's boundaries.

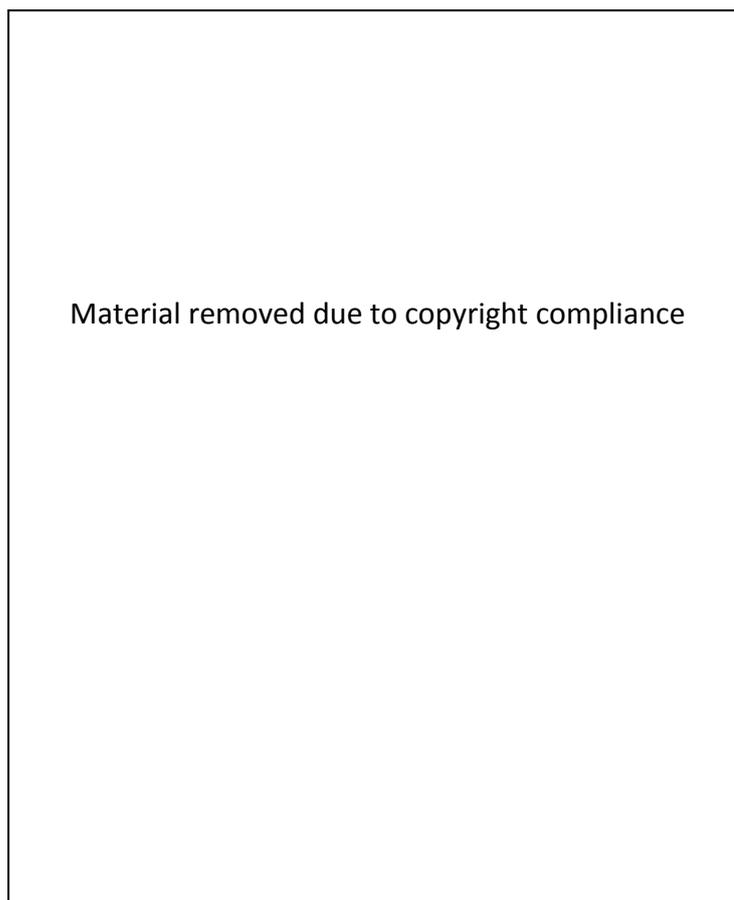


Figure 6: "Policy and Plan Framework under the RMA" ("Canterbury Regional Policy Statement," 2013)

The LGA has short and long term planning mechanisms for the allocation and use of rates taken from land owners and these planning process require considerable public participation. However, local government and businesses are subject to the RMA when seeking to carry out activities that affect the environment. Thus a council might decide through the public participation processes that drainage is an important issue for its community and allocate funding for drainage activities, but it would also need RMA permission (a "resource consent" or "permitted activity" status through relevant rules in RMA plans) to carry out those activities if there were to be adverse environmental effects of drainage (e.g., loss of habitat, natural character) or drainage activities (e.g., generation of dust or noise by machinery).

The LGA does not include mandatory tangata whenua inclusion as does the RMA, it only calls for consultation with local Maori who may or may not be able to claim tangata whenua

status. For example, although Maori refers to all members on both islands with the proper lineage, tangata whenua only includes those people, runanga, or iwi who can trace their genealogy to a specific area (e.g. Lake Ellesmere).

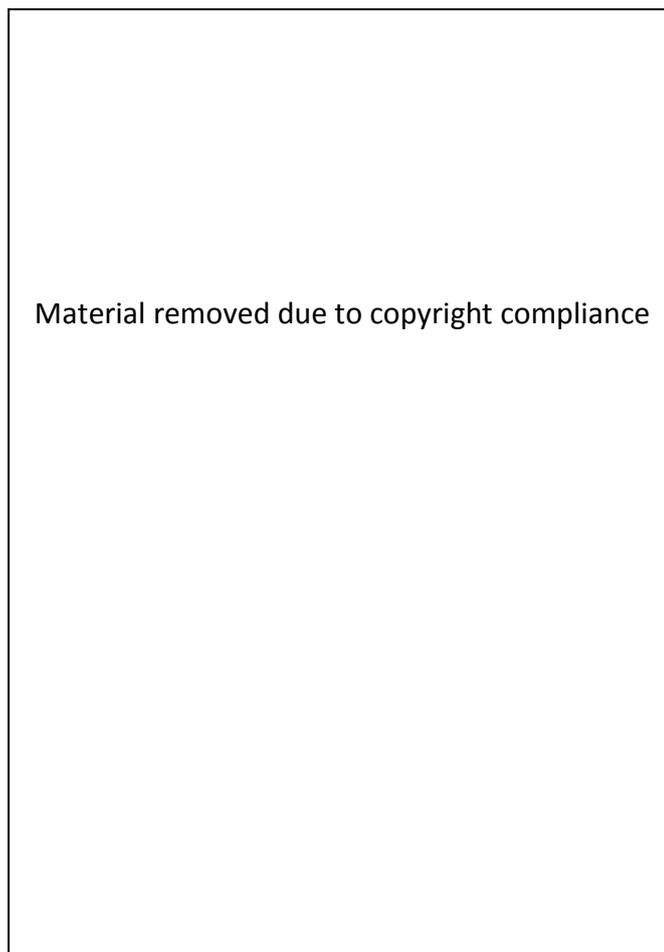


Figure 7: Canterbury Territorial Councils (Environment Canterbury, 2013e)

The interpretation of these requirements in this regard goes back to the Treaty of Waitangi. Article II of the Treaty asserts the inclusion of tangata whenua when dealing with those lands and resources which they have a right to, and Article III gives Maori in general the same status as citizens. Though the Crown is bound by the Treaty, the LGA, as it is written, must meet its principles, and so the LGA does give Maori equal citizen rights and allows their participation but it does not give special rights or powers to tangata whenua. The RMA, on the other hand, refers to the tangata whenua as partners in dealing with the aforementioned land and natural resources. Current policy surrounding Lake Ellesmere, depending on whether or not it is enabled by the RMA or the LGA, may include a mandatory tangata whenua participation application. This area remains grey in some instances because as discussed in the Introduction, the RMA and LGA both play a role in allowing and enabling the CWMS.

National Policy Statement for Freshwater Management

The National Policy Statement for Freshwater Management (NPS), authorized on July 1, 2011 by the Minister for the Environment and in effect at the time the empirical field work for this thesis was undertaken (2012), is narrow in coverage and requires regional councils to develop and set their own water limits. A revised NPS was released in 2014, but as that post-dates the field research this thesis does not address that and all references to the freshwater NPS are to the 2011 version. In the preamble, the NPS “sets out objectives and policies that direct local government to manage water in an integrated and sustainable way” and that, “Setting enforceable quality and quantity limits is a key purpose” (National Policy Statement for Freshwater Management (Ministry for the Environment, 2011) p. 3). The RMA states that, “The purpose of national policy statements is to state objectives and policies for matters of national significance that are relevant to achieving the purpose of this Act” (Resource Management Act (Ministry for the Environment, 1991), s.45). In its review, the NPS discusses the necessary steps to determine whether or not the limits have been met and whether or not the necessary values have been included. The NPS focuses on water quality, water quantity, integrated management, tangata whenua roles and interest, and progressive implementation programmes. The programme to complete these objectives must be completed by 2030.

4.2.2 Regional Policy Level

ECan is the main governing body surrounding resources in the region. It has mandates to adhere to some acts and plans at the national level, but is often left some freedom in setting limits and implementing programmes.

The Canterbury Regional Policy Statement

The RMA sets out the purpose of a regional policy statement as “to achieve the purpose of the Act by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region” (RMA 1991). The Canterbury Regional Policy Statement (CRPS) is a statutory instrument under the RMA and was developed by ECan. As of January 15, 2013, it had been officially revised and activated as a guiding statement for the region. In its Introduction, the CRPS says that it,

“... gives an overview of significant resource management issues facing the region, including issues of resource management (of) significance to Ngai Tahu. The purpose

of the CRPS is to set out objectives, policies and methods to resolve these resource management issues and to achieve the integrated management of the natural and physical resources of Canterbury” (Canterbury Regional Policy Statement (Environment Canterbury, 2013) p. 1).

The previous CRPS, operative at least in part since 1998, “provides an overview of the resource management issues of the region. It sets out how natural and physical resources are to be managed in an integrated way to promote sustainable management”(CRPS, 2013). The revised version notably incorporates Ngai Tahu issues.

The NRRP and the Land and Water Regional Plan

The Natural Resources Regional Plan (NRRP), was prepared by ECan pursuant to the RMA and provides for “the integrated management of the region’s natural and physical resources” (Natural Resources Regional Plan (Environment Canterbury, 2011) pp. 1-1).

Much of the NRRP, Chapters 4-8, was being revised to form the new Canterbury Land and Water Regional Plan (LWRP) at the time of the field research. As of the completion of the research for this thesis, the LWRP was in its ‘proposed’ stages. It had been released for public submission and the hearing process for those submissions commenced on February 25, 2013. In its own words,

“The purpose of the Canterbury Land and Water Regional Plan (“LWRP” or “the Plan”) is to identify the resource management outcomes or goals (objectives in this Plan) for managing land and water resources in Canterbury to achieve the purpose of the Resource Management Act 1991 (“RMA”). It identifies the policies and rules needed to achieve the objectives, and provides direction in terms of the processing of resource consent applications”(Proposed Land and Water Resource Management Plan (PLWRP)(Environment Canterbury 2012, p. 13).

The LWRP is the strategy for the Canterbury region for meeting the demands of the RMA which says, “The purpose of the preparation, implementation, and administration of regional plans is to assist a regional council to carry out any of its functions in order to achieve the purpose of this Act (RMA)” (RMA, 1991. s.64), and also must give effect to the NPS and the CRPS. It includes twenty-one objectives, and policies of two types; outcome-based and process-based, which either help guide decision making in the case of the latter, or, “identify actions the CRC will take to help implement the objectives” (“Proposed Land and Water Regional Plan,” 2012, p. 13). The LWRP also includes statutory rules and limits

which are legally binding and any activity in the region must meet all the objectives, policies and rules to be allowed. The plan also makes space for sub-regional sections to be inserted which deal at a smaller scale with individual catchments or zones, such as the Lake Ellesmere catchment (to be addressed in the Selwyn-Waihora Chapter of the LWRP).

Canterbury Water Management Strategy (CWMS)

The CWMS is the premier non-statutory document concerning the management of water in the Canterbury region, including the catchment that the Lake drains. The success or failure of this strategy will, at least for this catchment, most likely echo the health and survival of the Lake. As it sits within the framework of the LGA, the CWMS is designed along the principles of subsidiarity and community involvement. As a largely non-statutory document the various components of the CWMS are implemented through other mechanisms (e.g., funds and statutory plans).

The ECan Act (discussed in section 4.3.9) impacts on the CWMS by being the route to a statutory agreement. The Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 (ECan Act) (part 1, s.6) states, “the inclusion of the vision and principles of the CWMS in Part 1 of Schedule 1 does not accord to the CWMS or its vision or principles any status in law other than as provided in this Act.” Though this makes the CWMS primarily reliant on the ECan Act for implementation, the Commissioners must take heed of the vision and principles of the CWMS as discussed in the ECan Act (part 3, s. 66)

CRPS and the LWRP give statutory backing to the CWMS. Figure 8 displays the relationship between the CWMS and the RMA.

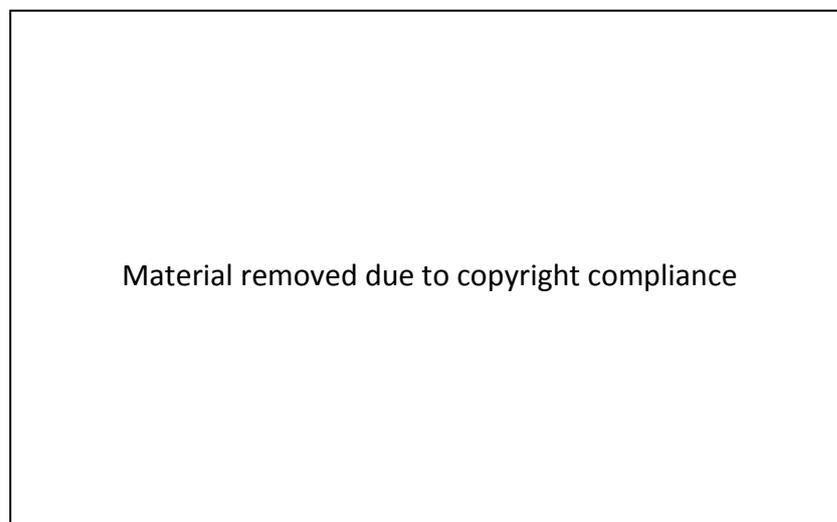


Figure 8: Relationship between RMA and CWMS (Skelton, 2011)

The CWMS focuses on primary and secondary values that the community placed on issues related to water management in public focus groups before the CWMS was finalised. The primary values were identified as: drinking water use, environmental use, customary use and stock water use. These were tied with goals toward sustainable management, a regional approach, and tangata whenua. Secondary values include irrigation, renewable electricity generation, and recreation and amenity. Those values are mirrored by natural character, indigenous biodiversity, access, quality drinking water, recreational opportunities, community use and commercial use. These values, seen in Figure 9, form a large range of topics that would become the main drivers of the CWMS. This inclusion of the community and the identification of values is a good start for co-management, as the community that is in contact most with the resource plays a role in determining its future.

The stated goal of the CWMS is, “To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework” (“Canterbury Water Management Strategy” (Canterbury Mayoral Forum, 2009)). The CWMS was developed over six years through input from ECan, the ten territorial district councils in Canterbury, NGOs, other stakeholders, and Ngai Tahu. The strategy identifies ten water management zones and drives the assembly of Zone Committees (ZC) and one Regional Committee to work developing implementation programmes for the strategy in a very community-oriented way, where a specific hierarchy is not present, but different complementary roles exist (Skelton, 2011). These committees provide recommendations (primarily to local governments in the region), and develop the Regional Implementation Programme (RIP) and Zone Implementation Programmes (ZIPs). The RIP and ZIPs are the committees’ official written recommendations and were the focus of all of these committee discussions during the fieldwork for this thesis. Figure 10 shows the water management zones as designed by the CWMS.

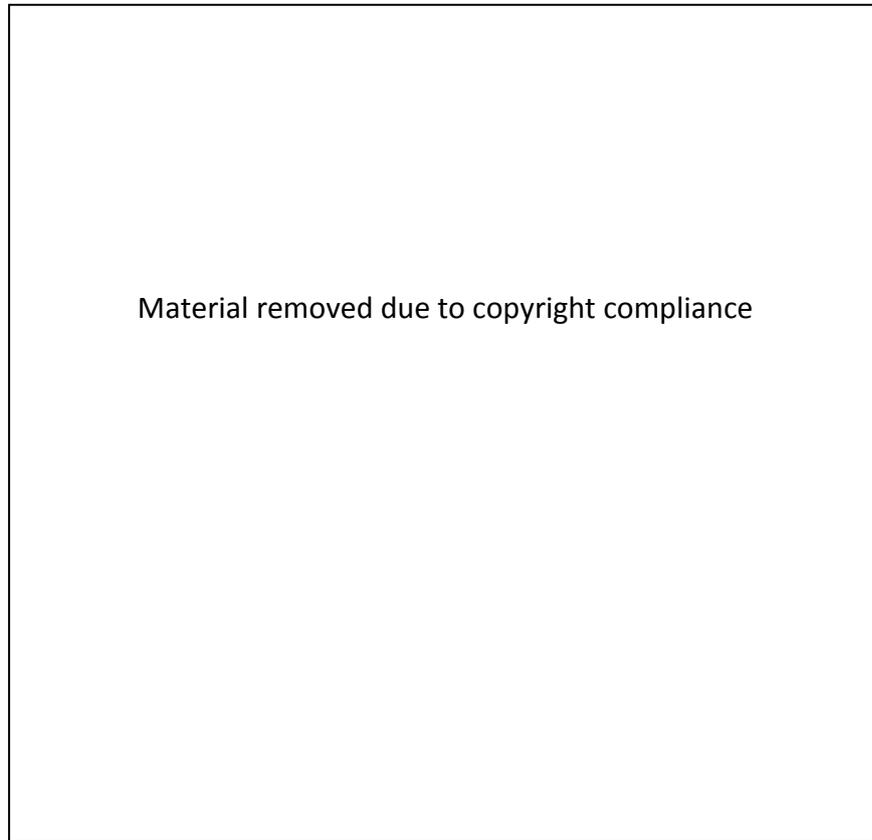


Figure 9: CWMS Primary and Secondary Values (Environment Canterbury, 2013g)

The committee for the Selwyn Waihora Zone (which includes Lake Ellesmere and its catchment) is supposed to facilitate community involvement. During the preparation of its ZIP, the committee has achieved their involvement through local Zone focus group discussions which are organised, led and attended by or on behalf of those involved with the committee, as well as by people from a broader set of society and stakeholders (as discussed later in this thesis).

This community input received through the focus groups is often discussed in committee meetings, as the minutes of the Selwyn/Waihora Zone Committee show. The committees are required to take into account the work of other zones towards the larger more inclusive regional plans. More importantly and perhaps more significantly for this thesis, the committees are to monitor ECan's implementation of the entire programme (Skelton, 2011). The zone committees do this by monitoring the implementation of the RIPs and ZIPs by the regional council.

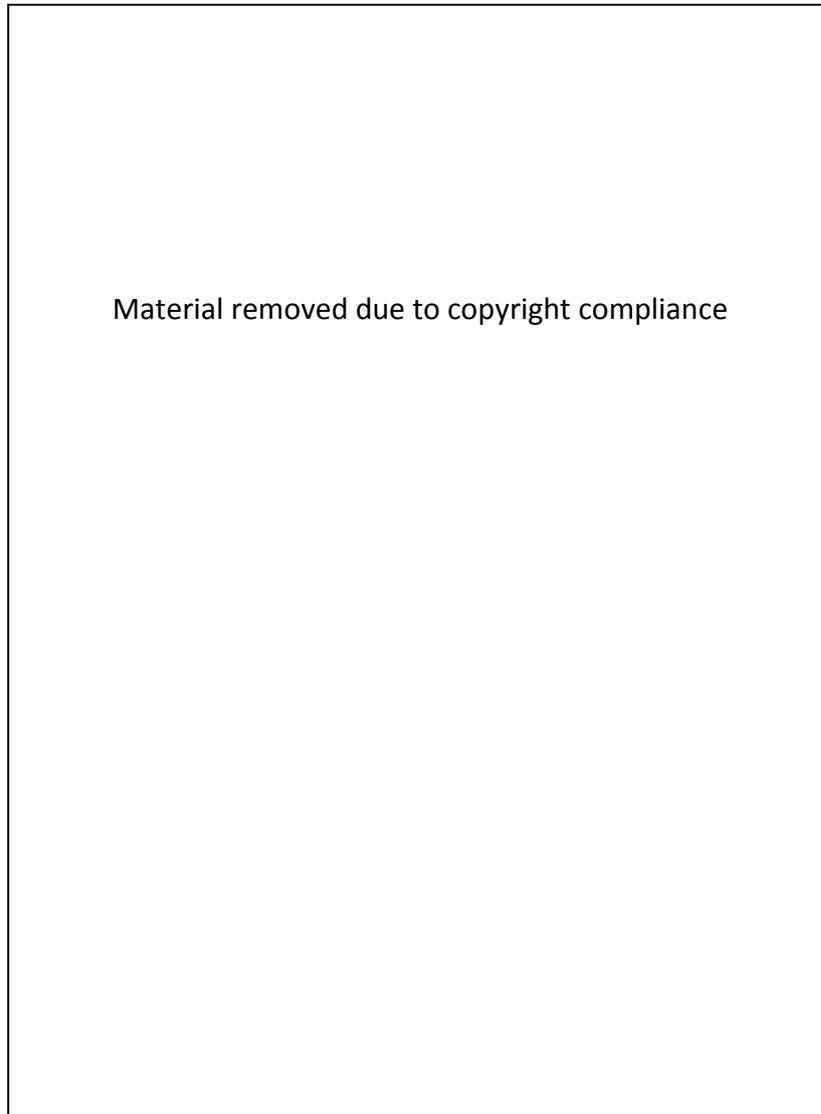


Figure 10: Water Zones, CWMS (Environment Canterbury, 2013e)

The zone committees were established as an extension of the regional council, so can only act with delegated authority (Skelton, 2011). But, they potentially play a large role in determining recommendations for statutory policy which, assuming the acceptance level of their recommendations is high, gives them considerable power for a non-elected body. The final word on the actual ZIPs however, rests with the commissioners of ECan, who take the recommendations into consideration in their decision-making processes. This consideration is supposedly based on the larger, regional scope and plan. Elected ECan councillors at the regional level began the strategy and its implementation programme but were subsequently replaced by Central Government appointees (called “commissioners”). At the time of this thesis the Central Government’s decision to extend the already appointed Commissioners’ contracts is still a source of controversy in the region.

On 23 November 2012 the final Te Waihora Co-Governance Agreement was signed between TWMB, TRONT and ECan in response to the CWMS,

“A formal co-governance arrangement (developed in partnership by Ngai Tahu, The Crown and Canterbury local government) for the active management of Te Waihora (Lake Ellesmere) and its catchment” (“Canterbury Water Management Strategy” (Canterbury Mayoral Forum, 2009)).

We will return to this co-governance issue when discussing the relationship with iwi (below).

The ECan Act

The Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010, commonly known as the ECan Act, was passed in 2010 and alters the leadership of the regional council and bestows upon it powers not previously allowed for other councils under other policies (Environment Canterbury (Temporary Commissioners and Improved Water Management) Act, 2010). The ECan Act replaced elected ECan councillors with Ministerial appointed commissioners initially for three year terms (a single election cycle), but which have now been extended through to 2016. The implementation of this Act in Canterbury was met with expected controversy, and stoked attitudes of unfairness and government overreach from the public’s point of view (Brower, 2010).

