

# The Emergence and Intensification of Hydropolitical Conflict Intentionality in Aotearoa-New Zealand

By:  
Adan E. Suazo

National Centre for Peace and Conflict Studies  
Te Ao O Rongomaraeroa

University of Otago

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## **Abstract**

Environmental security literature has devoted a significant amount of attention to the nexus between resource abundance and conflict. Important research has assessed this relationship by focusing on non-renewable resource wealth as a causal determinant of conflict, but little is known about the conditions that influence the emergence and intensification of conflict in water abundant environments. By most accounts, New Zealand is one of the most water-rich countries in the world. Even though violent conflict over water does not normally materialise in New Zealand, conflicts and incompatible claims motivated by water bottling, the growth of some types of agriculture, tourism, and water treatment strategies, continue to surface. Little, however, is known about how and why these conflicts emerge and intensify in a country such as New Zealand.

To address this lacuna, this project asks the following research question: How and why does the commercialisation of freshwater influence the emergence and intensification of hydropolitical conflict intentionality in New Zealand? This study presents two central arguments. First, that the introduction of a commercial enterprise motivates the emergence of hydropolitical conflict intentionality if the enterprise is incompatible with the interests of local communities. And second, that the intensification of hydropolitical conflict intentionality is determined by the level of trust that communities pose upon the approval and appeals process that supports a commercial operation. To test these arguments, this study examines the effects of water bottling and water chlorination on the towns of Ashburton (Canterbury) and Glenorchy (Otago), by employing a tripartite analysis comprised, first, of a conflict intentionality and engagement assessment, second, of a comparative case study analysis, and third, of a conflict intentionality classification.

The data suggests that communities engage in low intensity conflicts when they trust the approval and appeals process behind any given commercial operation. Water-based conflicts however are likely to escalate when local communities lose trust in the above processes and the institutions that administer them.

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## **List of Acronyms and Abbreviations**

ADC: Ashburton District Council  
AWA: Aotearoa Water Action  
CCI Scale: Conflict-Cooperation Intensity Scale  
CH Model: Collier/Hoeffler Model  
E. Coli: Escherichia Coli  
ECan: Environment Canterbury  
EIA: US Energy Information Administration  
EPA: US Environmental Protection Agency  
FAO: Food and Agriculture Organisation  
FARC-EP: Revolutionary Armed Forces of Colombia  
GDP: Gross Domestic Product  
Havelock North Report: Havelock North Drinking Water Inquiry Report  
IEA: International Energy Agency  
NIWA: National Institute of Water and Atmospheric Research  
NNN: Nitrite-Nitrate Nitrogen  
OECD: Organisation for Economic Cooperation and Development  
ORC: Otago Regional Council  
QLDC: Queenstown-Lakes District Council  
RMA: Resource Management Act  
UK: United Kingdom of Great Britain and Northern Ireland  
US: United States of America  
USD: American Dollar  
USGS: United States Geological Survey  
WHO: World Health Organisation  
WPI: World Poverty Index

## Chapter 1 - Introduction



Water, water everywhere, but not a drop to drink. These were the words chosen by the local Dunedin artist who designed the above poster, to explain what brought a group of protesters to the city's Octagon that day. The rally had been organized by Greenpeace in response to the intensification of water use for dairy farming in the Mackenzie River. I found it interesting that protesters in Dunedin were willing to mobilise over environmental issues taking place outside of their own city, and region. But what seemed even stranger was the motivations that drove them to protest that day.

So much of the work I had done at that point, and continue to do today, is so eloquently represented by this poster; there is water in abundance in a country like New Zealand, but anxieties over water insufficiencies and scarcities are ever present. The introduction of enterprises such as water bottling have motivated significant fears within communities in New Zealand, in some cases triggering significant political mobilisation. Similarly, intensive agriculture, and inadequate water infrastructure have been singled out as major sources of water contamination in several areas of the country, which have caused significant health crises. Grievances of this nature should not be expressed in such a place of water abundance, but based on the use, manipulation and profiteering to which freshwater is subjected in New Zealand, the myth of a water-abundant nation is constantly being challenged. On the global stage, New Zealand is certainly not alone.

Canada, my home country, currently faces what several observers call a 'water crisis' that consistently and disproportionately affects First Nations communities. Like New Zealand, Canada is one of the top-most water abundant countries in the world, yet adequate water access and use is not widely beneficial across all sectors of society. Water abundance, in this regard, is not synonymous with water enjoyment for all. In view of these asymmetries, questions arise in relation to how local communities and groups may respond.

New Zealand has indeed been immune to the forms of hydropolitical violence that have plagued other nations. For example, Bolivia underwent a series of riots in the city of Cochabamba over the privatisation of the city's water services. Similarly, State-mandated water

diversions along the Cauvery River in India have motivated intense violence. While such manifestations of water incompatibilities have so far eluded New Zealand, conflict within its borders is far from absent. Water bottling, wholesale water marketisation, intensive agricultural development, and preemptive water treatment have motivated communities in several parts of New Zealand to organise politically to prevent the installation of enterprises they regard as actually or potentially deleterious. On the surface, New Zealand's water abundance is such that it should satisfy the nation's multisectoral demands, and those of the ecosystems it sustains. If that is indeed the case, then why are communities in New Zealand engaging in water-related conflicts? What types of water use motivate citizens to mobilise within a water-rich environment? This project is an attempt to answer some of these questions.

To develop an understanding of how and why water-based conflicts emerge in a country with the environmental, economic, social and political characteristics of New Zealand, this study poses the following research question: How and why does the commercialisation of freshwater affect the emergence of hydropolitical conflicts in New Zealand? To answer this question, this study proposes two central arguments: first, that water commercialisation practices influence the emergence of hydropolitical conflict intentionality if they are incompatible with the interests of local communities. This argument is an acknowledgement of the varying impacts that commercial enterprises exert upon both their immediate natural environment, and on the communities that draw benefits from accessing and using the resources in that environment. Therefore, it is expected that some commercial operations will be more likely to influence the emergence of conflict dynamics than others. And second, this study argues that the

intensification of water-based conflict intent is dependent on the extent to which local communities regard an operation's approval process as trustworthy. This argument seeks to examine the role of New Zealand's water authority system in resolving water-based conflicts within their jurisdiction. Despite an undoubtedly robust water management infrastructure, New Zealand residents continuously engage in intense water conflicts such as protests, marches and different types of judicial challenges, all outside of the purview of the water authority regime. The rise of intense water conflicts puts into question the country's ability to adequately preempt and resolve said conflicts when they intensify. This argument attempts to explain this intensification.

In order to elaborate the arguments presented above, this study will be divided into 10 chapters, including the present one. Chapter 2 will provide an overview of the literature exploring the nexus between resource abundance and conflict. This chapter concludes that for the most part, abundance theory has been developed through analytical examinations of abundant non-renewable resources, and has not adequately examined the conflict-causing potential of other types of abundant resources, such as freshwater. It also argues that examining freshwater abundance requires a research approach that is sensitive to the different types of values that communities attach to freshwater, which may or may not be determined by economic considerations.

Chapter 3 builds on the elaboration presented in Chapter 2, and examines New Zealand's country-specific water dynamics. This chapter explores the quantitative state of New Zealand's

freshwater supplies, and presents an overview of the country's water authority infrastructure. It later presents a brief synopsis of the types of water-based conflicts that have emerged in New Zealand, as well as the types of water-driven enterprises that have motivated these frictions.

To examine the proposed research question, Chapter 4 lays out the research design applied in this study. In order to test the conflict-causing potential of water commercialisation, this study employs three methods of analysis to examine the effects of water bottling and water chlorination in the town of Ashburton and Glenorchy, located in the Canterbury and Otago regions respectively. First, it applies a conflict intentionality and engagement analysis, where participants' perceptions over water bottling and water chlorination are assessed in relation to their willingness to engage in conflict over those activities, and at what level of intensity. In this regard, perceptions are argued to be shaped in relation to participants' views over the economic, environmental and social compatibilities of water bottling and water chlorination in their towns. Second, it employs a comparative analysis to identify common causal themes across the above cases. This analysis pays close attention to the variables that influence respondents' inclination to engage in intense hydropolitical conflicts. It also endeavours to capture any potential variations in the causal impact of water bottling and water chlorination across cases. And third, this study applies a conflict intentionality classification that categorises actors in relation to the level and type of hydropolitical conflict in which they are willing to engage, or in which they became involved.

Chapters 5 and 6 feature individual conflict intentionality analyses as they apply to Glenorchy and Ashburton, respectively. Chapter 7 then, provides a tripartite analysis of the common threads identified in both cases. The chapter concludes that the data supports the arguments presented in Chapter 4, namely that the emergence of hydropolitical conflicts in Ashburton and Glenorchy are determined by the economic, environmental and social compatibilities of water bottling and water chlorination, and that conflict intensification is predicated by the trust that residents pose upon the approval process behind each operation. Whereas conflict was likely to escalate in the face of an untrustworthy and incompatible water operation, as was the case with water bottling in Ashburton and with water chlorination in Glenorchy, conflicts over incompatible water activities were likely to be contained within the water authority system in each location, when residents espoused no doubts over the activities' approval process.

Chapter 8 builds on the findings in Chapter 7, and provides a categorisation of the conflict intentionalities identified in Ashburton and Glenorchy. It categorises parties in relation to the level of intensity of their conflict intentionality, and the motivations that drove them to said potential level of engagement. In addition to this, Chapter 8 also includes an analysis of all parties that reported no visible will to engage in conflict, and who chose instead to engage in collaborative, community-based actions. While these accounts constitute a small segment of the participants, they are presented in this chapter as cases where enterprises such as water bottling and water chlorination (and in some cases, others) motivated residents to engage in positive interactions to alleviate their perceived negative impacts.



Chapter 9 explains the theoretical and empirical contributions of this study within the Abundance Theory literature, and provides recommendations for future research. In particular, this chapter stresses the need to conduct more qualitative research on the causal impacts of commercial practices such as dairy farming, and to apply the study's framework in urban environments. It also calls for more research on the causal interplay between water commercialisation and conflict in jurisdictions with higher concentrations of Indigenous people. Lastly, Chapter 10 provides some final thoughts and elaborates this study's conclusions.

## Chapter 2 - Revisiting Abundance Theory

### Introduction

Abundance Theory, as it relates to environmental security, seeks to explain how the abundance of natural resources can facilitate the emergence of conflict (Rosser, 2006). Despite some studies that challenge this theoretical proposition (Makdisi & Sadaka, 2006; Woodwell, 2006), there is wide support for causal relationships between abundance and conflict. However, abundance theorists are prone to analyzing this causal dyad by operationalizing natural resources as non-renewable resources. Overemphasizing the conflict-inducing causal effects of non-renewables is problematic because it leads to an empirical disregard for other types of natural resources that may bear a strong potential for conflict. Like some types of non-renewables, freshwater is marketed as a resource with high economic value, and several actors are encouraged to intensify its exploitation and manipulation globally, often causing water-related inadequacies for local communities, as well as environmental degradation and ecosystem collapse. While scholars of Neo-Malthusian persuasion have conducted significant work on how water scarcity can lead to conflict (Homer-Dixon, 1999; Hsiang et al., 2011), no comprehensive studies exist that focus on the conditions under which water conflicts emerge within a water-rich environment. To this end, this chapter will assess the relevant arguments featured in Abundance Theory, and will display the key empirical and theoretical propositions that shape the current state of the debate.

## **Theoretical Considerations**

At its core, Abundance Theory suggests that “natural resource abundance (or at least an abundance of particular types of natural resources) increases the likelihood that countries will experience negative economic, political and social outcomes including poor economic performance, low levels of democracy, and civil war” (Rosser, 2006, p. 7). The suggestion that a so-called ‘resource curse’ opens avenues for civil unrest via a number of different mechanisms has attracted significant attention in the literature. This argument, as Koubi et al. note, contravenes the seemingly-logical proposition that natural resource wealth leads to better outcomes (2014).

From an Environmental Security perspective, Abundance Theory serves as a collective response to Neo-Malthusian Theory, whose theoretical and empirical focus lies on natural resource scarcity as a driver of conflict (Homer-Dixon, 1999; Hsiang et al., 2011; Hauge & Ellingsen, 1998). Scholars of a Neo-Malthusian persuasion argue that a reduction in natural resources will produce an increasingly competitive environment, where individuals and groups will seek to maximise the gains of a dwindling resource supply, potentially igniting conflict over said resources. Critics of Neo-Malthusianism, known as Liberal Institutionalists, challenge its ‘competition’ mechanism by arguing that water actors are more likely to seek cooperation over water (Wolf, 2007; Theisen, 2012). Applying an international relations approach to the water cooperation-conflict debate, Dinar notes that a state’s ability to establish cooperative frameworks

for water use depends largely on the construction of institutions that help mitigate issues such as compliance problems and mistrust (2002). The main challenge for successful cooperation, Dinar continues, revolves around the question of trust: “If mistrust is alleviated and transparency enhanced, cooperation will ensue” (2002, p. 242). Dinar’s argument reinforces Oye’s observation that successful cooperation hinges upon conventions that “create rules of thumb that [...] diminish transaction and information costs” (1986, p. 20), and upon the creation of collective enforcement mechanisms (Oye, 1986). Delving into the dynamics of intra-state water conflict and cooperation, Bernauer et al. explain the Liberal Institutional proposition by stressing societies’ adaptive capacities, which they argue include “technological innovation, the use of the market mechanism, cooperation, and social institutions” (Bernauer et al., 2012, p. 531).

Abundance theorists have also framed their arguments within the context of the ‘New Wars’ paradigm coined by Kaldor, in which the demise of the Soviet Union, and the geopolitical dynamics that ensued, resulted in the diversification of warfare economies globally, leading warring parties to become increasingly dependent on natural resources to sustain the war effort (Kaldor, 1999). Natural resource abundance is therefore not seen as a causing factor of conflict, but as a facilitating mechanism for the continuation of war.

## **Empirical Considerations**

The literature on Abundance Theory has examined the relationship between natural resource abundance and conflict in a number of different ways. From an empirical perspective, the work of Collier and Hoeffler is groundbreaking. In their quantitative examination of civil war onset, known as the Collier/Hoeffler Model (from this point on referred to as CH Model), they assess the extent to which measurements of opportunity and grievance can cause the necessary conditions for civil war. As Collier and Hoeffler note, the outbreak of civil war requires more than just grievances: societal discontent must be accompanied by some type of financing mechanism that renders war a feasible and sustainable effort (Collier & Hoeffler, 2002). Thus, by examining the economic resources available for potential rebel groups, Collier and Hoeffler argue that the onset of civil war can be predicted by analyzing jurisdictional dependence on natural resource commercialisation. Of significance to this discussion is the opportunity dimension of the model, where indicators of natural resource dependence (measured as the ratio of primary commodity exports to the gross domestic product) are used to assess the extent to which natural resource abundance impacts the onset of civil war. Indeed, their regression suggests a highly significant causal relationship.

The CH Model has been applied by Collier and Hoeffler in other studies (Collier & Hoeffler, 2004), and has been widely used in subsequent research. For example, Rahman applies the Model in his analysis of the challenges faced by riparian states along the Nile Basin, arguing that natural resource endowments prevent greater cooperation for transboundary water management

(2012). Similarly, Ross applies the CH Model to the separatist conflict in Aceh (Indonesia), and concludes that the case fits with the risk factors proposed by Collier and Hoeffler, including dependence on natural resource exports (2005). In their analysis of natural resource use in the Colombian government - Revolutionary Armed Forces of Colombia (FARC-EP) conflict, Sanchez et al. conclude that the FARC-EP's involvement in the global cocaine trade contributed heavily in prolonging the duration and intensity of the war (2006).

However, Collier and Hoeffler's argument has come under the critical lenses of a number of scholars. For example, Makdisi and Sadaka note the CH Model's inability to predict the Lebanese Civil War of 1974, remarking that the probability of war in Lebanon, a country underwhelmingly dependent on natural resource exports, was very low during the period immediately preceding the war (2006). Similarly, Woodwell notes that the CH Model failed to predict the so-called 'Troubles' conflict in Northern Ireland, and is quick to highlight Northern Ireland's relatively low dependence on primary exports (2006). Financing, Woodwell continues, was ensured by way of involvement in illegal markets and activities, not on natural resource marketization (2006). Blum finds similar empirical discrepancies in his assessment of civil war in East Africa, where he argues that the CH Model displays significant lacunas that render its predictive potential inapplicable to the East African context (2006). Fearon challenges Collier and Hoeffler's causal mechanism (financing of rebel activities) in his study of oil dependence, and concludes that diminished state capacities and the temptation to seize office for resource control are better predictors of civil conflict (2005). Humphreys's findings on diamond and oil

abundance suggest support for Fearon's 'weak state' mechanism, but conclude that poor state capacity does not fully nor singularly explain the onset of civil conflict (2005).

Since the introduction of the CH Model, several studies have expanded the literature's comprehension of natural resource abundance, by examining specific types and characteristics of natural resources. For example, Ross identifies three key dimensions of natural resources - lootability, obstructability and legality - and argues that each dimension helps to facilitate different types of conflict, and dictates the duration of each strife (2003). In subsequent studies, Ross finds evidence of a positive causal relationship between natural resource abundance and the likelihood of civil war, where not only its onset, but also its duration and intensity, become aggravated by natural resource wealth (2004). Furthermore, his work assesses the impact of individual natural resources on conflict, most notably oil, diamonds and gas (Ross, 2006).

Research has also opened the non-renewable resources 'black box' by studying how specific types of resources affect the likelihood of conflict. For example, Le Billon complements the causal mechanism studied by Collier and Hoeffler, by examining how natural resources may affect not the direct onset of civil war, but states' vulnerability to civil unrest, by examining three types of resources: timber, diamonds and oil (Le Billon, 2012). Fairhead proposes a stronger focus on the political economy of conflict, based on the notion that most humanitarian crises occur in settings rich in natural resources (Fairhead, 2000). As in Le Billon's work, Fairhead focuses on abundance of specific resources, which he categorizes as follows: gems, minerals and carbons. Along similar empirical lines, subsequent studies scrutinize the individual effects of

fossil fuels (de Soysa & Neumayer, 2007), diamonds (Lujala, Gleditsch & Gilmore, 2005) and forest resources (Buhaug & Rød, 2006), suggesting a generally-positive causal relationship.

The literature also examines the role of natural resource abundance on factors that may stimulate conflict indirectly. For example, Sachs and Warner find strong evidence that countries with natural resource abundance often fail to achieve export-driven economic growth (2001). Their findings align with theoretical propositions that relate economic underdevelopment and stagnation with higher probabilities of conflict (Stewart, 2002). Sachs and Warner's research supports the evidence in Doppelhofer et al., where measures of resource abundance (fraction of primary exports in total exports) present a negative causal relationship with economic growth (2000). Doppelhofer et al., however, also find that abundance of mineral resources increases the potential for political instability and rent-seeking behaviour (2000). Subsequent analyses focusing on non-GDP related measurements of natural resource abundance provide further support for its causal relationship with conflict (Neumayer, 2004; Atkinson & Hamilton, 2003). However, Brunnschweiler and Bulte suggest caution when examining the issue of natural resource abundance within the context of economic growth: they argue that most studies rely heavily on countries' dependence on natural resource exports, and focus less on the rentability of the resource being analyzed (2008). Thus, they suggest that the dimensions of rentability and export dependence be scrutinized in unison (Brunnschweiler & Bulte, 2008).

The literature also frames natural resource abundance in relation to its effect on democratic performance. For example, Jensen and Wantchekon examine the path towards democratisation



in both resource-rich and resource-poor countries, and conclude that the former group featured weaker democratic performance after the third wave of democratisation than the latter (2004). They attribute this effect to vertical decision-making institutions monopolising executive discretion over natural resource rent, which leads to an erosion in democratic development (2004). This solidifies the previous findings by Wantchekon, who concludes that natural resource abundance increases income inequality and facilitates the strength of dictatorial regimes (2002).

The research above presents how natural resource abundance has been studied by environmental security scholars, and despite a number of challenges, it lays out a generally positive causal path between resource wealth and conflict. The next section will discuss the shortcomings of the literature. In particular, it will examine the lack of focus allotted to renewable resource abundance as a causal determinant of conflict.

## **Discussion**

There are two important dimensions that dictate the current state of the natural resource abundance debate. Firstly, conceptions and empirical explorations of abundance use quantitative measures to prove surplus, perhaps even, the non-scarcity of resources. Most of these measures come in the form of fractions of primary commodity exports (as is the case in the CH Model). Secondly, characteristics of abundance are implicitly and, I would argue, infrequently attached to

their commercialisation, and to their economic market value. Abundance theorists focus on the rent derived from natural resources, not just volume. Thus, when the literature discusses the causal relationship between resource abundance and conflict, it also undeniably assesses belligerent groups' commercialisation of abundant resources with high rentability. It is crucial to establish this distinction, as it will illuminate the subsequent sections of this discussion.

The above considerations problematise the literature's analyses of resource abundance as a causal determinant of conflict. For the most part, the empirical evidence that supports the abundance discourse is based on examinations of non-renewable resources. Research by Rahman (2012), Le Billon (2012) and Ross (2006) for example, is heavily dependent on the scrutiny of diamonds and fossil fuels, in the same way that Sanchez et al. (2006), Fairhead (2000) and Doppelhoffer et al. (2000) focus on narcotics, carbons and minerals respectively. A visible exception is the work of Le Billon, who focuses on timber resources as well as diamonds and oil in his tripartite study (2012). Even though timber, an output of the forestry sector, is widely considered a renewable resource (McWhinnie, 2012), Shearman et al. challenge its renewability, by arguing that the rapid exploitation of the world's forests has jeopardized their natural ability to regenerate their stock (2012). Notwithstanding this exception, and the somewhat unreconciled status of timber as a renewable resource, the predominant focus of the literature on non-renewables is difficult to deny.

The empirical reliance on these types of natural resources is understandable; they bear significant rentability based on their physical volume and strong market potential. For example,

Goreux notes that in 1999, one kilogram of rough diamonds in Sierra Leone had a market value of \$1.15 million United States Dollars (USD), which was equivalent to the yearly salary of 2,000 full-time Sierra Leonean civil servants (2001). Similarly, Murphy and Acosta remark that the FARC-EP's annual revenue from its involvement in the cocaine trade in 2012 was roughly USD \$1 billion (2013), with other sources citing higher return margins (Ramsey, 2012). While emphasizing the difficulties of arriving at an accurate estimate of the FARC-EP's cocaine revenue, Otis points out that all estimates represent a significant amount of financial resources as they pertain to the war effort (2014).

The empirical evidence that suggests a positive causal pattern between natural resource abundance and conflict is built upon cases whose physical abundance of non-renewable resources is coupled with high economic profitability. Whether it is diamonds in Sierra Leone, narcotics in Colombia, or oil in the Sudan, the conceptualisation of abundance is framed around not only quantitative measures, but also qualitative ones. The quantitative abundance of a resource is arguably less relevant if its economic value is low. A high market value for non-renewables translates into greater profitability by default for those groups who control their entry into the market. Therefore, the causal potential for conflict vis-a-vis natural resource commercialisation is heavily anchored on resources whose quantitative and qualitative volumes are considered high from a market perspective.

With such profitability potential, it is unsurprising that the literature has devoted such attention to these and other resources. In providing this focus, however, the literature

inadvertently universalises the representational value of non-renewable resources, and therefore fails to capture the conflict-inducing potential of other types of natural resources that may share similar abundance traits, such as freshwater. This is indeed a lacuna previously noted by Gizelis and Wooden in their examination of the direct and indirect relationships between water scarcity, governance and conflict (2010).

Without acknowledging the implications of renewable resource abundance on the emergence of conflict, I argue that Abundance Theory as it currently stands displays a theoretical and empirical vacuum that can only be filled by examining how renewable resource abundance affects the onset of conflict. To this end, research needs to be sensitive to case selection strategies that effectively identify renewable resource abundance within national and subnational settings. It also needs to employ methodological tools that effectively capture the different types of valuation systems attached to renewable resources. The multidimensional character of resources such as forests, for example, has been recognised by a number of organisations. In this regard, when stressing the importance of the forestry sector in West Africa, the Food and Agriculture Organisation (FAO) says the following:

The variety of cultural values and symbolic functions ascribed to the forests are as numerous and diverse as the communities and cultures of the region. Physically and mystically forests have defined the environment of communities in the region throughout time. The distinction that has been made between cultural values and the forest's functions is actually an artificial one. Tangibly and intangibly, forests feature in all

aspects of culture: language, history, art, religion, medicine, politics, and even social structure itself. Forest trees may house the spirits of ancestors as well as those of the newborn. And forests are viewed in both positive and negative lights as sources of evil as well as power and munificence, as providers for, and hindrances to development. (FAO, 1990, para. 1)

Similar multidimensional attributes have been assigned to resources such as freshwater. For example, eWater, an Australian organisation, extols the pluridimensionality of freshwater within Australia's Indigenous communities:

For Indigenous people, water is an intricate part of the landscape that holds vast social, cultural and economic importance; its value is intangible. It is not easy to marry this with the quantitatively-focused western style of natural resource management which tends to separate components of the landscape into 'silos'. (eWater, 2010, para. 6)

The issue of researching abundant renewable resources is therefore not a straightforward enterprise that can be approached, from a methodological and empirical perspective, in the same way the literature examines non-renewables. The next section elaborates this tension by focusing on freshwater and the ways in which it has been valued, and how these values can conflict with one another.

## **Water Abundance and Conflict**

When comparing the valuation and utility of renewable resources versus non-renewables, freshwater provides a significant entry point for the scrutiny of renewables as causal determinants of conflict. Despite growing evidence that global water supplies are in decline (Gleditsch et al., 2006; Beaumont, 1997), freshwater remains asymmetrically distributed across and within national jurisdictions, rendering water availability abundant in some locations, while remaining scarce in others (Fry, 2006). To this effect, several indexes have been created to assess the sufficiency or scarcity of national water stocks based on their supply, demand and distribution (Falkenmark, 1989; Sullivan, 2002). Additionally, progressive demands for food (FAO, 2009), energy (IEA, 2012), sanitation (WHO, 2017 a) and general consumption (EPA, 2017) continue to boost the global economic value of water.

As the rentability of freshwater resources continues to rise, so do pressures for their commercialisation. The bottled water industry is a sector that not only recognizes the economic potential of water, but which also exploits the resource more intensively based on its increasing profitability. For example, in 2015, Transparency Market Research anticipated that the global value of the bottled water industry could rise to USD \$279 billion by 2020 (2015). This prognosis was based on rising demand for bottled water. In the US alone, the consumption of bottled water increased from 24.5 gallons per capita in 2005 to 36.5 gallons per capita in 2015, amounting to 11.7 billion gallons of water consumed in 2015, and profit margins of \$14.2 billion

that same year (Rodwan, 2016). The worldwide demand for bottled water products followed a strikingly similar upward pattern (Statista, 2017).

As these pressures result in progressively more intensive water exploitation and manipulation, their impacts on local ecosystems, enterprises and inter-group dynamics generate deep and legitimate concerns. For example, Glennon framed this concern within the context of Nestlé's failed bid to bottle water from the Mekan River in rural Wisconsin. He pointed out that reducing the water supply of the Mekan, a particularly fragile ecosystem and home to a significant population of blue-ribbon trout (Glennon, 2002), by as little as 7.5 gallons, would have increased the entire waterway's temperature, impairing the natural reproductive cycles of its wildlife (Glennon, 2003). Such an eventuality would not only affect the river's ecosystem; it would have likely had a negative impact on human livelihood. Recent and similar concerns were raised in Ashburton (New Zealand) over the sale of a public estate with access to significant groundwater resources, which would have prompted an estimated 1.4 billion litres of water taken every year under a 30-year permit for bottling purposes (New Zealand Herald, 2016). After massive opposition to the sale, the project was eventually abandoned (New Zealand Herald, 2016).

An abundance of freshwater resources, as in the cases outlined above, does not necessarily entail that water distribution is equitable, or that freshwater supplies, from an environmental, cultural, economic and social perspective, are administered properly. Barlow, for example, highlights the environmental impacts of freshwater commercialisation in Australia and the US, and notes that pollution of holding lagoons in Adelaide (Australia), and boil-only advisories in

Atlanta (US) and Sydney (Australia) all derive from a push to maximize the profitability of water at the expense of infrastructure investment (Barlow, 2003). De Villiers similarly remarks that, although three quarters of China's freshwater supplies are located in its less developed south, the majority of its most water-intensive activities (industrial farming and agriculture) is found in regions with precarious volumes of water (de Villiers, 2003). This has led to significant contamination of waterways, and water supplies that are unfit for human consumption and use (de Villiers, 2003). The dynamics dictating the poor state of freshwater in the above cases also frame water access and usage asymmetries in water-rich countries such as Canada, where hundreds of Indigenous communities continue to live under long-term water advisories as a result of fecal contamination and agricultural activities (BBC, 2018).

The above exploration begs one important question: What do we know about water conflicts? Despite the conflict potential inherent in the commercialisation of freshwater, the literature's comprehension of causal factors behind hydropolitical conflict episodes is largely based on inter-state dynamics (Wolf et al., 2003; Zeitoun & Mirumachi, 2008). In this regard, Gleick frames water conflicts in the context of international politics, and argues that unavailability of freshwater is likely to generate tensions between water-poor and water-rich nations, due to the development limitations imposed by said unavailability (Gleick, 1993). Gleick later identifies four motivators that may contribute to the emergence of water conflicts: water systems as military and political goals, water as a tool of war, water as a target of war, and water resource allocation as a cause of contention (Gleick, 1998). In her study of inter-state water conflicts,



Haftendorn finds evidence that suggests that conflicting water use along shared riverways can cause conflicts between the involved states (2000).

The literature has undeniably devoted significant attention to the study of water conflicts between states, but less focus has been provided to examinations of intra-state water conflicts. Notwithstanding this uneven focus, a small segment of the literature has examined the sub-national dimensions of water-related conflicts. The work of Pandey for example illustrates the dynamics that dictate intra-state water conflicts in South Asia, which are largely determined by how freshwater resources are managed, and by whom (Pandey, 2011). Pandey provides further examples of communities and groups that have engaged in conflicts over water, in situations where water availability has been poor, as was the case in areas located in India and Pakistan (Pandey, 2011). Similarly, Funder et al. investigate the emergence of hydropolitical conflict events in rural Zambia, and conclude that conflictive water events are more frequent than cooperative ones because of competing water uses, including “watering of livestock, irrigation development, and access to water for domestic uses” (2010, p. 761). The ‘competing water use’ mechanism identified by Funder et al. also appears in Sondershaus and Moss’ analysis of local water conflicts in Germany. Their work suggests that diverging water uses between upstream and downstream communities along the Fredersdorf Mill Stream has facilitated an escalating number of hydropolitical conflict events (2014).

Departing from questions related to surface water, research has also scrutinised the conflict-causing potential of other forms of water supplies. For example, Döring finds evidence

that suggests that groundwater scarcity bears a significant potential to exacerbate communal violence (2020). Research has also examined the effect of climate-driven precipitation variation, and its subsequent impacts on conflict. Even though some researchers have downplayed the causal patterns between precipitation and conflict (O’Loughlin et al., 2012), others have found evidence suggesting that human vulnerability to conflict, among other impacts, increases as precipitation patterns fluctuate (Büntgen et al., 2011; Kelley et al., 2015).

In addition to the above studies, scholarship examining intra-state water conflicts has also found evidence suggesting that cooperative outcomes are likely to emerge between water actors, despite the existence of competing uses. For example, in their quantitative analysis of the nature and scale of local water conflicts in Vietnam, Mali, Zambia, Bolivia and Nicaragua, Ravnborg et al. suggest that local cooperation over water is more frequent, but argue that conflictive water events remain consistent enough to warrant continued focus in the literature (Ravnborg et al., 2012).

In view of the existing pressures to intensify water commercialisation, and the mounting economic value of water, several theoretical and empirical questions arise. While valuable in opening a theoretical ground for the study of natural resource abundance as a determinant of conflict, the literature displays a striking lack of studies that examine water-based conflicts in water-rich environments. What is known about water disputes is largely based on theories that highlight the scarcity of the resource. In this regard, and considering the understudied character of the water abundance-conflict nexus, Abundance Theory provides an important theoretical

foundation upon which the above dyad can be thoroughly examined. This study constitutes an initial attempt to mobilise Abundance Theory to investigate water conflicts in water-wealthy environments.

### **Chapter 3 - Water Abundance and Water Incompatibilities in New Zealand**

It is ironic that 1000 or 2000 years ago people living in parts of the Middle East, China, and Latin America had better systems for collecting, storing, and distributing water for human consumption and irrigation than they do today, a reflection of the high priority ancient civilizations placed on this issue. (Bourne, 1984, p. 3)

The ‘high priority’ to which Bourne alludes implicitly emphasises a balance between social equity and environmental respect. It also relates to how human institutions and macrostructures have embraced progress by establishing increasingly-intensive industries, and unsustainable patterns of natural resource commodification. In the process of attaching an economic value to elements in the natural environment, freshwater has become a resource that is consistently claimed by individuals, groups and sectors worldwide. This process sets the foundation for this study.

Bermejo conceptualises resource commodification as “an assertion of human control over nature and the de facto negation of the systemic character of nature” (2014, p. 22). This negation leads to a “valuation (mercantile) and a use [of Nature] that is incompatible with the vastly complex network of life” (Bermejo, 2014, p. 23). Bermejo’s argument stresses two important concerns, which should remain central from a conflict perspective: Nature’s highly-complex and multi-dimensional character, and the extent to which Capitalism has created an environment that facilitates the superiority of one valuation (in this case of economic character) over others. Highlighting a resource’s economic value, and dictating access and use criteria based on said

value, is not only incompatible with the network of interlinkages found in Nature; it also limits access to, and use of water for activities and enterprises not conceived for commercial gain.

Even though freshwater abundance may theoretically satisfy society's multi-sectoral demands (both commercial and non-commercial), conflict may still emerge when an actor commercialises water in such a way that creates scarcities for other parties. With this in mind, the objective of this chapter is two-fold. Firstly, it endeavours to explain the potential for hydropolitical conflicts in New Zealand by outlining the number of different claims and stakeholders involved in freshwater access and use. Because of the unique character of New Zealand's development as a binational and bicultural country, legitimate water claims are consistently asserted by both its European and Indigenous descendants, as well as individuals and groups involved in different sectors of the economy, making New Zealand a prime country to examine. Secondly, it explores how water conflicts may emerge as a result of water access that disproportionately favours commercial interests and practices.

### **Why New Zealand?**

New Zealand presents ideal conditions for the study of hydropolitical conflicts: it is a water-rich environment with a relatively robust water authority system in the form of city/district and regional councils, which jointly govern different aspects of freshwater access, use and overall management throughout the country. Alongside these institutions, the rules and

processes dictating the access and use of natural resources are clearly defined by legislation such as the 1991 Resource Management Act (RMA). The RMA is the Act of Parliament responsible for outlining the conditions for New Zealand's natural resource use and protection. The purpose of the RMA, as per the Ministry for the Environment, is:

to ensure [that] activities like building houses, clearing bush, moving earth, taking water from a stream or burning rubbish won't harm our neighbours and our communities, or damage the air, water, soil and ecosystems that we and future generations need to survive. (Ministry for the Environment, 2015 a, p. 2)

Along with its prescription of processes and regulations for natural resource access and use, the RMA also establishes a number of different conflict resolution mechanisms should disputes arise within its implementation. The RMA plays a tripartite role in the ventilation and settlement of hydropolitical conflicts. First, it stipulates that council and regional-level authorities are responsible for the management of the country's natural resources, including freshwater. In this regard, the RMA confers upon city and district councils responsibility over the effects of land use, and activities on the surface of rivers and lakes, while regional councils are mandated to decide upon issues related to water quality and quantity, as well as addressing the sources of water contamination (Ministry for the Environment, 2015 a). In delineating the jurisdictional confines of each governance level, the RMA also delineates the arbitrators responsible for the administration and delivery of conflict resolution pathways.

Second, the RMA effectively defines the process through which natural resources are accessed and used, which normally involves the granting of a resource consent by city, district, and regional councils. A resource consent is “the mechanism through which local authorities give approval for activities involving the use of natural and physical resources” (Ministry for the Environment, 2018, para. 1). A central component in the granting of a resource consent is what the RMA defines as an Affected Person. An Affected Person is “a person or organisation who the council thinks will experience an adverse effect from [a] proposal that is ‘minor’ or ‘more than minor’” (Ministry for the Environment, 2015 b, p. 5). Part of the granting of a resource consent for any given activity involves the proper identification of, and consultation with Affected Persons by either the council involved in the granting process, or by the party seeking the consent (Ministry for the Environment, 2015 b). In addition to the above approaches, councils may also start a public notification process involving advertisement of any given resource consent application in newspapers, with requests for written statements, or submissions from the general public (Ministry for the Environment, 2015 b). In this regard, the resource consent regime considers both the environmental impacts of a proposed activity, and how third parties may be affected by it.

And third, should concerns arise by Affected Persons during a consent application, or by the general public when an application is publicly notified, the RMA dictates the procedures allowing parties to voice discontent, which include approaching their local councils with formal written submissions (Ministry for the Environment, 2015 b). Individuals who present a submission have the opportunity to appear before council to elaborate their concerns, as well as

holding informal pre-hearing meetings with the applicant to resolve any outstanding issues. Councils also have the option of referring both applicants and submitters to mediation, where conflicts can be effectively ventilated and resolved via third parties.

Despite the institutional and procedural arrangements described above, New Zealand has seen a steady increase in the number of water-related conflicts motivated by how water is accessed and used by actors. From protests over water bottling in Canterbury (Newshub, 2016; NewstalkZB, 2017), to intense political organisation over water treatment in Western Otago (Stuff, 2018 a) and Hawke's Bay (Newsie, 2017), disputes over water continue to generate discord, and demand proper examination of the conditions motivating the emergence and intensification of water-related conflicts in New Zealand.

### **Water Abundance in New Zealand**

New Zealand is one of the most water abundant countries in the world. Nationally, New Zealand's per capita water availability is estimated to be 107,527 m<sup>3</sup> per year (Gluckman, 2017), making it the fourth most water rich country in the OECD (Statistics New Zealand, 2011). In terms of renewable water stock, New Zealand's Ministry for the Environment estimates that roughly 711 billion m<sup>3</sup> of water are stored in aquifers, while 320 and 440 billion m<sup>3</sup> are stored in lakes and rivers respectively (Ministry for the Environment, 2017). Abundant ground and surface water volumes are coupled with substantial amounts of precipitation, with Collins et al.



estimating that New Zealand receives an average of 550 billion m<sup>3</sup> of rainwater every year (2015).

Despite its enviable freshwater stock and low population density<sup>1</sup>, New Zealand faces a series of different challenges connected to how its water resources are distributed and utilised. For example, the Water Poverty Index (WPI), which measures water access, availability, capacity to sustain access, use, and environmental factors (including quality), ranks New Zealand in the 56th position globally in great part due to substandard measurements of freshwater use for domestic, agricultural and non-agricultural purposes (Lawrence et al., 2002). Comparatively, advocacy for efficient water use, and skepticism over water commercialisation and privatisation have dominated the national and development water strategies of a number of other water abundant countries. For example, Gustafsson points out that several municipalities in Sweden have experimented with the transfer of water management and sewage services to the private sector, but that these ventures were readily moved back into public regimes due to comparatively higher costs for end users (Gustafsson, 2001). In terms of support for international organisations, Bond and Dugard highlight the Norwegian government's decision to divest millions of dollars from the World Bank's Public Private Investment Advisory Facility, based on profound discrepancies over structural adjustment programmes' predisposition to commodify water in Global South countries (2008).

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<sup>1</sup> With 15 inhabitants per km<sup>2</sup>, New Zealand's population density represents less than half of the OECD's average, and is only higher than that of Norway, Canada, Iceland and Australia (Statistics New Zealand, 2005).

While efficiency and responsible State stewardship of water supplies place both Sweden and Norway in relatively high rankings in a number of indexes, doubts have been cast upon the efficient management of the resource in New Zealand. This was made evident by a recent report from New Zealand's Ministry for the Environment, which concludes that, although there is robust documentation concerning approved water permits, little is known about the amounts of freshwater used in the country (Ministry for the Environment, 2017). Tanentzap et al. argue that this trend originates with New Zealand's exclusive reliance on regulatory mechanisms (as opposed to central government intervention) to mitigate the adverse environmental impacts of activities such as agriculture (2015), itself a direct function of market-driven resource intensification and commodification (2015).

Water commercialisation in New Zealand often displays incompatibilities over water use and management between the country's European/Non-European (from this point on referred to as Pākehā) and Indigenous descendants (from this point on referred generically as Māori). This discrepancy emanates largely from profound differences over natural resource management, ownership, and Māori's unique constitutional standing in New Zealand. In terms of their relationship with, and regard for Nature, Williams points out that the "key to the Māori view towards environmental issues is the importance of not altering *mauri* [a resource's vital essence] to the extent that it is no longer recognizable" (2006, p. 74). Natural resource management, Williams suggests, can be fully attuned with human demands, but it must be achieved such that areas being harvested do not lose their essential character as a result of the harvest (2006). This worldview is somewhat incompatible with how New Zealand industries continue to intensify

their land and water use, which often leads to a significant diminution of water quality.

By-products of industry, most notably dairy farming, have progressively imperilled the integrity of rivers, lakes and aquifers (Houlbrooke et al., 2004). Environmental degradation, as Baskaran et al. suggest, has also been coupled with increases in ground and surface water demands, as well as in acute reductions in pastoral landscapes in New Zealand (2009).

The principles that govern Māori views on natural resource management are enshrined in New Zealand's foundational document, the Treaty of Waitangi, where the Crown recognises the authority that *iwi* (tribes) exert over their lands and natural resources (Ministry of Justice, 2016). Reconciling human needs with the long-term health of Nature is mandatory in fulfilling a Māori worldview, but these customs are often incompatible with Pākehā views on legal ownership and resource management. These differences are most evident in the Stage 1 Report on the National Freshwater and Geothermal Resources Claim before the Waitangi Tribunal, which shows that western-style principles of resource ownership do not fully reflect the Māori tenets of authority, stewardship, and control over natural resources (Waitangi Tribunal, 2012). These incompatibilities, as Smith argues, do not emanate solely from misunderstandings between Māori and Pākehā groups: they derive largely from a European application of a “moral perspective to land ownership and management, of ‘use it or lose it’” (2012, p. 56), that inherently circumvents traditional Māori values that amalgamate ideas of culture and identity with natural resource management. On Māori's close connection with Nature, and how this connection relates to their identity, the New Zealand Māori Council writes:

Land provides us with a sense of identity, belonging and continuity. It is proof of our continued existence not only as a people, but also as tangata whenua [original inhabitants] of this country. It is proof of our tribal and kin group ties. Māori land represents turangawaewae [place where one has the right to stand]. It is proof of our link with the ancestors of our past, and with generations to come. It is an assurance that we shall forever exist as a people, for as long as the land shall last. (1983, p. 10)

Considering the deep connections that Māori tribes have with water resources in particular, and Nature in general, it is understandable how and why intra-state water conflicts between these groups could emerge in a jurisdictional setting like New Zealand's. If water access criteria are arrayed in favour of commercial enterprises that threaten the integrity of water resources as per Māori philosophy, both the well-being and identity of Māori water users become threatened, thus increasing the potential for conflict along Māori-Pākehā lines.

This, however, is not to say that intra-state hydropolitical conflicts in New Zealand are exclusive to the Māori-Pākehā polarity: tensions over water use also exist within these groups. Such incompatibilities, in this case within Māori *iwi*, were most evident in 2013 when the South Island *iwi*, Ngāi Tahu, sought to invest in a water catchment project in the Makaroro River in Hawke's Bay, a venture that was heavily resisted by a local North Island *iwi*, Ngāti Kahungunu (Stuff, 2013). The project, conceived to intensify water and land use for agricultural purposes (Farmers Weekly, 2016), was perceived by the Ngāti Kahungunu as detrimental to the quality of their ground and surface water. An agreement was later reached by both *iwi*, where Ngāi Tahu

conceded to withdraw support from the project if the venture did not abide by the same environmental and cultural standards that Ngāi Tahu applied to their own rivers (Te Rūnanga o Ngāi Tahu, 2013). Even though the project was subsequently abandoned by Ngāi Tahu and its collaborating partners, this case highlights the extent to which inter-group incompatibilities over water can emerge within relatively like-minded groups.

Akin to grievances between Māori *iwi*, incompatibilities are also discernible between groups seeking access to natural resources for financial gain. For example, New Zealand's National Institute of Water and Atmospheric Research (NIWA) notes several conflicts have arisen in recent years over the development of the fish farming industry in New Zealand, which has antagonized other aquaculture activities, most notably mussel farming (2013). Similarly, civil society groups concerned with resource intensification for animal-based agriculture assert that enterprises such as dairy farming have led to an exponential increase in water use. In their view, this usage jeopardises water availability for other purposes, including plant-based food production (Vegans New Zealand, 2016).

The above elaboration leads to one central conclusion: despite freshwater surplus, and relatively strong institutional and procedural frameworks for water management, New Zealand is not immune to water-related conflicts. It is within such conditions that this study finds its theoretical and empirical anchors.

## **Water Commercialisation and Conflict**

As per Chapter 2, the causal relationship between the commercialisation of abundant natural resources and the emergence of conflict is of acute interest to abundance theorists. Applying this focus to freshwater in New Zealand requires the formulation of a question that assesses the dyadic relationship between freshwater commercialisation and conflict. To examine such a question scientifically would require an acknowledgement that commercial enterprises vary significantly in their profit-generating capacities, water extraction and use, and exclusion potential. In this regard, commercial enterprises are bound to exert an asymmetrical effect on the emergence of water-related incompatibilities between individuals, groups and sectors.

One cannot begin to discuss the water commercialisation-conflict polarity in New Zealand without alluding to the development of the dairy industry, arguably one of the principal economic drivers in the country (Statistics New Zealand, 2017; New Zealand Institute of Economic Research, 2017). While significant focus has been dedicated to the dairy industry as a particular cause of environmental degradation (Davies-Colley & Nagels, 2002; Davies-Colley et al., 2004; Larned et al., 2004), one cannot convincingly argue that all dairy enterprises display the same conflict-inducing potential. A small dairy operation, to name one example, is unlikely to motivate skirmishes over its water access and use based on its low environmental and social impacts. As dairying activity intensifies its production, however, its demands for water increase (Allan, 2004). This generates concerns about water access, scarcity and opportunity costs for

other water consumers. For good or ill, New Zealand's dairy industry has displayed precisely this progressive intensification: assessments of land use per industry demonstrate that between 1993 and 2012, land use for dairying in New Zealand increased by 46% (Statistics New Zealand in Foote et al., 2015), with the total amount of dairy cows reaching an estimated 6.5 million in 2012, up from 3.4 million in 1990 (Statistics New Zealand in Foote et al., 2015). This upward trend is consistent with the period covering 2012 and 2016, when land use for dairying increased by an additional 42.4% (Statistics New Zealand, 2018 a).

As the dairy industry intensifies, questions have emerged concerning the access and use parameters of other users and sectors dependant on freshwater. For example, New Zealand's Ministry for the Environment notes that several waterways near pastoral lands consistently contain unacceptable levels of E. Coli, rendering those waterways unfit for activities such as swimming and whitebait fishing (2009). Similarly, New Zealand's Parliamentary Commissioner for the Environment notes that fecal contamination can affect drinking water, quality of shellfish, and can have negative impacts on the health of livestock (2004).

The direct and indirect effects of intensive agriculture (and other activities) in New Zealand have generated conversations over how to securitise the country's freshwater systems; these discussions have been rooted in the introduction of water treatment strategies such as chlorination. As district councils in New Zealand fail to comply with nationally-mandated drinking water quality standards, frictions have emerged over both the setting of water quality guidelines, and the costs attached to water treatment infrastructure and administration. This was

the case in the Thames-Coromandel district, where local authorities argued that the central government's demands for higher water quality standards would inevitably bear additional costs for local taxpayers. To ensure compliance, the Thames-Coromandel District Council included a scheme to chlorinate all water supplies in its 2018-2028 plan, including the last two unchlorinated sites: the towns of Hahei and Pauanui (Newsie, 2017). The latter town's water supplies were subsequently chlorinated through the provision of equipment by Southern Cross Consulting Ltd, a company that specialises in water chlorination for municipal and community-level use (Southern Cross Consulting Ltd, 2017). This example illustrates two important points. Firstly, water authorities in New Zealand are becoming incapable of guaranteeing the good quality of the water under their jurisdiction, and secondly, it showcases the role of the private sector in the provision and administration of water security strategies. In short, the commercialisation of freshwater in New Zealand encompasses several dimensions of water resources, from their industry-driven degradation, to the fashion in which city/district and regional councils have chosen to securitise it. It is in this context that this study argues conflicts may emerge between individuals and groups affected by these activities.

When examining the question of water conflicts driven by enterprises such as dairy farming, or activities such as water treatment strategies, one is ultimately assessing the frictions and tensions that emanate from individuals and groups that espouse competing interests over water access and use. This relates tacitly to Peters' argument that resource-driven conflicts are extrapolations of competing meanings systems. On this note, Peters observes the following:



Claims to use and control resources and to exercise authority over things and people are premised on an ideology or a set of meanings. Struggles over resources or over power, then, necessarily take place in terms of such meanings. These meanings are both shared and disputed: different categories or groups assign different meanings, different definitions or different emphases at different times to known concepts, events and acts. Hence, one event, one institution or one concept may be defined and interpreted in a number of ways and in ways that contradict each other. (1984, p. 29)

The values, or meanings to which Peters alludes determine how and why a specific group seeks to interact with Nature and its diverse elements. Individuals and groups (in New Zealand and elsewhere) are drawn to water for spiritual (Kamitsis & Francis, 2013), cultural (Jahren & Sui, 2017) and religious reasons (Chamberlain, 2008), while others may identify water more instrumentally in terms of food requirements (Gonzalez-Dugo et al., 2010), sanitation (WHO, 2017 b) and industrial use (USGS, 2014). Household-level demands are similarly reliant on adequate access to water resources (Mayer et al., 1999; EPA, 2017). Other groups are driven toward the small-scale use of natural resources and, in some instances, on their non-use or conservation. For example, Ravindra et al. describe the people of Rajasthan (India) as a group that assigns value to water based on environmental conservation and community-building, rather than on commercial yield. These values are reflected in infrastructural developments, known as Johads, that are conceived to replenish aquifers via rainwater (Ravindra et al., 2017), and to ensure that local communities are central in the equitable and fair distribution of the preserved water (Hussain et al., 2014). Similar water catchment systems known as ‘Aflaj’ are employed in

Oman (Al-Marshudi, 2007), with priority of use given to direct consumption, sanitation, proper disposal of the dead, and food production, and at no cost for the system's beneficiaries (Trapasso, 1996). In these systems, profit-making is not the goal of water access, and the infrastructure that facilitates said access is equally defined by non-commercial criteria.

As in Rajasthan and Oman, similar dynamics are discernible in New Zealand, as environmental groups and Māori communities consistently seek to protect their natural resources for ecological health and cultural preservation, in addition to commercially-based gains. A prime example of these attitudes is reflected in the 2017 passing of the Te Awa Tupua Bill, which conferred legal personhood to the Whanganui River, and put measures in place to ensure its restoration and protection (New Zealand Parliament, 2017). A similar arrangement was later made through the Record of Understanding for Mount Taranaki, Pouakai and the Kaitake Ranges, where legal personhood was given to Mount Taranaki and its surrounding areas (Nga Iwi & The Crown, 2017). These examples bear witness to the types of initiatives that contain no perceivable utilitarian value beyond conservation and care.

As per the previous examples, the multitude of values that can be attached to water resources may be as varied as the individuals and groups who seek access to them. This heterogeneity does not seem to be reflected in the way environmental security analysts approach the study of natural resource abundance as a conflict-inducing factor. The previous chapter emphasized the literature's implicit focus on non-renewable resource commercialisation as a causal determinant of conflict. However, when one considers freshwater abundance or, more specifically, the

commercialisation of abundant freshwater resources, there are other factors that dictate the rise of conflict. Indeed, these factors encompass the economic dimension of freshwater but, unlike non-renewables, are not fully defined by it. This is a reality that arguably circumscribes water issues, both in New Zealand and elsewhere.

Non-renewables, such as minerals and fossil fuels, are crucial for the sustainment of modern human livelihoods, and these demands partially explain why such resources are generally coupled with a high economic value. For example, the US Energy Information Administration (EIA) predicts that by 2040 the global demand for energy will rise by 48%, with liquid fuels, natural gas and coal accounting for 78% of this increase (2016). In New Zealand, reliance on non-renewables follows a similar upward trend, with the consumption of coal, diesel, premium petrol and natural gas seeing upsurges in the years leading up to 2016 (New Zealand Ministry of Business, Innovation & Employment, 2017). In a world where supply and demand dictate global rhythms of resource exploitation, and where societies have not yet fully adopted a post-fossil fuel agenda, it is understandable why environmental security literature devotes such time and space to the conflict-inducing potential of non-renewables. However, applying this approach to freshwater is problematic because emphasizing water's economic character often leads to a negation of other values typically assigned to water.

As explained above, an abundance of freshwater resources poses the plausibility of a theoretical scenario of sufficiency for all individuals and groups. However, the way several commercial enterprises are seizing New Zealand's freshwater resources challenges the

sufficiency argument. Unsatisfied water demands in a resource-rich environment are largely attributed to the prioritisation of commercial interests, rather than water scarcity. Water abundance, on the other hand, focuses the attention of user groups on water quality and quantity and how these connect to industrial and commercial growth patterns. In such a setting, manufactured rather than natural inadequacies appear to drive actors into conflicts over water.

To explore how conflict emerges from water commercialisation, this research proposes the following research question: How and why does the commercialisation of freshwater affect the emergence of hydropolitical conflict in New Zealand?

## Chapter 4 - Research Design

### Introduction

The previous chapter explored the types of challenges faced by individuals and groups in New Zealand over the management and use of the country's abundant water supplies. The proliferation and growth of activities such as water bottling and industrial dairy farming raises questions with regards to the quantitative and qualitative state of New Zealand's freshwater. Bearing these considerations in mind, this chapter will describe the research design applied in this study. This chapter draws its framework, at least from a structural standpoint, from King, Keohane and Verba's proposed design components, which include the research question, theory, data, and use of the data (1994). These components are elaborated in no specific order or hierarchy throughout this chapter.

### Research Question

This study will examine the water commercialisation-conflict nexus by asking the following research question: *How and why does the commercialisation of freshwater affect the emergence of hydropolitical conflicts?* In this context, water commercialisation is defined as an activity or enterprise that derives direct or indirect monetary benefit from the exploitation and/or manipulation of freshwater resources. This definition encompasses a wide spectrum of

commercial enterprises, ranging from activities that seek access to water for its direct marketisation (e.g. water bottling, bulk water sale, soft drink production), that draw indirect revenue from water use (e.g. plant and animal-based food production), and that manipulate water so that certain actors gain financial benefit (e.g. externalisation of production costs via water pollution, water chlorination, water fluoridation).

Additionally, this study makes use of Eidem, Fesler and Wolf's definition of hydropolitical conflict, which they describe as "any [negative] interaction between parties that is action-defined, recorded, and made available to the public [that is] driven by some aspect or dimension of fresh water resources" (Eidem, Fesler & Wolf, 2012, p. 63). To complement their definition, Eidem, Fesler and Wolf propose a hydropolitical conflict spectrum that categorises events in relation to their intensity. They refer to this spectrum as the Conflict-Cooperation Intensity Scale (from this point on referred to as the CCI Scale), a tabulation of which is presented below. This definition, and its adjoined CCI Scale, prove beneficial to this study as they facilitate the examination of a wide array of hydropolitical conflict events, spanning from low-scale manifestations of discontent and disagreement, to overt episodes of violence. By applying this definition, one is able to expand the study's analytical space beyond the literature's traditional focus on violent forms of conflict, and allows for a thorough investigation of other forms of discord not as readily identifiable as the former. These tools also provide an opportunity to account for hydropolitical conflict intensity in a dynamic fashion, allowing this study to identify the escalation of conflict dynamics as they unfold.

<b>Intensity Level</b>	<b>Event Type</b>
-5	Small scale acts of violence, protests, vandalism
-4	Litigations, appeals of administrative actions
-3	Fines, proposal and permit denials, halting negotiations
-2	Petitions, withdrawal of third-party support
-1	Delays, report reviews, voicing opposition, editorials
0	Judicial rulings, no comment statements, announcements
1	Voicing opinion of approval, court-forced negotiation, editorial
2	Meetings, third-party-support, negotiation requests
3	Permit approvals, fixing violations, negotiations begin
4	Lawsuit settlements, regulation approval, management transfers
5	State bill passage, compacts or official agreements

**Table 1. The Conflict-Cooperation Intensity Scale**

## **An Exploration of Social Science Research**

As follows from Chapter 2, the knowledge of the causal interlinkages between natural resource abundance and conflict has been largely developed through quantitative examinations of non-renewable resource wealth. As such, the state of the literature has been largely shaped by theoretical formulations that have been proven (and in some cases, disproven) through data gathering and analysis instruments and methodologies that place greater value on the quantifiable traits of abundant natural resources, including their value in the marketplace.

This study seeks to examine how and why communities engage in hydropolitical conflicts motivated by the commercialisation of water, a question that requires an explicit methodological admonishment that freshwater resources can be assigned a plethora of value systems and meanings by individuals and groups. Methodologists like Goertz and Mahoney suggest that the appropriateness of a research paradigm should be dictated by the type of enquiry proposed by any one project (2012). Deciding what methodological framework is best suited to capture the above values and meanings inevitably leads to a classical exploration of the benefits of quantitative and qualitative research.

Quantitative and qualitative methods have often been regarded as antithetical paradigms. At their core, quantitative and qualitative methodologies differ at the epistemological, analytical and operational levels (Duchastel & Laberge, 2019). These differences stem from contrasting philosophical positions over a prescribed meaning of reality, and human subjects' ability to examine phenomena (in this case, of social nature) based on their interpretation of said reality (Lazar, 2004; Marshall & Rossman, 2014). In this regard, quantitative research has been traditionally associated with positivism (Brinkmann, 2017; Fox & Miller, 1998), which at its core suggests a separation between a subject's observable choices, and the background theories that motivate said choices (Clarke, 2016). As such, the researcher is concerned with capturing data to test a hypothetical statement as veraciously as possible (Filmer et al., 2004).

In contrast, qualitative research has been associated with constructivist paradigms. Delanty, for example, highlights constructivism's emphasis on the human subject as an 'active agent,' and



rejects the notion that individuals are passive, value-less actors (1997). Constructivism proposes the existence of a multitude of realities, which can only be uncovered through human interpretation (Andrews, 2012). As such, qualitative research emphasises the need to develop data-gathering tools that capture subjects' specific interpretations of the world. In this regard, Flick suggests that qualitative research "starts from the notion of the social construction of realities [...], is interested in the perspectives of participants, in everyday practices and everyday knowledge referring to the issue under study." (2008, p. 1). Qualitative research, then, provides a foundation for the examination of participants' individual perceptions or views on any given issue, without presupposing them to ascribe to any one value system.

While quantitative and qualitative methodologies seem to represent opposite, and perhaps irreconcilable approaches to social science research, scholars have extolled the merits of both methodologies, and have argued for the maximisation of their strengths in the study of social phenomena (Morgan, 1998). This stream of thought aligns with pragmatist philosophy, which proposes that realities can be both crafted by the individual, and can also be shared across human subjects (Feilzer, M. Y., 2010). As such, methodological frameworks such as mixed-methods approaches, to name one, incorporate the collection and analysis of both qualitative and quantitative data, while stressing the need to contextualise results within the existing philosophical plain (Cresswell & Plano Clark, 2011).

When examining the fashion in which the literature has tested the natural resource abundance-conflict polarity, there is a clear preference by scholars in choosing different types of

quantitative methodologies. This was argued to be the case due to the literature's asymmetrical focus on abundant non-renewable resources as causal determinants of conflict, and on the financial value systems normally attached to these types of resources. These methodologies are meritorious in their own right, and in their own contexts, and bring significant value to the research questions and objectives as envisaged by the researchers employing them. Applying a quantitative methodology to examine the conflict-causing effects of freshwater is, however, ill-suited for this study because emphasising freshwater's economic value presupposes that water access and use in New Zealand (and elsewhere) is solely predicated on financial return. This approach also incurs the risk of downplaying the non-commercial values that influence individuals' and groups' drive to access and use freshwater, and how and why these values may conflict with one another.

Quantitative research poses an additional challenge in the study of motivators of water-based conflicts in a country like New Zealand, which to some extent, relates also to the elaboration presented in the previous paragraph. The Treaty of Waitangi confers special authority upon Māori populations with regards to the management and guardianship of natural resources, including freshwater (Ministry of Justice, 2016). While some commercial interests indeed influence the access and use criteria of some Māori *iwi* (Stuff, 2013), Māori communities also assign different non-commercial values to their freshwater, values that may not be adequately captured through quantitative instruments. Indeed, Māori scholars have highlighted the tensions involving the commercialisation of freshwater and its impact on Māori settlements. For example, Muru-Lanning explains that industrial development along the Waikato River has led to

Māori people becoming alienated from it (2012). Similarly, Poata-Smith argues that Māori alienation from local waterways is due largely to riverways becoming increasingly bureaucratised by local administrators (2004). The question of alienation, as a source of Māori concern, is a prime example of the types of incompatibilities over water access and use that are difficult to capture and examine through quantitative methodologies. Therefore, applying a purely quantitative approach to the study of freshwater and conflict in New Zealand is likely to produce an analysis that disproportionately emphasises the commercial character of freshwater, at the expense of other non-commercial value systems central to Māori people. Such an analysis is prone to reflecting inaccurate views and opinions by Māori communities, and by other individuals and groups that may see in Māori ideals a better alignment for their own value systems.

Considering the shortcomings of quantitative methodologies in the study of water-based values and conflicts, qualitative research was deemed the best methodological framework for the study of individuals' water access and use criteria in this work. As such, qualitative research provides the necessary tools to relate and analyse the participants' views over how and why values and activities of different types may conflict with one another. Indeed, the question of water-based disputes is a multidimensional one, which requires a methodology capable of examining the complexities and ambiguities inherent in such an effort. Strauss for example argues that qualitative research is necessary to conduct a "detailed, intensive, microscopic examination of the data in order to bring out the amazing complexity of what lies in, behind, and beyond those data" (Strauss in Aspers & Corte, 2019, p.148). Qualitative research has been

useful in uncovering important dynamics in environmental conflict situations. For example, Griewald and Rauschmayer employ a qualitative research design to investigate the causal links between deforestation and the emergence of conflict in Germany, which allowed them to capture and analyse different aspects of the participants' views regarding forest clearing (2014). Similarly, qualitative research has been deployed by researchers to examine individuals' perceptions and personal views over practices such as water bottling. For example, through the use of qualitative methodologies, Ragusa and Crampton find evidence that suggests that individuals from Australia and New Zealand have little trust in companies that bottle and sell water (2016). It is therefore anticipated that a qualitative framework will add similar value to the study of freshwater and conflict.

## **The Arguments**

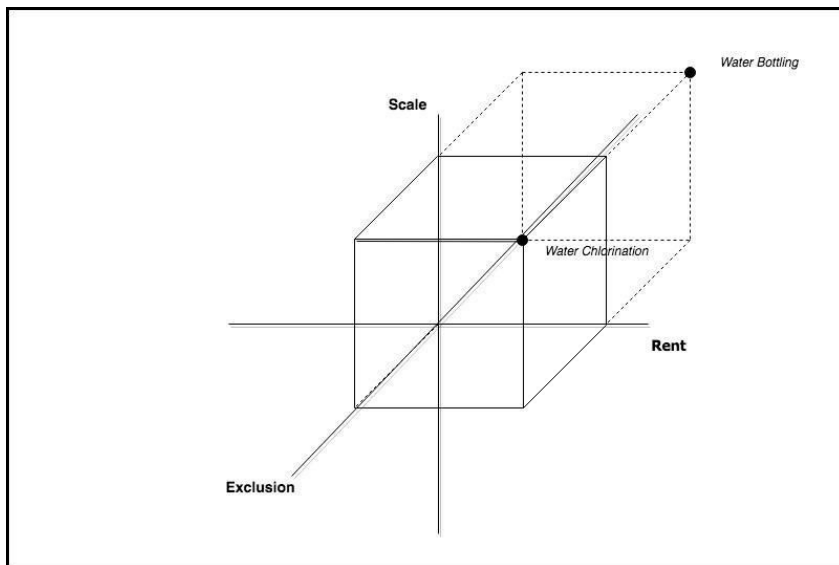
This study proposes two central arguments. First, that the introduction of water commercialisation practices influences the emergence of hydropolitical conflict intentionality if the practice is economically, socially and environmentally incompatible with those of local residents. In line with the explanations presented in the previous chapter, the proposed argument acknowledges that water commercialisation practices differ tremendously in profit generation, scale of extraction and use, and exclusion potential, and further suggests that some practices are more compatible with the economic, social and environmental realities of communities.

Second, this study argues that hydropolitical conflict intentionality is likely to intensify when local residents lack trust in the approval and appeals processes behind water commercialisation practices. This study understands intensification as the displacement of a conflict event or intentionality from one level of the CCI Scale to at least one of greater severity. This study will regard high intensity conflicts as events that fall between the -4 and -5 categories of the CCI Scale, medium intensity events will be included in the -3 category, and low intensity conflicts will fall between the -1 and -2 levels of the Scale. No comment and no opinion statements will be assigned to the 0 category of the CCI Scale. Additionally, this study defines an approval and appeals process as the set of legislative and procedural mechanisms through which a water-based enterprise becomes realised, and the processes that permit citizens to voice support or disapproval for said enterprise. The above argument endeavours to examine the role of State-mandated water authorities in the creation and administration of processes enabling the operation of water commercialisation enterprises. In this regard, this study anticipates that commercial operations approved under clearly-delineated and trust-inspiring approval and appeals processes are less likely to motivate escalation to the top-most levels of the CCI Scale, than operations that are approved under dubious decision-making processes.

### **Operationalisation and Case Selection Strategies**

To investigate the causal effect of water commercialisation on the emergence and intensification of water conflicts, this study operationalises water commercialisation by

examining the introduction of water bottling and water chlorination in the towns of Ashburton and Glenorchy. These commercial and water security enterprises will be explored in order to elucidate the relationship between water commercialisation and conflict, and water security and conflict. These activities also stand out because they display a considerable variation in terms of profit generation, scale, and the extent to which they affect local communities' water access. Thus, it is expected that the two dynamics will have an escalatory impact on the emergence of hydropolitical conflict.



**Figure 0. A tri-dimensional representation of water bottling and water chlorination in relation to their rent potential, scale and exclusion**

The graph on the right locates water bottling and water chlorination as they relate to their Rent, Scale of Extraction and Exclusion potential. Because the proposed research questions examine commercial enterprises, this study will only investigate the impact of operations that draw a financial gain from access to or manipulation of, freshwater. In other words, the analysis

will be limited to the side of the diagram bearing positive attributes along the x-axis. Under no condition should this be construed as a negation or dismissal of non-commercial values and enterprises linked to water; this study calls for research that adequately examines the causal interlinkages involving non-commercial operations and variables, and the emergence of hydropolitical conflicts.

Within the above triangulation, this study locates water bottling and water chlorination at opposite sides of the for-profit spectrum. Water bottling is considered an enterprise that derives significant rent from high water extraction, which would provide high values for the enterprise along the x and y-axes. In addition to high rent and scale of extraction, it is also proposed that water bottling is highly exclusive because water access is dependent on a monetary exchange, and imposes significant limitations on its use. Therefore, this study assigns a high positive attribute to water bottling along the z-axis.

Similarly, this study regards water chlorination as a commercial activity because private enterprises have been central players in water treatment strategies in New Zealand. In this regard, the act of chlorinating a municipality's water supplies is carried out under a public-private stakeholder arrangement, where public water quality standards are contracted to private enterprises specialising in the administration of chlorination, and in the provision of equipment and maintenance. A good example of such an enterprise is Apex Environmental, a company that describes itself as being "in the business of designing, building, installing and commissioning water and wastewater treatment plants for the food and beverage, dairy, textiles,

winery, and municipal sectors” (Apex Environmental, 2017, p. 3). Given this, and the continued pressures posed by lobby groups (Water New Zealand, 2018) and government entities (Harris, 2017; Department of Internal Affairs, 2017) to implement universal water treatment schemes in New Zealand, one can anticipate that the institutionalisation of water securitisation strategies such as chlorination will lead to a greater participation from the private sector.

Like water bottling, whose scale is defined by its level of water extraction, water chlorination is considered to have a similarly-high scope, due to the wide-ranging social impacts on a locality’s water supplies. Whereas the Rent and Scale variables bear similar values to those of water bottling, both enterprises differ in their exclusion potential. Unlike water bottling, water chlorination is designed as a measure to securitise a specific location’s public water supplies, and is not conceived to alter pre-existing access or procurement criteria. Despite contemporary research that stresses the different types of health risks linked to chlorinated water (Legay et al., 2011; Rifkin & Bouwer, 2007; Abbas et al., 2015), the act of chlorinating public water supplies is not a policy conceived to curtail water access, and therefore is not regarded by this study as bearing the same exclusion potential inherent in a water bottling operation.

The introduction of water chlorination in a water-abundant environment like New Zealand’s offers unique insights into the questions of water quality in the country. Because this study is based on Abundance Theory, the principal concerns in a water-rich setting are far-removed from questions of water quantity. Rather, they are more closely related to concerns over water quality degradation caused by the activities of individuals, groups and sectors. As such, water



chlorination is not a proxy of water abundance, but it provides a useful entry point to analyse the perceived sources of water quality decay, the measures that authorities enact to improve water quality in their jurisdictions, and the conditions under which these measures can influence the emergence and intensification of hydropolitical conflicts.