The ECan Act gives the council extended powers in three main areas. One of these powers concerns Water Conservation Orders in Canterbury, where there are two respective changes, “first, ECan has replaced the special tribunal which is provided for in the RMA to consider WCO applications; second, the only appeals of an ECan decision are on points of law and to the High Court” (Rennie, 2010, p. 20). This change removes the Environment Court from any involvement in RMA plans and policy-making within the region. The second main area that the ECan Act affects is regarding resource consents in the region. ECan and its appointed commissioners were given, “the ability to impose a moratorium on ‘specified’ applications for water permits or discharge permits” (Rennie, 2010, p. 20). Lastly, regional plans cannot be challenged on technical grounds in the Environment Court, which appears to give greater weight to the recommendations of the zone committees. All of these changes within the region are significant to the management of Lake Ellesmere, even beyond the implications for WCO’s and resource consents. Whereas outside the region a regional council’s RMA policies and plans can be appealed to the Environment Court on matters of

substance, within Canterbury, the ECan Commissioner's decisions can be appealed only to the High Court and only on points of law.

Regional Implementation Programme

The CWMS leads to more specific implementation programmes, one for the entire Canterbury region and others for specific zones that deal with issues pertaining more to their respective catchments. The RIP, as of March 1, 2013, was still in its draft form. A selection from the Foreword of the Draft RIP (dRIP) reads,

“The draft RIP has been produced under the CWMS and is a non-statutory document. It has been prepared by the Regional Committee through a collaborative process. It is a collection of integrated actions and proposals to give effect to the CWMS at a regional level and to support the ZIPs at a local level. It is a work in progress and will continue to develop” (Draft RIP (dRIP)(Canterbury Regional Water Management Committee (CRWMC) 2012) p. iii).

The Regional Committee, responsible for the RIP, is made up of community members, representatives from the Zone Committees, District Council, Ngai Tahu Canterbury Runanga, two ECan commissioners, one Central Government observer, and one seat each for TRONT and Christchurch City. The Regional Committee, like the Zone Committees, is selected through appointment and so those involved are not elected representatives, rather community members with area expertise. The runanga members are seen more as representatives for their iwi. Appointments on the Regional Committee, including the chair and two ECan appointed commissioners (among others) have been made by ECan under the ECan Act.

There may also be specific people who often reside and act in one zone where they have accumulated knowledge, but these zones still interrelate and share borders. The RIP allows for the sharing of ideas and management schemes amongst the zones in an integrated way, neither keeping local communities totally separate or withholding power in the form of a larger central government scheme. The RIP is currently a work in progress, and not all of the zones have completed their respective ZIPs. The RIP takes into consideration these ZIPs and includes them in its integrative process.

The RIP has four main regional priority issues, which each have a focus group. Kaitiakitanga, ecosystem health and biodiversity, land use and water quality and regional infrastructure

were all found to be priorities of the RIP (dRIP, 2012). Each priority issue was aligned with outcomes and recommendations for the future. One example is that of kaitiakitanga, which requests that district plans have a particular regard to the concept (dRIP, 2012). Each priority follows suit in the form of figures and targets that act as goals and guidelines for continued policy. The RIP is not hierarchically above the ZCs or respective ZIPs, though they do inform each other.

Zone Implementation Programme

The Selwyn/Waihora ZIP is the basis for recommendations concerning the Zone, many of which, where relevant, may later become part of the LWRP, in effect getting statutory backing. However, this is not automatic. Council planners work to turn the ZIPs into appropriate proposed wording in the relevant LWRP proposed chapter, but this does not mean this will be the final wording. The ECan Commissioners may change the wording approved by the Zone Committee, and the Commissioners themselves could also make changes to the draft of the proposed plan (policy) before putting it out for public submission. The hearings, held by independent (non-ECan) Commissioners might result in a final version from the hearing process that is different again to that proposed by the Zone Committee or the ECan commissioners.

The Selwyn/Waihora Zone and the other CWMS Zone boundaries are not fully delineated based on catchments, although the zones do provide a better governing area for Lake Ellesmere as they are larger and include more of the catchment than the original political district council boundaries. Like the RIP, the ZIP is non-statutory and its main function is as a set of recommendations. It can and will be altered in the future once progress towards its goals have been identified or found lacking depending on its three or ten year outcomes. If there is a conflict between the ZIP and previous policies that affect the Zone, the committee must find a new way to accomplish their goal in a non-statutory way while understanding that the statutory plans might allow a different outcome than identified by the ZIP (Skelton, 2011). The Selwyn/Waihora ZC includes ECan and district council members and appointed community members, including six runanga representatives.

The ZIP comprises recommendations and identifies key goals and limits for the zone. The advisory role that the committee plays, combined with the input from scientists and other stakeholders, adds to the legitimacy of the document as, “the sharing of ecological knowledge by natural scientists can play a key role in legitimizing regulations, even when

those regulations are created by a local management authority” (Pinkerton & John, 2008, p. 681). If a non-statutory document is to succeed, it must be viewed legitimately by those who fall under its jurisdiction or concern.

The Selwyn/Waihora ZIP (SWZIP) identifies nine priority outcomes for the area covered in the plan. These outcomes include, “thriving communities and sustainable economies, high quality and secure supplies of drinking water, best practice management of nutrients and water, the integration of kaitiakitanga into water management, healthy lowland streams, a healthy Te Waihora ecosystem, hill-fed waterways that support aquatic life and recreation, protection of alpine rivers and high country values and enhanced indigenous biodiversity across the Zone” (Selwyn Waihora ZIP, 2011). These priorities were examined and discussed in working group meetings and workshops with the general public. The working groups were titled Water Supply, Te Waihora and the Lowlands, biodiversity, and voluntary approaches to water and nutrient management. Due to its complexity, the issue of nutrient loads throughout the catchment was targeted as a 2012 project, was extended to 2013, and remained one of the major decisions facing the Committee at the conclusion of the thesis fieldwork.

4.2.3 Lake-Specific Plans, Policies, and Programmes

Plans, policies, groups and programmes surrounding Lake Ellesmere vary in their nature from Treaty rights to community-oriented groups. Although some of these groups and/or programmes stem from national and regional level documents and initiatives, they are still oriented around the Lake.

WET Community Strategy

Before the Canterbury Water Management Strategy commenced, ECan undertook public consultation processes as part of preparing its NRRP. Part of that process led to several groups and/or individuals (e.g. Lake Settlers Association) involved with Lake Ellesmere meeting as a group to record their goals and vision for the Lake in the future. The group focused on the Lake was called the Lake Ellesmere/Te Waihora Issues Group. The Issues Group was made up of several interests including local landowners, TRONT, the Lake Settlers Association and DoC, among others. The Issues Group’s Community Plan would contribute to the parts that included Lake Ellesmere (Waihora EllesmereTrust, 2004). According to the document, “Given the nature of the issues, the complexity of the lake and tributary system, and the number of targets identified, a co-operative approach has been identified as the

most efficient, effective and equitable solution to achieving long-lasting results” (WET, 2004, p. 2). This approach resulted in the Waihora Ellesmere Trust (WET), led by fifteen founding Trust members from the Issues Group, being incorporated as a charitable trust in 2003. WET served as a forum for local and community discussion mainly before the CWMS was developed and the Zone Committee established. It is worth noting that this first assemblage of different interests into a shared forum for discussion was formed ten full years before the research for this thesis. This is not to be forgotten when looking at the success or failure of the current nested design as there has been collaboration for some time now.

The Trust was set up with several goals in mind. First, it wanted to promote and sustain best management practices amongst local landowners as a way to help improve the Lake and its tributaries. Second, WET hoped to raise awareness of the history of the Lake and its environs. Third, and perhaps most importantly from the perspective of this thesis, the Trust wanted to provide an arena for dialogue amongst competing or interested factions surrounding the Lake. It also wanted to share the values associated with the Lake with others, and finally, to “recognize the views and expectations of Mana Whenua” in regards to its responsibilities under the Treaty of Waitangi (Waihora Ellesmere Trust, 2004, p. 3).

The Community Strategy itself had guiding principles, goals and strategic actions that all worked to achieve its vision for Lake Ellesmere. On its most basic level, the vision for the Lake was to be healthy and productive, culturally and historically significant, a location where different interests were balanced, a “wide open place” for enjoyment of future generations and a location for, “contemplation and tranquillity” (Waihora Ellesmere Trust, 2004). These actions and targets were also deemed to fall under the responsibility of different groups, often including ECan, DoC, Ngai Tahu and other government and private interests. WET is an important piece in the management network, as it provided a mechanism to facilitate and a forum for the different interests to discuss their ideas and find places for agreement on actions. Many of the issues that are at the core of the Community Strategy and therefore of WET’s purpose, fall within the ambit of the more recently established Zone Committee and might be expected to find expression in its ZIP and in the LWRP. Other issues may lie beyond the mandate of these bodies.

Among WET’s activities is its biennial Living Lake Symposiums, where new scientific data and management strategies are described and discussed. This attracts many local scientists, policy makers, and those involved with the Lake in hopes of updating the community on the

bio-physical, social and management aspects of the Lake and the reports prepared for the symposium are often published. WET has also released an Action Plan that describes its role and goals for the coming years. The Action Plan reiterates WET's catch phrase of, "Educate, Facilitate, Activate". Other WET activities have or do include: facilitating riparian restoration, scientific research, community engagement with the Lake and inter-agency/stakeholder discussions and consultations. It has employed up to five staff and at the time of the research had a fulltime manager and various contracted part-time staff. It receives funding support from members, contracted work and grants from central and local governments and NGOs.

Maori Co-Management/Governance: The JMP and Whakaora Te Waihora

Following the return of much of the Lake's bed through the Ngai Tahu Claims Settlement Act 1998, the Te Waihora Management Board (TWMB) was established to represent Papatipu Runanga (the subtribes of Ngai Tahu with claims to mana whenua for the Lake) in developing with the Department of Conservation a joint management plan for the Lake. The Board comprised three representatives appointed by Te Taumutu Rünanga; and one member from each of the remaining five Papatipu Rünanga (Te Ngäi Tüähuriri, Wairewa, Te Hapuo Ngäti Wheke, Koukourarata and Önuku (Te Runanga o Ngai Tahu 2008 "Terms of reference Te Waihora Management Board, February 2007)). In 2005, the Te Waihora Joint Management Plan (JMP) was finalised between Ngai Tahu and DoC – Ngai Tahu as owners of much of the Lake's bed and DoC through its ownership of some reserve lands adjacent to the Lake and responsibilities for managing various wildlife and non-commercial fisheries. At the time it was the first such statutory co-management document addressing Lake Ellesmere between Maori (in this case, tangata whenua) and the Crown (Memon & Kirk, 2011; Prystupa (1998)). The JMP did not include ECan, who's role was unaffected. The JMP merely provided a mechanism for DoC and Ngai Tahu to work cooperatively in the management of their respective land and other responsibilities. Technically,

"The JMP contains long-term objectives and detailed policies and methods for effective integrated management of the JMP area and the natural and historic resources within the area. The plan represents a coming together of the rangatiratanga of Ngai Tahu and the Kawanatanga of the Crown for the enhancement and protection of this taonga (Maori treasure)" ("Te Waihora Joint Management Plan," 2005).

This is somewhat of an overstatement as the JMP only affected the responsibilities that DoC had under the Conservation Act, not the broader Lake management responsibilities that were the responsibility of local governments or other central government bodies. It is yet to be seen how this interacts fully with the CWMS and ZIP. The TWMB continues to act as an advisor to TRONT and Papatipu Runanga, and has considerable freedom to act independently in external fora.

In August 2011, citing the direction given in the CWMS (noted above), Environment Canterbury announced:

The restoration and rejuvenation of the mauri and ecosystem health of Te Waihora/Lake Ellesmere has been confirmed with the signing of *Whakaora Te Waihora* - a long-term relationship agreement and shared commitment between Environment Canterbury, Ngāi Tahu and Te Waihora Management Board.

The parties have also signed an interim co-governance agreement which establishes an enduring co-governance framework for the active management of Te Waihora and its catchment.

These agreements signal the start of a new approach to management of natural resources in the region, one which acknowledges and brings together the tikanga responsibilities of Ngāi Tahu and the statutory responsibilities of Environment Canterbury.

<http://ecan.govt.nz/news-and-notice/news/Pages/ngai-tahu-and-ecan-confirm-restoration-te-waihora.aspx> downloaded 13 January 2015)

The Ministry for the Environment (MfE), ECan, and Ngai Tahu had signed a Memorandum of Understanding in relation to Whakaora Te Waihora (MoU), which established, “the commitment to a partnership... regarding the remediation and management of Te Waihora” (Memorandum of Understanding in relation to Whakaora Te Waihora, 2011) and TRONT TWMB and ECan had signed the ‘Te Waihora Interim Co-Governance Agreement and Terms of Reference, 2011’. Both were non-statutory documents separate from the JMP (which is primarily implemented through DoC and TWMB).

The MoU provides a written form of an agreement between the Parties to implement a co-managed restoration programme for the Lake. That restoration programme itself is Whakaora Te Waihora and is referred to as simply ‘the Project’ in the MoU. Despite retaining its statutory responsibilities under the Conservation Act and the existing JMP, DoC was not included as a party in the MoU.

The MoU required a set of tasks be accomplished before any funding would be released by MfE to support the restoration, and these tasks included a relationship agreement setting out “the on-going relationship between the two parties with regard to the management and governance of Te Waihora” (MoU Item 9). On November 7th, 2012 ECan and the ten Ngai Tahu subtribes with mana whenua in the Canterbury Region made a partnership relationship agreement (named ‘Tuia’) to “create clear and consistent expectations for how the relationship” between the parties would operate. Particular provisions included protocols of engagement and ‘collaboration’, including providing a right for each runanga to be represented on ECan committees and regular consultation meetings with the runanga. The runanga were to be supported by TRONT.

The National Water Conservation (Te Waihora/Lake Ellesmere) Order 1990 and Lake Opening Resource Consent

The National Water Conservation (Te Waihora/Lake Ellesmere) Order 1990 (The Order), signed on July 2nd, 1990, is a mechanism, provided for in the RMA (and before it the Water and Soil Conservation Act 1967) and provides an official order to protect the Lake and its habitat from certain activities that could cause further damage. The WCO predates even the RMA and is a critical component of Lake management. According to the Order, the Lake, “provides or contributes to an outstanding habitat for wildlife, indigenous wetland vegetation and fish, and significance in tikanga Maori in respect of Ngai Tahu history” leading to the provisions which protect the aforementioned qualities (Reeves, 1990). This Order prevents the Lake from certain developments such as further drainage that could further degrade or alter its water quality, quantity, or habitat. Essentially the Order prevents the Lake from being opened artificially to the sea unless it has risen to particular heights above mean annual sea level (1.05 m above in “summer” – August to March - 1.13m above in “winter” – April to July inclusive). As long as the Order stands, it provides a certain level of protection for the physical integrity of the Lake. In 2011, TRONT and DoC applied to amend the WCO to make several changes. These changes included adding outstanding features of the Lake for fisheries and wetland vegetation, as well as the inclusion of kaitiakitanga and mahinga kai as significant cultural factors, and allowing the Lake to be opened at any level between April 1st and June 15th. This change was to enable the Lake to be opened at opportune times for the out-migration of eels to spawn in accordance with Ngai Tahu wishes. These amendments passed in 2011.

The opening of the Lake requires a resource consent, which in turn requires some background about the current situation. The Te Waihora Management Board was formed by runanga and TRONT, which makes it the lead Ngai Tahu body in interaction with DoC. The Management Board also helped to develop the previously mentioned JMP. The original resource consent to open the Lake was pre-RMA and in 2001, was based primarily on the need to limit inundation of surrounding farmland. It was largely funded by a special rate collected from the Lake Settlers Association members, continuing a tradition established in the early 20th Century. The consent to open the Lake artificially was inherited by ECan from its predecessor, the North Canterbury Catchment Board along with the Board's responsibility to minimise flooding. When it was required to be renewed under the RMA, and therefore needed to meet different criteria related to sustainable management (not simply drainage), DoC and Ngai Tahu submitted in opposition. As a result, an agreed research period was developed to take into consideration the entire Lake catchment, instead of just the opening that was previously considered for the consent. An interim five year consent was granted in 2006 to continue opening the Lake in the manner it had been previously, but included a requirement for the consent holder (ECan) to consult with Parties to the Protocol for Opening the Lake and the undertaking of a research programme to better inform the decision-makers when the interim consent expired. These Parties were the Lake Settlers, Taumutu Runanga, Christchurch City Council, Selwyn District Council, Canterbury Regional Council, Ngai Tahu, WET, DoC, Fish and Game, and Commercial Fishers. The research programme involved ECan, with help and facilitation through a Statutory Agencies Group that was established and facilitated by WET. The main results of this programme were regularly presented as part of the biennial symposia organised by WET and informed amendments to the WCO and various restoration programmes for the Lake and its Catchment (e.g., Whakaora Te Waihora).

At the time of the empirical field work for this thesis, Ngai Tahu and ECan were in the process of preparing a joint new resource consent to open the Lake, one that would fit the new provisions within the recently amended WCO. The current consent will remain until such time as Ngai Tahu and ECan move forward their new iteration, (it was eventually granted in 2014). Plate 3 shows a successful lake opening.



Material removed due to copyright compliance

Plate 3: Lake Opening (*Waihora Ellesmere Trust*, 2013)

4.3 Conclusion

The case of Lake Ellesmere provides a rich history, varying policies and some unclear relationships. Much of Chapter 4 provides the most pertinent information pertaining to the Lake and thesis that helps to promote a shared awareness for the reader. This existing framework and history is important to the Results Chapter as it gives a base on which to compare governance arrangements to Ostrom's principles. Because long-enduring CPR institutions do not emerge overnight, following the evolution, side-tracking or progress of policies intended to manage a CPR are crucial to designing a system with Ostrom's principles.

Chapter 5 - Results

Results are organized in the following fashion: First, results surrounding the comments about the Treaty are given to set the stage in which the management of Lake Ellesmere sits. Second, each of Ostrom's principles is compared with the current and/or forthcoming governance framework surrounding the Lake. To this end, document analysis, specific observations, and interview commentary are all used to analyse and discuss the presence or lack of the respective principle. A summary of ZC observations can be seen in Appendix C.

5.1 Broad Treaty Implications

The Treaty and its resulting co-governance arrangements play a major role in the management of the Lake. Interviews revealed mixed comments about the Treaty, some positive, though some interviewees opined that there were also negative results.

The first theme that emerged was broad as interviewees spoke about what kind of an impact the Treaty has had on the Lake management process. Several interviewees responded simply, like ZC5, "I think it's had a big impact on it" and ZC6, "Enormous... I think the Treaty has had an enormous impact". ZC7 agreed, "A really, really big one", and so too did EC1, "Huge. It's about awareness raising", and LU1, "Oh well clearly an enormous one". Some of the interview group said it made some things more difficult but would pan out positively in the long run. ZC7 said, "...and not in the last two years, really, although it has in the change in the Conservation Order and things like that, but longer term, I think huge, absolutely massive". ZC2 also considered the time scale, "I think in the broader and long term it's been positive. I think in the short term there are those who have had to adjust their view of the world".

The interviewees were pressed to give more detailed responses or personal takes on the issues. These responses were more direct, often citing the alleged outcomes for Maori. EC1 said, "It's confirmed their sense of kind of, ownership, in the future of the Lake and without it I think their relationships would be completely different... The Treaty's fundamentally important to it, to both the past and the future of the Lake". EC2 said basically, "Of course the Treaty is what our partnership is what it's based on". ZC1 noticed a result too, "There's a whole resurgence of iwi confidence in themselves and knowing their place as Treaty partners and you know, insisting on their rights". ZC8 was more critical,

the Treaty, in my view; we're all New Zealanders now and I think the indigenous people have to be recognized, but sometimes I think the fact that they want all the benefits of their original race when a lot of them are 7/8 other race, so they want all the benefits of their own race but the responsibility of the other part of their race, they don't take those as well.

ZC3 also had a negative outlook, "I'm not sure that it's benefitted the economic side of the equation. It highlighted Maoris with chips on their shoulders. But it's done nothing to actually take them into getting jobs and education and doing more for themselves, becoming more skilled". ZC4 added, "The Treaty definitely makes things more difficult. It definitely creates ambition and aspiration".

In the document analysis, the Treaty was seen to have an impact on many policies, plans and programmes, though on some occasions (e.g. RMA) only certain sections of the Treaty were cited. When an analyzed document covered co-management or co-governance, the Treaty was cited often (e.g. Whakaora Te Waihora) and the above responses were in reference to its impact on Lake management in general, not one specific plan or programme.

Many interviewees mentioned the importance of the Treaty for relationships and governance, though the Treaty was, at times, not included in some documents. Interviewees were, however, prompted to respond to questions concerning the Treaty and its impact on the water management process.

5.2 Responses to Ostrom's Design Principles

As noted in Chapter 3, each of Ostrom's (1990) principles were used to guide the document analysis, meeting observations and interviews. The results are grouped in relation to her principles.

5.2.1 Clearly Defined Boundaries

Identifying clearly defined boundaries includes identifying who should be allowed to use the Lake as a resource and what the actual area is that needs to be considered to manage the Lake. Clearly defined boundaries help to separate a CPR from an open-access resource and can prevent free-riders from taking advantage of the CPR.

Document Analysis

Documents reviewed had varying political and physical boundaries concerning the Lake and its catchment. For example, The LWRP (PLWRP 2012, p. vii) refers not to Catchments, but to “sub-regional sections” (s.2 of the PLWRP 2012, emphasis added) or “areas” that “generally reflect Canterbury Water Management Zone Committee boundaries, but have been aligned with surface water catchment or groundwater management boundaries”. These are then considered to be ‘catchments’ (Figure 10). There is a chapter in the PLWRP where rules relate specifically to this area. Interviewees noted that there was considerable uncertainty as to where the actual boundaries of groundwater lay and that there was disagreement as to how much groundwater surfaced in the Lake itself or went beyond the Lake and entered the sea directly. However, they were generally prepared to accept the map as presented in Figure 11.

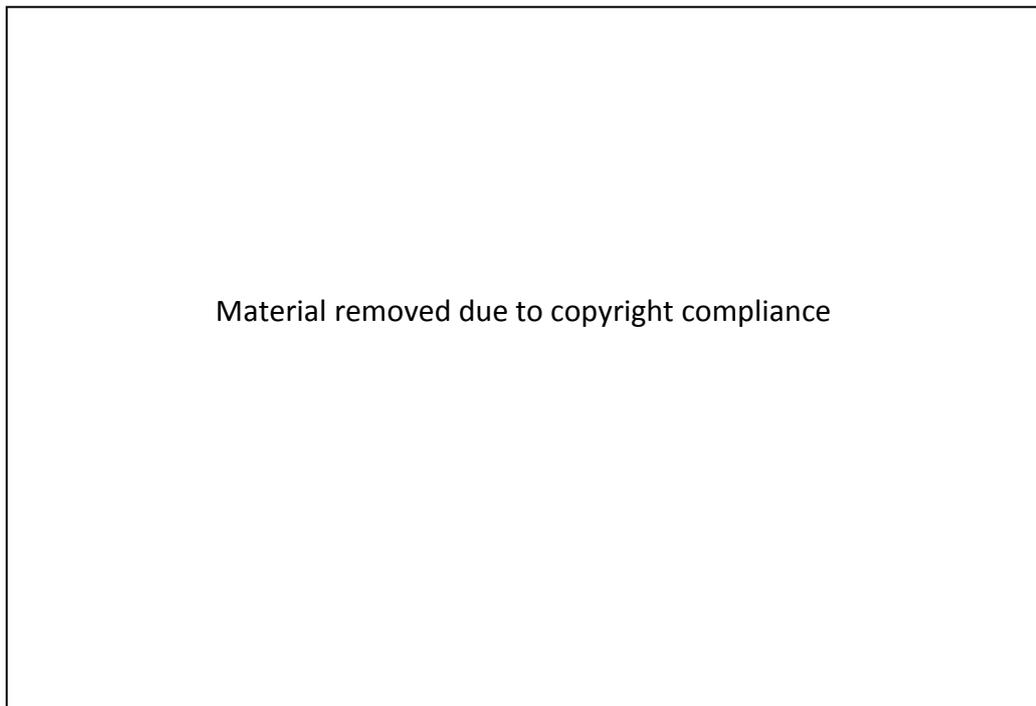


Figure 11: Te Waihora/Lake Ellesmere Catchment (Environment Canterbury, 2013d)

The second boundary map (Figure 12), shows the Selwyn/Waihora Zone as designed by the CWMS. Note how it and the following figure extend further inland than the PLWRP map (Figure 11), which assigns those higher alpine regions and rivers their own catchment section.



Figure 12: Selwyn-Waihora Zone (Environment Canterbury, 2013f)

The political boundaries of the Selwyn District are pictured in Figure 13; note the difference between the exclusion of land around the southeast corner of Lake Ellesmere and the western part of Banks Peninsula. In fact, the boundary between Christchurch City and Selwyn District in one part is a straight line across part of the Lake and the area in which the Lake is artificially opened to the sea is largely within Christchurch City's boundary.



Figure 13: Selwyn District Council (Selwyn District Council)

These political boundaries vary from natural boundaries. Figure 14 is a groundwater map of the same area. Note delineations in the boundaries, which in the case of groundwater, have a few small special sections especially in the area around the Rakaia River. The surface water catchment aligns most closely with the first map, Figure 11, of the LWRP.

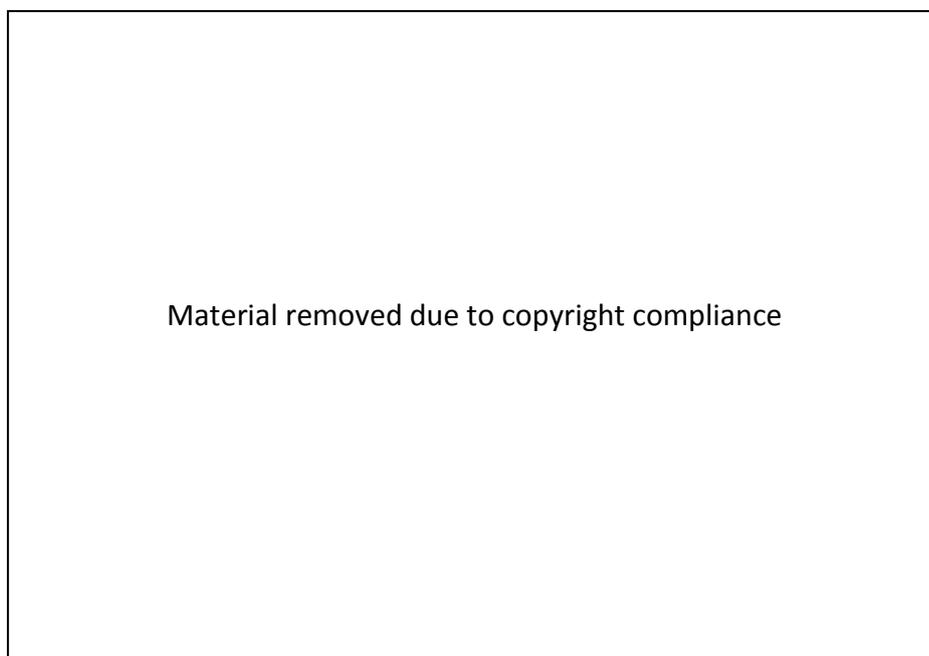


Figure 14: Groundwater for Selwyn (H.R. Williams, 2010, p. 2)

Because of these different boundaries and associated legal mandates for local governments the Lake and catchment cannot be managed by one of these political or natural boundaries on their own. Even respective runanga boundaries, as included in the Settlement Act, are not a direct match to the catchment of the Lake.

Observations

Direct observations of discussions regarding the issue of boundaries revealed that, broadly, boundaries in the catchment were accepted as “blurry” to begin with, as water is brought in from the boundaries of the large braided river systems (outside of the boundaries shown by document maps) and wildlife like fish were accepted as needing to be considered in context with not just the catchment, but the ocean, too. There was, therefore, little to no discussion of the boundaries within the ZC because they were all working within those boundaries given to them by central or regional government. It was also not the ZC’s role to decide the physical boundaries within which they worked. The boundaries were important for various discussions, especially those including water quality, but the actual shape of the boundaries was not in question, only the things that occur within those boundaries. There was also no

discussion over boundaries for the implementation stages of the CWMS, but it is possible those talks could be had in the future, where boundaries could play a much more important role. The implementation stages though, were outside the time scale and scope of this thesis' fieldwork.

Interviews

For physical boundaries, interviewees were asked about the slight variations between those boundaries set up by the LWRP, the District Councils, and the Water Zones, shown in the maps above. They were also asked what boundary they, specifically, thought should be considered when managing the Lake. Most responses cited 'the catchment' as the main boundary necessary for management of the Lake, but these again appeared flexible, blurred and at times different to those in the maps. ZC1 cited briefly, "ki uta ki tai, it's the whole catchment" and ZC5 said, "I would like to say the whole catchment". ZC6 also saw the catchment as important, "I have no problem with the boundaries, I think it's quite logical that the catchment is *between the Waimak[ariri] and the Rakaia...*"(emphasis added) and EC1 confirmed, "You're going to have to think of the whole catchment".

The 'natural' catchment, although frequently cited as the best boundary, did vary slightly from the political lines drawn and there were several comments on that difference. One interviewee, EC2, felt that when asked if there were issues with the slight clashes in boundaries, "Oh totally, I mean it's only these last couple of years we're actually sitting down [together]." Another non-committee member, LU1, had this to say, "Well yeah look, boundaries are an issue and that's why we have a Statutory Agencies Group that reflects into and across boundary issues..." and later, "So it's really only at the District Level, I think, where there are planning issues around boundaries that are at all problematic". Most interviewees however, felt that the variations in political boundaries were a minor issue. ZC2 defended the process and said, "I'm not sure that I would use the 'conflict' term in this situation yet," and went on to say, "By and large people seem to try and be positive and cooperative and work with each other to address these issues". Another interviewee, ZC5, agreed, "I don't see too many problems. As far as working with statutory boundaries I can't see there's much difficulty there".

Two comments were unique in that they brought up rate-payers and funding. ZC6 related the information back to the catchment saying, "Because once you start paying, then the wider the catchment the better" and also ZC3 said, "But Christchurch is [included and], from

a ratepayer, the real benefit is they've got this huge volume of people producing a majority of the rates to support what needs to be done". The issue of rate-payers connects to that of free-riding in a CPR, as well as funding to carry out zone-wide mitigations and monitoring. If many users of the Lake do not pay to help maintain it, they are in effect free-riding. The interviewees, documents and other readings indicated that fishing and water based recreational activities within Selwyn District Council, for instance, were often carried out by residents of Christchurch City, especially during weekends or vacation periods. According to the interviewees, the varying boundaries seen in the documents did not translate to major issues within the community or the Lake management process.

5.2.2 Congruence between appropriation and provision rules and local conditions

Ostrom's second principle looks for appropriation and provision rules that match the unique setting of the CPR in question. Although the Lake as a CPR contains many resources including fish and eels, this section is based mainly on the discussion surrounding water quality and quantity, as well as the management of the catchment as a whole, because these topics are the focus in the ZIP and CWMS. Most of the rules are set and enforced by either ECan or the Selwyn District Council (SDC) and are instruments of the RMA. Other entities like DoC and Fish and Game manage the wildlife and the Ministry of Primary Industry manages commercial fisheries and it is unknown whether or not they have congruence between their rules and local conditions because those organisations and that type of resource were not directly part of this study due to the focus on the CWMS and the ZC. However, those fisheries would certainly be included as an example of a local condition that would need to be considered for the ZC and management of the Lake (especially under the RMA), even if that inclusion did not work the other way around. This section will focus on those rules relevant to the Zone process that the ZC was working towards recommending (e.g. nutrient limit-setting) during the field work period.

Document Analysis

Documents surrounding local conditions were provided at Zone meetings and reviewed for this section of the thesis. These documents included scientific reports, presentations, and potential recommendations surrounding relevant topics (e.g. nutrient loads) for the committee to consider. The large amount of scientific data given to the ZC is a testament to the amount of effort put into understanding the unique setting of Lake Ellesmere. There

have been management focused scientific symposia held at Lincoln University since the 1970's and reports of these and other scientific studies help add to the knowledge concerning the Lake and what it means for those trying to live with and manage the resource. ZC members were also selected because of their knowledge of certain issues relating to stakeholders in the catchment. As shown in Figure 15, scientific reports were significant items on the ZC agenda.

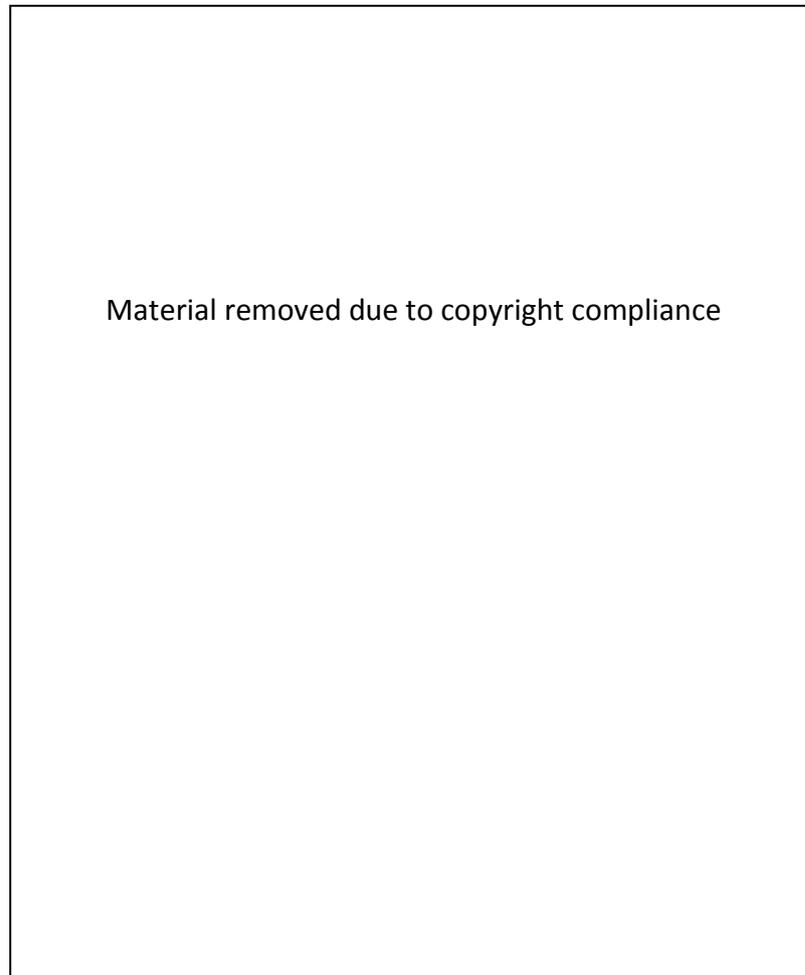


Figure 15: Example of a typical Agenda from the Selwyn/Waihora Zone Committee, (Environment Canterbury, 2012a)

The ZC was given this information throughout the observational period and some of their monthly agendas would total over one hundred pages of background documents. Sources for this information varied from external consulting companies like Golder Associates to ECan monitoring, individual experts and CRIs. Formats ranged from power point presentations to statistical graphs and data and water issue coverage appears comprehensive. Responses to questions raised at ZC meetings were addressed in subsequent meeting documents and can be seen in ZC agendas and/or online databases.

Observations

It was apparent at meetings that most ZC member questions were passed to a perceived expert (an employee of one of the councils, usually ECan, or an ECan-hired consultant) who would either answer immediately or indicate that they would return with an answer at the next meeting, which they usually (always) did. There was often confusion, albeit from different ZC members directed at different topics, towards different pieces of data or research. This confusion most often required a minor confirmation or clarification by a perceived expert. Members of ECan were often relied on to answer ZC members' questions and appeared to play a critical role in informing the ZC members.

It was apparent at times that the amount of scientific information was overwhelming for many of the ZC members if it did not touch on their expertise, particularly the interpretation of scientific tables and graphs as they pertained to nutrients and Trophic Level Index (TLI). Although they may have had expertise within their own professions, it was a difficult task to stay up-to-date with all of the information required to make a sound decision on some issues. Expertise was hard to come by individually in this situation so the ZC relied heavily on those outside of the members to supplement their knowledge. There was much time spent discussing the science behind scenarios and more time spent filling in one or more members of the ZC on scientific data. At first, the meetings included a breakdown and explanation of this data but as time went on, the ZC was asked to go through the information and be up-to-date beforehand.

The amount and scientific nature of information often caused the ZC to spend considerable amounts of time during their meetings seeking explanations and a shared understanding of the material.

Interviews

Interviewees were asked about the Lake and its congruence and appropriation and if they were taken into account or paid heed to in the Zone process. Most interviewees thought the unique aspects of the Lake were taken into account and that they were kept in mind during the ZC process that would help determine the rules.

For instance, ZC2 said that, "Part of me says that Lake Ellesmere/Waihora has been studied to death," and that, "there's a massive academic and scientific papers produced about it". ZC4 felt that previous management plans, "were purely based on lake level ...whereas now we've got fish retention and those kinds of deals and opportunity". ZC5 was satisfied with

the information saying, “I think we’ve had all the information we need, yes, I think so”, and EC1 thought, “I think that’s [what’s] recognized”. ZC5 also commented on the historical aspects of things, “Well I mean it’s considered, the fact that there was a historical opening at the site...” Another interviewee had this to say, “Well, I’d probably say that until twenty-odd years ago, thirty-odd years ago, the environmental part of the Lake, there was not much thought given to it at all really” (ZC8).

There were two interviewees who thought that the historical environmental setting could have been known, but was not fully discussed. ZC6 thought it was a time related issue, “No, because we haven’t had the time. And as time goes by I think that may be taken into account more”. When asked about the Wahine Storm and Lake Openings as unique aspects of the Lake, ZC3 said, “Well it hasn’t really been discussed, it’s accepted that it’s happened”. Overall, most identified the cultural history through the Lake Openings as a major impact on the environmental history of the Lake. These two interviewees both thought more could have been covered scientifically on the Lake, but as many others said, there are many reports and scientific studies done on the Lake, they cannot all be looked over during ZC time. While sitting in on nine ZC meetings, there was enough scientific data to easily fill each meeting, if not many times that length. Most interviewees felt that they paid heed to the specific factors of the catchment.

5.2.3 Collective-choice arrangements

Collective-choice agreements require that the rules surrounding a CPR be determined by those who interact with that CPR and, in effect, each other. Following this principle is expected to most effectively implement the rules from the previous principle and Ostrom (1990, p. 93) writes, “CPR institutions that use this principle are better able to tailor their rules to local circumstances” by using the knowledge and expertise of those closely involved with the CPR. A major facet of collaborative governance, like that within the Zone process, is the idea that the local public are consulted and empowered when it comes to different issues and this lends itself to the collective-choice principle. If these aspects of collaborative governance are met, then in turn they would help to meet the collective-choice ideals recognized by Ostrom.

Document Analysis

Identifying collective choice through document analysis came mostly through those involved with the Nutrient limit-setting Focus Groups and from presentations given at the ZC.

Appendix B shows the summaries of some Focus Group meetings. The main issue of note for these Focus Groups was, logically, the limit-setting process. This topic was of such high importance because of its ramifications for land and water use in the entire catchment. Figure 16 shows the interaction of these different entities within the CWMS.

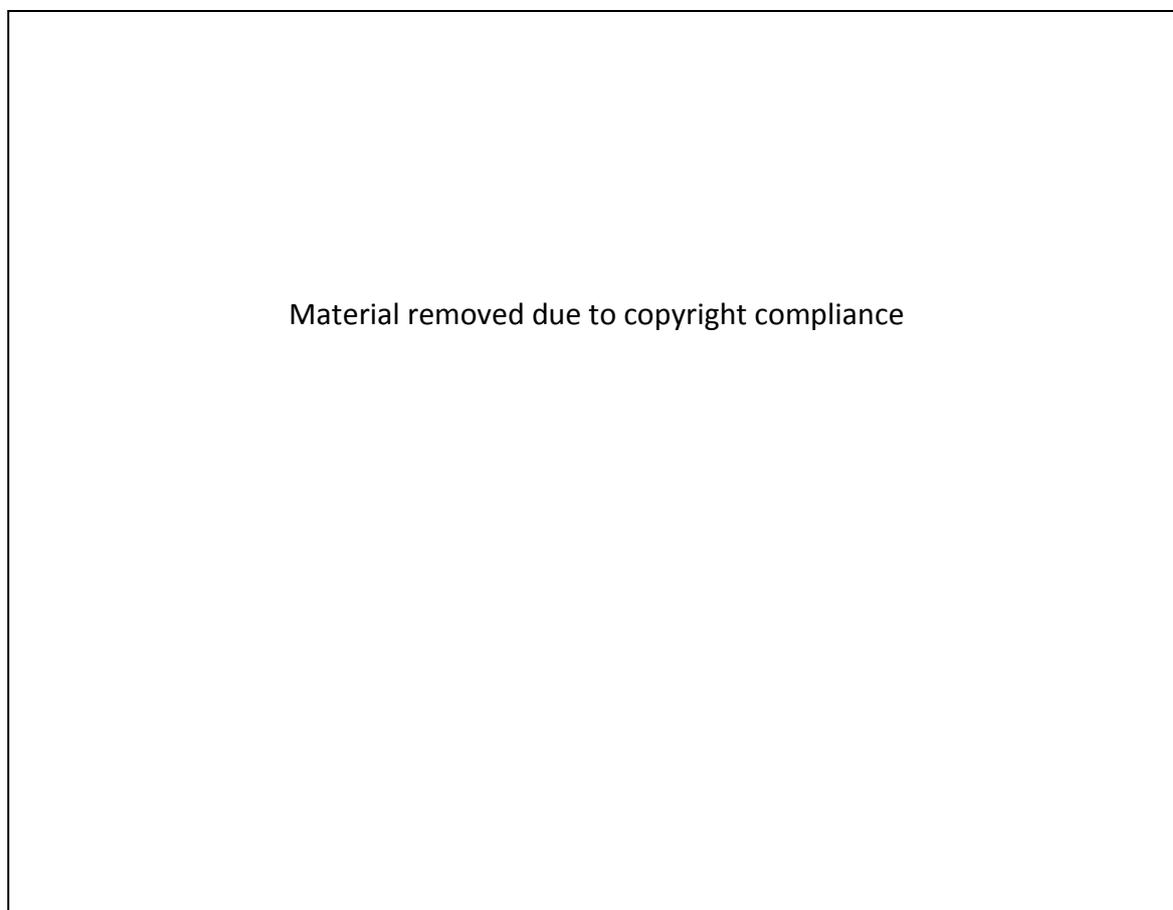


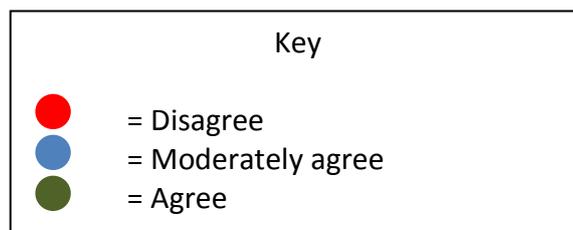
Figure 16: Draft Engagement Plan, (Environment Canterbury, 2012b)

Often, the groups were asked to assess different qualities, goals, or aspects within the catchment, and they responded by assigning corresponding red, blue, and green dots to each category depending on where they assessed each issue. The different groups could have widely differing views as illustrated by Figure 17 which shows the assessments made by various stakeholder focus groups of the likelihood of the current scenario in Canterbury achieving priority outcomes of the CWMS. These viewpoints were presented and discussed within ZC meetings by those involved with the focus groups and several members of the ZC observed, but did not participate in, the focus group assessments.