## **Case Studies**

This study will investigate the causal effects of water bottling and water chlorination as they apply in the towns of Ashburton (Canterbury) and Glenorchy (Otago). These cases were chosen because both locations have introduced water bottling and chlorination processes at different stages. Within the Glenorchy township, for example, a company by the name of Koha Water Limited (Appendix A) is undergoing the final stages of approval for a water bottling operation, which proposes the extraction and processing of roughly 236 million litres of artesian water per year until 2038 (Radio New Zealand, 2017 a), a process involving the approval of the Otago Regional Council (ORC). Additionally, the town's district-level water authority, the Queenstown-Lakes District Council (QLDC), initiated a water chlorination scheme in an effort to implement the recommendations by the Havelock North Drinking Water Inquiry Report (referred henceforth as Havelock North Report), which, among other guidelines, suggests that water authorities in New Zealand introduce universal treatment of their water supplies as a measure to prevent water-borne diseases (Department of Internal Affairs, 2017). The decision to

chlorinate Glenorchy's public water supply was approved in December 2017, and implemented in January 2018.

As in Glenorchy, water bottling and chlorination have been envisaged and instituted for Ashburton at various points in time. In 2016, the water bottling firm NZ Pure Blue initiated plans to purchase part of a business estate owned and operated by the Ashburton District Council (ADC), with the intention of abstracting a calculated 1.4 billion litres of artesian water per year until 2046 (Stuff, 2016). The permit to extract the above volume was granted by the Canterbury Regional Council, also referred by its trading name, Environment Canterbury (ECan) (Environment Canterbury, 2017). After the bottling plans were made public in April 2016, protests and marches against the operation took place in Ashburton, in some cases drawing crowds by the hundreds (Newshub, 2016). In addition to these mobilisations, Ashburton's residents organised a petition drive to help make the case against the bottling operation, an effort that succeeded in collecting an estimated 40,000 signatures (Stuff, 2016). Alongside water bottling, water chlorination in Ashburton was part of a broader effort by the ADC, dating back to 2003, to upgrade the water infrastructure under its jurisdiction. As a result, all 12 of the ADC's water supplies have been chlorinated on a permanent basis (Ashburton District Council, 2018).

These cases also prove beneficial for this study because they display significant variations in terms of their dependence on resource-intensive industries. Whereas Glenorchy, a town with a population of 363 (Statistics New Zealand, 2018 b) features predominantly low-scale economic enterprises and various types of subsistence activities, Ashburton, with a population of roughly

13,500 (Statistics New Zealand, 2018 c), lies in the heart of New Zealand's dairy and irrigation industries, both of which are heavily water-extractive. For example, data from Statistics New Zealand determines that an estimated 47.22% of Glenorchy's residents are employed in the accommodation and food services industry, while an additional 41.67% are employed in the arts and recreation services domain, narrowing employment in resource-dependent industries such as agriculture, forestry and fisheries to 3.33% (Statistics New Zealand, 2018 b). In contrast, the agricultural sector is the main driver of employment in Ashburton, with an estimated 21.5% of the population drawing some type of income from that industry (Statistics New Zealand, 2018 c). By examining the effects of water bottling and water chlorination in Ashburton and Glenorchy, this study will be able to capture dynamics related to asymmetries in income generation, employment dependence relative to sector, and the type of historical and contemporary water use to which locals are accustomed in each town, all of which may play a part in the generation and intensification of conflict in each location.

## **Methods of Analysis**

To examine the interplay between water bottling, water chlorination, and the emergence and intensification of hydropolitical conflict in Ashburton and Glenorchy, this study applies three analytical instruments. First, it employs a conflict intentionality and engagement analysis to examine how the introduction of water bottling and water chlorination influences the respondents' willingness to engage in water-based conflicts, and at which level of intensity. To

do so, a 30-question guide (Appendix B) was developed to capture the participants' general views of freshwater in their district, their attitudes toward water bottling and water chlorination, and their willingness to engage politically against those activities. When either enterprise inspired negative attitudes by the respondents, these attitudes were then juxtaposed with the participants' willingness to engage in hydro-political conflict over that activity, and what type of potential political action their engagement would entail. The study then asked participants to explain their perceptions over the decision-making process behind each activity. Finally, these accounts were distributed in relation to the categories of the CCI Scale, to determine both the level of intensity of each participant's conflict intentionality, and once quantified, to get a sense of the community-wide state of public opinion regarding each operation. Given that the question guide was limited to providing insights related to conflict intentionality, this study also employed the analysis of a number of documents to ascertain the participants' actualised hydro-political conflict engagement in both towns. These documents were selected based on the extent to which they reflected the participants' type of potential political engagement against water bottling and/or water chlorination. The chosen documents also provided insights into the level of scrutiny and transparency with which water authorities approved the examined practices. This in turn is expected to shed some light on the character of the approval and appeals process behind each water-based practice. In view of the above requirements, this study examined the following documents:

- District and regional-level council documents and reports in both locations.
- Public meeting minutes.

- Official submissions documents.
- Newspaper articles.
- Internal business materials.

Second, this project employs a comparative analysis framework to examine how the causal impact of water bottling and water chlorination on conflict varies across cases. To this end, this study compares and contrasts the participants' conflict intentionalities, and examines any potential variations as perceived in Ashburton and Glenorchy. A comparative framework permits a thorough investigation of the common threads found in each case, and what causal outcomes may be empirically linked to them. More broadly, a comparative framework was chosen to allow for theoretical generalisations that are sensitive to the local and regional specificities of each location of study.

The value of comparative research in environmental politics has been highlighted previously by scholars such as Steinberg and VanDeveer. On the value of comparative research for the study of environmental phenomena, they argue that “[c]omparative research, at its best, occupies [a] position between theoretical generalisation and an appreciation for the importance of context” (Steinberg & VanDeveer, 2012, p. 9), and that “it relates particular empirical instances to broader theories by making systematic comparisons across political units” (Steinberg & VanDeveer, 2012, p. 9). By comparing and contrasting the effects of water bottling and water chlorination in Ashburton and Glenorchy, this study will be able to capture local and regional specificities related to water access and use, and to apply its results in locations featuring similar conditions.

And third, this study establishes a conflict intentionality classification to display the different types of actors that emerge in response to the introduction of a water bottling and water chlorination. To do so, this study divides the negative (conflict) side of the CCI Scale into events of low, medium and high intensity. It then assigns the participants to each category based on the type and intensity of their conflict intentionality. Once the participants are located in each category, commonalities between the actors are assessed qualitatively to identify shared traits, views, objectives, and other properties that may become salient. In this analysis, accounts that report political engagement in the positive (cooperation) side of the CCI Scale will also be examined.

## **Data Collection**

Because the proposed arguments focus on residents' political responses motivated by water bottling and water chlorination, this study tried to capture the voices of as many residents as possible in each location, to gain the best possible understanding of how and why hydropolitical conflicts emerge and intensify. In this instance, this study did not endeavour to specifically capture the voices of, for example, individuals that would consider themselves political activists, nor those of individuals employed in any one industry. Rather, its efforts were devoted to capturing the perspectives of as wide a variety of individuals as possible.

To achieve this research goal, a recruitment strategy was developed, where local community members were approached in casual settings, which included parks, farms, public libraries, art galleries, museums and local businesses. These approaches were made at random, without prior knowledge of the individuals' political alliances, activism, or views over the scrutinised practices. As part of the recruitment strategy, individuals that were residents and/or employed in Ashburton and Glenorchy, and that were 18 years of age or older, were eligible to participate in the study. Any individual that failed to fulfill these requirements was excluded from the study. This strategy allowed for the capturing of individual views related to the economic, environmental and social compatibility of water bottling and water chlorination, as well as the locals' perceptions of water-related decision-making in each location. These accounts also provided a snapshot of how and why locals decide to engage (or not) in hydropolitical conflicts over them.

Most of the data collected in Ashburton and Glenorchy was gathered through face-to-face semi-structured interviews. This format was chosen because it allows the researcher to pay crucial attention to the respondents' narrative "as it unfolds" (Galletta & Cross, 2013, p. 76), which in turn permits respondents to craft a story that reflects important anecdotes that may prove beneficial for the research. A semi-structured interview format also enhances flexibility in terms of structure, and the ability to present further questions that may not have been included in the questionnaire guide (Mills, 2012). A semi-structured questionnaire also allows the researcher to approach respondents in casual settings and to build a rapport with them, while maintaining a basic set of themes and questions. Under such casual settings, a structured questionnaire may

prove to be too rigid to allow for adequate answers from the respondents, while a fully unstructured questionnaire bears a higher risk of veering away from the themes explored in the study. A semi-structured format results in the ability to combine research rigour with spontaneity and better rapport-building between the researcher and the respondents, and was therefore judged to be the most suitable data collection instrument for this study.

Given the recruitment strategy explained above, this study necessitated the ability to establish an immediate, trusting relationship with the respondents-to-be. In this regard, employing a semi-structured interview format was beneficial because it allowed the researcher to conduct a fluid, unhindered enquiry with the locals that resembled more of a conversation than an interview. To ensure the rigour of the study, the researcher always carried a copy of the question guide, but avoided as much as possible making direct reference to it during the interview process. Interviews were then recorded with a digital audio recorder.

In addition to the individual, face-to-face interviews, this research captured data through two focus group meetings, both of which took place in the town of Glenorchy. During the data collection process in Glenorchy, two interviewees, on two separate occasions, offered to facilitate meetings with friends, neighbours and colleagues. These offers were agreed by the Author, and culminated in the organising of two separate focus group meetings. During these meetings, the Author employed the same 30-question guide that was used for the individual face-to-face interviews. During the meetings, the Author made sure that everyone answered the questions, thus ensuring that the study could count each response individually.



This study received full approval by the University of Otago's Ethics Committee on August 23, 2017. Furthermore, as part of the University of Otago's ethics approval process, consultation with the University's Māori Development Office was started on August 2, 2017. The project received an initial set of recommendations (Appendix C) by the Ngāi Tahu Research Consultation Committee on September 13, 2017, which were included in the study. These recommendations included the need for the study to capture the respondents' ethnicity, and to start further discussions with members of Ngāi Tahu.

### **Māori Participation**

As part of the University of Otago's Māori consultation process, this study took serious steps to ensure the adequate participation of Māori in Ashburton and Glenorchy, but was confronted by a number of hindrances, the greatest one being the low concentration of Māori in both locations. In view of this, advice was sought from members of the University of Otago's Māori Development Office, and from the Author's primary supervisor in January 2018, at which point strategies were struck to reach out to Māori in each location. In Glenorchy for example, advice was given to contact the leadership and employees of a tourism company called Dart River Adventures, owned by Ngāi Tahu, a Māori iwi from New Zealand's South Island. Repeated efforts were made by telephone and in person between January 16-26, 2018, but no employee or member of the company agreed to participate in the study. During other interviews, locals shared with the Author that the company in question had been having problems with the community due to its use of high-powered jet-boats along the Dart and Rees River systems, which had allegedly caused significant water contamination, as well as some damage to private

property. That account could explain why the company may have been reticent to participate in a water-related research project. Also in an attempt to gain Māori participants, the Author purposefully identified lodging in the Rees River Valley, in a property owned by Ngāi Tahu Farming. Unfortunately, like with the previous company, no Māori leader or employee agreed to participate in the study, despite numerous attempts to make contact.

After the first portion of the data collection was finished, the Author sought the advice of Dr. Donna Matahaere-Atariki, a prominent Māori scholar, on March 29, 2018, where the project's objectives, and unsuccessful Māori participation in Glenorchy (and potentially in Ashburton) were discussed. During this meeting, she shared comments that echoed those of the local community in Glenorchy with regards to Ngāi Tahu leadership having adopted a policy of not discussing water issues in general. She also anticipated that the project could have similar difficulties in Ashburton, due to investments that Ngāi Tahu had made on a number of water-related ventures in the area.

Once in Ashburton, steps were taken to ask interviewees for potential references to Māori residents in their community. This strategy led to the identification of two Māori individuals, whom the Author met at the Ashburton Domain, a public park in Ashburton, on April 20, 2018. In addition to this effort, the Author reached out to a number of organisations in the district to seek advice on potential Māori participants. This search included communications with Community House Mid-Canterbury, which date back to April 17, 2018. These efforts proved

fruitless, as organisations were either reluctant to facilitate any contacts, or potential Māori participants refused to participate in the study.

## **Limitations**

This study's focus is devoted to deep examinations of value systems, traditions, personal histories, and other ambiguous issues, which as explained above, are best approached through the use of qualitative research. This however does not come without its share of limitations, the first of which is the representative character of the study. The data collection process succeeded in capturing a total of 56 accounts: 31 from Glenorchy, and 25 from Ashburton. Given the most recent census data for both towns, one cannot argue that the findings included in this study are in any way representative of the whole population in each location. Therefore, the claims emanating from this research need to be adequately confined to, and seen as reflective of, the voices of the residents only. This however does not represent a hindrance for this study, because the two arguments presented above are focused on local residents' hydropolitical conflict intentionality and engagement, and not those of Ashburton and Glenorchy as political units.

Secondly, this study investigates the question of hydropolitical conflict in two relatively small, rural environments. Even though the accounts and dynamics examined in this study may indeed be echoed by individuals in bigger, more urbanised contexts, this study does not provide a definitive foundation for such an assertion. This examination however does open the plausibility for researchers to explore the above dynamics in such settings. Such interrogations may shed

further light on how and why hydropolitical conflicts emerge and intensify in non-rural environments.

Lastly, and directly related to the previous section, this study cannot convincingly argue it is representative of New Zealand's Indigenous communities. While significant efforts were made to include as many Māori residents as possible, they did not produce a strong enough response that would make of this study reflective of Indigenous values, traditions and history. Bearing this limitation in mind, it is of crucial importance that future research examines the conditions that influence the emergence and intensification of hydropolitical conflicts within Māori communities.

### **Final Remarks on Research Design**

In closing, this chapter presented the research agenda for this project. It did so by proposing the following research question: *How and why does the commercialisation of water affect the emergence of hydropolitical conflicts?* To answer this question, this study proposed two central arguments: the first is that the introduction of water commercialisation practices influences the emergence of hydropolitical conflict intentionality if the practice is economically, socially and environmentally incompatible with local communities; second, that hydropolitical conflict intentionality is likely to intensify when local communities lack trust in the approval and appeals processes behind water commercialisation practices.

To test the above arguments, this study employs a qualitative methodological approach, and includes three methods of analysis: a conflict intentionality assessment, a comparative case study analysis, and a conflict party analysis. These analyses will be presented as follows. Chapters 5 and 6 will develop individual conflict intentionality analyses as they apply in Glenorchy and Ashburton, respectively. Chapter 7 will conduct a comparative case study analysis of the causal impacts of water bottling and water chlorination in each location. Lastly, the conflict party analysis will be elaborated in Chapter 8.

## Chapter 5 - Glenorchy

### About Glenorchy

The town of Glenorchy is located within the jurisdictional authority of the Queenstown-Lakes District Council, in the western part of the Otago region. The picture below shows an aerial view of the town of Glenorchy (circled in black).



**Figure 1. An aerial view of Glenorchy**

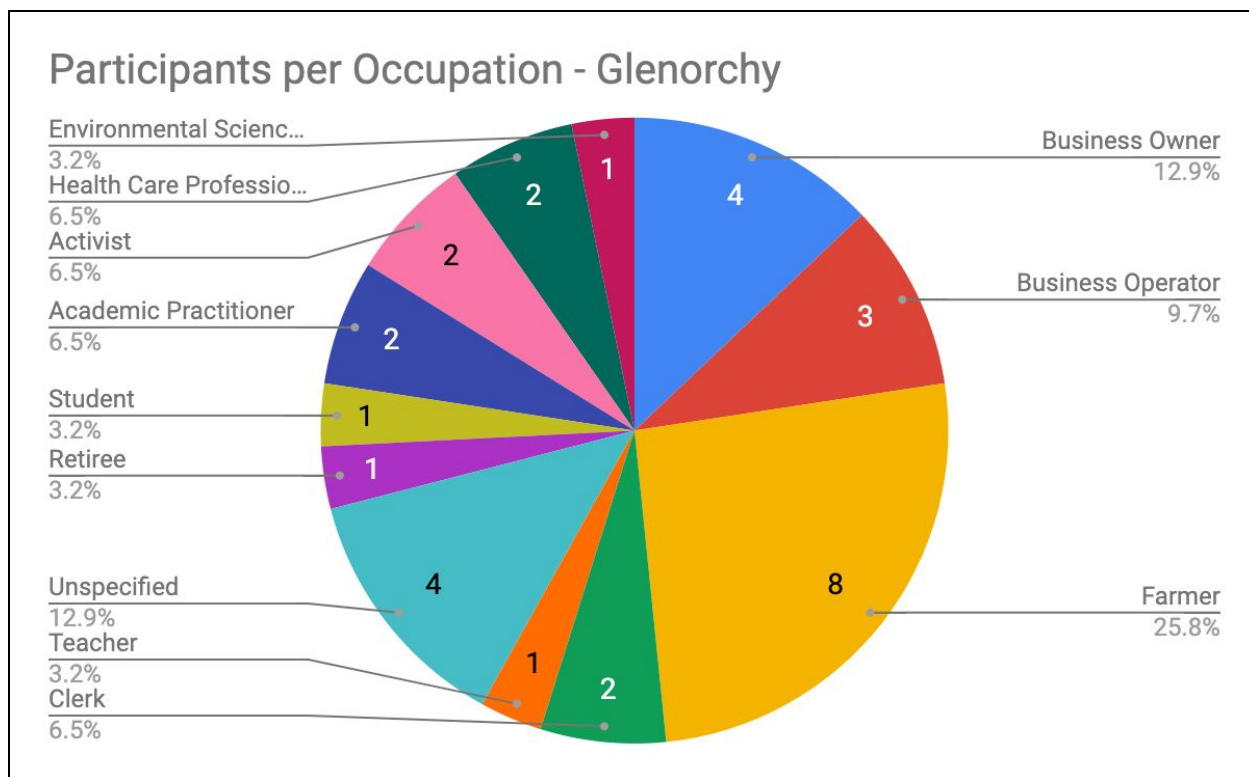
There is an isolation of sorts that dominates life in Glenorchy; as follows from the picture above, it is easy to note that the town is enclosed by different geographical elements. The town is bordered by the massive Lake Wakatipu in the south, by the Rees and Dart river systems in the west, and by the Southern Alps in the north and east, effectively limiting its direct access to the

rest of the country to one road. During the data collection, this isolation manifested in a number of ways, as will be explained later in this chapter.

According to Statistics New Zealand, Glenorchy has a population of 363 people, comprised by an almost equal amount of female and male respondents: 183 and 180 respectively (2018 b). Additionally, slightly over 70% of Glenorchy's population was found to fall between the ages of 15 and 64 years, with a median age of 39.2 years (Statistics New Zealand, 2018 b). Working residents were employed in a number of different occupation categories including managerial positions (26%), professional trades (14%), technicians and trade workers (15%), community and personal service workers (15%), clerical and administrative workers (5%), sales workers (5%), machinery operators and drivers (7%), and labourers (13%) (Statistics New Zealand, 2018 b). Additionally, an estimated 86.6% of Glenorchy's citizens aged 15 years and over had completed some type of formal qualification (Statistics New Zealand, 2018 b).

In terms of the town's ethnic makeup, it is difficult to ascertain the real ethnic belonging of Glenorchy's residents, because Statistics New Zealand's coding system allows for citizens to input more than one ethnic background, which allows the total percentage of ethnic calculations to surpass the 100% mark (Statistics New Zealand, 2018 b). Notwithstanding the above coding issue, Statistics New Zealand reports that most of Glenorchy's inhabitants are of European descent (96.2%), 11.3% were Māori, 1.9% reported being Pasifika, 1.9% were Middle Eastern, Latin American or African, and 1.9% were of other ethnic backgrounds (2018 b).

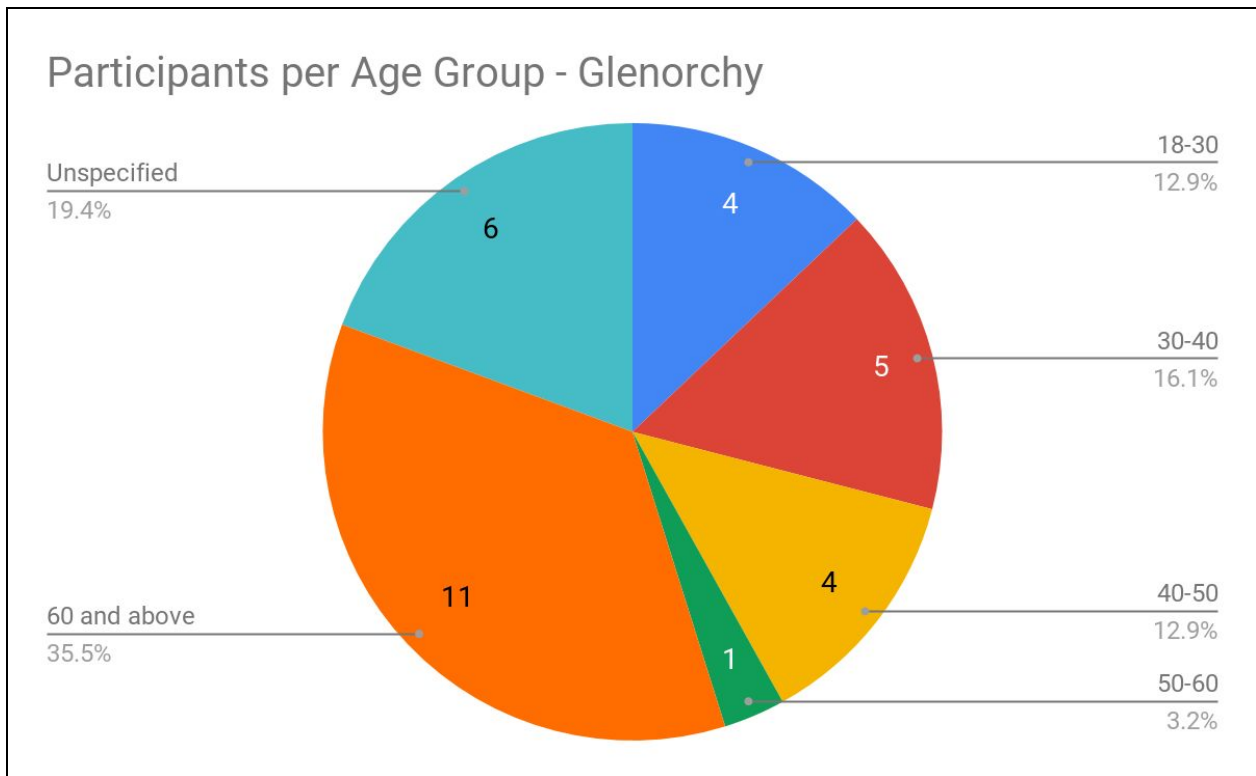
## About the Participants



**Figure 2. Participants per occupation in Glenorchy**

It is within the above-described context that the data collection process was established: it took place between January 17 and 24, 2018, at which point 31 respondents took part in the study. Participants reported being involved in a wide range of occupations, which are summarised in the graph above. Even though the greatest respondent cohort reported coming from the farming sector, the distribution of participants relative to occupation is fairly general. This provides an ample reflection of the potential incompatibilities that water bottling and water chlorination could exert upon a fairly broad range of interest groups in Glenorchy.





**Figure 3. Participants per age group in Glenorchy**

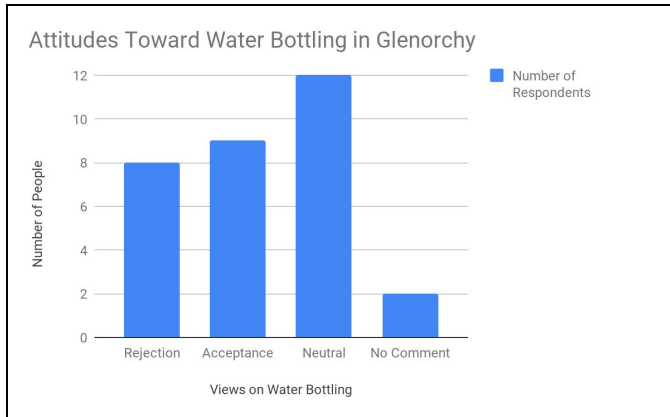
In addition to occupation, this study successfully captured the voices of a wide range of age groups, and ensured a comparable representation along gender lines. Out of the 31 participants that took part in this study, 19 were female and 12 were male. With regards to age distribution, 35.5% of the respondents reported being 60 years old or beyond, while 32.3% reported ages between 18 and 40. Additionally 12.9% of the respondents fell between the ages of 40-60, while 19.4% did not wish to share their age. The full age distribution of the respondents in Glenorchy is shown above. Considering the town’s age distribution (as shown in the previous section), this

study captured sufficient voices in each age bracket to reflect the participants' views and attitudes over water along age lines.

In terms of ethnicity and immigration status, the great majority of participants from Glenorchy, 23, reported being of European descent, and a small fraction, 8, reported being first generation immigrants. New immigrants reported coming from Hong Kong, the UK, the US, Australia and Germany. This distribution corresponds to the latest census information available for Glenorchy, where most of the town's residents are of European background, while a combined 5.7% are regarded as Pasifika, Asian, Middle Eastern, Latin American, African and other (Statistics New Zealand, 2018 b).

As per Chapter 4, it must be noted that no participant of Māori descent was identified during the data collection process, making this analysis unrepresentative of Indigenous views and positions vis-a-vis freshwater and their engagement in hydropolitical conflict in Glenorchy.

## Water Bottling



**Figure 4. Attitudes toward water bottling in Glenorchy**

The data collected in Glenorchy suggests that participants espouse generally mixed views of the water bottling industry. In this regard, those respondents who expressed negative attitudes toward the industry argued that a bottling operation in their town would generate a number of different problems. When asked about their views on water bottling in Glenorchy, eight out of the 31 respondents expressed strong attitudes against the project, attitudes that were largely shaped by the indirect impacts of a water bottling operation on the town. For example, respondents highlighted the pressures that a water bottling plant would exert upon the town's infrastructure, most notably the Glenorchy-Queenstown Road, the only road connecting Glenorchy to the rest of the country. Regarding the project's impact on local infrastructure, one respondent asserted:

*Probably the biggest problem would be the amount of trucks around the area. It wouldn't be the water per se. If it is a commercially-viable thing, then you would be*

*seeing 10 tankers a day. To be commercially-viable, they're not going to take 100 litres of water. They'll take 100 thousand litres of water. (Respondent 6)*

Other respondents expressed worries over increased noise pollution and traffic, and over farmers' continued ability to transport their produce to market. Additionally, concerns over the plant's potential impact on the proliferation of plastic waste further bolstered some participants' dislike for the water bottling industry. For example, one participant explained his dislike toward water bottling as follows:

*If everyone in the community starts drinking bottled water, how are you going to get rid of the plastic in the bottles? It has all sorts of consequences, which is not about protecting the health of the community. (Respondent 11)*

However, the water bottling operation did not seem to be widely rejected in Glenorchy presumably because of its abundance of water. In this regard, the data shows that nine participants expressed some type of acceptance for the installation of a water bottling operation in their town, a respondent cohort that was slightly higher than that which expressed a rejection for the operation. Water bottling did not seem to antagonise the town's respondents, or business interests. On this note, one respondent, who operates a local hotel, argued:

*Water bottling is an activity that'll happen, and if it is done well, it will happen, and hardly anyone will notice what is going on. (Respondent 7)*

When explaining whether water bottling in Glenorchy was problematic, a second respondent, employed in the tourism industry, reported:

*It depends on the impact [of the project]. You can extract as much water from this lake [Wakatipu] as you want, and have no impact on anyone. Whether that business would contribute one way or another, while taking the resource, is a different point.*

(Respondent 2)

A third respondent, who operates a local environmentally-friendly campground, was unaware of the water bottling operation, and seemed more concerned with developing a business that fostered awareness about water consumption and use, than with his business or interests being challenged by a highly-extractive operation in the vicinity.

Based on the above accounts the water bottling operation does not seem to be openly rejected by the respondents, but support is contingent on a series of conditions; the most prominent being a commitment to environmental responsibility by the company in question. For example, one respondent argued:

*If there is some kind of negative impact, that should be paid for by the commercial operation. And that's gotta change depending on what the source of the water is. I have a fairly firm view that if someone takes water right before it goes to the sea, what's the*

*issue? [...] I guess what I am saying is, if there is a potential downstream impact, then [the project] needs a lot more consideration than if there isn't.* (Respondent 6)

The respondents' primary concern regarding the water bottling operation was related to its potential impact on water quality degradation in their town. In this regard, one respondent expressed his concerns, saying:

*For me, the thought of people bottling water up there, my concern is potential contamination downstream, and also potential impact on my ability to take water from my bore, as it is downstream from there.* (Respondent 2)

Some respondents also expressed that they would support the water bottling operation if it benefited the town. However, these respondents were not clear about what specific benefits would satisfy them, although initiatives such as infrastructure investment, funding for community events, job creation, and cultural promotion of the town were points of convergence. respondents from Glenorchy promote the accomplishments of their locals, which helps explain why approval for any one commercial operation is best facilitated through support for the cultural and historical promotion of the town. In fact, some respondents documented cases where commercial transactions obstructed the celebration of the town's history, which resulted in some type of discontent in the community. One respondent for example said the following:

*There is an old stamp battery up the hill, that was traditionally for scheelite mining, about 100 years or more, and needed water. So there was a storage pond that was all water driven. The property surrounding it was bought by an American, and stopped all access. That kind of thing annoys me. Because he could've said: It is not commercially used now, but carry on doing it. It is not commercially used, but it can be a demonstration of what old fellows used to do, but he stopped the access. (Respondent 6)*

Alongside accounts that expressed either acceptance or rejection for water bottling, the data also shows a striking number of participants - 14 in total - reporting having no position whatsoever vis-a-vis water bottling in Glenorchy, or not wishing to make any comment about it. The motivation behind these views was largely shaped by two factors, the first of which was respondents not knowing about the water bottling project, and second, that they did not seem to consider water bottling as affecting them negatively in any way.

In addition to mixed views over water bottling as a significant cause of water concerns in Glenorchy, respondents did not express major distrust toward the approval process behind the operation. In fact, some participants expressed an unwillingness to interfere in what they regarded was a private transaction between the previous owner of the property where the bottling plant is expected to operate, and the bottling company. There are no indications in the data that suggest that the approval and appeals process behind Koha Water Limited's proposed operation was dubious or untrustworthy. Records from the ORC, the water authority responsible for the conferring of consents for bottling, document the degree of oversight it exerted in informing the

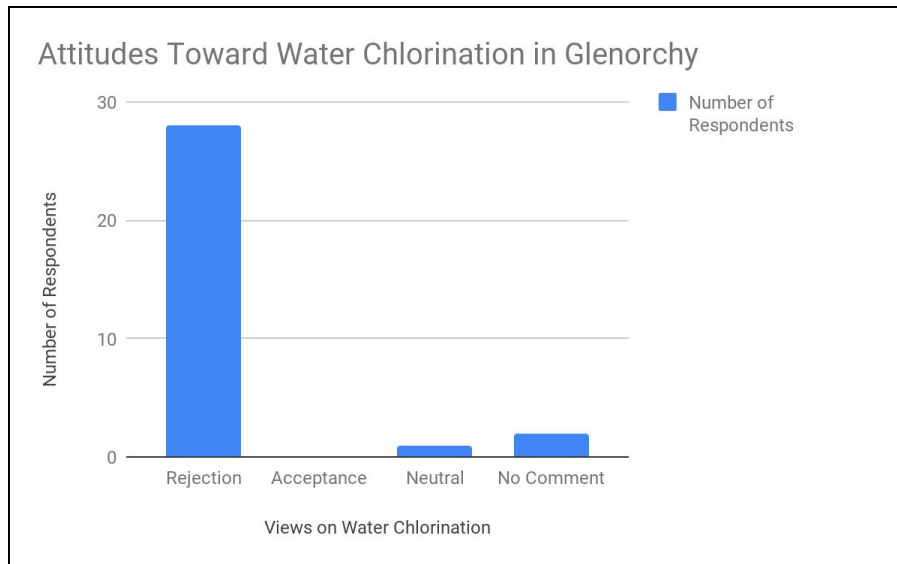
public about the bottling project (Appendix D). In its assessment, the ORC took a keen interest in detailing the precise nature of the project, including a full study of the operation's point of extraction, its impact on river flow levels, and an effort to explain the extraction rate of the bottling operation relative to other activities. On this last note, the ORC reported the following:

The Koha Water take is a small water take and is equivalent to the water used by a small irrigated farm. Typical farms in Otago using irrigation would use 6,000,000 litres per hectare (Aqualinc) per season plus water for stock use. On this basis the amount of water taken by Koha would be equivalent to a farm of less than 40 hectares. (Otago Regional Council, 2017, p. 17)

Bearing the above observations in mind, it is difficult to regard the approval and appeals process behind Koha Water Limited's proposed bottling operation as doubtful, or as inspiring skepticism by the respondents. That, however, does not mean that they unanimously agreed with the operation; it means that those who disagreed with the introduction of water bottling were likely to seek access to the ORC's appeals process to address any given grievance or incompatibility.



## Water Chlorination



**Figure 5. Attitudes toward water chlorination in Glenorchy**

The data suggests that respondents in Glenorchy strongly disliked water chlorination, a policy seen by most participants as a significant source of water worry or insecurity in the town. From the 31 respondents who took part in this research, 28 expressed significant opposition toward the chlorination scheme, many of whom evoked deep concerns about four central themes: environmentalism, public health, local suitability of the policy, and water-related decision-making practices. These expressions of dislike were also shared across occupations, age groups and sex. In addition to this, one respondent expressed neutral views over chlorination, and two more did not make any comments over the policy. In Glenorchy, no respondent expressed support or approval for water chlorination.

In terms of the impact of water chlorination on Glenorchy's ecosystem, respondents expressed significant concern over how the chlorine in the water could potentially affect the volume of flora and fauna that exist in the immediate vicinity of the town. For example, one respondent highlighted his worries over the impact of chlorine on Lake Wakapitu's fish stock, which relates to the lake's key role in the sustenance of populations of eel, trout, salmon, and several species of indigenous fish threatened with extinction (Otago Regional Council, 2016 a), many of which sustain several types of recreational and subsistence fishing activities in Glenorchy. Another respondent conveyed her worries over chlorination by stressing that chlorinated water could impose a negative impact on the town's ability to nourish its crops and, therefore, on its ability to adequately address its own food security needs.