Selwyn Waihora Deliberations: Results display – stakeholder judgments of scenario against priority outcomes Scenario: CURRENT

Stakeholder Group	a. Thriving and sustainable communities	b. High quality and secure supplies of drinking water	d. Kaitiaki/Te Aitanga-a-Māori is integrated into water management in the zone	e. Healthy lowland streams	f. Te Waihora is a healthy ecosystem	g. Hill-fed waterways support aquatic life and recreation	i. Enhance indigenous biodiversity across the zone	Overall Scenario Assessment
Rununga								
Irrigation	●	●	●	●●	●	●	●	●●
Dairy	●	●	●	●	●	●	●	●
Arable/Hort/Viticulture	●	●	●	●●	●	●	●	●●
Sheep and beef	●	●	●	●	●	●	●	●
Rural professionals	●	●	●	●	●	●	●	●
Rural woman	●	●	●●	●	●	●●	●	●
Environment	●	●	●●	●	●	●	●	●
Recreation	●	●	●	●	●	●	●	●
Commercial/Tourism/Energy	●	●	●	●	●●	●	●	●
Education	●	●	●	●	●	●●	●	●
Health/local authorities	●	●●	●	●	●●	●	●	●●
Community boards and committees	●	●	●	●	●	●	●	●

Figure 17: Current Scenario Stakeholder Deliberation Results (Environment Canterbury, 2012c)



The ZC, although based on collaboration, did include several runanga representatives. Their representative status is different than others on the ZC, and so within the ZC’s Terms of Reference, a 75% vote would be accepted if consensus could not be reached on the committee (*Selwyn-Waihora Zone Water Management Committee: Terms of reference, 2010*). Beyond that, external help would be required. It is worth noting though, that there were not enough votes to advance anything when the cultural split was considered exclusively and this lent itself to collaboration. No votes were held during the observation periods nor were any recorded during the period of the empirical fieldwork, so this thesis cannot judge the effectiveness of the cultural split and 75% requirement.

Observations

Within the ZC the Focus Groups were discussed at each meeting, attendance of ZC members at the Groups was noted, and the summaries and stakeholder responses were included in agendas and presented to the ZC to make sure there was a viable working relationship between the two entities. Within the ZC, it was obvious that one group did have an opportunity to have much more input into the process; the runanga. With six specific seats

on the ZC, they were the only representatives of an interest, officially, at the table. No other interest, even that of dairy, or farming, or of New Zealand's fishing community had even one specified representative seat.

One group that seemed to be missing from the stakeholder groups used in the Focus Groups was that of young people, possibly those in college or university (under the age of 25) who would grow up with the sanctions designed by the current generation of decision makers. There was also little to no discussion of such interests within the ZC, although it was observed that several claims were made about doing things on behalf of young people, families and future generations. It can be said, however, that most interests present through focus groups had a chance to have their thoughts shared. The type of impact those thoughts would have on the final recommendations was unclear. Throughout the observation period (nine meetings) it was rare to have the entire ZC present at any ZC meeting.

Interviews

The major theme of responses was that opportunities existed to participate but that different levels of involvement were present. On the one hand, EC1 said, "I think a really good attempt has been made to incorporate all interests. That being said, there will always be arguments about whether some interests get more air time than others" and on the other hand continued, "If you've got a ZC with twelve people it's going to be bloody hard to be representative of everybody". ZC4 thought most people were given a chance to be heard, "Everyone's had an opportunity to come in" and "I don't believe anybody's been shut out". ZC7 felt similarly, "I think that I've been impressed with the breadth of interests that have been involved through the Focus Group process. There's obviously an attempt by the Zone Committee to get a good breadth of representation. With fifteen people, how well can you do?"

When asked about who *should* be involved in managing the Lake, all interviewees mentioned that Ngai Tahu and/or tangata whenua should play a role in the management process as they own the lake bed and have significant cultural ties to the Lake. The question was open-ended and some responses focused on the Lake and others on the catchment, or both. ZC1 commented, "it's quite clear that (Ngai Tahu) should be involved with management decisions" and ZC5 said that, "the ZC of course is an integral part of that and the iwi really needs to be an integral part of the ZC's decisions" and later, "I guess the whole

of the community needs to be involved". ZC6 also added, "Te Waihora Management Board have a statutory right around the Lake" and also, "Look I think that the community in a whole needs to have a say on the Lake".

The issues over involvement were not over *who* should be involved but *how much say* those who are involved should have. It was ZC4 who felt that, "If it was just around the Lake I would have no problems with the iwi group's management boards having some control of the Lake. Where I start to run into problems is the idea that because a group owns the Lake bed then every decision of the catchment right up to the top, is a material consent, which they shall have input to". ZC3 based their argument on the idea that, "Elected people from all these councils, now, have got no other business to fall back on, so I wouldn't want [a] voted-on body dictating what farmers do. I think you'd have to have some appointees from outside the region, probably".

Others felt that specific groups were either disenfranchised, or had poor representation within those opportunities for participation. ZC7 looked to the younger generations, "where are the young people in this whole process?" ZC1 mentioned two groups, "the recreational interests have felt more difficult to have their say," and, "I think you could say the same about ecosystem biodiversity. People who have that as their primary interest, their views have probably been less well-represented". Another interviewee, ZC5, had similar views, "I think the environmental and recreational groups were not always well represented and I think if they were there might have been one voice that perhaps dominated". Two interviewees used representation by location as something they felt was not complete, ZC6 commented, "I think what they call the Land [Lake] Settlers organization have not been as accommodated as much as they should have been" and ZC3 thought, "Yes, I think they [Lake Settlers] have [been poorly represented]. From my point of view, the area above the Main South road, right through the Alps [have been poorly represented]".

DoC also came up in two interviews as being pushed aside or disenfranchised, especially as it related to their co-management agreement with Ngai Tahu in favor of another agreement with ECan. LU1 said, "I do think that what potentially has happened is that, I would say at the moment that the DoC feels disenfranchised". ZC2 agreed, saying, "The one group that I'm a bit concerned about right now is DoC". It is possible that this strained relationship is a side effect of the Treaty. One interviewee mentioned again the heavily weighted favour and/or impact of Ngai Tahu. ZC8 said, "No, I think it's virtually been focused on Ngai Tahu

interest and the people it's close to" and ZC4 felt that, "I guess a wee bit of a concern for me is that in the whole Zone process there are people living in the Zone that are a minority on the Zone Committee".

When queried about the inclusion and influence of external interests, there was varied response. This was to identify any external entities, and highlight any that played a significant role in the rule-making process. ZC7 was unsure, "We've relied on local people representing all sorts of interests but have we talked to interested parties who live beyond Selwyn and Christchurch and Banks Peninsula? I don't know that we have, no". ZC1 mentioned a few entities other than central government; Agresearch, DairyNZ and Landcare" and ZC3 thought, "Only the agricultural. Whatever you call them". Central government was again included by ZC6 who added, "central government has certainly had a role and they have put money in..." and LU1 thought, "obviously Central Government, if you see those as external, they certainly play a role".

Interviews revealed that external interests did not play a major role in the Zone outside of scientific input from consulting firms (most often locally based), an acknowledged role for central government, and input from the regional committee. The inclusion of these interests and their impacts was beyond the time and scope of this thesis to explore fully. ZC members seemed to downplay them, though, and so those outside interests' roles could have varied.

5.2.4 Monitoring

When considering monitoring as a design principle, Ostrom's criteria is not very strict. When studying CPR institutions, Ostrom (1990) found that those with monitors who are accountable to the appropriators were present in successful CPR situations. This section hopes to identify the monitoring, find out who is doing the monitoring, and then determine whether or not those monitors/auditors are accountable to the appropriators. There are several types of monitoring this section will consider: First is the Lake health, second is the impact of the Lake openings and third is on a catchment level. There is also mention of institutional monitoring within the Zone. Much of the monitoring is undertaken by different entities, so those pertaining to the ZC and water quantity and quality remain the focus.

Document Analysis

Much of the documentation for official monitoring is available online from ECan's website. Three examples of monitoring in the area are shown in Figures 18-20. First is an

environmental example, second is the location of groundwater wells and third is an auditing-type map of allocation zones in the region.

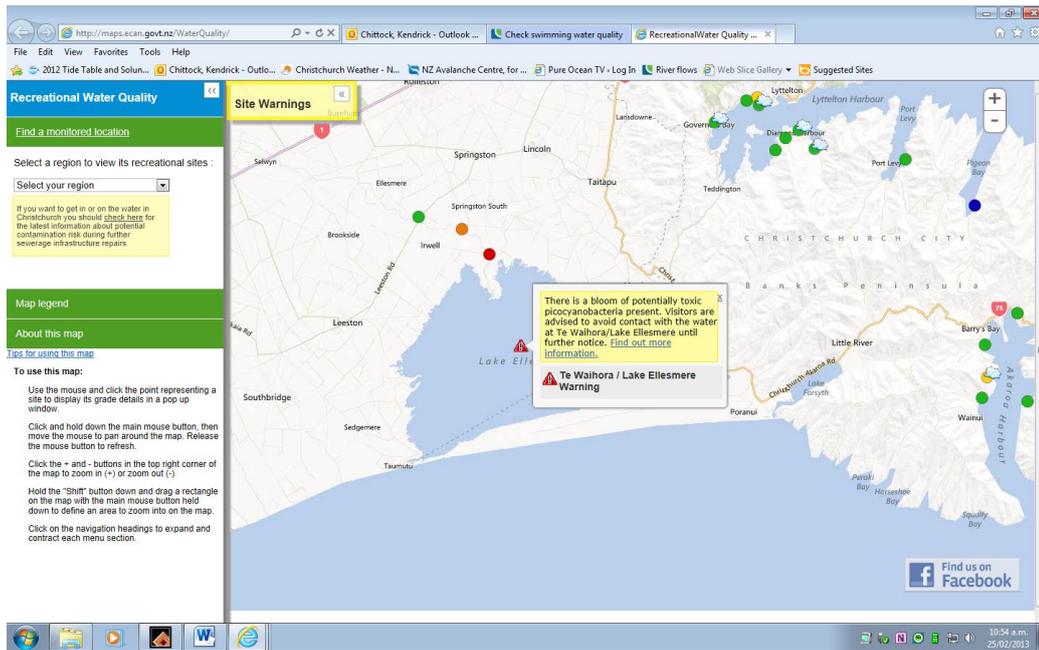


Figure 18: Recreational Water Quality Map (Environment Canterbury, 2013c)

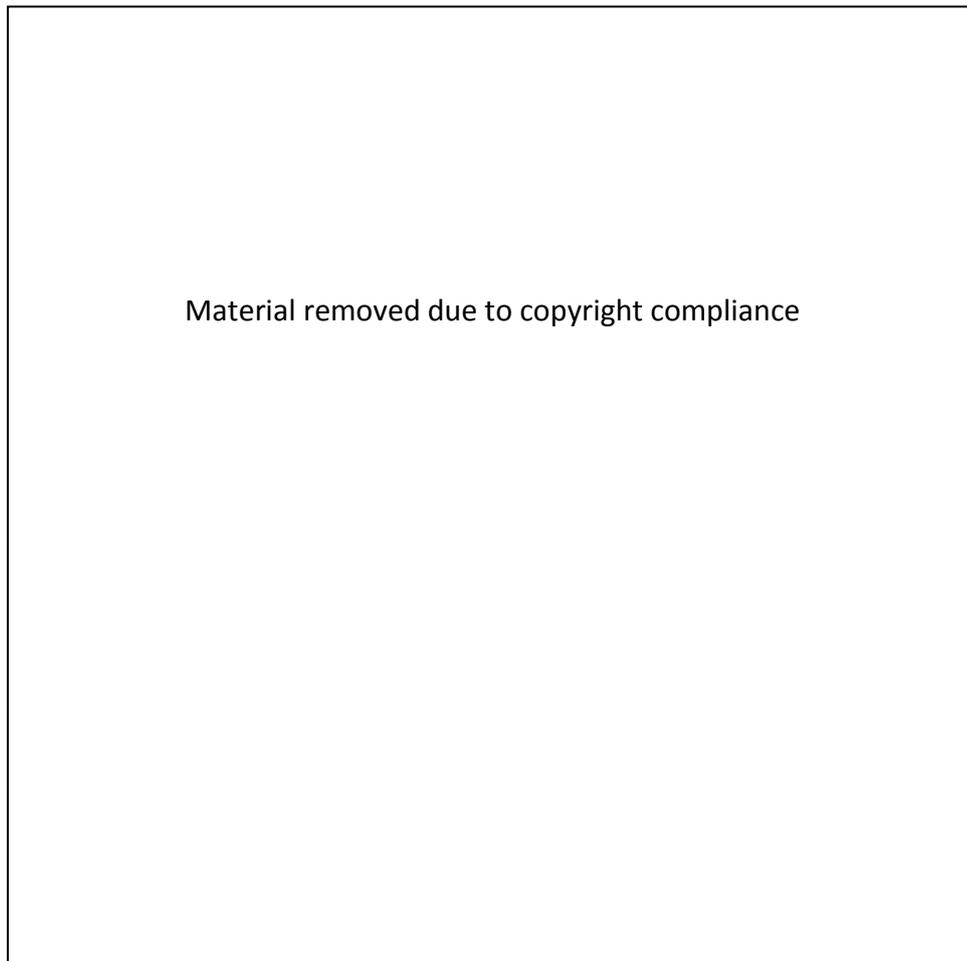


Figure 19: Groundwater Quality Monitoring Wells (Environment Canterbury, 2013b)

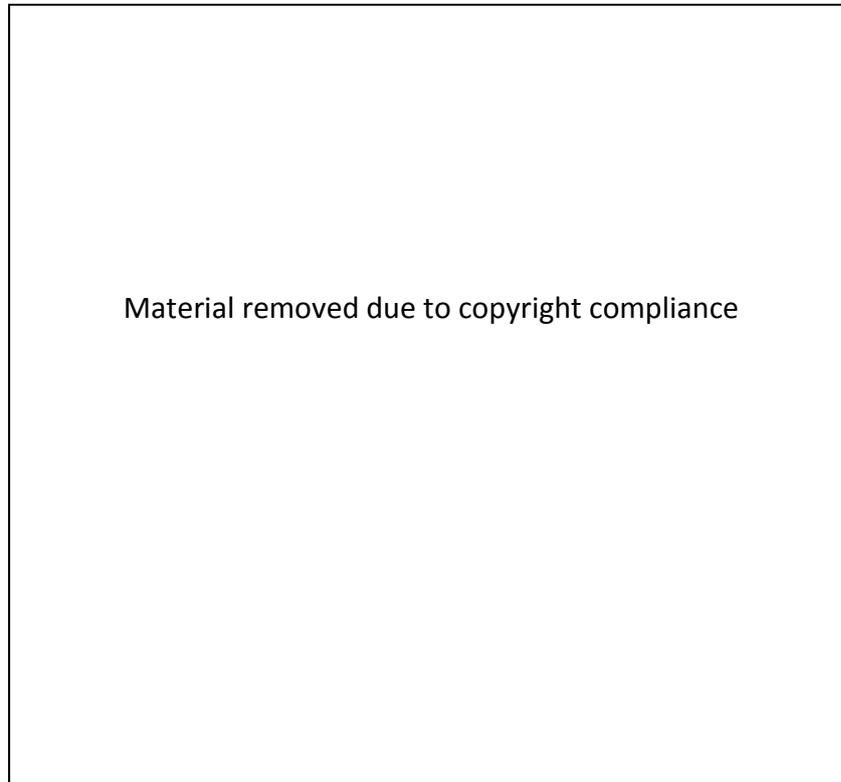


Figure 20: Groundwater Allocation Zones (Environment Canterbury, 2013a)

Also included online are reports from various experts in regards to water quality/quantity and lake levels. The variety, detail, and availability of monitoring as it applies to Lake environmental health at the time of this thesis varied within the Zone and around the Lake. Local universities and a joint effort between the University of Canterbury and Lincoln University called the Waterways Centre, also contribute to the overall knowledge.

However, upon a search for accountability of the monitors, there arises a major difference between the existing framework and Ostrom's principles. The *Environment Canterbury (Temporary Commissioners and Improved Water Management Act 2010)* (ECan Act) alters the accountability of the regional council (ECan) which does the majority of monitoring and auditing within the catchment. As a result of the ECan Act, the monitors in this CPR are not held accountable by the appropriators. The ECan Act reads,

“The purpose of this Act is to provide for the replacement of the elected members of the Canterbury Regional Council with commissioners who will act as the Council's governing body until new elected members come into office following the next election; and provide the Council with certain powers that it does not otherwise have to address issues relevant to the efficient, effective, and sustainable management of fresh water in the Canterbury Region” (ECan Act, 2010).

Currently, the commissioners are accountable only to their Ministerial appointers. There is a case to be made, however, that the commissioners are better suited and/or more knowledgeable when it comes to water management within the region and,

“The responsible Ministers must appoint commissioners who collectively have knowledge of, and expertise in relation to, the following matters: organisational change; and freshwater management; and local authority governance and management; and tikanga Maori, as it applies in the Canterbury region; and the Canterbury region and its people” (ECan Act, 2010).

That being said, even assuming momentarily that the appointed commissioners do well by the people of Canterbury, they are still not accountable to the people that they are monitoring or auditing. After all, “A commissioner vacates office if he or she is removed by written notice given by the responsible Minister; or resigns” (ECan Act, 2010) not by votes in the region. And in fact, to lessen the accountability of the commissioners even more, the ECan Act says, “A commissioner is not liable for any act done or omitted to be done by him or her in good faith in the performance or intended performance of his or her functions, responsibilities, or duties as a commissioner” (ECan Act, 2010). Until the commissioners have been replaced by elected officials within the CPR area, this principle cannot be said to exist in the current framework, despite any failures or effective work by those appointed. It is also important to note that although the runanga members of the ZC are all accountable to their runanga, the other members of the ZC were appointed by the three local councils and it is a committee of the regional council, technically answerable only to the non-elected ECan commissioners. However, the members of the ZC are almost all people who own or have property or live within the zone.

It needs to be noted that all monitoring does not have to be specifically scientific and the ZC does play a role in politically monitoring the Water Executive at the regional level and with that, the implementation of the programmes (*Selwyn-Waihora Zone Water Management Committee: Terms of reference, 2010*). This does not help to add to the accountability of ECan commissioners, but it does give the institutions involved a path to adaptive management in the future. It also gives some accountability in relation to the institutions surrounding the Lake as a CPR, but not elsewhere.

Observations

Observations of the accountability of the monitors echoed that of the document analysis. Existing scientific monitoring by councils was not questioned at meetings and appeared accepted as reliable and is freely accessible, however updating information on water takes was often recommended by interviewees as a voluntary decision for farmers. Within the ZC, the issues revolved more around the limits being set and the actions that were to be taken to meet different monitoring goals.

Interviews

Most interviewees confirmed the responsibility for monitoring was ECan's while acknowledging a couple of other groups (e.g. universities) who perform monitoring duties but do not have the ability to sanction. Comments on monitoring varied between the three main types. Some interviewees talked exclusively about Lake environmental health, others on the opening, and others on a holistic catchment approach. ZC1 said, "ECan largely for the chemical and the water quality and quantity. DoC largely, for the bird life and I'm not too sure, a combination of DoC and Fish and Game, probably Fish and Game for the exotic species. And now there's COMAR⁴ for cultural evaluations". Several others gave similar answers citing ECan; ZC5 said, "Yea, ECan is pretty much involved in that," and EC6 perhaps summed it up most accurately, "ECan do most of the monitoring but there are other organizations that do bits and pieces". Some of those bits and pieces were handled by DoC, Fish and Game or The Ministry of Primary Industry, as previously noted, who did different monitoring toward fish or birdlife. COMAR was mentioned twice as it is the cultural monitoring by the iwi of the Lake. The possibility of non-Maori cultural relationships and associated monitoring indices were not mentioned.

Some differences did appear, though, when prompted to speak on what the interviewees thought were the most important aspects of Lake monitoring. It was left to the interviewees whether or not to include the catchment in their monitoring commentary. ZC1 spoke about the chemical status as one major factor, "We need to know the chemical status of both the Lake and the inflows". Another interviewee, ZC6, thought that, "clearly the lake openings are critical to the Lake". ZC4 thought it a combination of the two previous comments, "Reduction, nutrient levels are the important one. After that, it's really about lake level". LU1 wanted to base monitoring on outcomes, "Well I think you need to be aware of what

⁴ Cultural Opportunity Mapping, Assessments and Responses

your desired outcomes are and once you define those you need to make sure that you've got some indicators for each of those and you monitor those over time". EC1 looked holistically, "I think we have to be looking at a, a kind of a, a more ecosystem-health sort of approach to measuring the Lake". These all relate to either the ecosystem as a whole, or to the water quality and quantity. No one mentioned flounder or some other individual species as the most important factor. A holistic approach can be seen in the scenarios that target different TLIs or irrigation needs that are discussed with the limit-setting.

Lacking in the monitoring was acknowledged by LU1 when speaking of the bird-life, "In terms of duck numbers, that's a Fish and Game/Council responsibility, they would acknowledge they don't do a very good job"⁵. So too was recreation monitoring, which was also mentioned as being important by ZC7, "...the health of the Lake and the use of the Lake would be a really good thing to be measured for me. That's a really good indicator". Another commented on recreation, ZC1, who said, "We have found it difficult to get good numbers on recreational usage".