A respondent who works as a corporate consultant argued that part of the problem sparked by chlorination emanates from a deep lack of systemic thinking by the QLDC. In this regard, she said the following:

*In my experience, it is not just residents: It is Council. It is people that are not taught to think systematically. So I think it is bigger than the individuals, in any of the groups you are working with. We are incentivised to give answers in school, we are not asked to ask questions. And as we get older and things become greyer, it is unsurprising that we take that approach, with farmers having one view, residents having another one [...] because they have those motivations, and it is uncommon for someone to ask us to step out of that box. (Respondent 30)*

Along with issues related to environmental concerns, respondents expressed worries over the causal connection between chlorine exposure and cancer. For instance, a respondent employed in the public health sector registered unease over this connection, a worry that was echoed by two other respondents, themselves cancer survivors who relocated to Glenorchy to have access to better environmental conditions. Other participants reported having had stomach problems and discomfort shortly after drinking chlorinated water. One participant said the following:

*Before [chlorination], drinking water from the tap was no problem at all. I didn't feel any problem at all. But after they put chlorine, I drink water from Glenorchy and I feel sick. (Respondent 8)*

Other respondents expressed their dislike for water chlorination by emphasizing the water's taste. On this issue, one respondent said:

*I haven't drunk out of the tap since [chlorination] started, and have been boiling water until we can afford to get a filter, because the water out of the tap tastes foamy and thick, and a little bit soapy. You can taste it. (Respondent 5)*

Evoking similar health-related concerns, another respondent argued that water chlorination was an issue that affected several dimensions of residents' health. She said:

*It is not just about drinking water. The skin is the biggest organ we have, and I get in the shower every morning, and it is chlorinated water that is getting through my skin, so we are ingesting it in different ways. I think drinking water gets too much attention, and it goes back to that systemic view: [Chlorine] is coming back to us in other ways that we don't immediately recognise. (Respondent 30)*

Departing from health concerns, another respondent related the chlorination policy to other activities in the district, which together may be contributing to the deterioration of the town's water supplies. He said:

*We do not understand aquifers: The size of them, how much water they have, what systems they recharge, their recharge rate etc. When you focus on one thing such as chlorine, you can argue for or against, but you need to look at the whole system. There are V8 boats going back and forth the river, causing a series of problems. All these issues are part of the same problem. You need to look at the whole and get a big picture. (Respondent 12)*

According to the data, the water chlorination decision was met with further disapproval by the community, in part, due to its dubious suitability for Glenorchy. Glenorchy is a jurisdiction that has, until fairly recently, eluded the intensive development and economic growth to which other parts of the country have grown accustomed. The town has mostly low-scale businesses in operation, with very few of the amenities and services one would expect to see in bigger and

more urbanised settings. When asked about their views on water quantity and quality, some respondents argued that both water traits were in an excellent state because of the absence of highly abstractive industries in Glenorchy or, to extrapolate, due to freshwater not being overly-commercialised in their town. One respondent said the following:

*History has shown that intensive dairy farming has degraded water quality. So yes, it has the potential. I don't think it has a strong potential the way they farm the land here. Their stocking rates are much lower than other parts of the country because the production is low and the land is not as good. We don't have that much flat land [...] like the Canterbury Plains [...] so the risk is lower here because of that. (Respondent 2)*

Another respondent also alluded to the absence of dairy farming when describing the high quality of Glenorchy's water, but argued that this perception may be changing in view of the growth of other industries such as tourism. She said:

*I think here we are not bad, because we don't have any dairy. And we don't, it hasn't affected us yet. But like in Glenorchy they've had these scares over e-coli this year with their water, because their town is growing so much, and it has changed the way in which they treat their water. It has never been updated to keep up with the growth, and suddenly they have all of these issues, because there are more people to deal with. (Respondent 10)*

Another respondent argued that despite some presence of e-coli particles in the water, the risk of industry and farming-related water contamination was minimal, which rendered chlorination of the town's water supply unnecessary in his view. This respondent's elaboration finds some support in a 2006 report by the ORC, which assessed the water quality of the towns of Kingston and Glenorchy. The report documents that between 1996 and 2003, Glenorchy's public water supplies showed no signs of faecal coliform bacteria, and minimal traces of nitrite-nitrate nitrogen (NNN)<sup>2</sup> (Otago Regional Council, 2006), and points out that direct land use posed no immediate risk upon the town's water well (Otago Regional Council, 2006). Further testing during the period between June 2011 and June 2016 shows low traces of pathogens and NNN (Otago Regional Council, 2016 b), proving both the benign state of the town's freshwater, and the questionable need for chlorination in some participants' views.

Lastly, the data gathered in Glenorchy suggests that dislike for water chlorination was also driven by disagreements over how the decision to chlorinate came about. For some respondents, the chlorination policy was motivated by an attempt by the QLDC to avoid liability in cases of waterborne diseases. One respondent for example said the following:

*It is very real for all of us, and one of the things that irritates me is that Council is like someone taking antibiotics: they can go damage themselves without getting an infection, instead of not allowing the damage to happen, and stop taking drugs. That's what they have done. Chlorination allows them to be as slack as they want. (Respondent 18)*

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<sup>2</sup> Nitrite-nitrate nitrogen is a by-product of the farming sector, and its high volume in water systems is used as a proxy measurement for farming activity.

Based on several respondents' comments, the QLDC conceived a water securitisation strategy that failed to infuse local values, and that overlooked adequate deliberation with the town's local experts. From the two focus group meetings held for this study, comprising a total of 16 respondents, there was a consorted view that proper consultation was not undertaken by the QLDC with regards to the implementation of the recommendations of the Havelock North Report. One respondent for example said the following:

*They [QLDC] haven't looked at options. They already decided what they wanted, and made the process fit. We are waiting to make a decision on what action to take, because now apparently there is some evidence that suggests we should chlorinate because the reticulations have been so under-cared. But we've gone to the ombudsman, and other organisations. An auditor came in to assess the [water safety] plan, and said it was all ok, so we agreed to it, and that was seen as enough consultation with the community.*

(Respondent 19)

One participant argued that the lack of consultation may have been caused by the QLDC favouring outside expertise over the local one. In this regard, the respondent said the following:

*Council doesn't discuss [chlorination], because they don't understand it, and they don't want to discuss it. They want to trust their managers. They say we're not experts, [that] we don't know, but these people are.* (Respondent 16)

Some respondents argued that, had proper consultation been started in Glenorchy, simpler and more cost-effective solutions would have been recommended by the locals, which would have led to less intrusive prevention strategies. One respondent, for example, noted that fears over water contamination could have been mitigated easily by building a fence around the town's water bore, thus preventing farm animals from approaching and negatively affecting the town's groundwater source. A decision-making process that was perceived as unilateral by the respondents exhausted an opportunity to launch a risk mitigation strategy both palatable to residents, and which could have catered to their specific requirements without breaching or imperiling their own water-related values and interests.

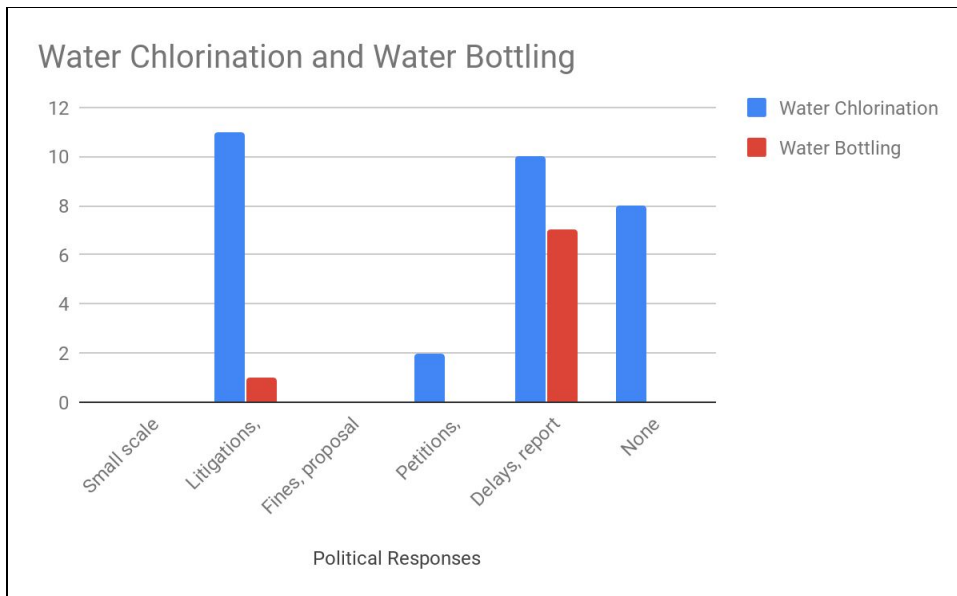
Some participants also reported having concerns with the precedent that chlorination could create in their district. This concern was related to the involvement of the private sector in the delivery of water services. One respondent said the following:

*[Commercialisation] is part of that picture, because for the sake of reducing liability, it is easier to involve a private enterprise. There is no doubt in my mind that Council will end up selling their water infrastructure, and have private companies control it, like they did in Auckland. (Respondent 19)*



Another participant expressed worries over such a scenario, because in his view, the private provision of water services would imperil the community’s consultation rights, which are conferred to them by the QLDC.

**Results**



**Figure 6. Distribution of Hydropolitical Conflict Intentionality in Glenorchy**

When accounting for the type of water-related practice that respondents regarded as being most deleterious for their interests, participants seemed more likely to exhibit conflict intentionalities over water chlorination than over water bottling: from the 31 respondents who participated in this study, 23 reported an intent to engage in some type of hydropolitical conflict action against water chlorination. Out of these accounts, 11 documented being inclined to engage in intense hydropolitical conflict through litigation. Additional actions were documented at different parts of the CCI Scale, with two respondents willing to engage in petitioning, and 10

expressing their will to voice discontent through their elected officials. In addition to this, eight participants expressed unwillingness to take any action. The data therefore indicates that more respondents reported intense hydropolitical conflict intentionality over chlorination than otherwise, although a comparable amount of voices stressed their will to participate in low-intensity conflict action.

The data suggests that the number of respondents willing to engage in conflict events of high intensity were comparable across gender lines. For example, from the 11 respondents who reported an intent to engage in litigation procedures, five were female and six were male. The data, however, shows that there is a clear imbalance with regards to the intent to engage in low intensity conflict events over water bottling and water chlorination relative to gender. For example, nine female respondents reported being willing to voice their discontent over water bottling and/or water chlorination through their elected officials, compared to one male participant. In addition to this, the two respondents that reported being willing to become involved in petitioning were female, with no male cohort expressing a similar intent to engage in such activities. In this regard, the data shows little variation of high intensity conflict engagement between female and male respondents, but the former cohort seemed more likely to exhibit low intensity conflict intentionality in response to water bottling and/or water chlorination. The gender distribution related to conflict intentionality is presented in the table below.

Type of Action	Female Respondents	Male Respondents
Small scale acts of violence, protests, vandalism	0	0
Litigations, appeals of administrative actions	5	6
Fines, proposal and permit denials, halting negotiations	0	0
Petitions, withdrawal of third-party support	2	0
Delays, report reviews, voicing opposition, editorials	9	1
None	3	5

**Table 2. Gender distribution of hydropolitical conflict intentionality in Glenorchy**

Some of the documented expressions of conflict intentionality against water chlorination in Glenorchy have translated into a number of manifested episodes of conflict. For example, official QLDC meeting minutes document that respondents from Glenorchy attended at least three public meetings between December 2017 and March 2018 to voice their discontent toward water chlorination (Queenstown-Lakes District Council, 2017; Queenstown-Lakes District Council, 2018 a; Queenstown-Lakes District Council, 2018 b). During one of these events, one community member poured water on the Council floor as a sign of protest, which culminated in the individual being removed from the Council premises (New Zealand Herald, 2017). Since then, further lobbying and organising around the chlorination issue have occurred in Glenorchy, with continued threats to intensify the ongoing conflict. During the data collection, a local organisation by the name of Sustainable Glenorchy expressed that they had already sought legal counsel to begin a legal challenge in court over chlorination. In addition to this, interviews with some of the respondents expose their plans of marching along the Glenorchy-Queenstown Road,

which would arguably cause significant disruption of economic activities dependent on that road, namely tourism and the transportation of produce to market. Such protests have not come to pass, but nevertheless suggest the potential intensification of the ongoing conflict.

Unlike water chlorination, water bottling inspired mostly low intensity hydropolitical conflict intentionality. With the exception of one respondent who expressed a desire to challenge water bottling through the courts, the great majority of accounts (7) reflected a will to use their elected officials as channels for the ventilation of their discontent. This type of intent falls within the confines of the Voicing Opposition category of the CCI Scale, which, as specified in Chapter 4, is considered a low-intensity conflict event. Aside from these potential events, no other action of higher intensity was reported by the participants in response to water bottling.

## **Discussion**

Bearing in mind the above results, the data provides general support for this study's first argument: water commercialisation practices facilitate the emergence of hydropolitical conflict intentionality if the practice is economically, environmentally and socially incompatible with local communities. In this regard, the generation of positive or negative attitudes by respondents seems to be related to their views of what part water bottling and water chlorination play in relation to community well-being. In most cases, those individuals that reported having strong views against water chlorination argued that the policy imperilled their own ability to benefit

from freshwater access in some way, irrespective of occupation. In contrast, respondents seemed less likely to regard the prospective water bottling operation as incompatible in their town, in part due to the abundance of freshwater found in Glenorchy, and to the potential economic and social benefits of such an enterprise.

The great majority of participants in Glenorchy espoused negative attitudes toward water chlorination, while holding mostly neutral views on water bottling. It must be noted however, that the second-largest concentration of participants seemed to approve of the water bottling industry, albeit with a series of conditions attached to their approval. Unlike chlorination, water bottling did not inspire strong negative attitudes in Glenorchy.

The data supports the second argument proposed in this study, namely that hydropolitical conflict intentionality in New Zealand intensifies when individuals do not trust the approval and appeals processes behind a proposed water commercialisation activity. In Glenorchy, this argument was evident in the community's lukewarm intent to engage in intense hydropolitical conflict over water bottling. This does not entail that conflict over water bottling was absent; it means that conflict intentionality over water bottling was distributed in the lowest levels of the CCI Scale, where hydropolitical conflicts are ventilated through the institutional and procedural purviews of water authorities. When trust in these processes was compromised, as with the introduction of water chlorination in Glenorchy, respondents tended to espouse significant disdain toward the water authority system, and were likely to report a preference for alternative avenues and processes to sway decision-making in their favour.

The data suggests overall support for the arguments presented in Chapter 4. It also indicates that Glenorchy's respondents seemed to be confronted with two crucial moments vis-a-vis their participation in hydropolitical conflict. The first relates to their views and perceptions of the generation of incompatibilities concurrent with water bottling and chlorination. Those respondents who regarded either one of these practices as deleterious were then confronted with a second crucial moment related to the intensity of their potential political action. In this regard, concerns over chlorination or bottling motivated the emergence of hydropolitical conflict intentionality at various levels, but the data indicates that said intentionality was likely to escalate when respondents did not trust the approval and appeals processes behind each operation. Therefore, conflict intensification seemed more likely in the face of water chlorination than water bottling.

While benign in spirit, the question of water securitisation through treatment has not been universally embraced by all districts in New Zealand, and Glenorchy's ongoing concern over chlorination demonstrates the extent to which a community is likely to resist such policies, and the rationale that drives their resistance. To some degree, the QLDC's decision to chlorinate the town's water reflects an acute inattention to (or disregard for) the non-commercial and systemic bond that some respondents in Glenorchy have established with their local environment. Based on the accounts by those respondents who have been politically active against chlorination, ideas such as local ecosystemic awareness seem to clash with the QLDC's perception that water security can only be attained via treatment. It can be surmised that the QLDC assumed, perhaps

wrongly, that chlorination would be met with support from the community due to the policy's ability to securitise the town's water from any potential risk. This policy, however, seemed ill-conceived for a town like Glenorchy, where no major justification for treatment has ever been documented.

Also related to the question of what drives water-based conflict (over quality or quantity), the decision by the QLDC to chlorinate Glenorchy's freshwater seems to impact the town's self-reliance (such as local food production), and its demands for health services. These points carry additional weight, considering the geographical location of the town, and the products and services sustaining it. Glenorchy lies on the northern shores of Lake Wakatipu, and is enclosed by the Southern Alps, effectively separating the town from the rest of the QLDC's jurisdiction. The nearest fully-serviced centre, Queenstown, lies roughly 46 kms south of Glenorchy, which partly explains some of the respondents' strong resistance to the chlorination scheme. In a town with only one convenience store, local forms of subsistence food production and procurement are of extreme importance for Glenorchy's residents, and any policy detrimental to such an enterprise is likely to be faced with resistance.

Additionally, the visible lack of public health services in Glenorchy raises questions as to the ability of residents to receive proper medical care should a chlorine-related concern arise. Prior to the installation of the chlorination scheme, medical services in Glenorchy were already limited, and remain so today: health care services in the town are delivered by one volunteer nurse who is available to treat patients once a week for three hours, in premises that are shared

with the local library and museum (Glenorchy Community Association, 2019). Whether water chlorination will increase demands for health services remains open for debate, and is an issue that falls beyond the scope of this study. It does, however, raise questions related to respondents' perceptions that their health-related needs are being influenced by a policy that already antagonises other aspects of their lives. Those respondents who questioned the decision to chlorinate on the grounds of its suitability for the town, seem likely to believe that any demand resulting from the chlorination scheme is fabricated, and thus likely to fragilise the community's ability to adequately address its own needs. This is not to say that the QLDC had the explicit intent to artificially generate the above incompatibilities: it nevertheless demonstrates how and why the water chlorination decision is seen as detrimental to the community's local fulfillment of needs.

Finally, the intensification of hydropolitical conflict intentionality is explained by accounting for the approval process behind the water chlorination policy. As per the elaboration above, chlorination was already regarded as incompatible with Glenorchy's water security framework, and as likely to produce water based divisions in the town. The unilateral approval of the policy, and the limited time allotted for its deliberation by the town's residents, worsened the respondents' overall orientation toward the policy. Therefore, one can argue that Glenorchy's intense hydropolitical conflict intentionality and subsequent organisation against water chlorination, were fueled by perceived problems resulting from the chlorination policy, and the respondents' discontent toward the approval process itself. Had proper consultation been established in Glenorchy, it would have perhaps left space for the respondents to advance



alternative solutions from within the water authority system, thus reducing the dominance of high intensity hydropolitical conflict intentionality. This under no condition negates the QLDC's drive to chlorinate Glenorchy's water, as the issue seems to have been treated as a matter of urgency, with little time to deliberate on the applicability or implementation of the policy. Glenorchy's resistance toward chlorination, however, demonstrates the challenges that local councils in New Zealand face in their attempts to securitise the freshwater under their jurisdiction, and the extent to which communities are willing to organise politically against these types of policies.

## Chapter 6 - Ashburton

### About Ashburton



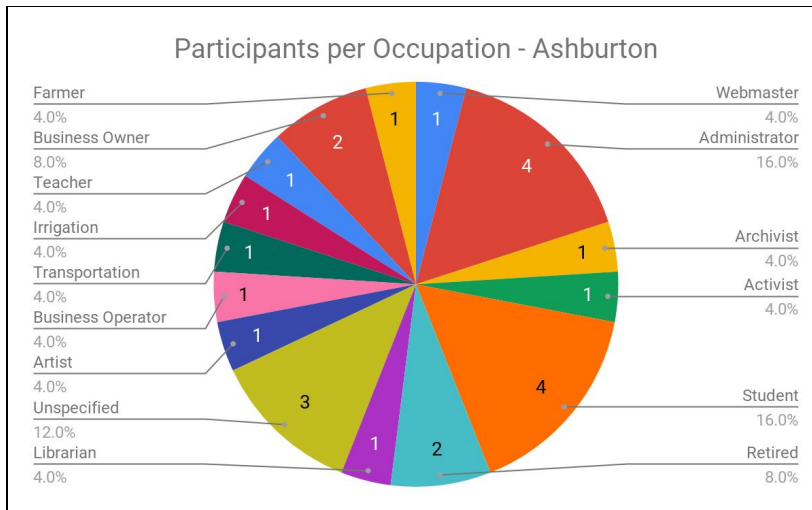
**Figure 7. An aerial view of Ashburton**

The town of Ashburton is located 89 kms south-west of the city of Christchurch, in the Canterbury region of New Zealand's South Island. Ashburton is administered by the Ashburton District Council, whose jurisdictional authority is confined within a combination of geographic elements. Ashburton is also under the greater regional authority of Environment Canterbury. The picture above shows an aerial view of the town (circled in black), in relation to the rest of the district. The area of authority of the Ashburton District Council is demarcated by the flows of the Rangitata and Rakaia rivers in the western and eastern parts of the district, by the Southern Alps in the north, and by the South Pacific coast in the south.

The majority of the town of Ashburton's population is concentrated in six subdivisions: Ashburton Central West (1,035), Ashburton Central East (1,722), Hampstead (2,736), Allenton West (2,052), Allenton East (4,131) and Netherby (1,821), which together hold a population of roughly 13,500 people (Statistics New Zealand, 2018 c). Out of its total population, roughly 48.3% of Ashburton's residents are male and 51.7% are female (Statistics New Zealand, 2018 c), with an estimated age median of 41.7 years (Statistics New Zealand, 2018 c). In terms of employment, Ashburton's residents are employed in a number of categories, the most prominent of which is managers (24%), followed by professionals (12%), technicians and trade workers (12%), community and personal service workers (6%), clerical and administrative workers (9%), sales workers (8%), machinery operators and drivers (8%), and labourers (21%) (Statistics New Zealand, 2018 c). Additionally, an estimated 71.5% of Ashburton's residents aged 15 years and over have some type of formal qualification, from which 10.6% have completed at least a bachelor's degree (Statistics New Zealand, 2018 c).

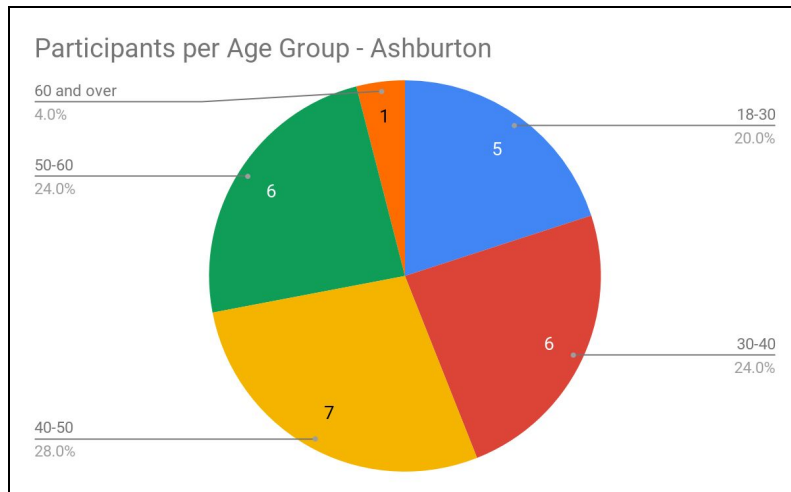
The ethnic makeup of Ashburton is predominantly comprised of residents who consider themselves of European descent (88.3%), followed by Māori (7.3%), Pasifika (3.4%), Asian (3.9%), Middle Eastern, Latin American or African (0.9%), and other (1.7%) (Statistics New Zealand, 2018 c). Like with the town of Glenorchy described in Chapter 5, Ashburton has an ethnic distribution that surpasses 100% due to Statistics New Zealand's coding system, which allows residents to input more than one ethnic background (Statistics New Zealand, 2018 c)

## About the Participants



**Figure 8. Participants per occupation in Ashburton**

Data collection in Ashburton took place between April 16 and 26, 2018, during which time 25 respondents agreed to take part in the study. All of the respondents who participated in this study either resided or were employed in Ashburton. In terms of employment, participants reported a wide range of occupations, which are summarised in the graph above. Considering the variety of income-generating sources reported by the respondents, it is anticipated that their observations will provide a clear and representative indication of the state of opinion regarding water issues in Ashburton, beyond any one industry.



**Figure 9. Participants per age group in Ashburton**

Additionally, the age distribution of the respondents was fairly equal. As per the graph on the right, a comparable participation rate was registered in all age categories, with the exception of the ‘60 years and over’, which featured only respondent. This age distribution proves beneficial for this study because it reflects the attitudes and views of a wide array of age groups with regards to water bottling and water chlorination.

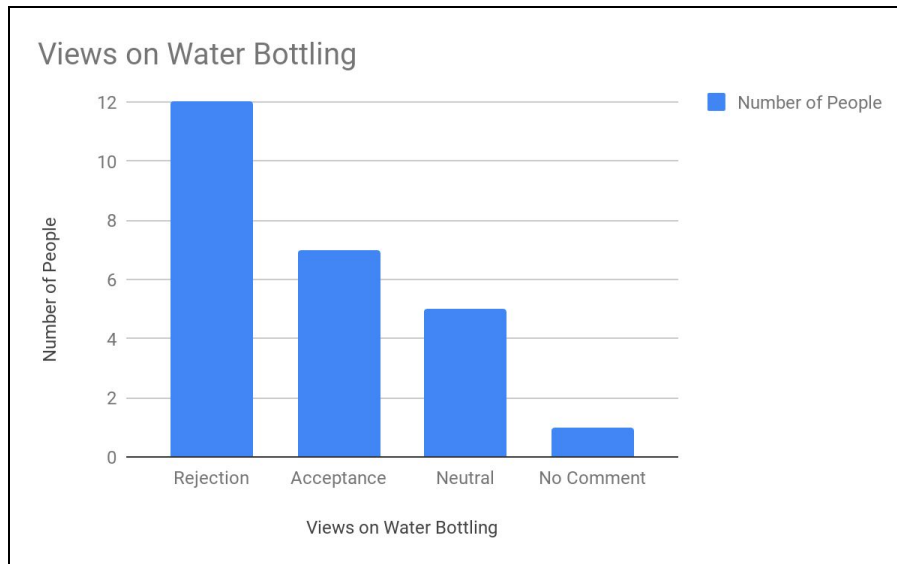
While the participant distribution related to occupation and age was fairly equal, there was a visible imbalance with regards to the respondents’ gender: from the 25 participants that agreed to take part in this study, 16 (64%) were female and 9 (36%) were male. In this regard, the respondents’ gender distribution does not reflect Ashburton’s, which as observed above, is significantly more balanced.

In terms of ethnicity and immigration status, the majority of participants reported being of European descent (17), which as observed above, mirrors the overall ethnic makeup of

Ashburton. Additionally, three respondents were of Māori descent, four were first generation immigrants, and one said he was both Māori and European. The participants who said were immigrants reported having migrated from the UK, Hong Kong and Iran. Based on the above distribution, this analysis does not adequately represent Indigenous values and interests related to freshwater in Ashburton, nor on Indigenous engagement in hydropolitical conflicts in this locality.

At this stage, it is important to make note of some difficulties experienced during the data collection process. Locals were normally amiable and approachable, and seemed generally amenable to have a casual conversation. This positive predisposition however often changed when the topic of water was introduced in the conversation, driving several potential participants to abstain from participating in the study. This took place on more than one occasion, and in several instances, locals became visibly uncomfortable, and in some cases, defensive. This helps explain, for example, the disproportionate participation of women in this study, as female participants seemed more willing to discuss their views on water issues than men, who seemed significantly more adversarial when the subject was introduced in conversation.

## Water Bottling



**Figure 10. Views on water bottling in Ashburton**

The graph above summarises the participants' attitudes towards the advent of water bottling in Ashburton. These attitudes were shaped by the extent to which participants regarded the practice as a source of water problems in their district. The data suggests that views of water bottling in Ashburton were negative overall, with nearly half of the respondents expressing an outright rejection of the industry. Participants rejected the idea of extracting water for sale for a number of reasons, which predominantly concerned questions of perceived water scarcity and quality. Several respondents argued that freshwater in the Ashburton district had been over-exploited for profit by a number of different commercial ventures that, by the time the data was collected, were already regarded by the participants as being the main sources of water contamination in the district. One respondent, for example, reported accounts where the ADC

discouraged mothers from using tap water to nourish their babies, on the grounds that if they did, their children would develop what the respondent called ‘blue baby syndrome’. Concerns over infant health had been elaborated previously by a health official in Canterbury, who argued that nitrates found in water could prove fatal to newborns (Radio New Zealand, 2017 b). The above respondent also expressed anger that ratepayers in the district had access to poor-quality water, while greater commercial operations benefited from the best-quality water for a token sum. The water bottling operation was seen as one such enterprise, and as one that failed to reveal any real economic benefits to the community. In this regard, one respondent said:

*The bottling project was heavily resisted by the community because there was never any disclosure of the economic benefits of the venture, whether the plant would bottle the water on site and ship it later. Later we found out that the water would be sent in bladders in railway carts, so the economic benefits the company was purporting were not accurate. (Respondent 1)*

Another participant regarded water bottling with suspicion because, in her view, it created a scenario where water was no longer usable by the local community, due to it being shipped to overseas markets, unlike other ventures in the district. In this regard, and when asked whether freshwater in Ashburton should be commercialised, she said:



*Absolutely not. Although as I am saying that, I don't want to be a freak about it. The bottling plant for example, when it [water] is taken, it is gone. With farmers there is at least some recharge. (Respondent 6)*

A second participant also regarded water bottling as a potential cause of inadequacies. To explain her disapproval for bottling, she said the following:

*It doesn't seem fair, because people have an eye for a profit. You can see places like South Africa where they need to bring water in to make up for shortages, same with Christchurch. One day we decide to sell, and another we end up with nothing. A lot of people have short sighted views, and do not consider leaving their farms to their kids, and focus on short term gain, so there is no stewardship. With such a mentality it is unsurprising that people go from one place to the other depleting as they go.*

(Respondent 19)

The inevitable exclusion inherent in water bottling motivated additional concerns by other participants, who argued that water authorities should stress the question of intergenerational justice. On this note, one participant argued that:

*[residents] should be able to conserve [water], and not put it to commercial [use]. It should be there for the public for many generations, not just because it is profitable. It is there for generations to come. (Respondent 9)*

Negative attitudes toward water bottling were further motivated by non-commercial arguments over natural resource management in the district, and in New Zealand as a whole. Three respondents alluded to Indigenous principles of environmental care and oneness with Nature as rationale for disagreeing with the bottling industry, or any practice that commodifies freshwater. On this issue, one respondent expressed that *our Indigenous people value water highly, and we have a Treaty that we need to honour*, when referring to the importance of upholding environmental well-being in New Zealand. When explaining why water is important to him, a second respondent said:

*Because it defines who we are. I am not Māori, but water defines who I am. My family moved from England in 1967. They travelled by water. If you talk to Māori people, they'll tell you where their mountain and river are. Their waka (canoes) came to this land by water. All their stories and legends come back to water. This is where I come from. I have nowhere else to go. This is my home, so I have adopted many of those Māori beliefs into my life. It is the definition of who we are. (Respondent 23)*

A respondent explained her rejection toward water bottling in her district by arguing that the industry was incompatible with Ashburton's environmental conditions. On this note, she said the following:

*[Bottling] to me speaks of how councils make decisions: Learn where it is best to bottle water, don't just do it wherever. Sure we need lime, but don't take it from all mountains. It is about sharing, and not about degrading certain areas. (Respondent 6)*

A second respondent evoked the same views over the environmental compatibility of water bottling in Ashburton. To sustain her comments, she said the following:

*From a historical point of view [Ashburton] is very dry. It is very windy. You could only grow wheat crops and sheep. People usually think this area is lush and green, but don't realise it is not natural. That water comes from somewhere else. (Respondent 4)*

Several other respondents stressed the connection between unhindered access to clean water and their ability to exercise their local and national identities. In this regard, one respondent argued that his ability to be a New Zealander is directly related to his unrestricted access to Nature, and to recreational activities such as hiking, fishing and swimming, all of which are highly dependent on good water quality and quantity. Two other respondents coincided on the recreational aspect of their water use, quoting memories from their childhood of swimming or interacting with wildlife around rivers and lakes. In particular, one participant pointed out that in order for residents to engage in these types of activities, they need to go to the top-most part of the district's rivers, where freshwater remains mostly untouched by human activities and is therefore sufficiently clean. In this regard, he said:

*If you want to go swimming now, you have to go right up to the hills [Southern Alps] now, to the source of the water. It is not the best part of the river because it is the coldest part.* (Respondent 20)

These respondents also concurred on a common dislike toward water bottling, and toward the commercialisation of water in general.

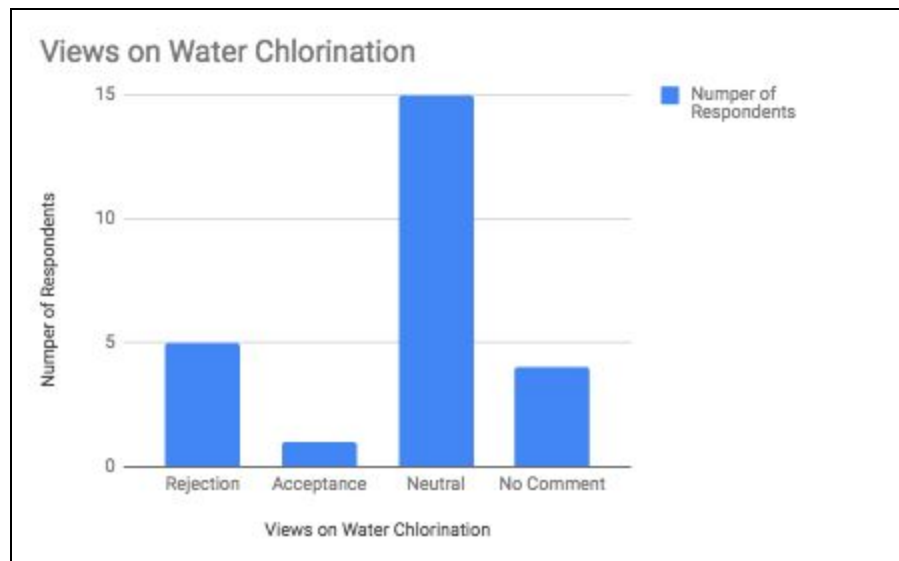
The data also documents some accounts in favour of water bottling, and expressions of conditional support for the industry. However, these accounts do not nullify the number of voices that expressed skepticism toward water bottling. In this regard, two respondents expressed open support for the industry, while five conveyed conditional support. The attitudes in favour of water bottling in Ashburton are perhaps best related by one respondent, who pointed out that it would have extracted far less water than the one consistently being exploited for irrigation and farming purposes. This respondent also stressed the significant volume of freshwater in the district's aquifers, and in the three riverways that cross the Ashburton area: the Rakaia, Rangitata and Ashburton rivers, all of which are fed by glaciers and snowmelt from the Southern Alps. To substantiate his arguments in favour of the water bottling operation in Ashburton, he said the following:

*[The] land came with a consent to take water. And it was I think 48 litres per second, which in the greater scheme of things here, is not a lot. One of the conditions of the consent was that the groundwater needed to be replenished from a river, at a rate of 64*

*litres per second. River water is alpine water, so ice and snow melt that comes down. So they're taking that water and pumping it into the aquifers. No one took any notice of that clause. They focused on the part that said that the venture would pump 48 litres [of water] per second... and [that it would have sold] it to an overseas company that is going to bottle and sell it: Who cares? (Respondent 21)*

In this respondent's view, water abundance helps to justify the extraction and commercialisation of freshwater in both the district, and in a country that has *more water than it knows what to do with*. Alongside these reasons, positive attitudes toward water bottling were based on the establishment of sound environmental impact assessments, regulations, and the locals' ability to benefit from water irrespective of industry.