5.2.5 Graduated sanctions

Penalties and sanctions were analysed to gauge their progressivity, harshness, or lack thereof and also for the accountability of those who apply the sanctions. The relationship between those who carry out the sanctions and those who can alter them was also of note. The presence of graduated sanctions was mentioned by several interviewees as it pertained to water quantity but was not as strict when it came to water quality, as is discussed below. Again, fisheries were mentioned for contrast but the thesis focus remains on quantity and quality of water. The sanctions for those individual CPRs like the trout fishery or the eel fishery have separate sanctions not directly part of the sanctions surrounding water quality and quantity in the Zone.

Document Analysis

Monitoring and sanctioning water use in Canterbury is done through resource consents and Environmental Protection Officers through ECan. Figure 21 shows the types of infractions against those consents and the consequences associated with each.

The different actions allow for not just graduated sanctions for severity but also for repeat offenders, which may cause a jump in a grade. The first warning is also very minimal if the

⁵ WET facilitated a bird count for the Lake on 9/2/2013 which counted around 55,000 birds

offense is not a large environmental threat. The sanctions also allow leeway for smaller infractions.

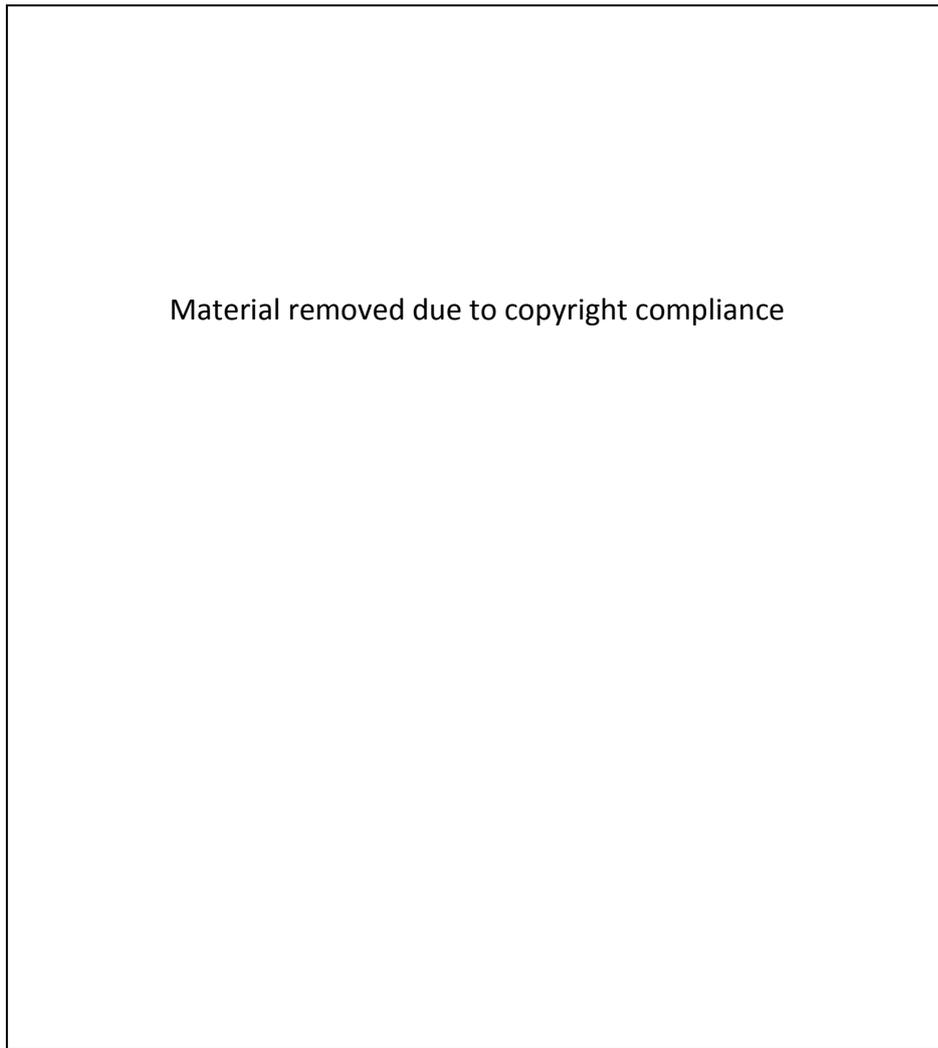


Figure 21(a): Non-Compliance Description and Associated Sanctions (Environment Canterbury, 2009)

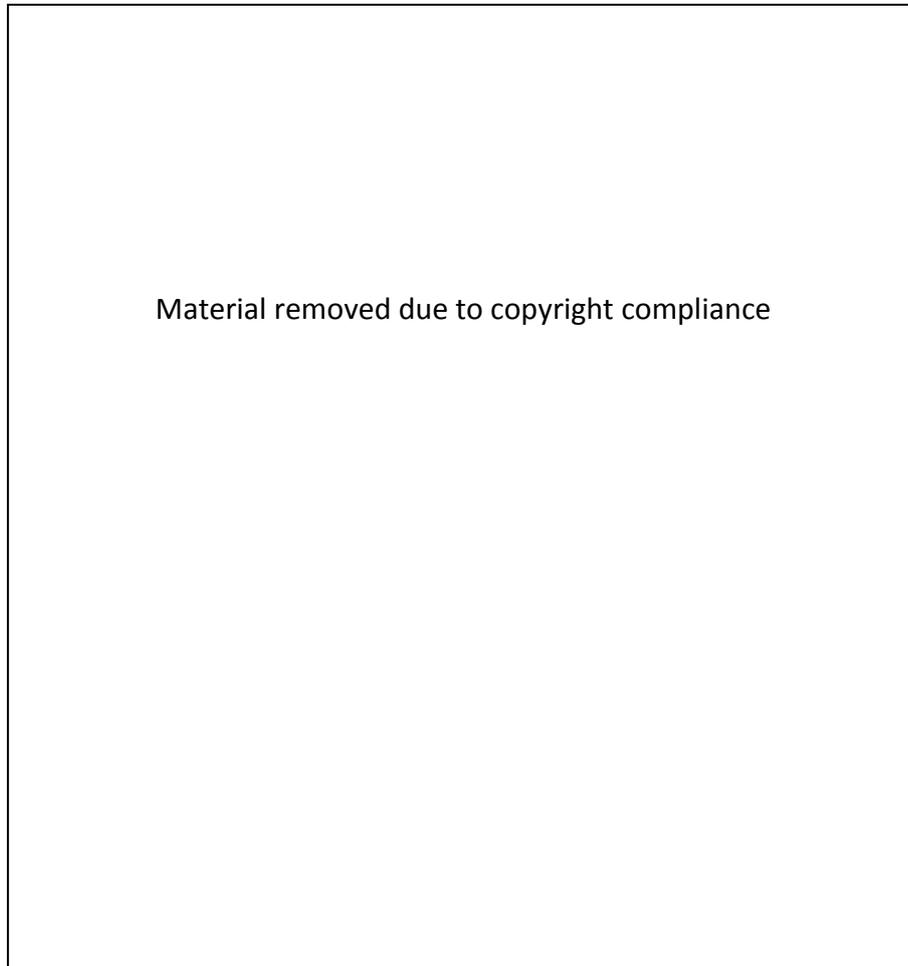


Figure 21(b): Non-Compliance Description and Associated Sanctions (Environment Canterbury, 2009)

Observations

ZC observations in this case were minimal. Although there was talk about water quality in the form of TLI limits and also of land use surrounding different scenarios, there was little discussion surrounding the actual sanctions. There was one meeting where water allocations were discussed but this focused more on trading those rights and not on the breaches of consent. Of much more import were the interviews, discussed below, where direct questions about the monitoring could be asked.

Interviews

Existing penalties were described by ZC2, "When people don't conform with us, we've got a whole series of steps as to, how we will handle that; notices, talking to people and so on. But at the bottom of that list is if people insist on not following the rules, we'll take them to court". In terms of water allocation and quantity, ZC6 said, "The first one's really just, what's going on? Second one's like, hang on, you've got a problem and you haven't fixed it. After

that you can be fined, for another breach, and then if you have, I believe that you have the ability to lose your consent". ZC1 discussed the current water abstraction rules, "Well, progress is sometimes very sudden. If a person is not complying with the conditions of their resource consent, they can just have their well shut down".

Also discussed were the different entities that enforced different sanctions for different aspects of the CPR. LU1 gave a couple of examples, "If it's a fisheries matter, nothing to do with the Zone Committee," and later, "If it's a wildlife matter then it falls under the Conservation Act and DoC, Fish and Game would deal with that" furthermore, "the Zone has a goal but there is another agency that would seek to implement through both compliance, law enforcement, habitat management and the like". ZC4 had more to say on fisheries, "fisheries management is absolutely hammered if you go over your quota. So there'll be major fines, loss of vehicles, loss of quota..." Although the ZC is determining much of the water quantity and quality recommendations, ECan does not carry out much of the wildlife and fisheries monitoring or sanctions. Those types of sanctions were outside the scope of this thesis.

ECan fell under some criticism for some non-sanctioning incidents. ZC7 felt, "Well I guess a frustration for me is the lack of prosecution of blatant abuses of the rules". EC2 described the controversy surrounding a local location near the Lake where, "It's acknowledged it's non-compliant but ECan's too scared to do anything about it because it's a group of, consortium of farmers who take advantage of [ECan's reluctance to prosecute]. A similar thought was expressed by ZC8, "Yea ECan, I'm not being critical it's just the way they operated, that were aware, did nothing virtually very early on". One interviewee, EC1, made a comment in defence of ECan's work, "An agency like ours always tries to take a very, take a measured approach and tries to be as effective as it possibly can. In other words it's not like a, you know, all of them have to be prosecuted if someone breaks a rule" and went on, "there is certainly a perception that the law is kind of uphill, not necessarily in a completely uniform sort of way. I think it's a perception rather than a reality, we apply the same tests to everybody whether we prosecute them or not". It was also mentioned that monitoring requires funding and so some monetary barriers may play a role. It is important to note that ECan does not prosecute every case and it is to their discretion whether they do or do not.

A few people commented on how things should or could be done in the future. These comments were helpful as the observations revealed little on this topic. ZC8 felt attitude

was important, “they actually need a change of attitude of people. You can’t have a lot of inspectors running around checking on them, it’s actually getting people’s mind changed”. ZC5 said, “And I guess the consequences, there needs to be some sort of penalty or fines or whatever”. ZC1 had a more in-depth answer, “I guess it’s been an attitude of the Zone Committee, which I endorse, that you always try to work with the people first and it’s only if there’s an unwillingness to comply after things have been explained, that you have to go from the carrot to the stick”. They went on, “And again, the direction we’re headed in now is to encourage things like audited self-management... But then that has to be to an agreed set of rules and it has to be audited by independent and capable auditors”. After describing the sanctions surrounding water quantity, ZC6 said, “in the future, I would imagine that there will be similar constraints around nutrients. That you’ll live within caps and limits...” Until the final sub-regional chapter is submitted via the ZC, it is difficult to predict exactly where the future compliance and monitoring scheme will differ from the previous set of rules. As of this thesis, the approach to enforcing compliance with maintaining any specified water quality and quantity requirements was to use graduated sanctions, although it seemed some situations were treated differently than others.

5.2.6 Conflict-resolution mechanisms

Quick access to a local forum as a means of conflict-resolution is an important principle in Ostrom’s work. Or, better yet, “Although the presence of conflict-resolution mechanisms does not guarantee that appropriators will be able to maintain enduring institutions, it is difficult to imagine how any complex system of rules could be maintained over time without such mechanisms” (Ostrom, 1990, p. 101). The type of conflict-resolution is not specific in Ostrom’s work, although she does mention that, “the potential for conflict over a very scarce resource is so high that well-developed court mechanisms have been in place for centuries”(1990, p. 101). Because of this lack of specificity, it is difficult to tell what, exactly, Ostrom would prefer. One word does stand out somewhat: ‘local’. The idea of a local forum for conflict resolution is an important one to Ostrom and also to the ZC.

Document Analysis

The ZC’s preferred style of conflict resolution can be seen in the ZIP, where it states, “The Zone Committee operates through a collaborative consensus approach and reflects the agreed commitment by all members to seek the outcomes outlined in this ZIP.” And furthermore, “It was agreed that the whole committee would address nutrient limit setting

due to the complexity and importance of this strand of work” (SWZIP pg. 7, 2011). These types of collaborative governance strategies, however, are not always present. Currently, they exist to solve issues in the zone and will again in the future. They do not offer a day-to-day solution for conflict resolution.

To help achieve these goals of collaboration, the ZC implemented Decision Cards that could be placed in different categories depending on the ZC’s level of agreement. These categories were as follows: *Decision area/element must be included and is acceptable as described in Strawman 1; ...must be included but more discussion/information required; ...possibly should be included but a lot more discussion/information required; ...should NOT be included but more information and/or discussion needed; ...must NOT be included.* Topics for Decision Cards would be issues that target the ZIP outcomes. These topics ranged from ‘Managed Recharge of water to Groundwater for environmental benefit’ to ‘Water Storage’ and ‘Protection of wahi tapu and wahi taonga sites’, to name a few. ZC members would offer their view on the topic and then categorize them as discussed. In this way, topics that were agreed upon could be approved and set-aside and more difficult issues could be singled out and focused on in later meetings.

The courts (adjudication) are seen in the CWMS as a last resort in most cases and it would be difficult to consider them ‘local’. The CWMS even states, “allocation decisions will be resolved in most cases without resorting to the courts” (CWMS, 2009). Although non-statutory, this bullet point in the CWMS alludes to conflict resolution strategies within the region.

Observations

There was an overall clash of views on the ZC based mainly on the split between those who were involved with farming (most often dairying) and those who were recognized as tangata whenua and in effect, a part of Ngai Tahu. It is notable that Ngai Tahu does have some holdings in dairy and owns farms, but their identification on the committee was mainly as tangata whenua first, then other considerations (whatever the topic may have been) second. The seating arrangement also echoed this ideological split, as runanga representatives most often all sat on one side of the table, across from the other ZC members. Some members would also go as far as to categorize the Committee by saying, ‘on this side of the table’. It is however, important to note that these types of splits happened *within* the ZC, highlighting

it as a forum for disputes. Within these disputes and discussions, several tactics were used to solve issues and reach consensus.

Along with the previously mentioned Decision Cards, a 'blue card' was implemented by the Facilitator and handed out to all members of the ZC, including public observers. The blue card represented an ad-hominid argument or disagreement which could be taken personally or was found to be culturally offensive. The card could be implemented in a 'Time Out' sort of way to cool the situation and remind the committee of their previously agreed upon cooperative approach. Confrontations that required the use of the blue-card were often left to be discussed later during in-committee time or would be circled back to in a later meeting. The blue card, although rarely used, was a good way to tell a Committee member that they were 'toeing the line' on an issue, whether they knew it or not.

One example of the blue card was the discussion of the use of alum in the Lake to help neutralize phosphorus loads. The idea was discussed within ECan before it was brought to the runanga and brought up in a public ZC meeting. In doing so, the runanga representatives were very frustrated that they had not been consulted first (as owners of the Lake bed) and refused to talk about the topic until it had been discussed amongst the runanga. The episode seemed a backward, or at least a side-step away from what had been a good build-up of relations in the previous couple of months at the Committee meetings. This was the most intense disagreement during the observational period and yet did not seem to cause much damage to the process of deciding load limits; it only delayed the discussion on in-lake mitigations. Where Pakeha could have a full discussion at the ZC table, runanga representatives often had to withdraw to their specific groups to discuss first, then return to the ZC table.

Often, at least half of the meetings were spent educating members on different industries, scientific data, or other issues that they were lacking in expertise. A presentation by Donald Couch on kaitiakitanga was timely, but it was surprising to see this concept not understood by others so late in the Zone process. There were also presentations done by various industries at that same meeting, at the Wairewa Marae. Also, there was considerable time spent discussing the TLI or options that were not obviously viable. It seemed they were going through the motions on some of these issues just to cover them when it was obvious well before the end of the discussion, that the scenario in question was not the solution.

In the June 5th ZC meeting, in-committee time was requested and approved for after the normal meeting hours. During in-committee time the public was asked to leave and the ZC would apparently have arguments or discussions on their own. Toward the end of the observation period, this private time was worked into the meeting agendas so that the observational period was much shorter. It is unclear exactly what was discussed during these times but it was apparent the ZC preferred them for the more difficult issues. It is also unclear what type of conflict-resolution was used during these private meetings.

Interviews

The questions pertaining to this topic were designed to find whether the forum for resolution was the ZC, somewhere else, or at the least, if in fact it did exist and most importantly, if it was effective. There were also a range of answers from the interviewees about the major disagreements surrounding the Lake.

Interviewees discussed the larger conflicts ranging from TLI to cultural history and commented on what appeared from observation to be 'disagreements', or as ZC6 said, "I don't know if you'd call it... [disagreements] I think people disagree. I think it's a matter of the extent to which they believe something". Belief and world-view, as discussed before, play a large role in this resolution process as most issues stem from those cultural beliefs. ZC1 spoke to this belief and world-view difference, "probably the major community disagreement is between those whose conservation interests tend toward the preservation end of things and others whose development interests tend towards maximum profit at any cost to the environment". On the cultural front, ZC1 also added, "But the point of view of iwi, Ngai Tahu in particular, is that resources are things which have their own mauri, spirit, life essence... whereas resource management in the Pakeha sense is more about this balance between ecosystem health and development opportunity". ZC5 thought that of most importance was, "The alum and the opening" although also brought up cultural beliefs, "Well I think there are a lot of cultural issues that haven't yet been resolved". The cultural theme was brought up repeatedly by different interviewees. ZC3 drew similar figurative lines across the table as the physical seating arrangement in the ZC meetings; "Maori/Pakeha, Maori/Farmer, Maori versus farmer". Whether the interviewee was including all Maori in his assessment or just the involved tangata whenua was unclear. ZC8 had a similar view, "Ngai Tahu obviously are very strong that their view is the only view and that's what we should do or not". One interviewee, a Maori, put it bluntly, "You know I

would automatically talk back in the Maori sense; they're crapping [i.e., 'defecating'] all over our whakapapa [family lineage]".

Aside from the cultural and world-view differences, there were a few more science-oriented answers. LU1 said, "Well the Lake Opening regime is probably, in my view, issue one, two and three... I guess the second biggest issue is around water quality in the Lake... If there was a third one, it's probably the need for and how to manage the restoration of the macrophyte beds in the Lake". Second, EC1 mentioned, "Well historically it's been about whether you manage it as a fishery or do you manage it as a drainage system". Another similar response came from ZC2 who said, "... the crunch thing, I think, the real differences will be, what is doing most of the, what is contributing most to the degradation of the Lake and what are we going to do about it?"

Asked next to explain the forum for resolving such disputes and whether or not it had been successful, answers varied. ZC1 had this to say, "So they're not fully resolved. How should they, will they be resolved? I think that's up to leadership". ZC2 separated different topics from one another, "the whole Ngai Tahu, Waihora Management Board, Whakaora, all of those things are in one bag. ...The other one about nutrients, setting limits, that's really tough". ZC8 also saw different locations for resolution, "Well I think you've got the Zone Committee doing some, you've got the co-governance agreement with ECan and Ngai Tahu and I think in the end we will get up to a workable scheme that people will agree with". "Not really," said ZC3 plainly, as to whether things had been resolved. ZC7 agreed, "No it [forum for disputes] hasn't been discussed".

EC1 and LU1 both said that the ZC was a focus for airing disagreements and resolving them, LU1 said, "I would say most of those issues have been discussed through the ZIP or the CWMS" but went on to separate other topics out, too, "I don't think the management regime, per se, in terms of Ngai Tahu and ECan is really being discussed in that (ZC) forum. That's sort of a governance decision at the highest level... the community's probably starting to get some feelings of being disenfranchised". EC1 said, "I think the Zone has been the forum for that, it's probably the best forum for all of these debates, actually". Those who were not on the ZC seemed to think the ZC was the best place, as was exhibited by EC1 and LU1, while those on the ZC felt that issues were split as to where they were being worked on to be resolved.

5.2.7 Minimal recognition of rights to organize

In an effort to find whether or not there was recognition of the rights to organize, it was pertinent to ask whether or not the recommendations put forward by the ZC would even be accepted by regional government. If the Focus Groups and ZC reach a consensus and put forth a community-driven set of recommendations to the regional council, if it is not accepted then the efforts of the inclusions of all these groups would be for naught. They would also not fit Ostrom's principle of the rights to organize.

Document Analysis

Without full approval from the ECan commissioners over the recommendations forthcoming from the ZIP, documents can only show their written intent. One example is in the ZIP, where "The Implementation Programmes, although not statutory, provide a very clear pathway, expectation and commitment for the programmes to be implemented and resourced as proposed" (SWZIP, 2011, p. 7). This quote suggests the ZIP will be followed by other authorities when complete. The CWMS also suggests the same, "Existing powers and/or new legislation will be used to ensure the implementation programmes are given appropriate legal status under the LGA and the RMA, and effectively provide a link between the two Acts" (CWMS, 2011, p. 15). The acceptance and inclusion of the ZIPs and RIP within statutory regional plans seems to be encouraged through these documents.

Observations

Observations within the ZC concerning the expectation of acceptance of the ZIP were based mainly on three events/moments. The first involved ECan Commissioner Caygill's somewhat emotional and seemingly genuine appreciation speech to the ZC, commending them on their work and encouraging them forward during the difficult-to-solve limit-setting process. This suggested a willingness to support the Zone's recommendations. The second was the acceptance by the Selwyn District Council of the ZIP, which it will implement as long as funds are available. The last, which is common amongst all ZCs, is the presence of an ECan commissioner, in this case, Donald Couch, on the Selwyn/Waihora ZC. The involvement of the commissioner provides incentive for approval and clarification on challenging issues. It is highly unlikely the ZC would put forward something that its resident commissioner thought was bound to be turned down by ECan. This also begs the question of whether or not central government is allowing the community the rights to organize, considering they have stepped in with the appointed commissioners.

Interviews

When asked, interviewees mostly felt that the majority of the ZIP would be accepted with some small alterations depending on funding and regional scale issues. ZC3 said about the recommendations, “well they’ll go through the CWMS in ECan I’m not sure how much policing they’ll get. It’s not something that the general public can see”. Again, ZC7 echoed the main feeling of the interviews, “So we’ll make a recommendation to the Commissioners and there’s absolutely no guarantee that they will, that they will put in place what we’ve recommended. And I don’t expect that it’ll be exactly as we recommend it, but how much of it is?” From ZC8, referring to the recommendation’s acceptance, “They will have to be, yea”. ZC6 mentioned the weight of the ZIP recommendations, “Yea. So much so that it scares me. Because, you know it’s a huge responsibility for a bunch of people who are not qualified planners. To be putting into place recommendations that will be written into a regulatory framework”. EC2 said, “If the central government through the regional, don’t take parts of it well, what the hell have we been doing the last three years? It’s a monumental waste of time”. ZC2 summed it up, “I think by and large they’ll be supported. If there’s something that’s really just not possible, then, you know, there’ll be some questions”.

5.2.8 Nested enterprises

Nesting, according to Ostrom, is included only for CPRs of a larger size, which is why it is included on this list. Subsidiarity is a major principle when designing and reviewing nested systems, and so some, not all of the management of the Lake can fall under this style of management. Earlier questions regarding central government’s involvement touch on this subject, as well as on commentary surrounding a topic that distorted the nesting within the Zone; co-governance.

Document Analysis

The CWMS describes the nesting of the process best, “Planning activities will be carried out in a ‘nested’ zone/regional/national level for consideration while ensuring coherence between the levels” (CWMS, 2011 p. 15). Figure 22 also describes the arrangements in two presentation slides that discuss nesting in governance (B. Jenkins, personal communication, 2013).

These slides also allude to a shift in the governance of the region to a more collaborative, nested style. This is supported by the wording of the documents establishing relationships between Ngai Tahu and the regional council (e.g. Whakaora Te Waihora). Co-governance,

and the associated agreements, is part of that nesting, done at a higher level than the more operational level of the ZC.

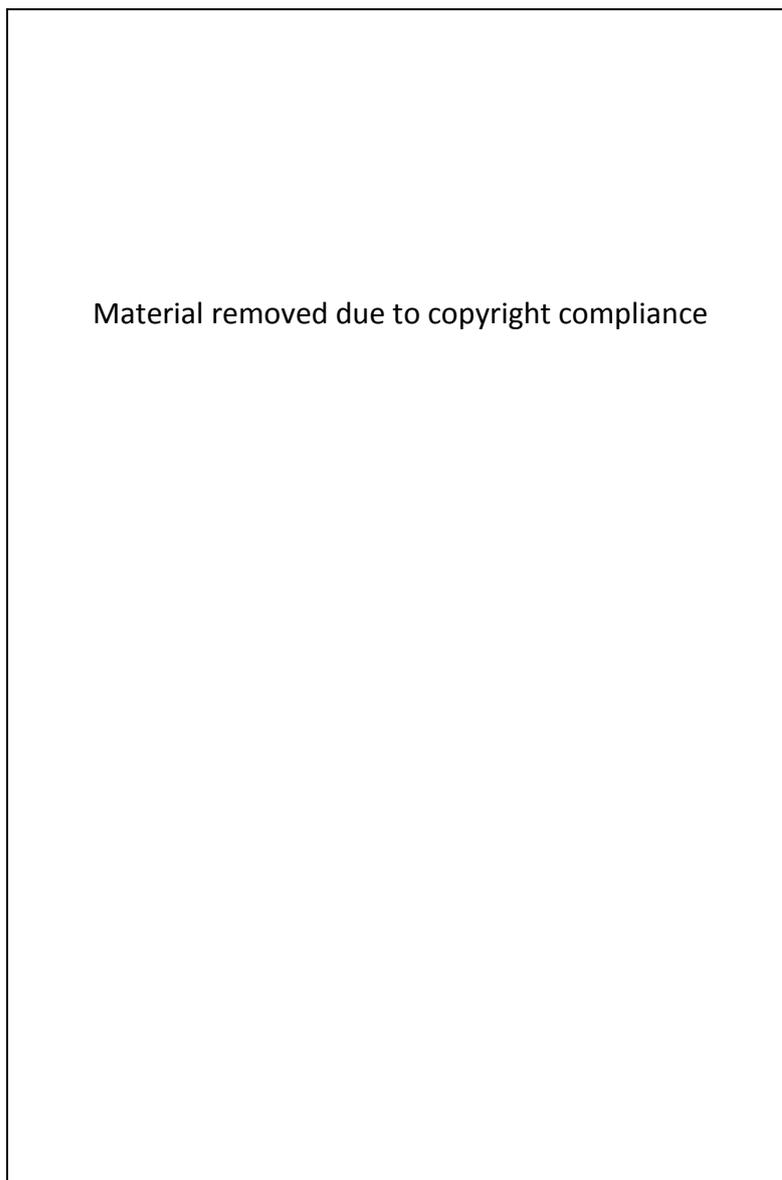


Figure 22: Presentation Slides from: Te Waihora/Lake Ellesmere: A hidden treasure on our doorstep (B. Jenkins, personal communication, 2013)

Observations

Observations during the ZC concerning nesting were limited. Occasional clarification of the statutory nature and implementation of different programmes was provided by ECan. A sense of equality amongst ZC and the regional zone committee was present.

Interviews

Interviews on nested governance touched on two major topics; central government and co-governance within the Zone. ZC2 mentioned central government in a more opinionated way, “there’s a view that government departments in Wellington want to run things all the time. Fair amount of truth in that. But in the case of Waihora, and I’ve been involved with some of the discussion about... ..the Ministry for the Environment, they’ve been pretty supportive, actually”. EC1 also commented, “government is well-represented, whether the government plays, plays the sort of role it should play in this sort of thing is another matter”. Comments surrounding central government’s involvement involve the idea of nested governance. In a nested system, subsidiarity would warrant an issue be dealt with on the smallest effective scale possible. For example, central government is not deciding the details over the lake opening. There is a role for central government to play especially when it comes to funding, support, and recognition of recommendations but it should not be their role in a nested system to micro-manage, at least inside of the ZC.

Several comments were made about nesting indirectly, through the views and functions of co-governance within the Zone. Although ZC1 thought the agreements to be a help, they also said, “On the positive side, I see that it has obliged people to look at those other points of view very carefully and see that as a positive thing. On the other hand, like cheese, good things take time”. EC1 said that, “Co-governance is kind of yet to be proven,” and continued, “There’s that interesting kind of interaction between co-governance and the CWMS and the ZC that hasn’t really been tested yet”. ZC2 said simply, “I think its early days,” and ZC6 added, “I think as time goes by they may be a help, but there may be a period where they’re viewed with suspicion by general public”. ZC8 was vague, “I wouldn’t say they’ve been a hindrance,” and ZC3 didn’t see much impact at all, “I think it’s business as usual and over time it will just slide into significance”. LU1 said, “At that time, they were necessary, absolutely necessary, so from that perspective they are good. But I’m not sure they’ve been implemented in an integrated sort of way as they could be”.

Two comments from opposite sides of the spectrum help to frame the impact of co-governance on nested systems the best. It was ZC4, who said, “I think at this point they’re a hindrance,” and explained their point, “They provide, I, to me, very negatively. Because I sort of believe right from the beginning that there were two tiers. So we could sit at a table and have a discussion, and I always felt I could win a debate at the table, knowing that the folk could get up from the other side of the table and go back up at that level, go up three

tiers, and say, actually, this is what we're going to do anyway". On the contrary, EC2, mentioned a longer-term goal for the co-governance agreements, "in my mind I hope it personally it leads to more Maori seats on the... ECan. Now we can actually be a part of the policy making process".

5.3 Conclusion

Results varied depending on the principle in question, though the different types of results (e.g. document analysis, observations, interviews) did not always align. One example was the principle for clearly defined boundaries. After document review and observations, the boundaries did not look to be defined for much of the CPR in question. There were three or more different maps showing the catchment and changing physical boundaries relating to the Lake. It was through the interviews that it was revealed the ZC members and others (e.g. iwi, researchers) all had a shared understanding of the boundaries. This result speaks to understanding each principle through the various lenses of the research to create a more informed output. No single result can work to define the presence or lack of a principle. Interviewees, though not necessarily familiar with Ostrom, had an understanding of the principles in question even though they were not asked directly; some via their experiences monitoring, some via policy and some via opinion and local government involvement.

Chapter 6 - Discussion

This Chapter presents a discussion of the results from the previous Chapter within the context of the theoretical literature reviewed in Chapter 2. In particular, the findings in relation to each of the Ostrom's Principles are drawn together in a discussion of community empowerment, the role of effective practical operational procedures, and the difficult nature of the challenges faced in this particular catchment.

The impacts of the Treaty cannot be emphasized enough in this thesis. Within New Zealand, the Treaty is a founding document and has a set aside holiday to recognize its historical signing. It is clear from the interviews that to analyse any type of resource management in New Zealand without considering the Treaty would leave much unexplored and not understood. Aside from the Treaty, its manifestations of the Settlement Act and both co-governance/management agreements play a major role surrounding the management of Lake Ellesmere, and are discussed as appropriate relating to the following topics.

Without input from various members of the Zone Committee who may have been absent by not having a specific seat on the ZC, there is a chance some groups could miss out on certain conversations or chances to be heard.

This issue poses questions about the jurisdiction of those at the bottom of the catchment and the extrapolation of their involvement and decision making abilities up the catchment to areas where they do not live or where they do not have a history. It may be that these abilities are enhanced because of location specifically, or potentially because of the Treaty and iwi recognition. It is unclear whether these should be viable reasons to have an enhanced role in the management of the Lake.

6.1 Ostrom's Design Principles Discussion

The principles used from the literature (discussed in Chapter 3) provide a context to examine the existing framework surrounding the governance of Lake Ellesmere and provide a background with which to answer the research questions. First, the principles are discussed and later, other research questions are explored. As has been found by others in relation to this Lake (e.g., Varona 2013), it was difficult to represent the entirety of the community surrounding the Lake given the uncertain nature of both biophysical, political and social boundaries, making it difficult to gain a sense of exactly who comprises 'the community' in relation to the CPR.

6.1.1 Clearly Defined Boundaries

Overall, the political and physical boundaries were believed to be effective and close enough to the existing catchment boundaries to warrant no large complaints about free riders or the wrong area being managed. The small difference between the political boundaries and groundwater/surface water was not seen as a problem (see Figure 7 and Figure 10). There was an overall acceptance that people just dealt with those slight differences in a way that did not negatively affect the management process.

In terms of a clearly defined boundary as described by Ostrom, this situation shows that it is not always necessary to have one clearly defined boundary to manage a CPR. In this case, political boundaries varied, physical boundaries like groundwater could change slightly over time, and appropriators might move in or out of the Zone. Ostrom writes that, “So long as the boundaries of the resource remain uncertain, no one knows what is being managed or for whom” (1990, p. 91). In this case, there was no doubt as to *what* was being managed (e.g. water quality and quantity) and that it was being managed *for* not only those within the Zone but also anyone who may use the Lake as a CPR.

For Lake Ellesmere, because it can delineate the *what* and *who*, the exact (clearly defined) boundary of the CPR may not be necessary. This does not, however, make the boundaries uncertain. It would be a stretch to consider a CPR with close to five different boundaries surrounding it as ‘clearly defined’. Through the mixture of boundaries, especially as it applies to the ZC and water quality and quantity, the ability of, “some set of appropriators must (be able) to exclude others from access and appropriation rights” (Ostrom, 1990) is still intact. Although the multiple boundaries of the Lake as a CPR cannot necessarily be considered ‘clearly defined’, they can be described as ‘agreed and understood’. This agreement and understanding from those interviewed (not necessarily everyone who uses the CPR) of the boundaries allows for the likely successful management of the CPR.

6.1.2 Congruence between appropriation and provision rules and local conditions

There certainly appeared to be enough information on the unique aspects of the CPR to have congruent rules about provisions. However, it is not enough, according to Ostrom (1990), to have the information; it must be used in the correct way.

Current rules have been designed based on then-available information on the local conditions. Some rules have become outdated or new knowledge has called them into

question, like concerns over social and physical changes in the catchment. But a major reason for even having the ZC is to help solve these issues in light of current knowledge and expectations. For example, if additional irrigation is needed, or more water is added to the catchment, the rules may change. Based on the interviews and observations from the document analysis, considerable effort is being put into trying to attain congruence between the local conditions and the appropriation and provision rules moving forward. The key decisions, however, were not made by the end of this research period.

6.1.3 Collective Choice Arrangements

The overall theme of this principle was that the opportunity existed for most to participate and play a role in altering the operational rules of the CPR, albeit some had much more involvement than others. The range of those involved with the CPR is not in question; it is the *amount* of involvement and more importantly, the *weight* given to certain groups within that public that has been shown to be a concern. In this way, participation through Focus Groups or ZC presentations may be present, but the effect of that participation could vary, possibly acting to ruin the collective-choice arrangement that is seen by Ostrom to allow, “individuals who directly interact with one another and with the physical world (to) modify the rules over time so as to better fit them to the specific characteristics of their setting” (Ostrom, 1990, p. 93).

One of the possible explanations for this uneven participation is offered in Ostrom’s work, “None of these situations involves participants who vary greatly in regard to ownership of assets, skills, knowledge, ethnicity, race, or other variables that could strongly divide a group of individuals” (Ostrom, 1990, p. 93). Clearly, this is not the case for the Zone process and heterogeneity of the group members could work to alter the participation input in favor of larger, more robust institutions and interests. Most of those attributes vary amongst Focus Group Stakeholders and even within the ZC.

The Treaty plays an interesting role in the discussion surrounding *who* is involved with the management of the Lake and its catchment and *how much* power those interests have. It does play a part in altering that relationship. On the one hand, the Treaty helps to include Maori and/or tangata whenua beliefs and interests, but it also elevates their status above other citizens when plans and policies are developed under the Treaty. The tangata whenua have a much stronger say than any other group because they have six specific seats at the ZC table as well as co-governance agreements with DoC and ECan. No other interest has such a

direct influence. Some may argue that Dairy plays a prominent role, and that is not being denied here, but Dairy interests do not have *specific* seats at the ZC table, even if some members are dairy farmers. Six specific dairy seats on the ZC could surely cause community uproar. The ZC, outside of the runanga representatives and elected officials, are there first as *individuals*. For example, there is no Treaty agreement for recreational users or for families who have lived around the area for generations. Those who may use the Lake very often and are part of the CPR community in a different way, must act through Focus Groups or hope that someone on the ZC can pass along their views (including the tangata whenua, if such is the case). In this way, the Treaty causes disruption in the balance of interests within the ZC in a way that could inhibit collective-choice.

As well as including the public, the ZC tried to include its own members in the rule-recommendation discussions. To ignore a member or to overwhelm another's position would jeopardize the collective-choice arrangement between CPR appropriators because it would effectively leave out their point of view or input. It is impossible to include every possible interest in the process but if the actual rule-making is hijacked by one group, then the collective-choice arrangement fails, and so too would Ostrom's principle of collective-choice because 'most' people affected by the rules would not be working to alter them. Ostrom does use the term 'most individuals' and not 'all' but surely one group dominating others would not fit for this principle.

At first glance, this may seem enough to void the presence of the principle within this CPR. However, just because Ostrom's (1990) work surrounding her principles does not include a CPR with such a conglomeration of different interests does not mean this principle is automatically void. And it even seems that this is not the case, as the collaborative governance design has given a range of participants from large dairy interests and local runanga to recreational users and rural women a chance to have their voice heard and taken into account. Ostrom's (1990) principle requires there be a way for most individuals to participate, and in this case, that way or opportunity does exist. Granted, there are no rural men or urban women stakeholder group, so those interests either have been assumed to exist in other representations or were left out of the stakeholder groups. However, as long as runanga interests do not drown out others due to their advantageous Treaty arrangements surrounding natural resources, collective choice is still possible.

6.1.4 Monitoring

The comments about a lack of monitoring focused on secondary issues to the Lake like birdlife and fisheries but also on larger-scale considerations at the catchment level. The focus on water quality and quantity in the Lake and catchment for this thesis also matches the focus of the institutions that monitor those same topics and who provided excellent data. Calls for more holistic monitoring and monitoring based on possible recreation days may be beneficial to the management of the Lake. They have been included in this analysis for future zone committee work or general consideration. Although the monitoring of the Water Executive, statutory agencies responsible for quality and quantity of water, does add some accountability to the institutional arrangement, it does not fully satisfy the principle. While water seems reasonably well monitored in terms of quality it is not so well for quantity (the government has recently introduced regulations requiring all irrigation water takes to be real time reported to regional councils using telemetry and automatic, tamper proof recorders on consented takes), also more holistic measures of the quality of the Lake and the stress and pressures on it are not well monitored, including the actual numbers and types of users.

The monitoring of the environmental aspects pertaining to the Lake opening seemed to be effective and it was clear who carried them out. It was also clear that as long as ECan remains under the control of appointed commissioners, their accountability to those appropriators within the catchment is too indirect to be considered as fulfilling the principle. For some issues there may be voluntary monitoring in which case, the principle could be fulfilled, but this is not the case for the major issues in the catchment. When elections are held again at the regional level, accountability can return and with it, the fulfilment of this design principle.

6.1.5 Graduated Sanctions

As a principle of long enduring CPRs, this is only partially complete within the management of the Lake. On the one hand, there are graduated sanctions pertaining to water quantity that increase with the intensity of the breach or infraction. On the other, like the monitors, those who apply the sanctions are not accountable to the people they are sanctioning. In its current iteration, the sanctioning also leaves space open for interpretation which, as highlighted by the interviews, can cause variation in the decision of ECan to take someone to court.

In the examples used in *Governing the Commons*, “In these robust institutions, monitoring and sanctioning are undertaken not by external authorities but by the participants themselves” (Ostrom, 1990, p. 94). When compared to this ideal, the sanctioning within the Zone is still not there. There is not an external authority per se, as ECan has not been considered external at any point in this thesis but ECan can also not be considered an appropriator or an official that is accountable to the appropriators. The Environment Court though, where some sanctions may end up, can be considered external.

The principle requires merely an either/or of appropriators-as-monitors or monitors who are accountable to the appropriators. The former is less likely, although the public can alert ECan to possible breaches of consents. The latter can be solved by implementing elections for the ECan commissioners. At present however, this principle is only partially fulfilled.

6.1.6 Conflict-resolution mechanisms

There are several main conclusions from the analysis that can be highlighted.

Although The Treaty plays a role in almost every aspect of New Zealand and especially that of resource management in Canterbury, of special note is the relationship that the Treaty manifestations of co-governance and co-management had with two principles: *Collective-Choice Arrangements* and *Conflict Resolution Mechanisms*. It is within these sections that the impact of those agreements has been the most significant and so will be discussed, respectively, there, and not in the following “Broad Treaty Implications” section.

First, cultural disagreements were more difficult to resolve than strategic or scientific agreements, although they are a necessary part of the collaborative process.

Second, the ZC was as much an informative and educational experience as it was a decision-making and conflict management forum. Agendas often included large amounts of detailed scientific information that was originally reviewed during ZC meeting time but was later asked to be read beforehand. In the interest of time, this was often problematic for conflict resolution issues requiring more time and thorough discussion.

Third, the in-committee time stands out as a major point of interest. What topics would the public not be in a place to hear or what disagreements should the public not witness? What are the benefits of in-committee time for the committee? Most importantly, how effective is this time as a conflict-resolution forum or a place for decisions? What kind of conflict resolution is being used and is it still collaborative? As the ZC meetings went on, more

private time was called for until it was a built-in part of the meetings that did not exist in earlier agendas. This may aid conflict resolution but the increasing lack of transparency starts to bring into question the ability of the community to independently monitor decision-making processes and hence the legitimacy of the decisions may be lessened.

The presence and persistence of the ZC within the CWMS (which hopes to solve issues out of the courts) and into the future provides appropriators with a forum for collaborative conflict-resolution. It brings together different interests in a setting where they must reach consensus in a collaborative, cooperative style of conflict management. Cooperation requires recognizing, “the concerns of disputing parties as components in their common interest. Rather than just examining the facts of the current dispute considerable effort is spent in learning the underlying basis of the conflict” (Jenkins, 1983, p. 61).

The blue card, as used in the ZC, is a tool for better understanding. To add even more confirmation of the committee’s actions towards cooperative conflict resolution is the effort spent discussing cultural ideals and social goals surrounding the issues that at times slowed down the process. Jenkins (1983, p. 61) writes, “A broader analysis of the social system in which the conflicting parties are a part, is made in the interest of the basic resolution of the forces in conflict or of some system value such as growth or stability”.

The ZC as a forum however, is not as focused as some of the examples in Ostrom’s work where small, singular disputes could be resolved on a local level. These smaller disputes (or more difficult ones) could still, if necessary, make their way to external adjudication, the Environment Court, an example of conflict resolution that is not consistent with collaborative governance (Jenkins, 1983) or with Ostrom’s localized forum. As discussed in Chapter 5, the CWMS states, “allocation decisions will be resolved in most cases without resorting to the courts” (“Canterbury Water Management Strategy,” 2011, p. 6). However, as was the feeling by at least one interviewee, there are times when free-riders (e.g. non-compliant resource users) are not taken to court. The exact reason for this specific case was outside the scope of this thesis. However, if this perception is wide-spread, it may act to hurt the legitimacy of a management scheme even if the goal of the CWMS is to avoid external adjudication, encouraging local solutions concurrent with Ostrom’s principles. Special favours and/or lack of sanctions against a known violation is not a principle seen in long standing CPR management as Ostrom (1990) suggests. This might be different if the dispute was being resolved on a local level, but in this case, the interviewees could not solve the

issue in the ZC (local) format and the monitor, ECan, was not taking the proper steps to bring adjudication to the external Environment Court to ensure sanctions or rulings were brought against those who were shown to have made violations. Although this case has not been settled and this thesis makes no judgement on the alleged infraction or outcome, the lack of enforced rules, even if those rules fall outside of Ostrom's principles, may impact other aspects of a successfully managed CPR such as cooperation and graduated sanctions. The closer the zone remains to collaborative style conflict resolution, the closer it will match Ostrom's principle.