## Water Chlorination



**Figure 11. Views on water chlorination**

Unlike water bottling, water chlorination seems to inspire mixed attitudes in the participants. There is a significant number of respondents that neither accept nor reject the policy: out of the 25 participants in this study, 15 did not adopt any perceivable attitude toward water chlorination. Conversely, one fifth of the respondents expressed an explicit dislike or disapproval for water chlorination in their district, with only one espousing positive attitudes toward the latter. Four additional respondents did not make comments on the matter.

The accounts documented in this study suggest that respondents may have internalised the implementation of water chlorination to the point where adopting positive or negative views over the policy has been precluded by the real need to securitise the district's water supplies. One potential cause for this lack of clear inclination may be attributed to the principal sources of

water quality degradation in the district, which have been linked to intensive dairy farming, the main source of economic well-being in Ashburton. If environmental decay is seen as an inevitable and irreversible side-effect of the main generator of wealth in the district, one could expect that respondents would be disinclined to espouse strong attitudes toward water securitisation strategies such as chlorination. This assertion seems to be supported by the data. From the 15 respondents who expressed neutral views over water chlorination, eight reported dissatisfaction with the quality of their water, which suggests that respondents may regard chlorination as a necessary and unquestionable mechanism to secure their water supplies. It did not seem that respondents perceived water chlorination as being incompatible in their district.

Those participants who rejected water chlorination argued that the policy had had negative impacts on their personal health and on their ability to address their own food requirements. This rejection also highlighted asymmetries in water access and use in the district. One respondent for example said the following:

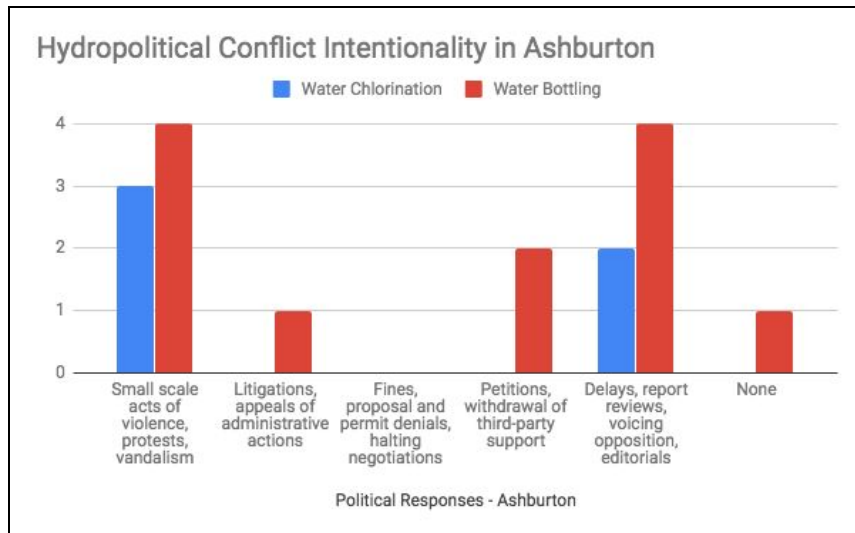
*People developed skin conditions from using chlorinated water, and could not grow their own crops as a result of that. This is substantial given that many people grow their own food in the district. Why should I take a shower and itch, use bad water, when they can get all the best water for free. (Respondent 1)*

The data points to a trend worth noting in those respondents who reported strong views against water chlorination. The five respondents who expressed a strong dislike toward water

chlorination also reported some type of anguish with regards to at least one more water-related policy or practice. For example, two respondents expressed disapproval towards chlorinating Ashburton's water supplies in conjunction with negative attitudes towards water bottling. Two other respondents reported being severely disillusioned with the decision-making process behind any water-related practice or policy, echoing concerns related to the favouring of commercial enterprises over other less-commercial interests. The respondents in question disapprove of water chlorination, but regard the policy as one in a handful of water mismanagement cases in the district. The fifth participant documented having supported strikes against water treatment in the district; this treatment included both water chlorination and fluoridation.



## Results



**Figure 12. Hydropolitical conflict intentionality in Ashburton**

The data collected in Ashburton suggests that respondents espoused a strong willingness to engage in hydropolitical conflict, but this conflict intentionality was coupled with low levels of participation. The data also suggests that intense hydropolitical conflict intentionality was primarily motivated by water bottling, although a comparable number of respondents reported willingness to engage in intense conflict events over water chlorination. As mentioned above, however, these respondents espoused more than one water-related grievance that, in some cases, included both water bottling and water chlorination.

In general, water bottling and water chlorination motivated respondents to espouse hydropolitical conflict intentionality at different levels. For example, 11 out of 25 participants reported being willing to engage in conflict over water bottling, while only five expressed similar

inclinations over water chlorination. From the individuals that expressed a desire to organise politically against water bottling, four were inclined to do so by starting or participating in protests, while a fifth participant reported being willing to support litigation procedures against the enterprise. In contrast, three out of the five respondents were willing to engage politically against water chlorination through protesting, while none were willing to engage in legal challenges against the policy.

Along the less-intense section of the CCI Scale, two respondents argued they would prefer petitioning to voice their disapproval of water bottling, while four regarded voicing opposition through their elected officials as the best option to express their discontent for the same enterprise. In contrast, water chlorination only motivated two instances where participants were willing to seek access to their elected officials to voice disapproval for the policy. These responses are summarised in the graph above.

In terms of gender, the data indicates that there was a clear preference by female respondents to engage in intense hydropolitical conflicts: four respondents reported either being willing to be, or having been involved in protests against water bottling and/or water chlorination, while one additional respondent expressed a will to challenge these activities through the courts. In stark contrast, no male respondent reported wanting to engage in conflict action at either one of these levels. These dynamics changed to some degree in the lower levels of the CCI Scale, where both female and male respondents reported comparable conflict intentionalities, although these

numbers were still slightly higher for the female cohort. The gender distribution of conflict intentionality in Ashburton is summarised in the table below.

Type of Action	Female	Male
Small scale acts of violence, protests, vandalism	4	0
Litigations, appeals of administrative actions	1	0
Fines, proposal and permit denials, halting negotiations	0	0
Petitions, withdrawal of third-party support	2	1
Delays, report reviews, voicing opposition, editorials	5	3
None	4	5

**Table 3. Gender distribution of hydropolitical conflict intentionality in Ashburton**

The data indicates that water bottling motivated more intense conflict intentionality in Ashburton when compared to water chlorination. A highly extractive enterprise such as water bottling seemed, and continues to seem, inherently incompatible with the water dynamics of districts such as Ashburton, where water access and policy are attached to the development of the dairy and irrigation industries. During the data collection, respondents were quick to attribute the root causes of water degradation to these industries, while at the same time remaining cognisant of their role in the generation and sustainability of wealth in Ashburton, and in the Canterbury region as a whole. When asked about his views on water-related decision-making in the Ashburton district, one respondent said the following:

*It is governing to a small percentage of the population, the farmers, which is fine, we need them, and dairy. But farming is becoming too intensive. It is starting to bite them in the ass. Eventually these rivers are going to be unusable for anybody, so a small*

*percentage of the population having the right to affect the rest of the country like that is unfair.* (Respondent 20)

This duality is important to consider when understanding why conflict emerged and intensified over water bottling, but not over dairy farming and irrigation. Based on the accounts documented in this study, one can roughly surmise that a balance of sorts existed prior to the prospective introduction of water bottling in Ashburton. Residents and the more traditional industries seemed to co-exist with an unwritten understanding that industry-driven water degradation could be somewhat tolerated by the community if it was met with wealth redistribution, employment generation, and the passing of water securitisation and treatment strategies, all of which would arguably mitigate the deterioration of the district's water. This is not to say that the dairy and irrigation industries were not perceived as sources of water problems by the respondents; it means that efforts were put in place to mitigate the adverse environmental impacts of these enterprises. In this regard, the data indicates that water bottling was regarded as an operation that had a significant potential to worsen the residents' domestic water use, as well as posing challenges to the water access parameters of the more traditional industries in the district, all the while offering remedial means that were regarded as inadequate by some respondents. These means included diverting some of the Ashburton River's flow, and using that water to recharge the aquifer system from which the bottling plant would have extracted its supplies, thus mitigating the quantitative impacts of the operation (Radio New Zealand, 2016). Some respondents argued that this measure would have proven costly, and that taxpayers would

have been the ultimate bearers of the costs of replenishing the aquifer (Radio New Zealand, 2016).

The mitigation strategies conceived by the dairy and irrigation industries were not replicable by the water bottling operation. Unlike the dairy and irrigation industries, which the respondents regarded as producing significant economic opportunities in the district, a water bottling operation would have been considered to benefit from relatively inexpensive access to massive volumes of high quality water (New Zealand Herald, 2016 a), all the while inspiring doubts regarding its real employment generation potential in the district (New Zealand Herald, 2016 a). In this instance, the coexistence that the dairy and irrigation industries were successful in fostering with the community seemed significantly less feasible for the water bottling operation; the latter motivated community members and local industries to unite under one banner in an effort to thwart the installation of an enterprise that both cohorts seemed to regard as incompatible in their district.

## **Discussion**

Bearing in mind the above findings, one can argue that the data collected in Ashburton supports this study's first argument, which is that the introduction of water commercialisation practices influences the emergence of hydropolitical conflict intentionality if it generates economic, environmental and social incompatibilities in the local community. In this regard, more respondents espoused negative views over water bottling than over water chlorination,

although the number of respondents relative to the total amount of participants was fairly low in both categories. Furthermore, conflict intentionality over bottling was concentrated at both high and low intensity levels, namely, at the Protest and Voicing Opposition scales.

This study finds evidence suggesting that water bottling in Ashburton sparked a strong political response because it was in tension with the interests of major economic enterprises in the district, namely actors in the dairy and irrigation industries. In this regard, the main political organiser of the 2016 Ashburton protests reported that the movement against water bottling was initially supported by representatives of the farming and irrigation industries, who later withdrew from the movement when their industries' water use was put into question. Those same economic interests went unchallenged in the chlorination of Ashburton's freshwater. To some extent, one can argue that water chlorination achieved the dual goal of securitising the district's freshwater while appearing to fix, in some measure, the negative environmental impacts of the dairy and irrigation industries. Thus, the chlorination of Ashburton's freshwater seemed to have mitigated the incompatibilities caused by other industries in the periphery, which helps explain why respondents seemed less likely to espouse intense hydropolitical conflict intentionality over the policy. In contrast, the respondents seemed to regard the water bottling operation as an enterprise with low remedial potential, unlikely to assuage its environmental footprint in the community. In terms of economic, social and environmental incompatibilities, water bottling was regarded as the enterprise that was least suitable for Ashburton's local reality.

This study also argued that individuals were likely to display intense hydropolitical conflict intentionality when they regarded the approval and appeals process behind a water commercialisation activity as untrustworthy. The data supports this assertion: respondents displayed significant skepticism toward the approval process of water bottling, which in turn, translated into both intense hydropolitical conflict intentionality and similarly-intense conflict events such as the 2016 protests. There is indeed evidence that proper consultation with the community was not started by the ADC with regards to the sale of Lot 9 (Appendix H). This included concerns about poor consultation with local Māori leadership, as described by ADC records:

Council's Chief Executive Officer and Mayor have received correspondence from Ngāi Tahu and Arowhenua Rūnanga about their concerns with the Lot 9 sale, stockwater closures and the impact on Mahinga Kai. The main issue highlighted is one of engagement with local iwi for water matters in general. (Ashburton District Council, 2016, p. 30)

Files submitted by the Bung the Bore movement echo the above concerns regarding community feedback and input, but also stress the ADC's alleged role in not including the community as an Affected Person as per the RMA framework:

We are at a loss as to how the Ashburton District Council came to the conclusion that Mr. and Mrs. 'C' and Silver Fern Farms would be the only parties affected by the Lot 9



take. Subjecting ratepayers to the expense of lowering bores for affected parties, paying their legal fees, and assuring them a clean and continuing water source should have been a community decision, just as the giving away of 40 billion litres should have been.

(Ashburton District Council, 2016, p. 39)

The Affected Persons to which the group alluded above were also the ones included in the resource consent application by the ADC before ECan, the water authority responsible for granting such consents (Appendix H). This application preceded the sale of Lot 9, and was submitted in 2011. In their application, the ADC reported the following:

[F]ive bores were shown to be potentially affected. One bore is owned by ADC and does not need to be considered, three are owned by Silver Fern Farms, and one is owned by Mr & Mrs JL & J Cockburn. Written approvals have been obtained from all potentially affected parties, being Silver Fern Farms and Mr & Mrs Cockburn. (Environment Canterbury, 2011, p. 2)

Community groups that engaged in intense conflict over the sale of Lot 9 for bottling later organised an effort to have the property's water consent removed, threatening to go to the courts over the issue:

We assure you of our intent to take this consent and it's [sic] process to Judicial Review should common sense not prevail. In doing so, the people of Ashburton, and indeed New

Zealand, would be asked to fund a challenge to save what is already ‘ours’. Should there be no decision made to abandon this consent by July 30th [2016], we will be left with no other choice than to instigate legal proceedings. (Ashburton District Council 2016, p. 41)

The above statements demonstrate the extent to which some members of the community felt the approval process for the water bottling operation was flawed. They also provide an indication as to why some respondents were likely to exhibit intense hydropolitical conflict intentionality. In contrast, respondents gave little indication that the approval and appeals process behind the chlorination of Ashburton’s freshwater was in any way flawed, or untrustworthy. This is not to say that chlorination inspired overly-positive attitudes, as there are accounts in the data that suggest that some respondents found chlorinated water problematic on the basis of its look, taste, and the health problems attributed to chlorine exposure. Nevertheless, accounts of this nature seemed to have been overshadowed by the legitimacy behind the policy, and by the urgent need to securitise the district’s freshwater.

The case of Ashburton raises crucial points in relation to perceptions of water issues and how those perceptions influenced some members of the community to espouse some type of hydropolitical conflict intentionality. In addition, the trust that respondents invested in the approval and appeals process behind any given water commercialisation practice seems to dictate the extent to which they are likely to intensify said intentionality, and potential engagement. Both water bottling and water chlorination inspired some type of discontent in the community, but this discontent translated into conflict primarily in relation to bottling. Water bottling

motivated perceptions of water scarcity in Ashburton, but these views were exacerbated by a seemingly-flawed approval and appeals process, leading respondents to circumvent the mechanisms inherent in the water authority system, and to seek extra-institutional ways to sway decision-making in their favour. These extra-institutional means resulted in the organisation of political protests.

With regards to chlorination, considering that most respondents perceived water contamination as being a result of the direct and indirect activities of the dairy and irrigation industries, and that addressing the root causes of contamination would inevitably require a de-intensification of these industries (and therefore a potential reduction in their economic outputs), it is likely that respondents were discouraged from rejecting any water securitisation strategy. Therefore, it can be argued that water chlorination facilitated an improvement in water access and use in the district. There is little indication in the data that suggests that respondents distrusted the approval process behind water chlorination, which also helps to explain why they were less likely to espouse intense hydropolitical conflict intentionality over this policy.

## Chapter 7 - Analysis

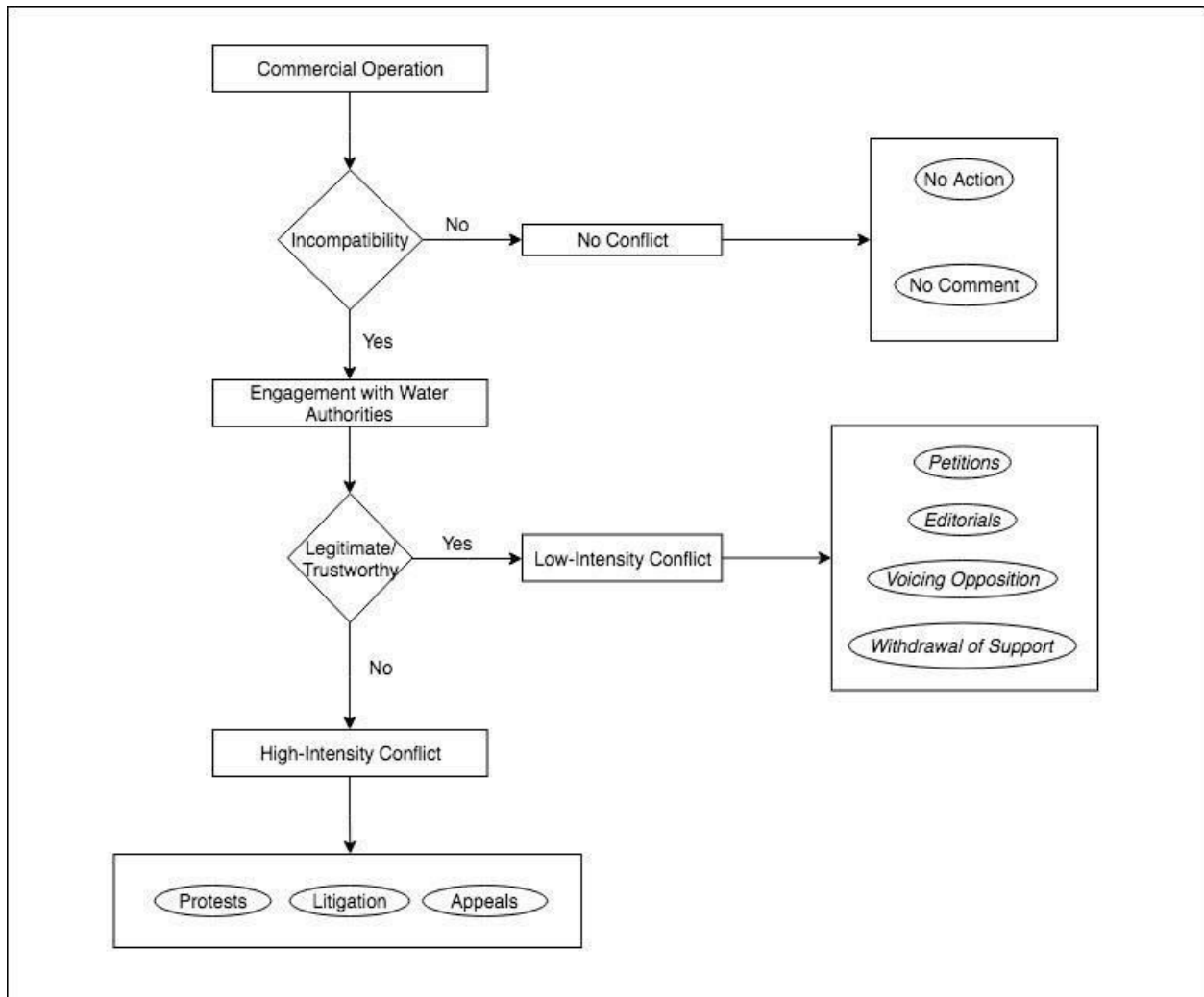
### Introduction

This study advances two central arguments. First, that water commercialisation generates hydropolitical conflict intentionality when the salience of water scarcity or quality is raised. The data collected in Ashburton and Glenorchy supports this argument. Second, that hydropolitical conflict intentionality intensifies when local communities regard the approval and appeals processes behind a commercial operation as flawed or untrustworthy. Water bottling and water chlorination operations that fall within the framework of the proposed definition of water commercialisation presented in Chapter 4 exerted an influence on the emergence of hydropolitical conflict. However, the data also indicate that not all conflict intentionalities intensified to the top-most levels of the CCI Scale, leaving a significant amount of accounts and events dispersed across the other intensity levels of the Scale. The data suggests that the emergence of conflict intent was motivated by concerns over incompatible water activities in each district, but that its intensification appears to have been motivated by an erosion of trust in the approval and appeals processes behind the scrutinised water bottling and water chlorination projects.

This chapter will explain first, how water bottling and water chlorination motivated the emergence of hydropolitical conflict intentionality in Ashburton and Glenorchy; secondly, how

respondents sought to address water bottling and chlorination issues through their existing water authorities. In this regard, this section will highlight the question of trust in the approval and appeals processes supporting the above practices, and how this trust played a role in respondents' engagement in low-intensity, intra-institutional conflict. Thirdly, this chapter will explain how untrustworthy or perceivably-flawed approval and appeals processes motivated respondents to circumvent their water authority's conflict resolution mechanisms, and influenced instead the intensification of conflict intentionality over water bottling and water chlorination. Lastly, it will provide a taxonomy the hydropolitical conflict intentionalities that emerged in Ashburton and Glenorchy.

## The Emergence, Containment and Intensification of Hydropolitical Conflict Intentionality



**Figure 13. Flowchart depicting pathways toward potential hydropolitical conflict intensification**

The flowchart above maps the trajectory followed by the respondents in Ashburton and Glenorchy as they contemplated their potential engagement in low and high-intensity conflicts over water bottling and water chlorination. At this stage, one must take note of two important

considerations. First, the above diagram, and the observations in this chapter, are derived from a relatively small respondent sample, which cannot be construed as reflecting the overall views, conflict intentionalities and political engagement of the wider communities in Ashburton and Glenorchy. Notwithstanding this limitation, the observations gathered from these samples provide important insights into the general thought-process of individuals conflicted by the introduction of a commercial enterprise they regard as antagonistic. In addition to this, the data demonstrates the level of common ground the respondents were capable of achieving irrespective of their demographic traits. And second, the above pathway was developed based on the respondents' conflict intentionalities as expressed by them during the interview process, and does not adequately reflect the respondents' actual hydropolitical conflict participation. Nevertheless, the data provides a unique account of the steps that antecede the materialised emergence and intensification of hydropolitical conflicts over water bottling and water chlorination.

There are three discernible processes that respondents seemed to follow in both locations: one where conflict intentionalities were motivated by concerns over water bottling and water chlorination; a second one where such conflict intentionalities were effectively contained by the water authority system in each district; and a third where conflict intentionalities escalated. The causal path that led respondents to any of these outcomes seemed to be decided by two crucial pivot points, the first of which is the respondents' perception that water bottling and water chlorination could cause water issues in their districts, in line with this study's first argument.

## First Pivot Point: The Identification of Water Incompatibilities

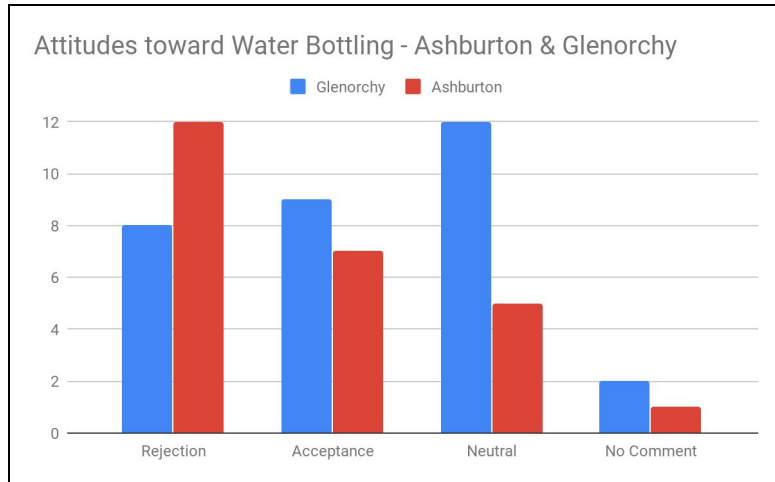


Figure 14. Attitudes toward water bottling in Ashburton and Glenorchy

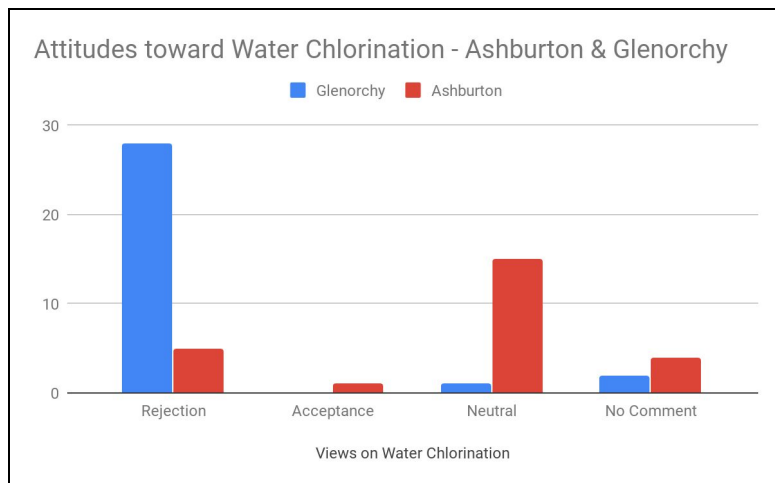


Figure 15. Attitudes toward water chlorination in Ashburton and Glenorchy

The data indicates that water bottling and water chlorination inspired different attitudes by the respondents. These attitudes were shaped by how they identified each water practice as causing incompatibilities locally. These attitudes are summarised in the graphs above. In Ashburton,



water bottling motivated predominantly negative attitudes, but respondents expressed uncertain opinions regarding the chlorination of their freshwater supplies as evident in the number of neutral views or no-comment statements over the policy. In Glenorchy, respondents espoused predominantly neutral views over bottling, although a slightly higher number reported holding positive rather than negative attitudes toward the industry. As in the Ashburton water bottling project, Glenorchy's respondents espoused overwhelmingly negative attitudes toward water chlorination where, as explained in Chapter 5, locals did not seem to regard the policy as having any real application in their immediate surroundings, an issue not so readily seen in Ashburton, where respondents were much more aware of the risk of accessing low-quality freshwater, and of the need to treat it.

Based on the data presented above, one can surmise that respondents in Ashburton and Glenorchy determined that the likelihood of water-based incompatibilities was more pronounced in the face of water bottling and water chlorination respectively.

## **Second Pivot Point: The Containment and Intensification of Hydropolitical Conflict**

### **Containment**

Once respondents perceived that there could be issues caused by water bottling or water chlorination, they were confronted with a second determination. This point relates to the

question of trust in the legitimacy of the approval and appeals processes supporting water bottling and water chlorination. Those respondents who expressed no doubts over the above practices effectively engaged in intra-institutional exchanges with their water authorities, in order to ventilate any given water-related grievance and/or incompatibility. In this case, conflict intentionality remained at the lowest possible levels of the CCI Scale.

As per Chapter 3, the RMA regime establishes the criteria applied by water authorities to decide upon issues of freshwater access and use. It also considers additional processes for the effective resolution of disputes, should any arise. Considering the levels within the CCI Scale, hydropolitical conflicts that one may consider of low intensity are effectively ventilated and resolved within the RMA-sanctioned institutions and processes.

	Glenorchy		Ashburton	
	Water Chlorination	Water Bottling	Water Chlorination	Water Bottling
Small scale acts of violence, protests, vandalism	0	0	3	4
Litigations, appeals of administrative actions	11	1	0	1
Fines, proposal and permit denials, halting negotiations	0	0	0	0
Petitions, withdrawal of third-party support	2	0	0	2
Delays, report reviews, voicing opposition, editorials	10	7	2	4
None	8	0	0	1

**Table 4. Hydropolitical conflict intentionality in Ashburton and Glenorchy**

One can argue that the success of the above processes hinges on whether applicants and submitters deem the entire regime as trustworthy or not. In this regard, the data suggests that respondents' inclination to engage in low or high intensity hydropolitical conflict was based on the extent to which they trusted the approval and appeals processes behind water bottling and water chlorination in their districts. To this effect, the table above displays a distribution of all accounts reporting negative attitudes toward water bottling and chlorination, and distributes them in relation to the most intense hydropolitical conflict event in which each respondent would be willing to engage.

When analysing the respondents' conflict engagement potential, the data indicates that intentionality remained low when they trusted the RMA-sanctioned approval/appeals processes behind each practice. This, in turn, translated into hydropolitical conflict intentionality becoming contained at the lowest levels of the CCI Scale. For instance, the data suggests that the approval process behind water bottling in Glenorchy was not regarded as problematic because the purchase of the operation's potential site (and its accompanying water rights) came as a result of a private transaction between the latter's previous owner and the bottling company, a process respondents did not seem to consider worthy of disruption nor skepticism. In addition to this, and as was explained in Chapter 5, the consent approval process, as administered by the ORC, was not judged by the respondents to be inadequate or flawed. In terms of conflict intentionality, those respondents who disagreed with water bottling (eight out of 31) expressed little inclination toward intense political organisation and engagement, which also helps to explain why conflict intentionality over bottling in Glenorchy is concentrated in the 'Voicing

Opposition' level of the CCI Scale, a space where conflicts over water are ventilated through the institutions and processes laid out by the RMA framework.

Similarly, the chlorination of Ashburton's water supplies did not seem to be regarded as a policy that was approved under dubious conditions. In fact, chlorination was perceived as part of a wider water securitisation strategy that also featured updates in water infrastructure and other forms of treatment, including fluoridation. No accounts documented in this study suggest that respondents deemed the decision-making process behind chlorination as tainted, or as illegitimate. With respect to the intensification of conflict intentionality over water chlorination, five out of 25 respondents expressed disapproval over the policy, but potential conflict engagement within this cohort was very low, with only three participants willing to engage in intense conflict, and a comparable amount of respondents (two) expressing a will to voice their discontent with their elected officials.

In the above cases, there is little indication that the decision-making process behind each practice or policy influenced the participants' will to intensify their political engagement beyond interactions with their local water authorities. This seemed to be the case even when respondents regarded water bottling and water chlorination as potential sources of water-based conflict. Although hydropolitical conflict intentionality in Ashburton and Glenorchy did not intensify, it does not mean that conflicts over water bottling and water chlorination were absent: it could mean that the extant political infrastructure that decides on water issues, and the processes allowing respondents to express their worries over any given decision, were regarded by the

respondents as sufficiently robust and trustworthy to ventilate and assuage any of their concerns intra-institutionally, thus preventing these conflicts from escalating further.

### **Intensification**

It follows from the data, however, that when the integrity of the above processes and institutions, and that of elected officials, was put into question, respondents were more likely to seek extra-institutional measures to assuage or prevent the prospect of a water incompatibility, causing an escalation of conflict intentionality beyond the purview of the RMA framework. Thus, an institutional bypass of sorts seemed to occur, with some respondents disregarding the existing conflict resolution mechanisms on the grounds that the water authority regime was unlikely to mitigate potential water inadequacies. Instead, these respondents displayed high-intensity, extra-institutional conflict intentionality, presumably to sway the direction of decision-making in their favour.

The above expressions of conflict engagement manifested in both the respondents' conflict intentionality, and in the active participation by some of them in conflict episodes motivated by water bottling and water chlorination in Ashburton and Glenorchy, respectively. For example, there were 28 respondents in Glenorchy who expressed negative attitudes toward water chlorination, 23 of whom reported willingness to engage in some type of political and/or judicial conflict. Of those 23 respondents, 11 reported being inclined toward litigation procedures to challenge the chlorination policy, followed by two accounts preferring petitioning and/or

removal of third party support, and 10 arguing that contacting their local officials was the best possible political route to voice their disagreement. In addition to these voices, eight expressed unwillingness to take any action against chlorination, despite their disapproval of it. In Glenorchy, hydropolitical conflict intentionality over chlorination is mainly directed toward litigation, namely, the second-most intense hydropolitical conflict level in the CCI Scale.

Similarly, water bottling inspired some actors in Ashburton to intensify their conflict engagement potential beyond interactions with RMA-sanctioned institutions and processes: from the 11 respondents who expressed being willing to engage in conflict over water bottling, four reported an inclination to protest against the enterprise, and one expressed a willingness to go to the courts. A total of five respondents expressed intentions to engage in intense hydropolitical conflict over water bottling. In addition, two respondents reported wanting to start and/or participate in petitioning, while four argued that the best way to counter the water bottling industry would be through their local authorities. The above figures translated into a number of respondents willing to intensify their political engagement beyond the RMA's purview, although in Ashburton, the number remained low in relation to the total amount of respondents.

In both Ashburton and Glenorchy, high conflict intentionality seemed irrevocably linked to water bottling and water chlorination being authorised by processes that left little space for respondents to genuinely voice their discontent intra-institutionally. In Ashburton, for example, the approval process for the water bottling operation was regarded with significant skepticism largely because the purchase of the property where the bottling plant was envisioned to operate

was part of the Ashburton Business Estate, and owned by the ADC, the local district council. Even though the resource consent for this project fell outside of the jurisdiction of the ADC, the above transaction inspired the belief that the potential problems caused by the water bottling operation would have been at least partly caused by the ADC, at a point when respondents were already skeptical over the Council's ability to ameliorate water quality standards in the district. Also, the project was being considered despite its dubious economic, environmental, and social benefits and ramifications. For instance, Chapter 6 related the concerns expressed by some respondents with regards to the operation's highly-debated employment generation potential, which some argued was far less than purported by the operator. They also expressed discontent over the plant's aquifer replenishment strategy, which would have caused part of the Ashburton River flow to be diverted into the aquifer from which water would have been abstracted, an infrastructure respondents argued would have been paid for by taxpayers.

From a wider perspective, there are some political dimensions that may have further aggravated the respondents' disapprobation of the water bottling approval and appeals processes. Prior to the proposed water bottling operation in Ashburton, ECan, the water authority in charge of approving resource consents for water extraction in the region, was already undergoing an acute crisis of trust, evident in actions taken by New Zealand's central government. The central government's low regard for ECan's ability to govern its freshwater supplies was such that, in 2010, it decided to remove all of ECan's elected councillors. It then replaced them with a Council appointed by central government officials (New Zealand Parliament, 2010), with the promise that elections for new councillors would take place no later than 2013 (New Zealand

Parliament, 2010). This plan, however, was later amended through the passing of the Environment Canterbury (Transitional Governance Arrangements) Act 2015, which enacted changes to ECan's governance structure. These changes included the overall makeup of the Council itself, which was to be comprised by not only elected but also by appointed officials, amendments that were envisioned to take effect as of the 2016-2019 electoral cycle (Government of New Zealand, 2015). Because the 2016 election was to take place "on the second Saturday in October 2016" (Government of New Zealand, 2015, p. 4), the approval process for the water bottling operation's resource consent in Ashburton was deliberated upon by an unelected regional council. One can argue that the unelected nature of the Council cast doubts over its ability to make decisions that were perceived as trustworthy, and as reflective of citizens' needs. In this regard, the inadequacies that respondents had already seen could materialise as a result of the water bottling plant, seemed further aggravated by decision-making processes and institutions that respondents did not trust.

Similarly, respondents in Glenorchy expressed significant disdain over having been inadequately consulted in the QLDC's decision to chlorinate the town's water supplies. As per Chapter 5, respondents documented doubts over the applicability of chlorination in a town where the quality of water had traditionally been high. They further argued that the introduction of chlorine would only cause them problems and that they were being stripped of their status as Affected Persons (as per the RMA framework), and therefore, of their ability to prevent and/or appeal the chlorination decision. This led to a belief that any interaction with the QLDC regime would have proven purposeless, thus justifying the need to conceive of extra-institutional means



to facilitate the addressing of chlorine-driven incompatibilities. It is under this light that conflict intentionality over water chlorination in Glenorchy intensified.

Considering the above-described conflict intentionalities, and the subsequent materialisation of some hydropolitical conflict events over water bottling and chlorination in Ashburton and Glenorchy respectively, one can surmise that the arguments proposed in this study find support in the data: Water bottling and water chlorination influenced the emergence of hydropolitical conflict intentionalities in Ashburton and Glenorchy. The intensification of these conflicts was mediated by the extent to which respondents regarded the approval and appeals processes behind each practice as trustworthy. As it stands, however, the arguments include two important caveats.

Firstly, the data shows that whenever a commercial water operation inspired an intense hydropolitical conflict intentionality by the respondents, as was the case with water chlorination in Glenorchy and with water bottling in Ashburton, it also provoked a comparable reaction at the bottom-most portion of the CCI Scale, where a significant number of low-scale hydropolitical conflict intentionality accounts is discernible. This indicates that communities featuring high-intensity conflict intentionality seem to also contain individuals and groups that seek less disruptive alternatives in resolving issues, regardless of their shared negative attitudes toward any given water-related activity.

From a gender standpoint, this trend was most palpable in the female respondents in each town: whereas the male respondents were visibly concentrated in specific parts of the CCI Scale, the female respondents were more uniformly distributed across the spectrum. In terms of conflict intensification, the data suggests that respondents in Glenorchy were more likely to escalate their conflict engagement, irrespective of gender. In this regard, a third of the respondents (5 female and 6 male) reported being willing to become involved in litigation procedures, reactions that were mostly triggered by water chlorination. This suggests a type of gender-neutral consensus in Glenorchy over the perceived negative impacts of water chlorination, and over the decision-making process behind it. The only other comparable gender-neutral response was seen in Ashburton, but in this case, responses were concentrated at the two lowest levels of the CCI Scale (7 female, 4 male). This suggests that, even though these respondents may have regarded water bottling and/or water chlorination as incompatible, they trusted their water authority infrastructure enough to voice their discontent over those activities through them. The comparative gender distribution in relation to conflict intentionality in Ashburton and Glenorchy is summarised in the table below.

Type of Action	Ashburton		Glenorchy	
	Female	Male	Female	Male
Small scale acts of violence, protests, vandalism	4	0	0	0
Litigations, appeals of administrative actions	1	0	5	6
Fines, proposal and permit denials, halting negotiations	0	0	0	0
Petitions, withdrawal of third-party support	2	1	2	0
Delays, report reviews, voicing opposition, editorials	5	3	9	1
None	4	5	3	5

**Table 5. Gender distribution of hydropolitical conflict intentionality in Ashburton and Glenorchy**

Taking into consideration the various types of conflict intentionalities that emerged in the examined cases, one cannot assume that intense hydropolitical conflict inclinations are widely shared within communities, nor that groups who engage in high-intensity conflict events are fully representative of the views of the whole community, at least not from a *modus operandi* perspective.

Secondly, conflict over the commercialisation of freshwater remains a realistic possibility despite low numbers of individuals willing to engage in high-intensity political action. As follows from the data, respondents from Ashburton and Glenorchy did not report a will to engage in intense hydropolitical conflict in large numbers. Despite an undeniable concentration of high intensity conflict intentionality over chlorination in Glenorchy and over water bottling in Ashburton, those cohorts do not reflect a plurality of support (11 out of 31 in Glenorchy, and five

out of 25 in Ashburton). The data, however, does suggest that conflict intensification can still occur in the face of a minority of locals willing to engage in such types of conflicts, a finding that aligns with research that concludes that non-violent conflict can materialise with as small a portion of the population as 3.5% (Chenoweth, 2017). Although only five respondents in Ashburton reported a willingness to engage in intense hydropolitical conflict over water bottling, they nevertheless succeeded in materialising the most significant conflict action against any of the water practices examined in this study. Similarly, and despite the fact that less than half of the respondents from Glenorchy expressed a will to intensify their conflict engagement, they nevertheless succeeded in materialising litigation actions that fall within the purview of an intense hydropolitical response, with indications that conflict over chlorination could intensify further. In both cases, plurality in conflict intentionality did not adequately reflect the communities' true intent to realise high-intensity conflict episodes.

## **Conclusions and Final Thoughts**

It follows from the data that water bottling and water chlorination exerted an influence on the emergence of hydropolitical conflict when respondents espoused concerns over the generation of water issues in their communities. However, two other processes could be discerned, both of which relate to the containment and intensification of hydropolitical conflicts. Whereas the emergence of hydropolitical conflict intentionality was motivated by concerns over water, their containment was facilitated by respondents regarding the decision-making and appeals processes

behind each practice as sufficiently robust and legitimate. Conflict intentionality nonetheless intensified when respondents regarded these processes as inadequate or illegitimate.

The findings presented in this chapter shed an important light on the central role of State institutions in maintaining effective channels through which hydropolitical conflicts can be ventilated and resolved. They also provide a small insight into the type of hydropolitical conflicts that can emerge in situations where the trustworthiness and transparency of water-related processes and decisions are questioned by communities.

Even though this study examined hydropolitical conflicts in relatively small rural environments, they are not standalone, isolated episodes of discord and animosity. As time progresses, New Zealand continues to witness an undeniable upsurge of intense hydropolitical conflict events which requires the continued attention of both the research and policy communities. If the escalation of hydropolitical conflicts is indeed anchored on communities' trust in their water authorities' decision-making and appeals processes, then one can extrapolate from the findings in this study that water authorities in New Zealand could be facing a progressive decline of trust in their RMA-mandated duties, which could translate into communities preferring extra-institutional arrangements to sway water-related policy-making in their favour.

The above-mentioned decline of trust is already resulting in the intensification of hydropolitical conflicts outside of Ashburton and Glenorchy's contexts. Intense marches over

water bottling in Belfast have succeeded in drawing residents by the thousands (Radio New Zealand, 2019); some of these gatherings have required the intervention of law enforcement officials (Stuff, 2018 b). Along with their ability to draw strong popular support, protest movements over water-related decisions have succeeded in developing robust financing campaigns to help sustain their conflict actions, including challenges in court. One noteworthy case is the recent statement by the Christchurch City Council, which announced the granting of \$50,000 to cover the legal expenses of the Aotearoa Water Action organisation (AWA) (Christchurch City Council, 2019). AWA has been challenging Environment Canterbury's approval of two resource consents for water bottling, on the grounds that the decision-making process behind each application breached the RMA. This case illustrates the extent to which local groups are willing to intensify and sustain their actions over untrustworthy decision-making processes. It also sheds some light on the types of incompatibilities inherent between city/district councils and regional councils over water issues.

Similar to Glenorchy, water chlorination has also motivated mobilisation by some groups in New Zealand, highlighting the types of challenges involved in the contemporary implementation of water treatment strategies in the country. For example, Māori groups in Hawke's Bay have protested before city councillors, expressing their discontent with the introduction of water chlorination, and arguing that, as *kaitiaki* (guardians) of water, they opposed the use of chlorine (New Zealand Herald, 2018 a). This incident demonstrates the extent to which some Indigenous groups regard water treatment strategies as detrimental to their value systems. Also in Hawke's Bay, a group referring to itself as Guardians of the Aquifer organised a petition calling for a

referendum on the implementation of chlorine in the city of Napier, arguing that chlorine posed undisclosed health risks (New Zealand Herald, 2018 b). In addition to these examples, there is evidence suggesting that universal water treatment has had unforeseen negative effects on some industries, increasing the costs of production for enterprises such as breweries and wineries, whose processes are adversely affected by the presence of substances such as chlorine in the water (New Zealand Herald 2016 b).

The findings documented in this study, and the examples above, demonstrate one crucial truth: hydropolitical conflicts in New Zealand are an issue of both the present and the future, and the country's traditionally-abundant freshwater stock should no longer be seen as a guarantee that water relations will remain peaceful.

Beyond the dynamics examined above, this study also uncovered a small segment of participants who did not engage in any type of conflict action within the CCI Scale. Instead, these respondents chose to start enterprises more closely related to community-level cooperation over water. Other respondents also reported identifying the need to create spaces for dialogue over water, in order to influence the betterment of water-based outcomes in their districts. While these participants constitute a small minority of accounts, these stories provide an important contrast to those documented in the previous chapters, and merit space within this study. The next chapter will relate these stories, and will showcase the opportunities identified by some communities in New Zealand in the face of water-related adversity.

## **Chapter 8 - Conflict Intentionality Classification**

As a result of the emergence, containment and intensification processes described in the previous chapter, this study identified four types of parties, which will be explored in this chapter: Revisionist, Status Quo, Reclusive and Collaborative. These individuals espoused discernable differences in the type of political action in which they would potentially be willing to engage. This chapter will build on the examination above, and will provide a taxonomy of the conflict intentionalities motivated by water bottling and water chlorination in Ashburton and Glenorchy. To do so, this section will provide a categorisation of parties based on their conflict intentionality, and the intensity of their preferred political action. Additionally, this chapter will provide an analysis of individuals who reported no conflict intentionality of any type and intensity, but who nevertheless expressed a willingness to establish cooperative initiatives to help improve a visibly-adverse situation. As was expressed at the beginning of Chapter 7, one must take note that the analysis in this chapter is based on the respondents' views over their own potential conflict engagement. Unless it is explicitly stated, this analysis does not account for actualised conflict engagement by the respondents.

### **Revisionist**



Firstly, one can highlight a respondent cohort that was likely to engage in intense hydropolitical conflict events, an intent that stems from a profound lack of trust in the water authority regime. The intentionalities expressed at this level reflected a significant skepticism toward the established political paradigms, and did not seem likely to lead to any type of engagement or ‘reaching out’ to elected officials, civil service, or decision-making institutions in general. These respondents seemed the most likely to regard their water authorities as inefficient, unreflective of their needs, and as overly-sympathetic to commercial interests, a point that was most salient in Ashburton, but that was not entirely absent in Glenorchy. Additionally, these participants were the most likely to quote Indigenous knowledge and wisdom when framing their perceptions of Nature, and humans’ interactions with elements in the environment. Due to a profound skepticism towards how water is treated and governed, these respondents were the most disposed to disengage from mainstream political fora, and the most likely to report being willing to follow disruptive routes to achieve the change they believed they deserved. This type of respondent will be regarded henceforth as Revisionist. Within the context of this study, revisionism relates to actors justifying radical reconfigurations in decision-making and institution-building through political actions conceived to disrupt the existing political status quo.

The revisionism described above was evident in the account reported by one of the main leadership figures of the Bung the Bore movement, responsible for the 2016 protests in Ashburton over water bottling. When asked about her long-term objectives regarding how water is managed and governed in her district, she argued that she wanted to advocate in favour of the creation of a New Zealand-wide fund that would accrue revenue nationally, but that would be

available for the use of small local councils. This fund, she argued, would allow local councils to invest in better water management infrastructure, regardless of the point of origin of said funding. This proposed structure, which stresses the need for a nation-wide sense of solidarity concerning water (and environmental) issues, demonstrates the type of actions for which a Revisionist party is willing to advocate. Their views of change are contingent upon significant recalibrations of the existing political order and, in some instances, on the redrafting of jurisdictional authority over water management, governance and financing.

The *modus operandi* chosen by Revisionist actors reflects the notion that their profound views of radical structural change are unlikely to be met by their authorities, which in turn renders them more likely to support alternative, extra-institutional channels to express their discontent. These types of actors, however, are not widely seen as positive bearers of change by other members of the community, and in several cases Revisionist parties were subject to significant contempt. In Glenorchy for example, one respondent referred to the difficulties experienced by another community member, who is well-known for her vocal environmental activism. In his account, he argued that the person in question has had to live with the negative impacts of her political activities, the most significant being her inability to secure stable employment in Glenorchy. Another participant, also from Glenorchy, described a local sustainability-based organisation as a 'ginger group', due to its activism to improve environmental standards in Glenorchy, and their recent actions against water chlorination. Similar views were documented in Ashburton regarding the reputational standing of some locals, whom several respondents considered as extremists, and as dismissive of facts. Some of these views were so negative that, in some cases,

participants who would be considered Revisionist reported having received death threats by members of the community who disliked or disagreed with their activities. In most cases, Revisionist actors seemed cognisant of these consequences, and were willing to take responsibility for them. In Ashburton, one respondent who reported being heavily involved in protesting in the district argued that environmental issues are so important that they are “worth dying for,” whilst a second respondent, also from Ashburton, acknowledged that her political activism was directly responsible for a decline of her health.

### **Status Quo**

In contrast, although the number of respondents willing to engage in low-intensity hydropolitical action espoused similar views, concerns and objectives as their Revisionist counterparts; they expressed a pursuit for positive change by accessing the RMA-dictated institutions and processes, and by being willing to engage intra-institutionally with these entities to resolve any given issue. In this regard, the transformative character of their intentionality reflected some type of trust in the system, something that was not as readily manifested within the Revisionist cohort. Furthermore, the positive resolution of disputes in this group remains within the confines of the prescribed political order and its processes, and in no way seeks to reconceptualise, reconstitute or defy the inner mechanics and outputs of decision-making. This cohort also seems unlikely to intensify their hydropolitical conflict action in the face of an unsatisfactory decision by policy-makers. These actors will be referred henceforth as Status

Quo, and will be defined as a party that, notwithstanding its concerns over any one water-related decision, seeks access and interactions with its water authorities to influence corrective measures.

One good example of a Status Quo account was documented in Glenorchy, where a respondent expressed significant concerns over receiving an order by the Otago Regional Council to install a water metering device in his property. During his interview, the participant shared copies of letters he wrote to the authorities in question, requesting that the order be reversed. Several months after the data collection was completed, the same participant shared additional follow-up letters, where he continued to make the case against water metering, despite his requests being consistently met with unsatisfactory results. This respondent also reported being willing to start similar actions with regards to both water bottling and water chlorination.

Along similar lines, a respondent from Ashburton argued that several residents in his district chose to voice their disapproval of any given water-related issue by removing their support for incumbents during electoral contests, which, in his view, happens often. In this instance, such a removal of support does not question the integrity of the political or electoral systems, and the action focuses solely on the holders of public office. Under no circumstance are these intentionalities envisaged to disrupt the institutional status quo, unlike the Revisionist parties described above, whose actions are meant to fall outside of the prescribed political order.

These accounts reflect consistent dissatisfaction with water-related decision-making. They also highlight a preferred *modus operandi*, manifested in the respondents' continued willingness to engage with their decision-making institutions, despite some dissatisfaction. In this regard, Status Quo actors may still espouse profound doubts over the individuals who hold elected office, but these doubts do not translate into institutional and procedural trust being breached. This in turn makes them unlikely to intensify their conflict intentionality, or their potential engagement in intense conflict.

## **Reclusive**

This study also identified a significant number of respondents who reported unwillingness to take political action against water bottling or water chlorination, irrespective of their disagreement with any given water-related issue. Some respondents, for instance, expressed a disinclination to engage in any type of political action, either through their elected officials, or by participating in intense political action. These respondents seemed the most likely to resign themselves in the face of systematic injustice, and to seek no action to address the source of said injustice. From this point on, this cohort will be referred to as Reclusive, in acknowledgement of its proclivity to remove itself from any one contested affair.

Reclusive respondents in both Ashburton and Glenorchy seemed to base their reported lack of political responsiveness on the unlikelihood that their potential action could improve an adverse

circumstance; the ostensible unattainability of positive outcomes was the main driver of inaction for this cohort. One respondent from Ashburton, for example, argued that he anchored his lack of engagement on the fact that, in his view, his district's water authorities were too friendly with strong actors in his community. Any action to try to reverse policies that favour said actors, he continued, would prove fruitless, as wealth generation in his district is overly-dependant on those actors. This type of account was also echoed by a participant in Glenorchy, who expressed that activism was not compatible with his personality, and even if it were, it would not succeed in reversing what he perceived as preferitism toward commercial interests. This participant was referring to the significantly lower water rates in areas such as Queenstown, one of the main hubs of the tourism industry in New Zealand's South Island. He expressed discontent over this asymmetrical policy because, in his view, the sources of Queenstown's freshwater emanate from Glenorchy, and therefore the locals in his town should benefit from comparatively better water rates.

When asked about their views on water bottling and water chlorination, Reclusive actors often related a significant amount of knowledge with regards to each practice. They also espoused an understanding of the regional, national and, in some cases, international dimensions behind each enterprise, which seems to have facilitated a perception that the introduction of these practices in their own towns was inevitable. For example, some respondents from Glenorchy referred to the strifes over water bottling in the Canterbury region to illustrate the inevitable introduction of water bottling in their district. In those accounts, respondents made references to international demands for bottled water, and to water scarcities abroad, and argued that sooner or

later those demands would translate into water bottling becoming a reality in their town, given its significant surplus of high quality water. Similarly, respondents from Ashburton seemed quick to note that industry-driven water degradation in their district, and elsewhere in New Zealand, was such that policies like water chlorination could not be rolled back, and political action to eliminate those policies would prove useless. The perceived inability to influence an inevitable outcome seemed to inform Reclusive actors' decision to remove themselves from engaging in any type of hydropolitical conflict action.

### **Cooperation in the Face of Water Based Incompatibilities**

Chapter 7 explained the conditions likely to influence the emergence, containment and intensification of hydropolitical conflicts in Ashburton and Glenorchy. Building on these findings, the present chapter then provided a detailed description of the types of conflict intentionalities identified in both locations. These findings highlight the challenges faced by communities in New Zealand as they cope with the introduction of commercial water practices they regard as deleterious, and as they seek alternative means to address these issues. The following section, however, departs from the question of hydropolitical conflicts, and endeavours to analyse parties that were unlikely to engage in such episodes.

Throughout the data collection, cases and stories related by locals in both Ashburton and Glenorchy suggested that some community members took it upon themselves to take unilateral

action to help improve an adverse water-related situation. In these accounts, locals related a willingness to disengage from institutions, processes and debates in their communities that they argued as inherently divisive, and instead, decided to establish local networks of collaborative action. Even though the number of such accounts constitutes a small minority of cases, they provide a beacon of hope, for they are manifestations of what can be accomplished when community members engage with one another in response to the potential for water based conflicts.

This brief section includes these stories separately, because they provide a stark contrast to the accounts described previously. Parts of this analysis relate directly to the introduction of water bottling and water chlorination in Ashburton and Glenorchy, but it also includes collaborative episodes motivated by other factors.

## **Collaboration**

The previous chapter provided a detailed overview of the conditions in which water bottling and chlorination conflicts could emerge and intensify in Ashburton and Glenorchy, and demonstrated that hydropolitical conflict intentionalities were likely to escalate when local communities espoused a lack of trust in the approval and appeals processes for any given water activity. In contrast, enterprises established under a trustworthy approval and appeals regime seemed to inspire local communities to ventilate any given discontent or disapproval through the



channels prescribed by the RMA, thus containing hydropolitical conflict dynamics to the lowest levels of the CCI Scale.

Thus far, the focus of this study has been inherently conflict-centric. The data, however, indicates that a small number of respondents were likely to forego conflict engagement at any level, and seemed to prefer proactive, peace-based channels for the betterment of any given situation instead.

In the previous chapters, these voices were coded within the No Comment or No Action level of the CCI Scale because indeed, these actors' intentionality did not correspond to the types of actions within the conflict side of the CCI Scale. However, as the data collection process continued, these same respondents elaborated their views on political action, thus uncovering some insights that relate more to local community-level organisation, than to intra or extra-institutional conflict. These actors also seemed to recognise that water-related adversities could be reversed through such collaborations. This group of participants will be regarded henceforth as Collaborative.

Unlike the Revisionist parties described in the earlier stages of this chapter, Collaborative parties did not seem likely to challenge the integrity of any political institution or process, but recognised the system's inability (or unwillingness) to ameliorate an adverse situation. In some cases, Collaborative actors reported having generated institutions and processes that mimicked those already in place in their district, reconceptualised in such a way that enhanced local actors'

ability to influence how water was accessed, treated and used within this proto-institutional framework.

Chapter 6 for example related the experience of respondents in the small town of Mayfield, near the town of Ashburton, who found a channel for achieving positive change in proactiveness and local agency, while circumventing the political jurisdiction of their water authority (the ADC). In this example, locals accrued sufficient revenue to create their own community water well, on a portion of land that was donated by one of the community members. This collaboration, which occurred outside of the margins of the existing decision-making institutions and processes, was a response to repeated episodes of water inadequacies in Mayfield, which some respondents argued originated from dairy farming and irrigation activities in the vicinity. This example highlights two important dimensions of Collaborative parties: on the one hand it stresses these actors' unwillingness to resign themselves in the face of an adverse water-related condition; on the other, it showcases their political agency, and their ability to reconceptualise institutions and processes as they 'should have been' had they been administered by their water authorities.

A similar account of a Collaborative actor was given by a respondent in Glenorchy, who explained the measures that some of her neighbours undertook during the aftermath of water chlorination. The respondent shared the experience of a resident in the small encampment of Kinloch, whose freshwater derived directly from a clean source in the mountains, and who did not have access to the QLDC-administered water system. In view of the chlorination of water in

Glenorchy, the individual made an open call on social media to offer free water from his/her source to anyone in the community who considered themselves to be affected by the policy. As with the community members in Mayfield, some respondents in Glenorchy circumvented the jurisdictional system of their water authorities to create solutions to problems that, in their view, could not have been addressed through interactions with the mainstream political regime.

The examples above demonstrate the willingness of some community members to establish local networks of support and how, in some cases, these endeavours mirror already-existing institutions and processes within the water authority system. The community-conceived collaborations differ, however, from the mainstream ones, in that the former establish institutions and processes that concentrate greater decision-making power in the hands of the stakeholders involved in these collaborations. In this regard, one can argue that Collaborative parties erect parallel proto-institutions and processes in an attempt to achieve, through their own means, the change they regard as unattainable through the existing authorities.

In addition to the above examples, this study identified other Collaborative parties that sought to create spaces for debate and conversation of heavily polarising issues, including water. To some extent, the will to create these spaces speaks to a wider reality, perhaps most applicable in Ashburton and its surroundings, where respondents seemed very uneasy about discussing water-related issues, and where several respondents argued not feeling safe enough to discuss these subjects in public. In an attempt to bridge these conversational and discursive divides, an artist living in the Ashburton district reported that her art gallery had become the de facto place

for locals to engage in divisive debates. She argued this was the case due to the gallery being a space where different interpretative approaches were not only welcomed, but encouraged. This same individual facilitated the participation of the only representative of the irrigation industry that was willing to share his views on water. The delivery of his account, however, was contingent upon it taking place in the gallery itself, which demonstrates the extent to which its very existence has provided a venue for the proper ventilation of views and perspectives over issues such as water management and commercialisation. It also proves the will of Collaborative actors to seek solutions to perceived problems, all at arms length from their local authorities.

Similar to the account documented in Methven, there were other Collaborative actors who argued that the use of art had proven beneficial in bringing what one can regard as parties-at-conflict to converse and exchange views. During the data collection, the Ashburton Art Gallery was hosting a temporary exhibit entitled ‘The Water Project’, a collaborative project established by 13 New Zealand artists that “engages with the complex realities of water in the 21st century—as bringer of life and ancestral voice, but also as a contested commodity and saleable resource” (The Water Project, 2018). The curator involved in making the exhibit possible in the Ashburton Art Gallery related the difficulties she faced when seeking approval for the exhibit by members of the ADC, the entity that administers the Gallery. In her account, she stressed the notion that the availability of venues such as ‘The Water Project’ were crucial for bringing together parties with conflicting interests, who could then take the opportunity to speak with one another, and perhaps gain greater understanding of each other’s viewpoints. On this note, she argued:

*The gallery needs to operate in a neutral fashion. There are commentaries in that exhibition that are very critical, but everyone can come here and feel that their voice and opinions matter. (Respondent 3)*

In addition to the exhibit, the Gallery established an education programme where children could learn about water-related processes such as aquifers replenishment, leaching, and filtration.

While succeeding in creating a safe conversational space that was previously absent, the example of the Ashburton Art Gallery differed from the previous Collaborative accounts, in that the action took place within the existing institutional purview of the ADC. In this regard, the collaborative space created by the Gallery was not fully detached from the ADC infrastructure and, to some extent, one can argue that by providing the necessary funding for the exhibit, the ADC was party to the collaboration in question. The installation of the exhibit, however, was conceived by the Gallery's curator in response to a space she argued did not exist within the ADC framework, and that was desperately needed in the community.

## **Conclusions**

This chapter presented an analysis of the conflict intentionalities identified in Ashburton and Glenorchy as a result of the introduction of water bottling and water chlorination. It found that

intense hydropolitical conflict intentionality was likely to be expressed by actors espousing revisionist attitudes toward their water authorities, while respondents who reported not being willing to alter the current institutional status quo seemed more likely to express an inclination toward low-intensity, intra-institutional conflicts. Lastly, an array of respondents reported no desire to engage in any type of political action against either one of the practices examined in this study.

Additionally, this chapter analysed accounts where locals reported not being willing to engage in any type of conflict, and chose instead to become involved in local cooperative initiatives to help improve a visibly-adverse, water-related circumstance. These actors recognised the shortcomings of the existing institutions and processes but, unlike the Revisionist actors examined during the earlier stages of Chapter 8, Collaborative parties chose not to defy the institutional composition of these entities. Instead, they proactively created their own, and in so doing, provided greater decision-making power to their communities. In addition to creating these proto-institutions and processes, Collaborative actors were cognisant that discursive vacuums existed in their communities, and were willing to create safe spaces where these vacuums could be effectively undone. Above all, the existence of these actors reflects the opportunities that could exist in the face of adverse water-related decision-making, and the value these actors and communities bring to the attainability of peaceful coexistence over water.

## **Chapter 9 - Research Intersections and Limitations**

### **Theoretical and Empirical Intersections**

This study presents evidence that contributes to the ongoing development of Abundance Theory. It does it first, by generating an understanding of how water-based conflict intentionality can emerge and intensify in a water-rich country like New Zealand. As with most other abundant non-renewable resources, conflicts motivated by the commercialisation of freshwater can become a reality when individuals and groups in countries such as New Zealand espouse doubts over the approval and appeals processes behind any given operation seeking to access and use freshwater. This demonstrates that even in a situation of surplus, several economic, environmental, political and social variables can interact to influence individuals' hydropolitical conflict intentionality, and potentially, their conflict engagement.

And second, this study provides a unique insight into the steps immediately preceding the materialisation of hydropolitical conflict in a water abundant setting. By focusing on respondents' conflict intentionality, this study provides an important perspective with regards to how and why individuals shape their initial views and predispositions toward any given water-related enterprise, and how those views in turn can translate into individuals becoming increasingly-inclined toward conflict engagement. This observation however comes with a crucial limitation: an individual expressing a strong will to engage in hydropolitical conflict may not necessarily translate that intentionality into action. While the data collected through

interviews provides a strong indication of the respondents' conflict intentionality, the documentary sources provide but a small suggestion of their actual conflict engagement. This limitation however opens novel opportunities for research that examines the progression from hydropolitical conflict intentionality to active hydropolitical conflict engagement within water-rich environments. By establishing, to name one example, a long-term ethnographic investigation of an individual's progression from a reported conflict intentionality into a manifested conflict engagement, research can help uncover the causal mechanisms that influence his/her decision-making process, which can then be mobilised and compared across numerous other units.

From a theoretical standpoint, and considering the overall field of environmental security, this study aligns with the Liberal Institutionalism assertion that conflicts over water can be managed through the creation and proper administration of water management institutions and processes. The proposition is supported by those respondents who expressed an inclination toward low intensity, intra-institutional conflict around water disputes. Under no condition does the Liberal Institutionalism argument negate the existence of conflict; it argues that its escalation can be prevented through institutional development and trust-building. Water bottling and water chlorination motivated a fair number of respondents to become inclined toward conflict, but several of these intentionalities remained within a low-intensity bracket, and within the administrative and political purview of the water authority regime. In these cases, respondents who did not express doubts over the approval and appeals process for water bottling and water



chlorination were less likely to intensify their conflict intentionality beyond these arrangements, thus contributing to the containment of hydropolitical conflicts.

This is not to say that interactions within the water authority system yielded results that respondents deemed as widely appropriate, or remedial. There were indeed accounts of respondents who reported consistent dissatisfaction with their local water authorities, but these events did not seem to disrupt the trust they invested in their water authority infrastructure in any way. Those who reported a will to remove their support by voting against their incumbent officials, for example, demonstrates an implicit trust in the system that is unlikely to translate into institutional challenges, or into hydropolitical conflict intensification.

Low-intensity conflict intentionality in Ashburton and Glenorchy demonstrates the conflict-assuaging potential of liberal institutions such as city/district and regional-level councils in New Zealand, and how local communities are drawn to engage with them in the face of a water-related incompatibility. This study, however, cautions the research community from surmising that liberal institutions will effectively contain all conflicts over water. The trust mechanism to which Dinar alludes (2002), and that Oye argues is achieved through the creation and solidification of conventions (1986), should not be synonymous with the existence of liberal institutions and processes. The Liberal Institutional argument applies insofar as the authorities that make decisions over water gain and sustain the trust of the communities affected by their decisions. If trust in these institutions and processes erodes, there is a legitimate likelihood that communities will espouse an inclination toward intense conflict engagement, to influence an

improvement to a visibly-adverse condition. Beyond the respondents' accounts in Ashburton and Glenorchy, high conflict intentionality elsewhere has materialised into protests, although no record suggests that overt violence has emanated as a result of the above conflict escalation. However, this does not mean that violence over water will continue to remain absent in New Zealand. Caution and foresight must therefore dictate the research and policy communities' future work, with a keen focus on reconstituting, reinforcing and maintaining communities' trust in the State's water authority infrastructure.

While it suggests overall support for the Liberal Institutional argument, the evidence collected in this study also recommends revisiting some aspects of it. One such dimension relates to circumstances where the water authority regime itself is a party to hydropolitical conflict. As follows from the documentary analysis, the ADC, ECan, QLDC and the ORC, at different stages, were all parties to conflicts triggered by water bottling and water chlorination, which seems to have created a vacuum in each district's conflict resolution capabilities. In this regard, the data suggests that the State's expected role as a facilitator and administrator of peace can become that of a potential exacerbator of, or party to, hydropolitical conflict. For some respondents, potential conflict intensification seemed to be the only possible route to improve a perceived condition of injustice or inadequacy. For other participants, establishing collaborative networks within their own communities became the best option to resolve any given water-related issue. In either case, the State did not seem to be a proactive actor in the positive resolution of disputes.

The above observation is part of a lacuna previously identified by Finger in his critique of the literature's failure to problematise 'the institution' within the purview of environmental politics.

In this regard, he observes the following:

Institutions are simply seen as being neutral instruments in the hands of policies, politicians, ideologies, people, organizations, or even technologies. Rarely are institutions considered to be a problem, let alone the problem when it comes to diagnosing or addressing the global environmental crisis (Finger in Park et al., 2008, p. 34)

If indeed the State is expected to manage conflicts over water when they arise, who is then mandated with the task of diffusing conflict when the State is a party to it? Should peacebuilding capabilities be concentrated at the community level, or at the water authority level? What form should these capabilities take when hydropolitical conflicts intensify? And finally: Should peacebuilding capabilities be administered from without the conflict locality altogether? This last question echoes concerns by Gillet et al. in their analysis of local water conflicts in South Australia, where they recommend that conflict resolution capabilities be relocated from the immediate setting of the conflict (local/regional) to a State level (Gillet et al., 2014).

In addition to the question of institutional trust, this study cannot neglect pointing out the role of unusual weather patterns in influencing some of the respondents' concerns over freshwater quality, quantity, and the allocation policies designed by their water authorities. During the data

collection in Glenorchy, it was common to find signs around the town suggesting the high risk of forest fires in the area. Further discussions with the respondents uncovered worries over the unusually dry summer of 2018, where locals took notice of the low levels of seasonal precipitation, and how that had impacted the reservoir levels in their town. respondents also reported having been served with water restriction notices during this period, something that seemed highly unusual for them. Similar accounts were provided by locals in Ashburton, where respondents expressed significant discontent over preferential water allocation in their district during times of drought.

Even though this study's research objectives were not concerned directly with the impacts of climatic change on the likelihood of water-based conflicts in New Zealand, climate-driven uncertainty cannot be denied as a factor that altered, to some degree, the respondents' traditional perceptions over water availability and quality in their towns. In this regard, this study finds support for what several analysts call the 'threat-multiplier' argument (Vivekananda, Schilling & Smith, 2014), which suggests that climate change is likely to exacerbate the negative effects of extant state fragilities, bolstering the likelihood of conflict. Even though the argument is normally applied in weak socio-economic settings, there are some applications of it in Ashburton and Glenorchy, where climate change seemed to have had an effect on the water access and use capabilities of some of the respondents, leading to pressures of different type and scale.

Concerns over the impact of climate change on intra-state water conflicts have already been envisaged by policy-makers. For example, former British Secretary of State for Energy and Climate Change Edward Davey argued that changes in rainfall could impact the robustness of

existing water sharing treaties and agreements, increasing pressures between and within states (Government of the UK, 2012). If indeed the erosion of trust in New Zealand's water authority system is partly influenced by changing climatic conditions, then one can conclude that such fluctuations are likely to continue influencing how and why individuals and groups in New Zealand could espouse an intent to engage in hydropolitical conflicts.

The above elaboration highlights important issues related to liberal water authorities' ability to conceive of access, allocation and use policies and processes that account for their conflict-inducing potential. This study uncovered evidence suggesting that water-related institutions and processes in New Zealand, while promoting sound environmental well-being and protection mechanisms, seemed ill-equipped to manage conflict escalation. This finding was perhaps most palpable in Glenorchy, where the otherwise benign decision to securitise the town's freshwater supplies through chlorination induced a relatively unexpected backlash within the respondent cohort, which motivated some participants to report high conflict intentionality, and in some cases, active conflict engagement. In this regard, attention must be provided to develop and bolster conflict resolution capabilities at the district and regional levels, as they are the governance structures mandated with implementing socially, economically, and environmental-sensitive water management strategies.

Beyond the theoretical application of the Liberal Institutional framework, this study documented cases where water-driven conflict intentionality (and some manifested conflict cases) in Ashburton and Glenorchy intensified when commercial operations were approved

under dubious and untrustworthy decision-making processes. In this regard, the causal mechanism applied by Neomalthusian theorists - competition - seems to find some application in the case studies examined in this study. This application is worth noting because the competition mechanism that Neomalthusians argue emerges from natural resource scarcity (Homer-Dixon, 1999), also seems to manifest in resource-rich environments like New Zealand's. In this regard, Abundance Theory seems to share some causal patterns with the Neomalthusian framework.