6.1.7 Minimal recognition of rights to organize

The theme that emerged from the interviews was that it is expected that provided the funding existed, a majority of the ZIP will be accepted. There were some who thought that some minor changes would be made but the Commissioners were aware of the process and involved in it so it is unlikely they would let something completely at odds with their vision for the region make it all the way to the end of the process; in contradiction to the CWMS in which they are so involved. As to Ostrom's principle, given the ZIP is accepted in a way similar to what participants think it will be and what documents say it should be, that part of the principle is certainly present. There are also other rules through districts and groups like WET who have been allowed to form and have been recognized as contributors to the process. Barring a complete disregard for the process and written programmes by the ECan commissioners, this principle is present.

It may be for further discussion and research, though, that the *option* to accept the ZC input could sway the presence of this principle. If the ZC rules were accepted, then yes, the principle is present. If the rules were not accepted, then no, the principle is not present. The key question, though, then becomes one of the impact of the threat of not accepting the ZC recommendations. It is possible the recommendations could be altered or unauthentic in some way due to the overarching threat of not being accepted. It is also possible that the perception that a majority of the recommendations will be accepted due to mutual understanding or other local relationships can overcome the overarching threat of unacceptance, therefore confirming Ostrom's (1990) minimal recognition of rights to organize. Further, the research period for this thesis did not see any recommendations presented for acceptance and so the results of those local inputs into the statutory policy is yet to be seen (even if anticipated by statutory proposed planning documents like the LWRP).

6.1.8 Nested enterprises

The nesting of the management of the Lake has been dramatically improved through the CWMS and its resultant RIP and ZIPs. The question of commissioners looms large again though, as an extension of the central government they can be seen as the government not relying on that level of nested governance. This could be construed as central government not willing to cede power once the strategy was in place, and in essence, dislodging the subsidiarity of the programmes. Nesting relies heavily on subsidiarity and if central government manages each level, there is no nesting involved. The rest of the governance is nested, however, and as long as central government does not solve problems small enough for the region then the principle can be considered present.

Although the principle is present through the nesting of the CWMS and other documents and forums, there is a distortion as highlighted by the analysis. Co-governance was shown to occupy a role outside most of the nesting, possibly allowing for some community members to circumvent the figurative 'nest'. This scatters subsidiarity, and if taken too far, could jeopardize the nesting of the system and its alignment with Ostrom's principle.

6.2 How do current arrangements surrounding the governance of Lake Ellesmere compare to Ostrom's *Design principles*?

As indicated in the Results section, the governance system surrounding Lake Ellesmere has much in common with Ostrom's principles. The presence of each principle varies and (as discussed in detail in Section 6.1) some are more complete than others. However, in summary:

Clearly Defined Boundaries – Not present, but seemingly not necessary

Congruence between appropriation and provision rules and local conditions – Enough scientific information, rules have yet to be finalized

Collective-choice arrangements – Large opportunity for participation, varying degrees of weight and influence amongst those participating

Monitoring – Sufficient monitoring, but some lack of monitor accountability

Graduated sanctions – Sufficient graduated sanctions, but lack of sanctioning body accountability

Conflict-resolution mechanisms – Current strategies within ZC sufficient, future conflict surrounding implementation is not as collaborative

Minimal recognition of rights to organize – Sufficient, but depends on the acceptance of the Zone's recommendations by ECan

Nested enterprises – Sufficient arrangement, but relationship altered due to co-governance agreement between the Crown and tangata whenua

Although it is too early to declare whether or not the current scheme is successful when it comes to long-term managing of a resource, some conclusions can still be drawn.

Based on Ostrom's (1990) Design Principles, Lake Ellesmere's management is not set up to be a long-enduring CPR institution. Although some principles are present, and the issue of boundaries has not been shown to be problematic, several other principles were absent from the management of the CPR at the time of this thesis. The lack of these principles is a result of two major differences that are unique to the Canterbury region. The first is the co-governance agreement stemming from Treaty rights between ECan and Ngai Tahu, which can alter the nested properties and collective-choice arrangements if handled incorrectly. The second difference is the ECan Act of 2010, which replaced elected officials who were accountable to appropriators in the region with appointed commissioners who are accountable only to their respective ministerial appointers. The ECan Act plays a large part in the accountability issues surrounding monitoring, graduated sanctions, and conflict-resolution mechanisms that Ostrom (1990) has seen in long-enduring CPR institutions, despite the ZC's ability to monitor the Water Executive.

The ECan Act has an expiry date by which time the commissioners are supposed to have presented to the national government recommendations for the future structure of local government in Canterbury. The expiry of the ECan Act has, however, already been extended once and there is no guarantee that a future regional council may be elected or whether Selwyn District Council or Christchurch City Council will continue to exist. If this comes about and depending on its nature, more of Ostrom's principles may be seen in the management regime. The co-governance issue within the region has some integration, as the CWMS calls for, "a formal co-governance arrangement (developed in partnership by Ngai Tahu, the Crown and Canterbury local government)" ("Canterbury Water Management Strategy," 2011, p. 114). If the agreement can somehow be integrated into the nesting more effectively than the current voting mechanism within the ZC, its negative impacts can be

mitigated. If both of these changes were to occur, only a few small differences from Ostrom's principles would be present, boding well for the future of the Lake.

6.3 How does co-governance and community involvement affect CPR management?

6.3.1 Co-Governance and CPR Management

Co-governance, and to a lesser extent for this case, co-management, play a pivotal role in the management of Lake Ellesmere and so could play a similar role in other CPR management situations. The co-governance agreement between ECan and Ngai Tahu has been shown to take precedence over the co-management agreement between DoC and Ngai Tahu. DoC does not make specific statutory policy, per se, on the major issues in the region, whereas ECan does. It would be much more beneficial to Ngai Tahu to be heavily involved with policy making rather than just planning and carrying out lake restoration. On this level, co-governance/management relationships can take precedence over one another, possibly moving the relevance of one below the other. If a Treaty partner can 'go over the head' of one of their co-management partners, there is less incentive to focus their efforts at the management level.

This is consistent with the definitions explored in the Theoretical Context, as co-governance involves the sharing of power, with which much more can be achieved for the non-governmental partner than through an agreement to merely work together on a management strategy not contingent on power sharing, like the JMP.

The weight of the co-governance agreement draws with it several other factors. One major issue within the CPR is that of entitlement, which was addressed by the Settlement Act and handed partial ownership of the lake bed to Ngai Tahu. This ownership, in the western sense, provides further entitlements to the runanga surrounding the Lake that other stakeholders do not have, nor could they obtain. These entitlements put Ngai Tahu in a strategic position to influence policy surrounding the Lake. However, the entitlement awarded to Ngai Tahu does come with the responsibility of being a producer within the CPR and to add to the resource and maintain it. This could come in different forms. Ngai Tahu and its runanga also have more to lose than others who may not share their entitlement advantages because of their ownership and responsibility surrounding the lake bed. It also puts them more at risk to the effects of free-riders in the CPR like those non-point source polluters who may be taking advantage of the resource. DoC also owns lands along the Lake

margins, although their entitlements are different from Ngai Tahu's. The awarding of entitlements within a CPR is a defining characteristic and like a unique environment, will often result in a unique management scheme.

Institutions within a CPR, especially as Agrawal (2003) discusses their ability to benefit from a changed social setting, are also affected by co-governance. This effect comes in the form of acknowledgement through the government side involved in the co-governance (or co-management) agreement. Co-governance plays a part in favouring one group over the others within a CPR. In the case of Lake Ellesmere, the acknowledgement and awarding of governance rights to the tangata whenua placed their institutions in a better position to have an impact, for better or worse, on the Lake and its environs. This is not to say that other institutions surrounding dairying or fisheries, for example, do not play a role. They must come about their influence in a different way than the tangata whenua because they do not have a co-governance agreement, nor in this situation, is there a Treaty-like or LGA requirement to develop one on their behalf. Without such an agreement, groups other than the tangata whenua must come by their influence in other ways.

The reasons for the difference in influence come in two forms. The Selwyn/Waihora Zone is uniquely affected by the Treaty in a way that is not present in other zones. First, the number of runanga in the area translates to a larger presence on the ZC. Although it is a consensus approach based on collaboration, the number of runanga representatives, as well as the presence of a commissioner with runanga ties, certainly puts this Zone in a unique place of a majority of ZC members being Ngai Tahu. On top, or more to the side, of that representation, sits the actual co-governance agreement between ECan and Ngai Tahu. This agreement has shown through interviews especially, but so too in document analysis and observation, to operate outside of the Zone Committee process even though it is called for in the CWMS. The figurative location and autonomy of the agreement affects the nesting of the management scheme that exists within Canterbury.

In this way, and as previously seen in the Nested Governance principle, co-governance also affects CPR management strategies that include a nested governance system. Furthermore, in the case of Lake Ellesmere, though presumably not in all cases, the nesting of different governance levels is disturbed by the presence of a co-governance agreement.

A co-management agreement with the necessary amounts of power sharing could also act in a similar way. This is not a result of the agreement in and of itself, rather a lack of full

inclusion of that agreement into the nested system. This lack of inclusion allows the co-governance agreement to operate often on its own terms (or sometimes, unknown terms) and as interviews offered, the relationship with the ZC is still not fully understood. If the co-governance was included in the nesting in a more integrated fashion, or a better nesting of Maori water governance was included within the region, its role would be better understood and its power could be checked in a similar way that Zone Committees are expected to act as a check on the Water Executive.

The multiple 'co-agreements' in which Ngai Tahu are engaged provide Ngai Tahu with different advantages. Currently, the agreement with ECan seems to be favoured as feelings of disenfranchisement from DoC have been mentioned in interviews. Previously, it seemed that the JMP was given more attention when it came to opposing the Lake Opening consent. This suggests strategic manoeuvring when it comes to such partnership relationships, all aimed at enhancing, or recovering, indigenous power. However, there may be a point where multiple agreements concerning the management of the Lake become too many.

Disenfranchising a Treaty partner could cause a negative effect on the management of a CPR. Moreover, Marshall (2008) has previously critiqued the inefficiencies and confusion created by a nested governance regime that resulted in repetitiveness and multiple plans directed at the same issue. Those concerns may well apply here unless there is consolidation and better integration.

Revisiting Berkes' (1994) figure of co-management hierarchy, we can see in Figure 23 that both Ngai Tahu agreements fall in different places on the scale. Although this is designed as a co-management scale, it can be applied with co-governance in this sense to compare the two agreements. The JMP agreement has little power sharing and yet remains a joint effort. This falls squarely above the 'joint action' hierarchy as described by Berkes. The co-governance agreement involves regional government and in effect, removes some of the community from participating, while elevating one sector to near-governmental status. For this reason, it is lower on the actual co-management scale. If Ngai Tahu were the entire community, then the agreement would be on the opposite end of the spectrum.

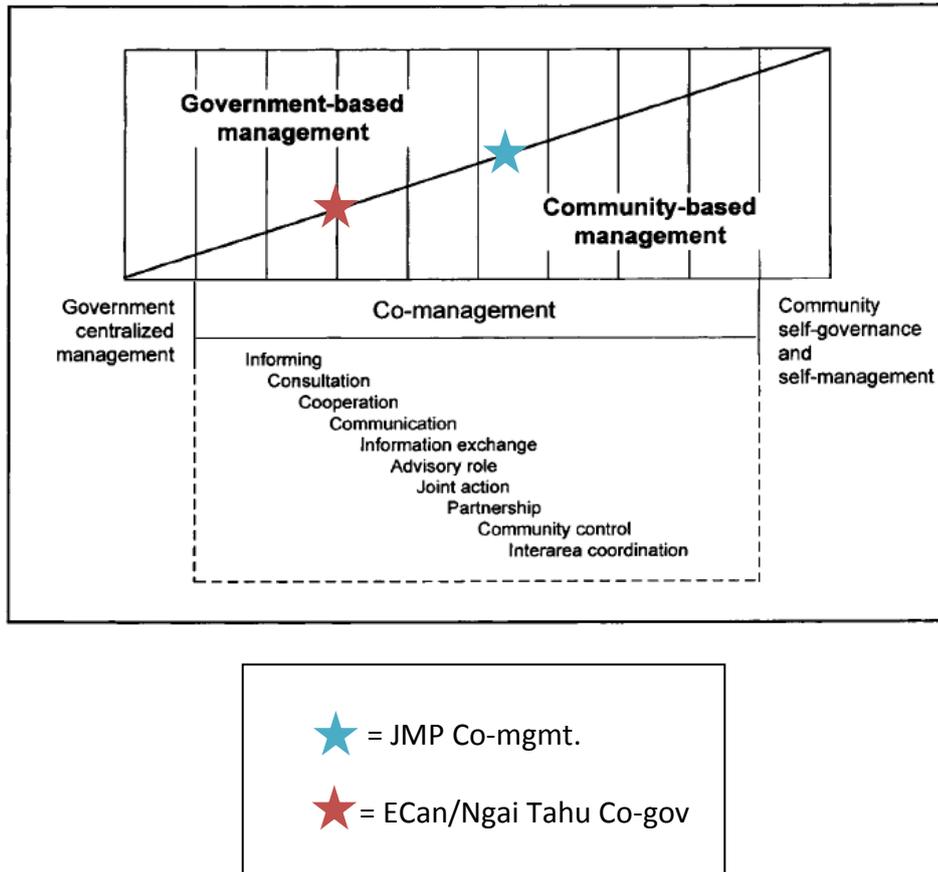


Figure 23: A hierarchy of co-management arrangements surrounding Lake Ellesmere/Te Waihora, adapted from Berkes (1994)

6.3.2 Community Involvement in CPR Management

The calls for community involvement in CPR management within the literature discuss the relationship with the CPR as the defining communal requirement (Agrawal, 1999). Ostrom (1990) also discussed the difficulty of communities with varied cultural backgrounds, wealth, and lifestyles in managing CPRs and in fact, her research was based mainly on culturally similar communities. The case of Lake Ellesmere certainly provides a community with a relationship to the CPR within the catchment, but it also includes at least two very different culturally-based worldviews and different levels of involvement and wealth within that community.

A major factor of involving a CPR community is the ability for most people in the community to have their say and participate in the process regardless of differing worldviews. This case has shown that this can be done in a diverse setting through mechanisms like the ZC and Focus Groups. Agrawal et. al (1999) saw a place for differentiated communities to move in the direction of sustainable management, and this is a first step.

Significantly differing worldviews based on culture and a post-colonial rebalancing of relationships, though, may require a greater use of a cross-cultural conflict-resolution mechanism. For instance, a conflict management style like confrontation or compromise, which can rely on majorities and is not consistent with collaboration (Jenkins, 1983), could give a larger advantage to a majority or large lobbying group. On the other hand, cooperation and collaboration where consensus is the goal would mean that even if worldview numbers were lopsided within a CPR community, the minority would still have their views expressed in the policies.

Within communities, the legitimacy of a policy or programme can play a big part in their success. Pinkerton's (2008) claims as to the benefits of co-management to legitimacy (in that it could help to make rules seem effective and fairly enforced) may be true in some instances. However, the results here suggest that a more co-governance style, as epitomized by the ECan and Ngai Tahu agreement, can work to hurt the legitimacy of a programme due to the exclusion of other users of the resource. Co-governance requires power-sharing where co-management does not, however there may be some instances when co-management does involve power sharing. A name does not always define an agreement; rather it is the substance that shapes it. Here, the substance matters.

The case of Lake Ellesmere has shown that allowing a power-sharing management or governance scheme to exist outside the collaborative framework can delegitimize the developing plans. If the power-sharing arrangement can circumvent or operate outside the nested system which is used to manage the CPR, then it can absolutely cause questions over fairness and acceptance of rules. This is shown through the interviews, where interviewees expressed concerns over the rights of iwi to have a say in resource consents throughout the catchment, and again in frustrations over using the co-governance agreements to get around the ZC.

These negatives, however, do not necessarily mean the CPR cannot survive; they only act to make it more difficult to manage. This case has shown that communities can play a major role in the management of CPRs to the point of writing their own recommendations and rules for their respective catchments. The benefits to including the community, as described by Ostrom (1990) and discussed in the results are often on full display in this case, as the unique setting and community make-up add much to the management scheme (e.g. local knowledge and expertise). With collaborative governance comes co-management, whether

there is a signed separate agreement or not. This also bodes well for legitimacy and acceptance of the programmes and plans put in place.

Chapter 7 – Conclusions

This research set out to explore questions related to the sustainable management of common property resources (CPRs) and the process of moving from a largely hierarchical approach to a more community-based collaborative model of a large common property resource; in this case a lower catchment lake that held multiple significant values for a variety of different stakeholders. To sustainably manage such a lake required an integrated catchment management approach that included an effective relationship between the indigenous iwi and pakeha, as well as a successful relationship between different levels of governance from Central Government to local landowners and stakeholders. The case chosen, Lake Ellesmere, has been the focus of considerable management attention over the last decade for its biophysical health and its significance in the settlement of colonial injustices. The implications of these contextual issues on the mechanisms that have been used by those involved in decision-making for the Lake have been examined through eleven interviews with people directly involved in decision-making, coupled with observations of interactions and use of material and advisors at meetings, and reflective reading and analysis of relevant documents. The research has drawn on Ostrom's design principles as its primary organising and analytical framework, supported by Pomeroy and Berkes's conceptual model of the relationship between government and community empowerment in decision-making. The analysis and detailed discussion of the resultant data enables the three key focusing questions raised at the outset to be addressed in the following sections. The thesis closes with a brief comment on its limitations, and identifies some key areas for future research.

7.1 How does co-governance and community involvement affect CPR management?

The research presented here has shown that co-governance has a direct impact on CPR management, though it is not clear whether that impact is always beneficial or always detrimental. In the case of Lake Ellesmere, community involvement is key to the proposed programme (e.g. ZIP) being accepted into statutory documents and amongst local peoples who could then monitor, enforce and adjust accordingly. The community involvement hinges largely on the acceptance of the ZC recommendations, and without a seemingly fair level of statutory incorporation, the community involvement may have been for naught. In such a case, it is not the involvement of the community per se, that matters, but rather it is the

adoption or incorporation of the community decision making recommendations into the management of the CPR that is the crucial element.

If any of the above stemmed from co-governance between the Crown and Ngai Tahu, then certainly those impacts have been positive as it relates to this thesis. However, the Treaty and the Settlement Act, though beneficial for several reasons (such as empowerment and associated resource rights for indigenous people), also posed a problem when the agreements were able to usurp or operate outside the design of the CWMS and associated plans. Even at the community level, co-governance of the Lake was weighted in favour of one interest group due to the rights of tangata whenua surrounding natural resources.

This is not to say that there is not a potential imbalance in other aspects of policy or management. If half of the ZC were specifically dairy farmers, or commercial fishers, it could have had the same distortive qualities as was apparent when specific seats were allocated for a group stemming from the co-governance regime. There are certainly advantages to co-governance, but as it applies to Ostrom's principles, it can be disruptive. This disruption, if not balanced, could lead to different allocations and entitlements which may cause friction amongst appropriators. To avoid possible friction, the co-governance arrangement must be incorporated into the lattice and nesting of management strategies in a way that gives appropriators the opportunity to participate in the same ways in regards to the CPR, without special standing. It could be argued, that once special standing or a certain amount of rights are amassed by one group in a CPR, that it ceases to be a true CPR and converts to either a private resource, a public resource, or other. If this is the case, then applying Ostrom's principles could be out of place.

7.2 Is the new framework surrounding the management of Lake Ellesmere designed in a way that is consistent with relevant literature on long-enduring CPRs?

When compared to Ostrom's (1990) principles there is substantial evidence to say that the new arrangements surrounding Lake Ellesmere are mostly consistent with those of long-enduring CPRs. One principle concerning boundaries differs from the literature but it does not void the principle overall due to a common understanding of participants of the understood boundaries. Though there is some difference in conflict resolution mechanisms and further research is needed to understand minimal recognition of rights to organize, the research suggests that in the context of Lake Ellesmere these are the critical principles. The

way in which they operate potentially render other principles irrelevant. If, for example, the ZC local inputs are not adopted by higher levels of government, many of the advantages offered by any similarities between Ostrom's remaining principles and the new framework will be minimized. The Treaty similarly distorts the framework surrounding the Lake by creating unequal rights, access, and governance amongst appropriators of the CPR.

Finally, the ECan Act also distorted the principles due to the presence of central government that has altered the nesting of subsidiary governance levels and impacted on monitoring and sanctions. Restoring the ECan Commissioners to elected positions would alleviate this distortion, though it is unclear if any negative outcomes from this supposedly temporary Commissioner arrangement would carry over to a regime in which local democracy had been restored. Though it is possible to gauge the likely success of a CPR based on Ostrom's principles, this thesis cannot say whether the presence of only some of those principles is enough to support a CPR in the long run. Further research on the outcomes of ZIP implementation and other policies is needed.

7.3 To what extent does the origin of government rules affect the level of community involvement?

The origin of the rules for CPR management, when viewed through the case study of Lake Ellesmere, is an imperative part of designing a long enduring CPR institution and management plan. Much of the ZC process was based on a local setting (e.g. Selwyn/Waihora ZC) and the effort was expected by participants to be accepted or at least, weighted heavily in the application of statutory rules. It may be that the origin of the rules is more important than those who enforce them (e.g. ZC rules enforced by ECan), though external monitoring would impact on a CPR in other ways, as discussed in Chapter 6.