The competition dimension was most evident in the town of Ashburton. For example, there is evidence suggesting that the introduction of water bottling in Ashburton would have increased the number of actors competing for water access and use, with a significant number of respondents perceiving themselves as placed in a comparatively disadvantageous position by a flawed decision-making process. The reported participation of members of the irrigation and farming communities in the 2016 protests further suggests that industry-level competition was also palpable in Ashburton, and that several economic actors saw the introduction of a water bottling operation as an activity likely to increase water claims in the district. This study suggests that the competition mechanism presented by Neomalthusian theorists is not the exclusive manifestation of a resource scarce environment: competitive behaviours in a water-abundant setting can still be triggered when local communities and interest groups regard a water commercialisation practice as a source of problems. The Neomalthusian framework, however, does not apply any further beyond the above manifestations of competitions.

From an empirical standpoint, this study complements a series of different research findings in the environmental security literature. Perhaps the most striking empirical alignment occurs

with Doppelhoffer et al. and their examination of mineral resource abundance and conflict. As per Chapter 2, Doppelhoffer et al. argue that the abundance of minerals is correlated with political instability, and with what they term rent-seeking behaviour (2002). Reports of district-level disruptions motivated by the introduction of water bottling and water chlorination evoke some of the concerns raised by Doppelhoffer et al., although the instability to which they allude manifested differently in Ashburton and Glenorchy, where it remained confined to non-violent forms and expressions of hydropolitical conflict. In addition to this, and beyond the data collected for this study, water abundance seemed to motivate a steadfast growth in the number of actors seeking to draw an economic benefit from their access to and use of freshwater, evident in the growth of industries such as dairy farming, irrigation, tourism and water bottling in Ashburton, Glenorchy, and arguably in the rest of the country. Therefore, the political instability and rent-seeking behaviours that Doppelhoffer et al. argue emerge from the abundance of minerals also apply as manifestations of freshwater abundance.

This study moreover contributes to work that examines the causal relationship between natural resource abundance and democratic performance. For example, Jensen and Wantchekon argue that natural resource abundance contributes to weaker democratic performance, which can then translate into the emergence of conflict (Jensen & Wantchekon, 2004). They argue this effect is caused by the rise of vertical decision-making institutions seizing too much discretionary power over abundant natural resources (2004). Indeed, this study identified a Revisionist respondent cohort whose distrust toward water authorities motivated its inclination toward high-intensity, extra-institutional conflict intentionality. These findings, and evidence

identified elsewhere in New Zealand (as explored above), suggest that local communities are becoming reluctant to seek access to their liberal institutions, and to some degree, are becoming unwilling to interact with, or contribute to, the democratic life in their districts and regions. Poor citizen participation and input, one can argue, only contributes to the further deterioration of the elected water authority system in New Zealand; this aligns with the theoretical proposition presented by Jensen and Wantchekon that natural resource surplus leads to negative outcomes, in this case, manifested in poor democratic performance.

This study also documented, albeit from the periphery, a small number of cases where respondents created parallel, institutional frameworks to create unilateral solutions to water-related problems. To some extent, these institutions and processes constitute a reimagined version of their water authority regime, at least in part, where decision-making power and stakeholderhood are devolved to the water users themselves, and where safe havens for conversations over water are created outside of the water authority's purview. The installation of art galleries, community water sharing, and collaborative water infrastructure investments are clear examples of the type of cooperative frameworks that some respondents argued were best positioned to improve an adverse water-related condition triggered by the introduction of water bottling, water chlorination, or the continued development of industries such as dairy farming and irrigation. However, these findings constitute peripheral observations, which require deeper examination in order to accurately assess the mechanisms and processes that allow for such cooperative behaviours to materialise.



To garner a better understanding of how cooperation can be fostered, peace, and not conflict, should be the guiding principle driving future research questions. This is a concern previously raised by Shrivastava and Suazo in their exploration of what they call 'Peaceful Sustainability'. In their examination, they say the following:

Peace-centered sustainability endeavours require reformulating research questions into enquiries, which are inherently peace-focused: How does environmental degradation affect peace and sustainable development? How does environmental health affect positive peace infrastructures? Answering such questions will inevitably lead our scientific community to identify stakeholders for peace in both sustainable development and human security circles, and thus arrive at dynamic solutions that effectively incorporate human and environmental dimensions. (2017, p. 31)

Examining such questions would inevitably lead to the study of what Amster calls 'Peace Ecology', which he defines as:

[An environment] in which people possess tools for resolving conflicts and restoring relationships, distributing resources and opportunities in just ways, and promoting the health and wellbeing of all constituents. It is also a society that relates to the balance of the biosphere in positive and healthy ways, that limits its ecological footprint and sees itself as part of nature rather than its superior. (2015, p. 20)

## **Research Limitations and Recommendations**

The above theoretical and empirical exposition demonstrates the complexity inherent in the management of abundant freshwater resources in New Zealand, and the extent to which different types of commercial operations are likely to inspire communities to become inclined to start and intensify conflicts. It also proves the challenges the research and policy communities face in properly assessing predictable patterns of behaviour over water access and use in New Zealand. Environmental, economic, social and political heterogeneity seem to influence the types of allowances (or lack thereof) that New Zealand communities are likely to provide in relation to water based conflicts caused by a commercial water practice.

In this regard, this study devoted its resources to the analysis of two rural environments in New Zealand which, to some extent, highlights the challenges inherent in the introduction of water bottling and water chlorination in areas with similar conditions to those found in Ashburton and Glenorchy. There are, however, indications that water conflicts continue to emerge and intensify in urban areas such as Christchurch; this suggests that the water incompatibility and institutional trust mechanisms may also be applicable in those environments. To accept this assertion as a given, however, would be premature, as rural and urban centres diverge significantly with regards to their water access and use criteria. Therefore, future research needs to dedicate adequate time and effort to examining the commercialisation-conflict dyad as it applies in urban centres.

In addition to expanding this study's framework beyond its rural context, further research needs to assess how the commercialisation of freshwater may influence the emergence and intensification of hydropolitical conflict in Māori communities. Ashburton and Glenorchy do not have significant Māori populations, which renders the results of this study difficult to replicate in more densely-populated Indigenous areas. Additionally, this study did not capture a sufficiently-representative sample of Māori respondents to adequately reflect Indigenous views and interests over freshwater and hydropolitical conflict. With this in mind, and considering the special status of Māori in New Zealand, this study urges the research community to devote special attention to how the commercialisation of freshwater may create conflicts akin to those found in Ashburton and Glenorchy in communities with greater concentrations of Māori residents. Such efforts will inevitably require special respondent identification strategies to adequately target Māori participants in the location of interest. They will also need to develop strong networking capabilities through known Indigenous leaders (including academics), groups, organisations and policy-makers to maximise their ability to secure adequate Māori participation.

While examining the causal effects of water bottling and water chlorination proved beneficial from a theoretical and empirical standpoint, this study does not directly allude to the specific impacts of the dairy industry, a significant source of water-related incompatibilities in New Zealand. Indeed, some accounts presented in this study suggest that the intensification of the dairy industry has influenced certain communities to remove their trust in their water authority regimes, which, by application of the arguments presented in previous chapters, would suggest

that these communities are likely to engage in intense hydropolitical conflicts over dairy farming. Cases of protests, such as the one presented at the beginning of Chapter 1 over dairy intensification in the Mackenzie River, prove the wider application of this study's arguments beyond the initiation of water bottling and water chlorination projects. This does not, however, delve deep enough into the specifics of the dairy industry, the conflict parties involved, and the incentive structures that have allowed for the industry's rapid growth. Therefore, this research recommends a proper examination to determine whether the arguments that apply to water bottling and water chlorination are indeed translatable to the dairy industry.

Lastly, and bearing in mind the conflict-inducing potential of water chlorination, this study recommends that further research be done on the connections between water securitisation strategies and the emergence of hydropolitical conflict. This recommendation emanates from the findings in the town of Glenorchy, where water chlorination motivated some of its residents to develop inclinations toward hydropolitical conflicts of different intensities. This study raised doubts over New Zealand's country-wide embrace of water securitisation strategies and treatment, and presented evidence suggesting that not all communities in the country fully accept the merits of solutions such as chlorination, nor accept the decision-making process behind them. As was the case in Glenorchy, chlorination was regarded as a policy that respondents perceived as unnecessary in light of the town's traditionally-pristine freshwater supplies. By reducing the locals' ability to influence or challenge the chlorination decision prior to its implementation, the QLDC inadvertently motivated some respondents to intensify their conflict intentionality beyond engagements with the submissions regime, prompting some to organise collectively to challenge

the decision in the courts, and to potentially organise other episodes of higher intensity, including marches and protests. Whether conflict intensification was something the QLDC anticipated remains open for scrutiny. Nevertheless, one issue remains clear: some communities are likely to regard the implementation of water treatment strategies as sources of incompatibilities. As these strategies are increasingly regarded as urgent, and as pressures to implement them rapidly drive water authorities to forego adequate community consultations, the water incompatibilities outlined above will be seen as a continuous imposition from above, thus motivating respondents to prolong their resistance.

## Chapter 10 - Conclusions

This study examined the linkage between the commercialisation of freshwater and the emergence of hydropolitical conflict. It did so to contribute to the ongoing debate started by environmental security theorists in general, and abundance scholars in particular: the connection between natural resource wealth and conflict. In its earliest stages, this study argued that abundance theorists' implicit focus lies in the way in which individuals and groups with competing interests commercialise abundant natural resources, and how this commercialisation may affect the onset of conflict in turn.

To examine the water commercialisation-conflict nexus, this study posed the following question: How and why does the commercialisation of freshwater affect the emergence of hydropolitical conflicts? Two central arguments were proposed to answer this question: the first, that the introduction of water commercialisation practices influences the emergence of hydropolitical conflicts if they cause economic, environmental and social incompatibilities for local communities. The second argument asserted that commercial enterprises established through untrustworthy approval and appeals processes were likely to motivate local communities to circumvent the water authority regime, and to engage in intense hydropolitical conflicts.

To test the proposed arguments, this study examined the introduction of water bottling and water chlorination in the towns of Ashburton and Glenorchy, New Zealand. The data collected

in both locations provides support for the proposed arguments: conflict intentionality did indeed emerge when respondents perceived that a commercial operation was incompatible with their interests. The data also demonstrated that the containment and intensification of hydropolitical conflicts depended on the extent to which the respondents trusted the approval and appeals processes behind water bottling and water chlorination. When these practices were approved through transparent and trustworthy processes, they were likely to motivate participants to engage in intra-institutional, low-intensity conflict, thus allowing water authorities to contain conflict at the lowest possible levels. In contrast, when these practices were approved under conditions that respondents did not regard as legitimate, and when their appeals processes did not allow for the adequate ventilation of concerns, some members of the above communities were inclined to circumvent the dispute resolution mechanisms available through their water authority system, and likely to espouse extra-institutional, high-intensity conflict intentionality.

This study also offered four different reflections of its limitations. First, it emphasized the explicit focus on rural communities, and argued that in order to attain a clearer, country-wide perspective over the water commercialisation-conflict nexus, research needs to adequately examine how these dynamics unfold in urban environments, where conflicts over different water practices continue to emerge and intensify. Second, it recommended a special focus on the study of hydropolitical conflicts as they apply in Māori communities, as the generation of water incompatibilities, and Indigenous communities' distinct views on water governance, may lead to different outcomes in these contexts. Third, in stressing the empirical benefits of examining water bottling and water chlorination, this study also recommended that attention needs to be

devoted to the interlink between dairy farming and the emergence and intensification of conflict, given the dairy industry's reported role as a source of frictions within and without communities in New Zealand. Lastly, and akin to the previous recommendation, this study presented a brief case for the future study of water securitisation strategies as causal determinants of hydropolitical conflicts in New Zealand, attempting to examine how and why water based conflicts could emerge in view of continued pressures to securitise the country's freshwater via treatment.

In closing, this study offered a modest picture of the current state of affairs that governs water issues in New Zealand. Whereas several dynamics point to the deterioration of trust in state-mandated water authorities and their processes, hope was also reflected in the accounts of locals who saw in community engagement a channel for the attainment of positive outcomes. This study also offered insights into the concerns of local communities living in water-abundant environments, and how these concerns seem to increase as the commercialisation of freshwater becomes more intensive. Challenges indeed exist in New Zealand, but opportunities for peace are also possible. The questions therefore pertain to how the research and policy communities can facilitate the reestablishment of trust in New Zealand's water authority system, and in its ability to effectively navigate through the complexities of water-related conflicts.

As the picture in Chapter 1 presented: "Water water everywhere, but not a drop to drink" should not be a slogan that communities in New Zealand should be encouraged to write. This study was an attempt at examining this reality, and at presenting what has happened, what



continues to happen, and what is likely to happen, in view of the unsustainable commercialisation of water and its incompatibilities.

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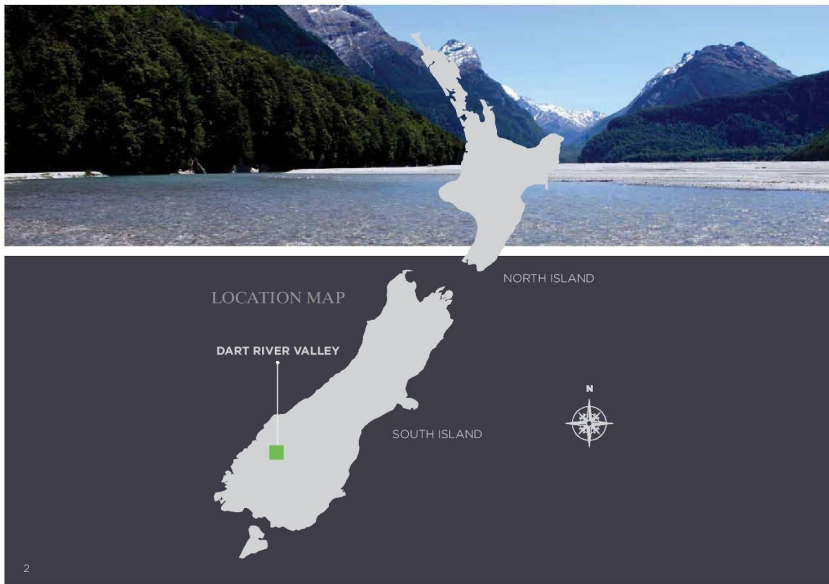
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## **Appendices**

## **Appendix A - Koha Water Limited Business Brochure**

This brochure, prepared by the company Koha Water Limited, explains in full detail the proposed water bottling operation in the Glenorchy area. In it, the company explains the rate of extraction, the purported environmental impacts of their activities, the manufacturing process and potential markets. The document is available to the public.





## INTRODUCTION

Koha Water Limited has the exclusive rights to extract and bottle 639,000 litres (168,000 US Gallons) of artesian water per day from a remote underground aquifer located in New Zealand's magnificent Dart River Valley.

Financial forecasting for extraction, bottling and exporting the aquifer water indicates a very attractive return on investment over the first 10 years, utilising just 8% of the total allocated water rights. The additional 93% presents numerous opportunities for future growth and scaling of the business.

The Dart River Valley, as part of the Mount Aspiring National Park, has been granted World Heritage Status in recognition of the "outstanding universal value" that the area provides. Another feature of this spectacular location is the abundance of rare and highly-treasured Jade stones and boulders. This specific source of Jade is of particular historical and cultural significance to local Maori.

The water is sourced from this untouched landscape and interacts with the unique geology, including the highly prized Jade, prior to extraction resulting in aquifer water that is of exceptional quality. It is distinctive within New Zealand, and the world.

The natural features of this area and the presence of Jade are unique to this water source and presents excellent marketing opportunities to demographics worldwide.

All elements of the brand have been developed at a super-premium level which complements the outstanding water quality and associated natural landscape. The brand name, KOHA, is a Maori word which translates to gift, present or offering. In this case the brand is positioned as "a gift to share with others".

International trademarking of the KOHA brand has been thoroughly researched by our Patent Attorneys and registrations have been made in all our key export bottled water markets. KOHA, being of Maori origins has greatly assisted with the trademarking process.

Since this idea was first conceived by Trevor Nicolson over 6 years ago, all aspects of the project have been researched, reviewed, revised and confirmed. Now the founders of Koha Water Limited are seeking a strategic partner to take this project to market.

All the hard work has been done, and now the opportunity exists to turn KOHA into a global brand.

*This is not an information memorandum and as such is not intended to be distributed to the public. This is a business plan document intended to be distributed to parties with related industry experience and interest. The purpose of this document is to provide a summary of the project to date and the associated opportunities that exist.*

*No reference has been made to appendices or attachments. However, all statements have been based on significant research performed and information collected over five years. Further information and verification of statements, including appendices and attachments, can be viewed by request. The reader therefore accepts these conditions and the author and anyone associated with the production of this document will not be liable in any way to any party.*

  
JAN ANDERSSON  
FOUNDER/DIRECTOR

  
ALAN HARPER  
DIRECTOR

  
LEE NICOLSON  
DIRECTOR

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## THE DART RIVER VALLEY

The underground water source (aquifer) is located in the remote and beautiful Dart River Valley at the head of Lake Wakatipu, approximately 40 kilometres (25 miles) north-west of Queenstown, at the base of New Zealand's South Island.

## FORMED BY GLACIERS

Glaciers sculpted the mountainous landscape within the Dart River Valley until some 11,500 years ago. At this time the glaciers receded and ice melt started filling Lake Wakatipu, exposing a landscape of amazing fjords, rocky coasts, towering cliffs and beautiful waterfalls.

Tectonic uplift and weathering still shape the schist, the predominant local bedrock, where it is not covered by tussock, native beech forest and sub-alpine shrub land.

The geological history of the valley results in steep schist slopes with limited soil and vegetation at high altitude.

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### THE CATCHMENT AREA

The catchment area feeding the Jade Aquifer is 58,000 hectares, more than ten times larger than Manhattan Island, New York. Over 80% of the catchment area lies within the World Heritage Site of Mount Aspiring National Park and is significant to global landscape conservation.

In addition to the picturesque natural environment the catchment area also has an abundance of naturally occurring Jade Stone, including the sacred Te Korokoro Jade boulders.

### LIMITED HUMAN IMPACT

Human impact on the total area is very minimal. The only access to the upper part of the valley is on foot and only then when rivers are low enough to allow crossing. The aquifer recharge area holds no permanent human inhabitants.

The isolation, lack of human interference and the area's World Heritage Status protects the environment from man-made effects, preserving the purity of the water.

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## WATER COMPOSITION SUMMARY

COMPOSITION	QUANTITY	SUMMARY	LONG FORM DESCRIPTION	COMPOSITION	QUANTITY	SUMMARY	LONG FORM DESCRIPTION
SOURCE	Artesian	Protected	An artesian aquifer is a confined underground aquifer through which water flows and is stored. It is encased in impermeable layers that allow for positive pressure and an upward natural flow of water, without the need for pumping.	pH	6.7pH	Neutral	With a <b>neutral pH (6.7)</b> the mouth feel or orientation of the water is considered neutral, making it light and clean.
REGION		Isolated	Dart River Valley, Southern Alps, New Zealand.	SODIUM	1.9mg/L	Low	The level of sodium affects the saltiness of the water's taste profile. Jade Aquifer's low sodium content is a result of its high altitude and distance from the sea. Additionally there is low sodium enrichment from interaction with the geology in the aquifer. Typical New Zealand waters by comparison have sodium levels in the range of 8-11mg/L.
TDS	55.0mg/L	Low	The amount of total dissolved solids (TDS) is low. This refers to the amount of minerals, salts or metals that are dissolved in the water. TDS is directly related to the purity and quality of a water. Low TDS waters are light and crisp. This is distinctive for New Zealand bottled waters, which usually contain high levels of TDS and are perceived to have more weight and substance in their texture, resulting in a much 'harder' mouth feel. <b>Jade Aquifer water TDS is lower than all other New Zealand bottled waters.</b> The low mineral content is attributed to a combination of pure rainfall, the unique catchment area and the monolithic nature of the underground geology dominated by schist rock.	POTASSIUM	0.6mg/L	Low	Potassium in such low concentrations does not affect a water's taste. Jade Aquifer water has the <b>lowest concentration of all other New Zealand bottled waters</b> as a result of its quality of the water, and the lack of influence of humans on the environment.
HARDNESS	48mg/L	Soft	Jade Aquifer water is a soft water, and is a result of the combined low levels of calcium and magnesium. Typically soft waters are classified between 0-60mg/L of calcium carbonate. <b>This calcium carbonate concentration approaches the perfect hardness of water</b> , any lower concentration and the water is too soft and acidic. Waters with a concentration of over 150mg/L are classified as being hard and require the addition of a softener.	BICARBONATES	35mg/L	Dominant	Bicarbonates are the most desirable anion in water and are the most dominant anion in Jade Aquifer's water composition.
VIRGINALITY	1.4mg/L	Very Good	Virginality refers to how protected a water is from its environment, determined by the level of nitrogen in the water. Jade Aquifer water has very good virginality with a nitrate concentration falling between 1-4mg/L, on a scale of 1mg/L to 500mg/L.	SULPHATES	6.9mg/L	Typical	Sulphates have minimal affect on a water's taste unless it occurs in extreme concentrations. Sulphate concentrations are typical of other New Zealand bottled waters.
MAGNESIUM	0.8mg/L	Low	Magnesium, while an important mineral for living organisms, in large concentrations in water can add a bitter or metallic taste to the water. <b>Jade Aquifer water has the lowest magnesium concentration of all New Zealand bottled waters.</b>	CHLORIDES	1.0mg/L	Low	Similar to sodium, chloride content is related to the salt content of the catchment rainfall. If the content is too high the water will have a salty taste. <b>Jade Aquifer water has the lowest chloride concentration</b> when compared to all other New Zealand bottled waters.
				CALCIUM	18mg/L	High	Calcium is an essential mineral for all living organisms, with numerous health benefits. Jade Aquifer water has the <b>highest recorded calcium concentration</b> when compared to all other New Zealand bottled waters.
				NITRATE	1.7mg/L	Low	Jade Aquifer's source is <b>protected from human influence</b> , leaving the water with low levels of nitrate.

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### THE ASSET

Koha Water Ltd holds the right to extract 639,000 litres (168,000 US Gallons) of water a day from the Jade Aquifer.

We hold the rights to the aquifer water via a 27 hectare parcel of freehold land, adjacent to the Dart River, which overlies the aquifer. The water rights are also for sale with this opportunity.

- Koha Water Ltd has been granted consent to extract and use water to operate a commercial bottling plant
- Current consent period: 1 April 2009 to 31 March 2038
- Rate of abstraction: 22 litres per second for a maximum of 8 hours per day up to 7 days a week
- This equates to 236 million litres (62.3 million gallons) of water per year

### OUR WATER

Although bottled water is literally everywhere, the quality, taste and drinkability between waters varies significantly.

Our water has a distinctive composition and is of exceptional quality.

The rain falling into the Dart River Valley catchment is either converted to snow and glacial ice or flows to the valley floor. The steep slopes of the catchment area and the lack of soil and vegetation at higher altitudes means the water has very little interaction with organic components prior to entering its underground aquifer journey. The resulting water has an uncharacteristically low mineral content, but the minerals that are present are highly desirable, such as calcium and bicarbonates.

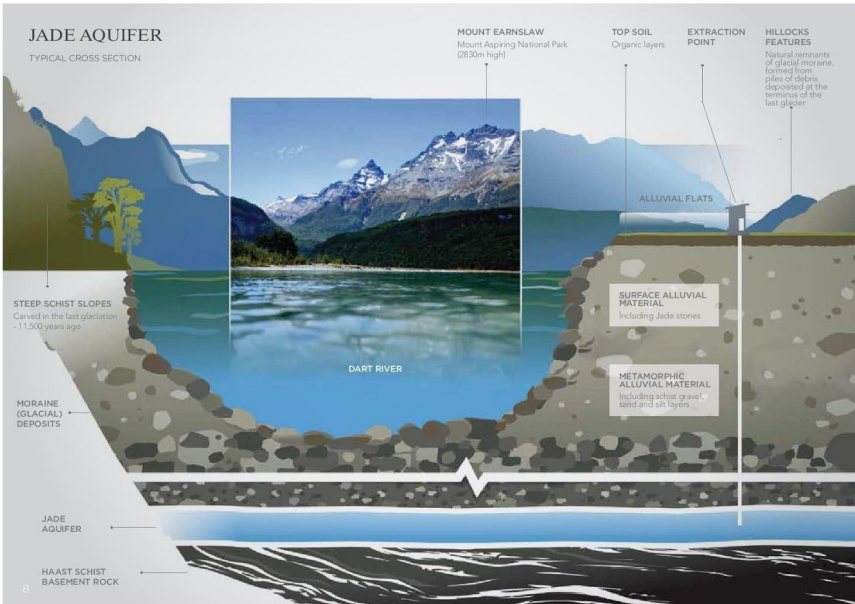
As the water transcends its path, it naturally filters over the Jade Stone that is in abundance in the catchment and is enhanced by the mineral characteristics of the surrounding terrain. When the water reaches the lower levels of the valley some of the water permeates down through the sub-surface layers into what is known as the Jade Aquifer.

The water has an extremely low nitrate level of less than 2.0mg/L which indicates that it has not been contaminated from the recharge area and is confirmation of the very low impact humans have had in this region. This purity is an excellent selling point.

Jade Aquifer water total dissolved solids, is lower than all other New Zealand bottled waters. The low mineral content is attributed to a combination of pure rainfall, the unique catchment area and the monolithic nature of the underground geology.

Nutritionally our water has the ideal composition for daily hydration because of its purity, low sodium content and neutral pH.

Our water's clean and neutral taste is a perfect match with seafood dishes, soft cheeses, desserts and whisky as it does not overpower delicate flavours.



## LOGISTICS

SINCE INCEPTION OF THIS PROJECT IN 2005 A THOROUGH AND METHODOLOGICAL PROCESS HAS BEEN UNDERTAKEN TO VERIFY THE FEASIBILITY OF THIS PROJECT AT EVERY STAGE.

The nearest bottled water producer is over 500km (310 miles) away. Although this geographic separation results in a water profile that is unaffected by humans and unique from other New Zealand waters it also presents some logistical barriers. The remote location of the water source, and the associated costs of getting the water to market, were the biggest hurdles to overcome hence significant research and investigation was undertaken to confirm financial viability of this component.

### EXTRACTION

Extraction logistics have been resolved. In 2007 a sub-surface extraction point was constructed and commissioned to extract the water from the aquifer.

### BOTTLING AND DISTRIBUTION

Two main options are available for bottling and distribution.

#### OPTION 1

Costings, consent feasibility and logistics of constructing a bottling plant at the extraction point in an existing building have been confirmed. The water would be bottled, labelled and packaged at source and then transported via road to a South Island port for worldwide export.

#### OPTION 2

Alternatively bottling could be outsourced for a lower capital investment option. Following extraction the water would be loaded into bulk transport containers and transported to Cromwell or Christchurch via road where bottling, labelling and packaging would be performed by specialist bottling operators.

### FINANCIALS

Extensive research and costings have been completed for all stages of the process from extraction, to exporting and marketing through to sales at distribution points. This information has been used to verify the business plan in a detailed financial model. The financial forecasting not only confirms feasibility but indicates a more than healthy return on investment over the first 10 years, along with a conservative marketing and distribution plan.

### SUSTAINABILITY

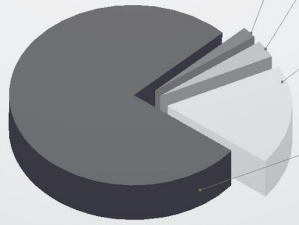
Koha Water Limited has begun working with Carbon NZero, the world's first organisation accredited Green House Gas Certification Scheme under ISO 14065, to assess and verify potential greenhouse gas emissions. This information is being used to drive our systems to reduce our carbon footprint.

Koha Water Limited is also investigating initiating its own Native Forest Regeneration Programme at the aquifer site to sequester carbon and offset any GHG emissions from our production and distribution processes. This programme is preferred over simply purchasing carbon credits as it generates a high level of long term integrity and would offer benefits to the surrounding environment and to the local community.



## MARKET ANALYSIS

Initially bottled water brands emerged due to inaccessibility to safe and clean drinking water and a need for convenience. As consumer acceptance of bottled drinking water increased and competition intensified, more expensive and more premium brands emerged. Over time, this led to the development of super-premium brands and more recently highly desirable ultra-premium bottled water brands. Today over 700 bottled water brands exist worldwide. These can be classified as follows:



### ULTRA-PREMIUM (2%)

**POSITIONING:** An emerging sector, low volume and high value brands  
**DISTRIBUTION:** Exclusive boutique stores, upper echelon hotels and fine dining restaurants  
**PACKAGING:** Superior design and elaborate packaging, often taking cues from luxury perfume and spirit brands  
**PRODUCT TYPE:** Generally iceberg or artesian water, some mineral

### SUPER-PREMIUM (3%)

**POSITIONING:** Luxury and exclusivity  
**DISTRIBUTION:** 4 and 5 star hotels and restaurants, speciality water retailers  
**PACKAGING:** Elaborate design and distinctive packaging, always glass  
**PRODUCT TYPE:** Mainly artesian or spring water, some iceberg

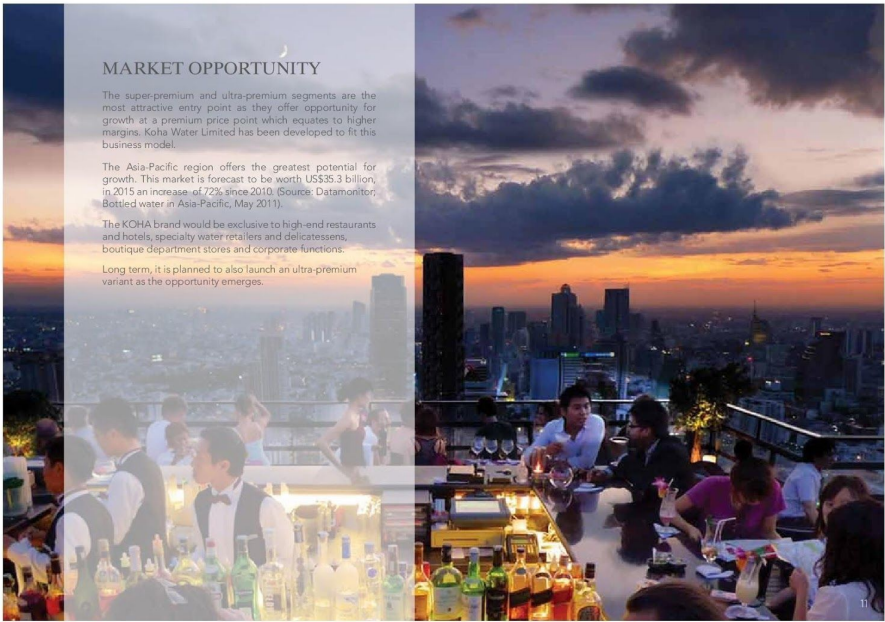
### PREMIUM (18%)

**POSITIONING:** Often global brands, strong brand recognition, above the line investment  
**DISTRIBUTION:** Retail chains, convenience, restaurants, bars  
**PACKAGING:** Available in glass and PET  
**PRODUCT TYPE:** Mainly mineral or spring water

### EVERYDAY (77%)

**POSITIONING:** High volume, competitively priced brands for everyday consumption, usually local brands  
**DISTRIBUTION:** Widespread distribution  
**PACKAGING:** Predominantly PET  
**PRODUCT TYPE:** Numerous sources, often filtered tap water

*(Data compiled from various sources)*



### MARKET OPPORTUNITY

The super-premium and ultra-premium segments are the most attractive entry point as they offer opportunity for growth at a premium price point which equates to higher margins. Koha Water Limited has been developed to fit this business model.

The Asia-Pacific region offers the greatest potential for growth. This market is forecast to be worth US\$35.3 billion in 2015 an increase of 72% since 2010. (Source: Datamonitor, Bottled water in Asia-Pacific, May 2011).

The KOHA brand would be exclusive to high-end restaurants and hotels, specialty water retailers and delicatessens, boutique department stores and corporate functions.

Long term, it is planned to also launch an ultra-premium variant as the opportunity emerges.

### KOHA TRADEMARKING

Trademarking is of critical importance in the bottled water industry. An advantage of the KOHA brand name having Maori origins is that international trademarking is possible without major obstacles.

Initial trademark searches were completed by our Trademark Attorneys in all our key export markets, including Hong Kong, Singapore, China, UAE, Macau, New Zealand and Australia. Subsequently, KOHA trademark registrations have been made in Hong Kong, Singapore and China and in Australia, KOHA WATER.

In addition 20 different domain names have been registered for Koha Water which includes all the country domain suffixes in key markets identified for KOHA.



### BRAND DEVELOPMENT

When developing the KOHA brand it was essential that all elements including brand name, story, packaging and identity reflected the exceptional water quality and the super-premium positioning.

Our brand, KOHA:

- KOHA is a Maori word meaning gift, present or offering. In this case emphasis has been placed on a gift to share with others
- KOHA is easily pronounced, particularly in Asian countries where languages are linguistically similar to Maori. This gives consumers confidence in ordering our brand by name from a wine list
- KOHA is four letters and two syllables so it is memorable and easy to read
- Research indicates KOHA does not have any negative translation or connotation in other languages
- The brand story will engage consumers and appeal to high-end clientele
- Still and Sparkling variants are planned in 750ml bottles the perfect size for sharing

### PACKAGING

The KOHA packaging design pays close attention to the source of the water and the unique native environment. It is important to let the water speak for itself, allowing the branding and bottle design to complement the quality of KOHA water.

The result is an understated, yet elegant and sophisticated design, that appeals to a higher end consumer.

- The KOHA logo is contemporary yet timeless. The link between the 'H' and 'A' represents the spine of the local Tuakura or shield fern. The Koru or curled end is based on the shape of a new fern unfurling and symbolises new life, growth, strength and peace
- Carving within the bottle reflects the traditional carving of Jade which mimics both the flow of water and movement of the logo
- The grey logo is inspired by the schist stone found in and around the Dart River
- The bottle has been designed so it can be manufactured, filled, transported and stored easily
- The colours of the Still and Sparkling variants have been designed so they are easy to differentiate
- The packaging complements a fine dining table setting
- The design lends itself to brand extensions



## STORY OF KOHA WATER

Thousands of years ago glaciers sculpted the remote, mountainous environment of the Dart River Valley. Today the sheer cliff faces, pristine glaciers, soaring mountain ranges, braided rivers and stunning waterfalls are so treasured they have been granted World Heritage Status.

This area also hides another treasure, Jade, or Pounamu as it is known by local Maori. This stone is highly prized and superior to the rest of New Zealand's Jade because of its unique colour profile, ranging from vibrant green, through to milky green and dark olive with magnificent pearly, pale green bands that can be highly translucent.