7.4 Research Limitations and Future Research

Limitations surrounding this thesis mainly concerned scope and time. The Lake was chosen as a focus of the case study but it was clear early on that attending every meeting that stemmed from the CWMS was impractical. With so many facets to this issue, and to CPR management in general, the research was limited to those that could be practically addressed within the timeframe and resources available. This led to a perhaps narrow focus on the transitions occurring in a particular year that must not be seen as necessarily holding in the longer term.

Finding runanga representatives prepared to be interviewed was also difficult and I was fortunate to find two iwi members who would share their thoughts. Approaching the thesis through the lens of a Maori traditional world view was not possible given the time and scope of this thesis.

Future research could usefully expand the research undertaken here both longitudinally for the same catchment, and with greater attention to a Maori cultural perspective, or to compare the situation described with similar transitions in other catchments within the regions or elsewhere. The major limiting factor, time and timing of research, could be addressed with a longer period of study both for the implementation portions of the new water framework in the region and also a follow-up study monitoring the changes and impacts of the new framework on the catchment. Both of these future research options would take considerable time and would do well to balance better the input from both pakeha and iwi involved with the Lake. Further interviews of those not directly involved professionally or with the governance of the Lake would add a needed point of view for such explorations. The level of influence exerted by people wearing particular 'hats' within the process and those worn outside it, and the effects of changes in personnel should also be examined to understand the critical pathways to new CPR management regimes.

As Ostrom's principles can be applied to many situations throughout the world, further research could overcome the case study limitations and expand similar research to other CPRs, particularly those where indigenous rights differ from other citizens. The success of Ostrom's principles in such situations could form a reflection of the benefits and drawbacks of such differentiation of rights in natural resource management situations and/or add to a better understanding of how to utilize nesting and co-governance in such situations.

7.5 Conclusion

Overall, the research presented here has demonstrated the importance of exploring the implementing mechanisms during the transition to co-management of a major common pool resource. In doing so it has particularly highlighted the influence of post-colonial rebalancing of power relationships on such co-management attempts and suggests a need for greater attention to be paid to transition processes and nesting of co-management and co-governance arrangements.

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Appendices

Appendix A - Focus Group Participants

Focus Groups	
Rūnanga	
Peter Ramsden (coordinator)	Koukourārata
Te Whe Phillips	Ngāti Wheke / Rapaki
Yvette Couch Lewis	Ngāti Wheke / Rapaki
Terrianna Smith	Taumutu
George (Waitai) Tikao	Ōnuku
Jason Arnold	Te Waihora Management Board/Te Rūnanga o Ngāi Tahu
Irrigation	
Paul Reese (coordinator)	Irrigation NZ, Farmer
Susan Goodfellow	Central Plains Water Ltd
David Irvine	Selwyn / Waimak farmer
Mike Chaffey	Dunsandel Groundwater Users Group, Farmer
Ian Minson	Selwyn / Waimak Farmer
Tim Wardell	Water Rights Trust
Carey Barnett	Ellesmere Irrigation Society, Farmer
Dairy	
James Ryan (coordinator)	DairyNZ
Lucy Bowker	Synlait
Tony Watson	Westland Milk
Ron Pellow	South Island Dairy Development Centre
Simon Manson	Dairy Farmer, Lake Settlers, Drainage Committee
Harry Schat	Dairy Farmer, Dunsandel Groundwater Users Group
Colin Glass	Dairy Holdings Ltd
Gary Lamers	Dairy Farmer
Michael Woodward	Dairy Farmer
Arable / Hort / Viticulture	
David Hadfield (coordinator)	HortNZ, Farmer
David Birkett	Ellesmere Irrigation Society, Farmer
John Everest	HortNZ, Farmer
Stewart McPherson	Ellesmere Irrigation Society, Farmer
Mike Arnold	HortNZ, Farmer
Valerie Saxton	Winegrower
Nick Pyke	FAR
Mike Beare	Plant and Food
Paul Jarmen	Farmers
Peter Redfern	Farmers
Sheep and Beef	
Victoria Lamb	Beef and Lamb
Phil McGuigan	Silverfern Farms
Tim Cookson	Sheep and Beef farmer
Campbell Tuer	Sheep and Beef Farmer
Judith Earl Williams	Sheep and Beef Farmer
Richard Freidman	Sheep and Beef farmer
Rural professionals and advocacy groups	
Lionel Hume (coordinator)	Federated Farmers
Richard Christie	Ravensdown
Michael Keaney	Ballance
John Gilbert	Westpac
David Pratt	National/ANZ
Wayne May	CRT
Rural Women	
Lorraine Sheen (coordinator)	Rural Women
Rebecca Miller	Dairy Womens Network
Helen Abbott	Rural Women
Natasha King	Rural Women
Kerry Maw	Rural Women
Robyn Casey	Leeston Farmer
Environment	

Chris Todd (coordinator)	Royal NZ Forest and Bird
Peter Chamberlain	WET Trustee (Harts creek streamcare, retired farmer)
John Benn	Department of Conservation
Jan Walker	Ornithological Society
Sue Jarvis	Lincoln Envirotown
John Sanders	Water Rights Trust
Recreation	
Tony Hawker (coordinator)	Fish and Game
Kerry O'Brien	Canterbury Windsport Assoc
Chrissie Williams	Canterbury Sea Kayakers Network
Andrew Howard	Canterbury Fly Fishing club
Jack Hore	Canterbury Fly Fishing club
Ron Stuart	NZ Salmon Anglers Association
Grant Bonniface	Waihora Clay Target Club
Commercial / Tourism / Energy	
Ian Lees	Trustpower
Don Babe	Little River Rail Trail Trust
Clem Smith	South Island Eel Industry Assoc
Sarah Pullan	Ellesmere Commercial Fishermen
Hamish Rennie	Waihora Ellesmere Trust
Education	
Adrienne Lomax (coordinator)	WET Community Education
Jenny Webster-Brown	Waterways Centre for freshwater management, UC and LU
Ken Hughey	Lincoln University
Kelvin Nicolle	Waterwatch
Stephen Brailsford	Brailsfords Ltd
Dave Irwin	CPIT
Lana Kennett	Lincoln University student
Craig Perry	Lincoln High School teacher
Rachel Cottam	Lincoln High School student
Health / Local Authorities	
Andrew Mactier (coordinator)	Selwyn District Council
Murray England	Selwyn District Council
Judy Williamson	Community and Public Health
Alizon Paterson	Community and Public Health
Peter Kingsbury	Christchurch City Council
Community Boards and Township Committees	
Alan French	Selwyn Central Community Board
Ian Chatterton	Dunsandel Community Committee
Ivy Harper	Lincoln Community Committee
Jenny Gallagher	Malvern Community Board
Allan Thorne	Malvern Community Board

Appendix B – Focus Group Summaries

Scenario 1 and 2

- 1) The 13 Selwyn Waihora Focus Groups met on Thursday 31 May 2012. The purpose of this workshop was to present information on the Scenarios 1 and 2

Scenario 1 (baseline) is based on current (2011) land use and explores the impact of current land use on water quality and quantity (i.e. accounting for the lag times in the system). It is only relevant for the biophysical modelling. An assumption is that no change or intensification from 2011 land use occurs.

Scenario 2 is based on a surface water supply providing for 60,000 ha of irrigation. This will comprise approximately 30,000 ha of new irrigation on the plains and also replacement of approximately 30,000 ha groundwater sourced irrigation with surface water. The scenario recognises that other enterprises and land uses in the catchment will also intensify.

- 2) Biophysical, social, cultural and economic assessments of these scenarios were presented. The full report can be found at www.ecan.govt.nz/selwyn-waihora - you are encouraged to read this in order to get the full picture. Some summary points:
 - Scenario 2 would result in an increase in on farm costs, revenue and profit; an increase in employment and incomes; an increase in irrigation reliability; increased population growth and an increase in population growth and transience in the community.
 - Average shallow groundwater Nitrate-N concentrations are expected to increase under both scenario 1 and 2.
 - Te Waihora will be more nutrient enriched under both Scenario 1 and 2, leading to an increase in frequency of nuisance algal blooms. Lake openings will increase due to increased lake inflows combined with new opening rules. Recreation on lake may be compromised due to low lake levels and water quality. While an increase in Trophic Level Index is a shift in an ecologically negative direction, this is unlikely to cause a 'threshold' change in the lake.
 - Under scenario 2, lowland stream N concentrations are expected increase. There is increased risk of exceeding the 30% cover threshold of filamentous algae, increased risk of exceeding the 80% level of protection of aquatic species from chronic nitrate-N toxicity effects, and lack of support of benthic biodiversity and trout habitat. Diversity and abundance of invertebrate and fish taxa are likely to decline.
 - Under scenario 2, low flows and annual flows will increase in the hill-fed streams, though there is predicted to be an increase in filamentous periphyton and macrophyte coverage.
 - Mahinga kai and wahi tapu are likely to be adversely affected with further deterioration in the health of the aquatic ecosystems.
- 3) Focus Groups were asked to evaluate the acceptability of Scenario 2, based on the information provided and their own values and experiences. The Focus Groups fed back a variety of perspectives on Scenario 2 with most concern around the likely state of Te Waihora and the lowland streams with further irrigation development. They were most satisfied with the economic and social conditions in the catchment and the state of hill-fed waterways under scenario 2. A range of mitigations were suggested as means of addressing some of the unacceptable elements, for example, wintering on less leachable soils, nitrification inhibitors, winter barns and feedpads, irrigation efficiency, targeting education and peer pressure.
- 4) The Selwyn Waihora Zone Committee will use the modelling and the Focus Group analysis to inform their discussions on water quality and quantity limits for the catchment.

Scenario 3

- 1) The Selwyn Waihora Focus Groups met again on Thursday 21 June 2012. The purpose of this workshop was to present information on the Scenario 3

Scenario 3 aims to deliver a Trophic Level Index of 6 in Te Waihora / Lake Ellesmere

- 2) Biophysical, social, cultural and economic assessments of these scenarios were presented. The full report can be found at www.ecan.govt.nz/selwyn-waihora - you are encouraged to read this in order to get the full picture. Some summary points:
 - In order to achieve a TLI 6, a suite of lake interventions as well as on-farm advanced mitigations and land use changes were required. The on-farm mitigations included a combination of advanced mitigation measures. In terms of the land use change, an economic optimisation model placed the more intensive land uses on the better soils and reverted the poorer soils to very low intensity sheep. Lake interventions included an alternative method for better lake opening and level control, and a phosphorous inactivation treatment.
 - Scenario 3 completely alters the nature of farming operations in the catchment, with significant social effects – these effects would be unevenly distributed across the catchment. Farm employment would be based on dairying, farm size would increase, there would be fewer family farms, more high debt farmers, succession issues and a higher age of retirement due to low asset base. There would need to be management strategies in place to assist individuals, families and communities to cope. Unless the changes are extensively consulted upon and support packages put in place, potential to cause widespread social disruption and a decline in trust and sense of well being
 - It is acknowledged that the nutrient loss reduction target could have been met through other land use configurations, which may have resulted in a different balance of consequences for the four well beings
 - In terms of drinking water, the annual average nitrate levels under Scenario 3 will be slightly lower than current, at around 6mg/l, though there will be variability across the zone. The number of shallow wells predicted to exceed the annual average concentrations of 1/2MAV, are approximately 50%, which is also less than current. The number of wells predicted to experience some exceedances of MAV are around the same as currently experienced. Shallow wells may be more vulnerable to bacterial contamination with more intensive landuse in the lower catchment.
 - Under Scenario 3, there will be a reduction in algal blooms in Te Waihora, a reduction in the incidence of water quality restrictions and increase in recreational opportunities, though the appearance of the water is likely to remain a barrier to more contact use. The controllable lake opening will mean that the Lake is connected at important times for recruitment and migration of customary fisheries. There will be a negligible change in clarity and colour, and no direct impact on macrophytes, though it is acknowledged that it may be easier to re-establish macrophyte bed if salinity levels can be controlled.
 - Flows in the lowland streams are expected to increase slightly from what people experience today. Low flows will get slightly higher and there will be slightly less time under irrigation restriction. However, even though the flows may increase under this scenario, in some streams this increase is not enough to support the full range of ecological values that would be expected in a stream of that type. There will be an improvement in macrophyte cover, algae and nitrates and phosphorus compared to current, however there are still some risks. Habitat availability will be similar to current, habitat quality will improve, and aquatic diversity (invertebrates, fish and birds) and abundance will also benefit. Improved water quality in the lowland streams is likely to increase recreational opportunities.
 - Flow and quantity in the hill-fed waterways is not expected to change significantly from current in the upper catchment, though there may be an increase in extent of the drying reach.
 - With more base flow there is expected to be more wetlands, and scenario 3 may benefit restoration efforts around the fringes of Te Waihora. There will be an improvement in the quality of instream habitat and ecosystem, and local habitat restoration, riparian management and sediment control are all important factors.
 - Whanau acknowledge the improvements to the lake and tributaries but believe an improvement relies on many things happening together – change in regulatory environment, change in farm practices, and lake intervention – the whole package is required.
- 3) Focus Groups were asked to evaluate the acceptability of Scenario 3, based on the information provided and their own values and experiences. The Focus Groups acknowledged the environmental gains that are provided in this scenario, especially to the lowland streams and Te Waihora. However, the majority of groups felt the social disruption caused by this scenario would be too great. The Focus Groups are now exploring how to turn some of the unacceptable elements of both scenario 2 and scenario 3, to acceptable. These actions/options will help form the basis for future discussions.

Scenario 2 + Bolt ons

- 1) The Selwyn Waihora Focus Groups met on Thursday 12 July 2012. The purpose of this workshop was to present information on the Scenario 2 + bolt ons

Scenario 2 + bolt ons

- Approximately 30,000 ha of new irrigation on the plains sourced from surface water outside the catchment
 - Replacement of approximately 30,000 ha groundwater sourced irrigation with surface water sourced from outside the catchment
 - Gradual intensification of other enterprises and land uses in the catchment (no land use change)
 - Lake interventions:
 - alternative methods for better lake opening and level control
 - phosphorus inactivation treatment (treatment in streams and carried out to lake in stream flows)
 - All farming in the catchment will undertake the fullest possible extent of mitigations (advanced mitigation) to reduced nutrient loss without changing their farm type (i.e. no land use change).
- 2) Biophysical, social, cultural and economic assessments of scenario 2+ bolt ons (Scenario 2+) were presented. The full report can be found at www.ecan.govt.nz/selwyn-waihora - you are encouraged to read this in order to get the full picture. Some summary points:
 - Scenario 2+ is expected to result in larger, and more corporate farms, shift to younger families and increased transience in rural communities. There will be a substantial increase in activity on farm, driven by intensification. New approaches to dairy will require a substantial shift in practice for farm managers/workers. Irrigation reliability increases from current.
 - Cash farm surplus after costs of mitigation is broadly similar to current. Regional GDP will increase \$300M from current, individual and household income will increase for the population affected, social infrastructure will benefit. Employment will increase around 30% from current, and it is likely more migrant workers will be needed.
 - In Te Waihora, under Scenario 2+, the lake will be less phosphorus enriched, and N loads will be similar to scenario 1 (baseline). The TLI is likely to reduce to 6.4 from the current level of 6.8, resulting in a small decrease in frequency of nuisance algal blooms. Internal P loads in the lake are assumed to decrease by 50% as a result of the P inactivation treatment. The lake is likely to be slightly less green in calm conditions although changes to clarity will be negligible. The abundance and quality of customary fish species will increase, and market volatility of commercial fishery will reduce. A controllable outlet to the sea under Scenario 2+ benefits fish migration and recruitment, and may also support efforts to reestablish macrophyte beds.
 - Overall flows are expected to increase 15-20% in the catchment compared with actual experienced flows over the past 5-10 years. Under Scenario 2+, N concentrations in the lower catchment streams are likely to be similar to current. In stream P concentrations are assumed to reduce by 50% as a result of advanced mitigation on farm and the in stream phosphorus inactivation treatment. The diversity and abundance of invertebrates, fish taxa and birds are likely to show an improvement under Scenario 2+ from current.
 - Whanau acknowledge that the bolt ons are an attempt to mitigate adverse effects in the lake and tributaries, but are uncertain about what the extra 30,000ha will mean for wahi tapu and mahinga kai. Protection will depend on a change in regulatory environment, change in farm practices, and lake intervention – the whole package is required.
 - Under scenario 2+ N concentrations in groundwater and exceedences of the drinking water standard are similar to current and significantly lower than under Scenario 1 (baseline) and Scenario 2 as a result of farm mitigations
 - Recreational opportunities under Scenario 2+ may be enhanced through improvements in the trout fishery in the lake environs, and increased connection between the lake and sea may be positive for numbers of sea-run trout. There is also likely to be some improvement in nature-based recreation activities.
 - Annual flows and low flows in the lower Selwyn are expected to increase under Scenario 2+ above what has been experienced over the past 5-10 years. These improvements to flow and reduced risk of nuisance plant and algal growth is likely to lead to an increase in recreational opportunities in the lower reaches.
 - 3) Focus Groups were asked to evaluate the acceptability of Scenario 2+, based on the information provided and their own values and experiences. The Focus Group assessments indicated a greater level of acceptance of Scenario 2+ compared with Scenario 2, however there was still concerns, particularly around drinking water and lowland streams. The groups were most satisfied with the economic and social conditions in the catchment and the state of hill-fed waterways under Scenario 2+.

Appendix C – Zone Committee Observations Summary

Date of Meeting	Agenda/Topics Discussed	Points of Interest/Note
March 6, 2012	-Arable Farming Brief -Limit Setting (FG, Scen. 1) -LWRP Briefing -Election of Chair	-New leadership format: Meeting Chair, Deputy Chair, Regional Comm. Rep., Liaison Role
April 3, 2012	-Discussed Water Transfers -CPW Briefing -Limit Setting (Technical analysis, FG, Managing)	-Pat McEvedy is new Chair -Discussed Selwyn/Waihora Sub regional chapter and LWRP -Transfer of unused water allocation options
May 1, 2012	-Dryland Biodiversity Brief -Limit Setting (LWRP Brief, Statutory and Policy toolkit) -ECan update -SDC Response to ZIP	-ZC members begin attending FG -SDC advises majority of ZIP will be accepted with funding
June 5, 2012	-Limit Setting (Scen. 1, 2, FG) -ZC discussion of Limit Setting -Immediate Steps Decisions -Waimakariri Workshop	-Wybrow requests In-Committee time, McEvedy agrees to 'Public Excluded' meeting times/extensions -Clare Williams expressed Tangata Whenua concerns
July 3, 2012	-Limit Setting (Bolt-ons, Scen. 3, Discussion on Scen.3) -WTW Briefing	-Choose to look at 3 scenarios for Limit Setting with bolt-ons -Discussion of Lake Opening -WTW focus is on habitat not TLI
August 7, 2012	-Limit Setting (Scen. 2 + bolt-ons, Thinking Space) -V5 Presentation -Implementation Work Schedule	-Note differences in Overseer versions 5.4 and 6
September 4, 2012	-ECan Commissioner David Caygill acknowledges ZC's work -Potential Solution Package 1,2,3,4,5	-Alum idea not run by Runangas; frustration on both sides
October 2, 2012	-Kaitiakitanga Presentation -Sub-Regional Chapter and ZIP addendum Sessions -Pig Farmer presentation	-Meeting held at Wairewa -Noted tensions of farmers on 'grandfathering' N-loads -Donald Couch frustrated by discussion topics

November 6,
2012

-Sub-regional Chapter and ZIP
addendum Sessions (water
quality, quantity

-In-committee time now
taking up about half of
meetings
-Charles Crofts vents
frustration on ecological flows
instead of what is consented

Appendix D – Interview Questions

Introduction

- What is your involvement with the lake?
- What are your goals for the lake?

Ostrom's Design Principles

- Who should be and who is involved in making decisions about the management of the lake?
- What is the geographical area that needs to be considered in developing a lake management plan?
- What do you think about the conflicting/varying boundaries offered by different policies?
 - How do those varying boundaries affect the policy or ZIP recommendations?
- How has the unique environmental setting been taken into account?
- How has the historical situation affected the current and future management scheme?
- Have there been interests left out or poorly represented in the process?
- Who? How have those interests responded?
 - Have external actors played a significant role?
- What aspects of the lake, most importantly, need to be monitored for effective management of the lake?
 - Are you familiar with any monitoring programmes for these aspects of its management?
- Who is involved in monitoring the recommendations of the ZIP?
- What are the consequences for resource users if they break the rules within the boundaries?
 - How do (how will) those consequences progress for repeat offenders?
- What have been the major areas of disagreement surrounding the Lake?
 - Any specific examples that have had a significant impact?
 - Have these disagreements been discussed sufficiently? In what forum have they been discussed?
 - How have these disagreements been resolved, if at all?
- Are the results of the ZIP recognized by the regional government and territorial authorities?
 - Are there policies or recommendations that do not have the support or backing they require?

Thesis Focus

- What kind of an impact has the Treaty had on the process?
- How have the co-governance arrangements between Ngai Tahu, ECan and the DOC affected the process?

- Are those agreements a help or hindrance to lake management?
- How do they help? How do they hinder?

Appendix E – Documents Reviewed

Bio-Physical Lake Ellesmere

Te Waihora/Lake Ellesmere: State of the Lake and Future Management

National Policy Level

The Treaty of Waitangi

The Ngai Tahu Claims Settlement Act

The Resource Management Act

The Local Government Act

National Policy Statement for Freshwater Management

Regional Policy Level

The Canterbury Regional Policy Statement

The National Resources Regional Plan

The Land and Water Regional Plan

Canterbury Water Management Strategy

The Temporary Commissioners and Improved Water Management Act (ECan Act)

Regional Implementation Programme

Zone Implementation Programme

Lake-Specific Plans, Policies and Programmes

WET Community Strategy

The Joint Management Plan

Whakaora Te Waihora

The National Water Conservation (Te Waihora/Lake Ellesmere) Order 1990

Lake Opening Resource Consent