Jade is so plentiful within this valley you are likely to discover several stones while walking amongst the river terraces. If you venture further afield you may also

stumble upon Te Koroka, an area granted 'special area' status because of the enormous, highly valuable, Jade boulders (up to twenty tonnes) that are known to exist here.

The exact location of these boulders is so secret it is only known by a few local Maori. To enter you must first obtain written permission from the local tribe.

The water that flows over this geologically breath-taking and culturally significant area then permeates down through the sub-surface layers to the Jade Aquifer, named after the highly-prized Jade with which the water interacts.

Jade is revered for its strength, often considered stronger than steel. Its beauty is cherished as a stone for carving but it is the intrinsic value of this sacred stone that gains it true respect. It is credited as the stone of clarity, courage, justice, wisdom and modesty. In New Zealand, and many Asian cultures, Jade is given as a special gift so these qualities can be bestowed on the receiver.

IN MAORI LANGUAGE A GIFT IS KNOWN AS KOHA. ONCE THE JADE AQUIFER WATER IS BOTTLED IT BECOMES KOHA, A GIFT WE SHARE WITH YOU, SO YOU MAY SHARE WITH OTHERS.

A PIECE OF JADE FOUND WITHIN THE DART RIVER.

## GROWTH OPPORTUNITIES

The super-premium positioning of KOHA can be further developed for the ultra-premium segment with a positioning of a 'gift of Jade to share'. KOHA will further extend the concept of gifting by attaching a real piece of Jade to the bottle that can be collected.

Attaching real Jade would allow emphasis on the intrinsic values of the stone:

CLARITY, COURAGE, JUSTICE, WISDOM AND MODESTY

The ultra-premium packaging concept adds value to the brand, is distinctive, provides a competitive advantage and reinforces the source of the water as the Jade Aquifer.

The ultra-premium option also:

- Encourages consumers to repeat purchase in order to collect a set therefore driving sales
- Delivers subtle branding into 5 star hotels who are often against branding in their premises
- Also creates a unique serving ritual around the brand which differentiates it from other bottled waters
- Is a concept that is not currently available in the drinks category

Prototype designs have been advanced for an ultra-premium option that incorporates actual Jade into the bottles. Provisional design registrations with our intellectual property attorneys have been advanced.

### GROWTH STRATEGIES:



15

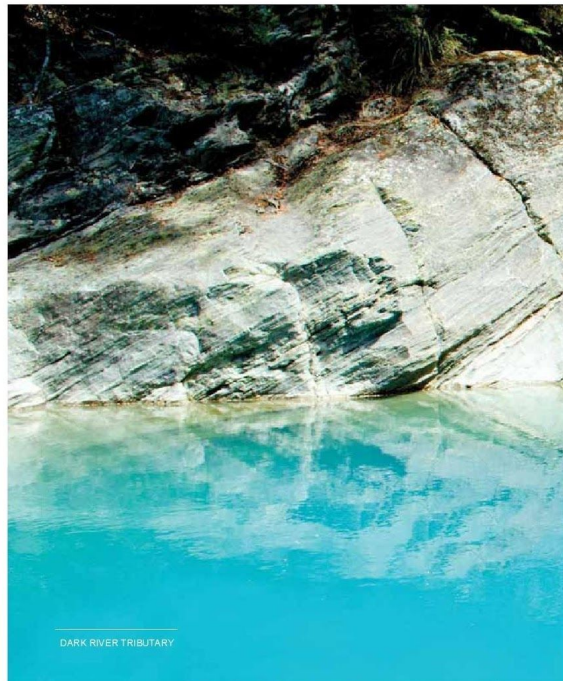
## IN CLOSING

This document has been developed as an overview of the work that has been done on KOHA to date. All aspects of the project have been researched, reviewed, revised and confirmed.

Additional information is available for review, including; market data, logistics reports, financial models, water quality assessments, brand development data, photography, valuations, resource consents and permits. If you would like to find out more please contact us.

Better yet, come and visit us. We are sure you will be captivated by the Dart River Valley and you will see for yourself the potential this water and brand have to offer.

For more information contact:  
 Steve Rowe  
 KOHA WATER LTD.  
 Tel: +34 638 024 447  
 steve@juicedeluxe.com



DARK RIVER TRIBUTARY



## **Appendix B - Questionnaire Guide**

### **The Emergence and Intensification of Hydropolitical Conflicts in New Zealand**

**Questionnaire prepared by: Adan E. Suazo, National Centre for Peace and Conflict Studies, University of Otago**

Value:

1. How would you describe your satisfaction with the quality and quantity of water in your community?
2. What does water mean to you personally? [For recreational use? For domestic use? For profit?]
3. How is water related to your occupation? [Does your business or place of employment depend on water for its activities?]
4. In your view, is your business or place of employment's water access under threat?
5. Who owns the water in your community? Does everyone have the right to it?
6. Who makes decisions over water in your community?
7. Are you satisfied with how decisions over water are made?
8. There are (or were in the case of Ashburton) plans to bottle water from your community. How do you feel about that? [Should people or companies be allowed to sell water?]
9. What do you think about water being bottled or sold elsewhere in New Zealand? Do you find it problematic?
10. Public water supplies in New Zealand are consistently being treated to ensure they are safe to drink and use. How do you feel about your public water supplies being treated?
11. In situations where, for any reason, water is not safe for drinking, what should the authorities do to improve the situation in your view?
12. In descending order (from 6 to 1), what activities seem most important to you:
  - a. Water Bottling
  - b. Irrigation
  - c. Rafting
  - d. Water Shipping
  - e. Fish Farming
  - f. Domestic Water Use



### Perceptions of Abundance

13. In your opinion, do you consider New Zealand to be a water-abundant country? Can you elaborate? Where can we see that abundance?
14. In what ways do you (and/or your community) benefit from this water abundance?
15. In your view, is the abundance of water in your community under threat in any way?

### Perceptions of Water Asymmetries

16. In your view, do people benefit from water in the same way?
17. Do people in your community use more water than others? Is this a problem to you?
18. Do you think your own access to water is at risk? Why?
19. Are you aware of anyone in your community having trouble accessing water?

### Indicators of Conflict Intentionality

20. If your water access were reduced by someone withdrawing water for sale, would you consider this to be:
  - a. Unfair
  - b. Illegitimate
  - c. An issue worth resisting
  - d. Acceptable
21. Under what conditions would you decide to take political action if you had a concern about water?
22. In connection to the previous question, what type of action would you consider taking:
  - a. Protest, Vandalism
  - b. Litigation
  - c. Pushing for fines and permit denials
  - d. Petitioning
  - e. Voicing opposition, writing editorials
  - f. None

### General

23. Would you consider Ashburton/Glenorchy to be your home? [How long have you lived in the area?]
24. Are you employed in the area?
25. What do you do for a living?
26. DOB

27. Gender
28. Ethnicity
29. Age
30. Political affiliation

## Appendix C - Letter from the Ngāi Tahu Research Consultation Committee outlining its recommendations for the study

NGĀI TAHU RESEARCH CONSULTATION COMMITTEE  
*TE KOMITI RAKAHAU KI KĀI TAHU*

Wednesday, 13 September 2017.

Professor Kevin Clements,  
National Centre for Peace and Conflict Studies,  
DUNEDIN.

Tēnā Koe Professor Kevin Clements,

### **Revisiting Abundance Theory: Freshwater Wealth and Conflict in New Zealand**

The Ngāi Tahu Research Consultation Committee (the committee) met on Tuesday, 12 September 2017 to discuss your research proposition.

By way of introduction, this response from The Committee is provided as part of the Memorandum of Understanding between Te Rūnanga o Ngāi Tahu and the University. In the statement of principles of the memorandum it states "Ngāi Tahu acknowledges that the consultation process outline in this policy provides no power of veto by Ngāi Tahu to research undertaken at the University of Otago". As such, this response is not "approval" or "mandate" for the research, rather it is a mandated response from a Ngāi Tahu appointed committee. This process is part of a number of requirements for researchers to undertake and does not cover other issues relating to ethics, including methodology they are separate requirements with other committees, for example the Human Ethics Committee, etc.

Within the context of the Policy for Research Consultation with Māori, the Committee base consultation on that defined by Justice McGechan:

*"Consultation does not mean negotiation or agreement. It means: setting out a proposal not fully decided upon; adequately informing a party about relevant information upon which the proposal is based; listening to what the others have to say with an open mind (in that there is room to be persuaded against the proposal); undertaking that task in a genuine and not cosmetic manner. Reaching a decision that may or may not alter the original proposal."*

The Committee considers the research to be of interest and importance.

As this study involves human participants, the Committee strongly encourage that ethnicity data be collected as part of the research project as a right to express their self-identity. That is the questions on self-identified ethnicity and descent, these questions are contained in the latest census.

The Committee strongly recommends contact with Ngāi Tuahuriri Runanga and Te Runanga o Arowhenua through Te Rūnanga o Ngāi Tahu regarding this study.

The Committee suggests dissemination of the research findings to Te Rūnanga o Ngāi Tahu

The Ngāi Tahu Research Consultation Committee has membership from:

*Te Rūnanga o Otākou Incorporated  
Kāiti Huirapa Rūnaka ki Puketeraki  
Te Rūnanga o Moeraki*

NGĀI TAHU RESEARCH CONSULTATION COMMITTEE  
*TE KOMITI RAKAHAU KI KAI TAHU*

regarding this study.

We wish you every success in your research and the committee also requests a copy of the research findings.

This letter of suggestion, recommendation and advice is current for an 18 month period from Tuesday, 12 September 2017 to 12 March 2019.

Nāhaku noa, nā



PR. NTREC

Mark Brunton  
Kaiwhakahaere Rangahau Māori  
Research Manager Māori  
Research Division  
Te Whare Wānanga o Otāgo  
Ph: +64 3 479 8738  
Email: mark.brunton@otago.ac.nz  
Web: www.otago.ac.nz

The Ngāi Tahu Research Consultation Committee has membership from:

*Te Rūnanga o Ōtākou Incorporated  
Kāti Huirapa Rūnaka ki Puketeraki  
Te Rūnanga o Moeraki*

## **Appendix D - Otago Regional Council Report on Water Consent Koha Water Limited**

This excerpt details the extent to which the Otago Regional Council informed the public about the impacts of the water bottling operation proposed by Koha Water Limited. It also explains how the extraction of a water bottling plant compares to other existing operations in the Otago region.

## REPORT

Document Id: A987444  
Report Number: 2017/0716  
Prepared For: Council  
Prepared By: Chief Executive  
Date: 15 March 2017  
Subject: **Chief Executive's Report – March 2017**

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### **1. ORC Consents for Bottling Water**

There has been recent publicity over water being bottled and exported and what consents ORC has for bottled water production.

There are currently three consents issued for bottling water in Otago, 96753 (JM Love), 98037(Green Ocean Group) and 2007.462 (Koha Water Ltd).

The JM Love consent issued in 1996, gives consent to the holder to take 2 litres per second, 6 hours per day, 4 days per week, 6 months of the year (4,493 cubic metres per year).

Green Ocean Group issued in 1998, gives consent to take up to 10,000 litres per hour (87,600 cubic metres per year) and replaces an earlier consent lodged in 1987. ORC assessed the water take as being from a high yielding gravel with minimum or no drawdown effects.

Koha Water Ltd (which has been the subject of recent media reports) issued in 2007, gives consent to the holder to take up to 236,160 cubic metres of water per year. ORC assessed the water take as being from river gravels close to the Dart River. The likely stream depletion was calculated as around one litre per second. The median flow of the Dart River (ORC data) is 51,490 litres per second. The percentage reduction in river flow if the consent was fully used would be less than 0.002%. Given this minute change it is unlikely that any effect could be detected. To date this consent has not been used and will expire in 2019 unless it is used or an extension to the lapse period is sought.

#### ***Public consultation and notification***

The ORC administers the Resource Management Act (RMA) which sets out the legal requirements of public participation in the resource consent process. The Act says that an application may be publicly notified if the adverse effects of the proposed activity are likely to be more than minor.

All consent applications received by ORC are assessed for effects on the environment as required by the RMA. The applications are also assessed against the provisions of the Regional Plan Water (RPW). In the case of the bottled water consents - all of which are groundwater takes, the applications were assessed using Schedule 5B of the RPW. Schedule 5B is the method used for identifying parties likely to be affected by bore interference (reduction in water level/drawdown) when a new application to take groundwater is received. The significance of any interference may result in limits being placed through conditions of consent depending on the distance the take may be from another bore. Significant interference is defined as when the water level in an affected bore is greater than 1 metre for confined aquifers and 20 centimetres for unconfined aquifers.

In assessing the Koha Water application the nearest bore to the consent holder's activity was over one kilometre away. The assessment using Schedule 5B of the RPW showed that at one kilometre from the proposed take the drawdown effect would be less than one centimetre and therefore the overall effect would be no more than minor. Consequently the application **had** to be processed as a non-notified application.

***Compliance monitoring of consents***

J M Love – This consent does not need metering as the take of 2 litres per second does not trigger metering regulations. It was last inspected in 2007 where use at the time was for domestic purposes and irrigation of one hectare.

Green Ocean Group - This consent does not need metering as the take of 2 litres per second does not trigger metering regulations. It was last inspected in 2007 where use at the time was for small-scale bottling and domestic purposes.

Koha Water – ORC staff contacted the consent holder in 2016 to establish whether the consent had been exercised, and were advised that it had not been.

***Comparison of water use***

The Koha Water take is a small water take and is equivalent to the water used by a small irrigated farm. Typical farms in Otago using irrigation would use 6,000,000 litres per hectare (Aqualinc) per season plus water for stock use. On this basis the amount of water taken by Koha would be equivalent to a farm of less than 40 hectares.

The Ministry for the Environment (<http://www.mfe.govt.nz/publications/rma-fresh-water/update-water-allocation-data-and-estimate-actual-water-use-consented-3>) has published water allocation data and an estimate of actual water use for **consented** takes in New Zealand for 2009-2010. This data comprise information for all types of take including, farming, mining and energy generation. In Otago's case the estimated number of consents granted was 1976 with an overall allocation of 8.74 billion cubic metres per year. Analysis of data by ORC for 2017 has indicated that this level of allocation is correct.

The three consents ORC has issued for bottling water represent 0.15 percent of all takes and 0.05 percent of all consents. If these three consents were all exercised a total of 328,253 cubic metres would be used each year. Using 2010 MfE numbers this equates to 0.0037 percent of Otago's water allocation per year. Since 2010 there has been an increase in the allocation and use of water in Otago. This being the case, the allocation of water for bottling will be less than 0.0037 percent.

Water is used to produce much of New Zealand's electric power generation, as well as most of our food and other commodities. In the case of the Manapouri Power Station, up to 500,000 litres per second of freshwater can be discharged directly into the sea to generate electricity to be used in the production of aluminium at the Tiwai Point smelter near Bluff.

There is considerable information available from various sources that estimate how much water is used to produce different products. In each case water is used as a raw material which is used to produce another product. The following table shows typical quantities of water used to produce everyday produce (multiple sources of information).

Product	Quantity	Water used – Litres
Paper	1 sheet A4	10
Beer	250 ml	75
Wine	250 ml	120
Orange Juice	1 lt	1200
Tea	250 ml	27
Bread	1 loaf	570
Potatoes	1 kg	500
Chicken meat	1 kg	3500
Chocolate	1 kg	17200
Beef	1 kg	15400
Sheep meat	1 kg	10400
Pork	1 kg	6000
Cheese	1 kg	3200
Apple	1 kg	820
Egg	1 kg	200
Cabbage	1 kg	240
Pasta	1 kg	1850
Milk	1 lt	1000

***Impact of Bottling Water in Otago***

The environmental impact of current water bottling consents in Otago is insignificant and at a level where it would be difficult to measure any adverse effect. It is highly unlikely that any further proposals to bottling water in Otago would have any effect that was more than minor - any such effect could be controlled using the resource consent process. A strong argument can be made to demonstrate that the bottling of water is a prudent use of a valuable resource. In comparing the production of bottled water with the use of water to make other products there are significant advantages. Most of the water taken in a bottling plant is used, while much of the water used in produce is for irrigation and processing. Furthermore the use of water for irrigation etc. often results in a contaminated discharge that has to be treated. Bottled water is sold at a similar price to milk (\$2 per litre). However to produce one litre of milk approximately 1000 litres of water is required. The value of the raw water is in the order of \$2 per litre for bottled water and \$0.002 per litre for milk.



**Appendix E - QLDC Meeting Minutes: December 14, 2017**

Pages 5-8 of the QLDC Meeting Minutes shows the first time Glenorchy's residents appeared in a public forum to voice their discontent toward the chlorination of their public water supplies.



**Minutes of an ordinary meeting of the Queenstown Lakes District Council held in the Council Chambers, 10 Gorge Road, Queenstown on Thursday 14 December 2017 commencing at 1.00pm**

**Present:**

Mayor Boulton; Councillors Clark, Ferguson, Forbes, MacDonald, McRobie, MacLeod Miller, Smith and Stevens

**In attendance:**

Mr Mike Theelen (Chief Executive), Mr Peter Hansby (General Manager, Property and Infrastructure), Ms Meaghan Miller (General Manager, Corporate Services), Mr Tony Avery (General Manager, Planning and Development), Mr Stewart Burns (General Manager, Finance and Regulatory), Mr Ulrich Glasner (Chief Engineer), Mr Myles Lind (Manager, Asset Planning), Mr Blair Devlin (Planning Practice Manager), Mr Craig Barr (Senior Planner - Policy), Ms Anita Vanstone (Senior Planner - Policy), Mr Lee Webster (Manager, Regulatory), Mr Thomas Grandiek (Monitoring and Enforcement Officer), Mrs Joanne Conroy (Property Advisor, APL Property Ltd), Mr Dan Cruickshank (Property Advisor, APL Property Ltd), Mr Peter Harris (Economic Development Manager), Ms Erin Moogan (Maintenance and Operations Manager, Property and Infrastructure), Ms Sarah Thomson (Contract Manager), Mr Paul Speedy (Strategic Projects Manager) and Ms Jane Robertson (Senior Governance Advisor); two members of the media and approximately 40 members of the public

**Apologies/Leave of Absence Requests**

An apology and application for Leave of Absence was made on behalf of Councillor Hill who sought leave for a period of two months on medical grounds.

Other applications for Leave of Absence were made as follows:

- Councillor McRobie: 23 December 2017 - 22 January 2018
- Councillor Forbes: 23 December 2017 - 7 January 2018; 14 - 28 February 2018
- Councillor Miller: 18 February - 1 April 2017

**On the motion of the Mayor and Councillor Stevens the Queenstown Lakes District Council resolved to accept the apology and grant the requests for Leave of Absence.**

**Declarations of Conflicts of Interest**

There were no declarations of conflicts of interest.

**Matters Lying on the Table**

There were no matters lying on the table.

**QUEENSTOWN LAKES DISTRICT COUNCIL****14 DECEMBER 2017****Page 3**

*The Mayor advised that Standing Orders gave him the discretion to restrict the speaking time if there were more than six speakers on the same topic in the Public Forum.*

*The overall topic addressed by speakers 4-9 in the Public Forum was their opposition to Council plans to chlorinate all the untreated water systems in the district, in particular, that in Glenorchy.*

**4. Niki Gladding**

Ms Gladding observed that chlorination did not get the Glenorchy water/wastewater system any closer to compliance. The Water Safety Plan had been signed in 2012 and she would have expected measures to be in place by now but these had never happened. She believed the Council's planned chlorination was motivated by fear of liability based on its failure to implement the plan, as there was no evidence of e-coli in the water. She considered that this negligence would ultimately cost the community. Furthermore, consultation had determined that funding should be used for a permanent solution for the water system not a temporary one, and as it was not an emergency no funding should be spent on temporary chlorination.

Ms Gladding spoke about the risks of disinfection by-products, especially the potential for them to promote cancer and cause liver damage.

**5. John Glover, Glenorchy Community Association**

Mr Glover stated that chlorination was a divisive issue which inflamed the Glenorchy community. He believed the Council's decision was driven by political expediency and if there was any actual risk the Council would have taken other actions. He considered that the biggest risk to the Glenorchy water system was really the condition of its water tanks. He tabled extracts from a previous annual plan showing that funds had been allocated in 2013 to address this but the work had not been undertaken and the funds had been rolled over ever since. He observed that elsewhere on the agenda the Council was being asked to defer the item again and he asked why this was reasonable, as it either represented a risk or did not. By contrast with this deferral, he noted the Council's speed in addressing the risk of injury from vehicles stopping at Bennetts Bluff.

*For the benefit of subsequent speakers on this topic, the Mayor stated that the Council had made an irreversible decision to chlorinate all Council water supplies over summer and would determine a final position in the new year.*

**6. Donald Crum**

Mr Crum advised that he had his own water supply but an ugly by-product of chlorination were trihalomethanes which were highly carcinogenic. Accordingly, the cancer risk of using chlorinated water was 93% higher than using a system without. Systems with higher incidence of trihalomethanes also increased the risk of bladder and colon cancers and public health research indicated that bathing and showering in chlorinated water had as much risk as drinking it. Disinfecting water through oxidation was more expensive but the side effects were minimal. He considered that Glenorchy people who relied on the town water supply had the right to demand water that protected their health.

**QUEENSTOWN LAKES DISTRICT COUNCIL****14 DECEMBER 2017****Page 4**7. Maria Thompson

Ms Thompson advised that she and her husband had moved to Glenorchy three years ago. Both had had cancer but had been in good health recently. However they were concerned that the introduction of chlorination into the water supply would adversely impact their health. She stated that the water in Glenorchy was beautiful and it would be a shame to do anything to it.

8. Trish Fraser, Sustainable Glenorchy

Ms Fraser advised that she was the fifth speaker from Glenorchy speaking about chlorination of its water supply, but the Mayor should not limit speakers from other areas of the district affected by the introduction of chlorination as this should be deemed a separate topic. She noted that she represented 67 members of Sustainable Glenorchy none of whom was happy about the proposal to chlorinate Glenorchy water and the Council's unilateral decision to do so. She stated that chlorination had been added to the Arrowtown and Hawea water supplies under temporary authority to address the presence of e-coli, but such was not the case with Glenorchy. Ms Fraser noted that the Christchurch water supply was not chlorinated and if a city of its size could be without chlorination, Glenorchy could be without it also. Ms Fraser questioned the Council's mandate to chlorinate the water without implementation of the Water Safety Plan and she urged the Council to reconsider the proposal to chlorinate without asking the Glenorchy community.

*The Mayor sought an indication from those in the public gallery of who still wished to address the Council about chlorination of Glenorchy water supply and those who wished to speak on other issues.*

**On the motion of Councillors Forbes and MacLeod  
the Council resolved to suspend Standing Orders  
and extend the Public Forum beyond 30 minutes.**

9. Danielle Jones

Ms Jones sang the song 'I See Fire' (Ed Sheeran) and symbolically poured Glenorchy water from a bottle onto the floor of the Council Chambers.

*The Mayor asked Ms Jones to stop what she was doing. When she did not, he asked her to leave the meeting and she was escorted from the room.*

10. Steve Wilde, DownTown Queenstown

Mr Wilde supported the four business cases presented on the agenda and expressed the hope that they would receive unanimous support and move forward as part of the 10 year plan process.

Downtown Queenstown was reasonably confident that the new bus service was not impacting upon Beach Street traffic but nonetheless looked forward to the development of a permanent transport hub on Stanley Street.

11. Glyn Lewers, Frankton Community Association

Mr Lewers thanked the Council for completing the toilets on Frankton Beach. He asked the Council to continue to advocate for the underpass under the Kawarau Falls Bridge to the kindergarten. He was pleased to see the

**Appendix F - QLDC Meeting Minutes: February 8, 2018**

Pages 6-8 of the QLDC Meeting Minutes shows the second time Glenorchy's residents appeared in a public forum to voice their discontent toward the chlorination of their public water supplies.



Minutes of an ordinary meeting of the Queenstown Lakes District Council held in the Council Chambers, 10 Gorge Road, Queenstown on Thursday 8 February 2018 commencing at 1.00pm

**Present:**

Mayor Boulton; Councillors Clark, Forbes, Hill, MacDonald, McRobie, MacLeod, Miller, Smith and Stevens

**In attendance:**

Mr Mike Theelen (Chief Executive), Mr Tony Avery (General Manager, Planning and Development), Mr Stewart Burns (General Manager, Finance and Regulatory), Dr Thunes Cloete (General Manager, Community Services), Ms Meaghan Miller (General Manager, Corporate Services), Mr Blair Devlin (Planning Practice Manager), Mr Ian Bayliss (Policy Planning Manager), Ms Mindy McCubbin (Senior Planner - Policy), Mr Stephen Quin (Parks Planning Manager), Mrs Jeannie Galavazi (Senior Parks Planner), Mr Aaron Burt (Senior Planner, Parks and Reserves), Ms Michelle Morss (Corporate Manager), Mr Lee Webster (Manager, Regulatory), Mr Nathan Bates (Alcohol Licencing Inspector) and Ms Jane Robertson (Senior Governance Advisor); two members of the media and 15 members of the public

**Apologies**

An apology was received from Councillor Ferguson.

**On the motion of the Mayor and Councillor Stevens the Queenstown Lakes District Council resolved to accept the apology.**

**Leave of Absence Requests**

- Councillor Stevens requested a leave of absence 19-27 February 2018.
- Councillor McRobie requested a leave of absence on 16 February 2018.

**On the motion of the Mayor and Councillor MacLeod the Council resolved to grant the requests for Leave of Absence.**

**Declarations of Conflicts of Interest**

Councillor Forbes advised that she owned part of a company that provided public relations services for Skyline Enterprises Ltd and questioned if this represented a conflict of interest in respect of item 1 ('Proposed new reserve lease and easements to Skyline Enterprises Ltd'). The Mayor stated that he did not consider this a conflict of interest.

Councillor MacLeod advised that he leased a property at 181-185 Upton Street from Varina Pty Ltd and questioned if this represented a conflict of interest in respect of item 5 ('Corporate Submission on Stage 2 Queenstown Lakes Proposed

**QUEENSTOWN LAKES DISTRICT COUNCIL  
8 FEBRUARY 2018  
Page 2**

District plan and withdrawal of land from Stage 2 proposals'). The Mayor stated that he did consider this a conflict of interest.

Councillor McRobie advised that he had been a Commissioner on the hearings panel for Plan Change 52: Cardrona Station Special Zone (item 6) and he would therefore not take part in the discussion or voting on this item.

**Matters Lying on the Table**

There were no matters lying on the table.

**Public Forum**

1. John Glover, Glenorchy Community Association [GCA]

Mr Glover stated that the GCA supported the proposed terms of reference [TOR] for the Glenorchy Airstrip Consultative Governance Committee. The TOR were not a surprise to the GCA as they had been involved in their preparation, for which they were grateful.

In 2016 as part of its community planning exercise, the GCA had recommended that the Council prepare a district-wide camping strategy. They were pleased to see that the Council was now acting on this recommendation, as a good network of camping facilities was the key to managing freedom camping.

2. Alan Paris

Mr Paris advised that he lived at 42 Old School Road which was near the Shotover River. He circulated a map of the area near his house on which he had labelled various points where he had observed unhygienic acts being performed by freedom campers. This included a female who was travelling in a non-self-contained vehicle toileting in the bushes, campers in the water shampooing and washing, beer bottles littering the Queenstown Trail and toilet paper in the bushes. He stated that activities which contaminated the water were especially bad because two houses downstream of the camping site took their drinking water directly from the river. He believed that freedom camping should be banned unless there were facilities in place (showers, toilets) and also suggested that a phone line be made available for people to report violations of freedom camping rules.

3. Trent Yeo, Chief Executive, Ziptrek Ltd

Mr Yeo expressed concern about the exclusivity of the lease to Skyline which favoured Skyline to the detriment of other users. He urged Council to require a minimum of 25% of the proposed carpark to be made available to the public for carparking. Mr Yeo noted that Skyline had been using the area for carparking for many years although it wasn't part of the lease area and had cleared trees and levelled land without permission. He was opposed to reserve land being used for private use and if the area was rolled into the lease in 2020, other users should be permitted also to use the carparking facility. He was also concerned that Ziptrek had been excluded from consultation on this proposal. Overall he considered that use of the carpark exclusively by one entity for itself should be stopped. Mr Yeo acknowledged that the Council had sought

submissions on the proposed lease and that his company had not lodged a submission.

4. Justine Farquharson

Ms Farquharson thanked the Council for the actions it had taken so far to address the problems with freedom camping. She believed that the situation was now well past being controlled by the Freedom Camping Act 2011 and the tag 'freedom camping' itself needed a re-think. Some campers did not have an impact but others were doing real damage to the environment, especially those travelling in non-self-contained vehicles. Campers needed education and this could be achieved through campervan hire companies. Part of this should be encouraging camping thinking to change from 'self-contained' to 'self-sufficient'. The provision of good, self-funded facilities would help to achieve compliance.

5. Bruce Farmer (Chair, Sustainable Glenorchy)

Mr Farmer thanked the Council for organising a meeting to discuss chlorination in Glenorchy. Both the Council and the community had the same goal, namely, safe, sustainable and clean water for the community. He suggested that the Council take the same approach as Christchurch and chlorinate in the short term but then only use it on a case by case basis going forward. He asked the Council to implement the 2011 Water Safety Plan for Glenorchy as it contained many initiatives to improve the Glenorchy water supply. He noted that there had been a recent increase in coliforms in the water and this needed further analysis. Sustainable Glenorchy wanted to be part of the solution to providing a safe water supply in the town.

6. Basil Walker

Mr Walker suggested that buses leaving from the airport put CBD on their destination board as well as Fernhill, as most people boarding at the airport did not know that a bus to Fernhill went via the CBD. He also considered that there had been a low uptake of bus travel by the local community. The Mayor disagreed, stating that statistics to date showed that use of the bus service was a long way ahead of projections.

7. Erna Spijkerbosch

Mrs Spijkerbosch acknowledged that she had a conflict of interest in terms of camping but the levels of free camping in local reserves meant that the environment was suffering and the ratepayer was paying cost of the degradation and enforcement. Facilities such as 12 Mile Delta and Moke Lake weren't free and this should not be a surprise to many visitors as it was not possible to go to the toilet free in Europe. She suggested that the Council provide signage showing the locations of DOC camping grounds before put any gates were put up at the free camping areas the Council proposed to close.

**Confirmation of agenda**

The Mayor proposed that in light of the high public interest in the item, that item 7 ('Freedom Camping Amendments') be moved up the agenda to item 1, with all subsequent items moving down one.



## **Appendix G - QLDC Meeting Minutes: March 23, 2018**

Pages 6-11 of the QLDC Meeting Minutes shows increasing concerns by residents of Glenorchy about the chlorination of their town's water supplies. This section of the meeting minutes also documents residents from different parts of the Queenstown-Lakes district expressing discontent over chlorination. This section also shows tensions related to the lack of consultation with local *iwi* with regards to chlorination.



**Minutes of an ordinary meeting of the Queenstown Lakes District Council held in the Armstrong Room, Lake Wanaka Centre, Wanaka on Friday 23 March 2018 commencing at 1.00pm**

**Present:**

Mayor Boulton; Councillors Clark, Ferguson, Forbes, Hill, MacDonald, McRobie, MacLeod, Smith and Stevens

**In attendance:**

Mr Mike Theelen (Chief Executive), Mr Tony Avery (General Manager, Planning and Development), Mr Stewart Burns (General Manager, Finance and Regulatory), Dr Thunes Cloete (General Manager, Community Services), Mr Mark Edghill (Chief Financial Officer, Queenstown Airport Corporation), Ms Jen Andrews (Manager Communications and Community, Queenstown Airport Corporation), Mr Ulrich Glasner (Chief Engineer), Dr Deborah Lind (Manager, Strategy and Performance), Mr Blair Devlin (Planning Practice Manager), Ms Mindy McCubbin (Senior Planner - Policy), Mr Stephen Quin (Parks Planning Manager), Mr Lee Webster (Manager, Regulatory), Mr David Collins (Legal Counsel, Meredith Connell Ltd), Mr Dan Cruickshank (Property Advisor, APL Property Ltd), Mr Tom Lucas (Rationale Ltd), Mr Warren Ladbrook (Harrison Grierson Ltd) and Ms Jane Robertson (Senior Governance Advisor); four members of the media and approximately 60 members of the public

**Apologies/Leave of Absence Requests**

An apology was received from Councillor Miller (on approved leave of absence).

Councillor McRobie requested leave of absence on 28-29 March. He added that he would be observing Otago Anniversary Day on Monday, 26 March.

**On the motion of the Mayor and Councillor Stevens the Council resolved to grant the request for Leave of Absence.**

**Declarations of Conflicts of Interest**

No declarations were made.

**Matters Lying on the Table**

There were no matters lying on the table.

**Public Forum**

1. Kathy Dedo, Link Upper Clutha

Ms Dedo spoke about the functions of Link Upper Clutha and circulated to the Council packs of two tea bags which were a Link Upper Clutha initiative to encourage the community to get involved in 'Neighbours Day Aotearoa' which was happening over the upcoming weekend. She also signalled that because

**QUEENSTOWN LAKES DISTRICT COUNCIL****23 MARCH 2018****Page 2**

Link Upper Clutha had only 10 months remaining of funding from the Department of Internal Affairs, they would be approaching Council for funding through the Ten Year Plan.

2. Simon Telfer, Active Transport Wanaka

Mr Telfer was critical that funding of only \$1.5M beginning in 2022 was allocated to Wanaka in the Ten Year Plan for extending the tracks network in Wanaka. By contrast, the Plan allocated \$23.5M to track development in Queenstown and this would start in the current year. The proposal to upgrade the Park Street to Hotops Rise section had \$7.4M allocated to it which was five times the budget for Wanaka for the next ten years. He stated that Council needed to address this inequity.

3. Don Robertson, Lake Hawea Community Association

Mr Robertson spoke against permanent chlorination of the Hawea water supply and asked the Council to delay a final decision on permanent chlorination for 12 to 18 months until there could be a meaningful evidence based process to identify a best practice solution. He referred to the Harrison Grierson 'lessons learnt forensic assessment' of the delivery of the Lake Hawea Water Supply Capex Project and noted that the community was losing confidence in the Council in light of these conclusions.

4. Richard Elvey, Youth worker at Kahu Youth

Mr Elvey spoke of the success of the youth club but noted that they only had a further 18 months to run in their current rental premises. He advised that it had taken 4.5 years to find the current building and 18 months was a short time to find an alternative. The problem was compounded by large increases to land values and rents and the importance of having a central location. They had identified Council land on Lismore Park beside the water tower that they wished to lease from the Council for a new building and sought further discussion of this proposal.

5. Members of the Upper Clutha Youth Council

Moana Watson, Kate Godsell and Meg Thomas spoke of their support for Kahu Youth. They described it as a fun place to go and chill and a 'second home'. They stressed the importance of it being located within walking distance of Mt Aspiring College and town and the importance of not delaying any action. They were supportive of the proposed Lismore Park location.

6. Roger North, Kai Whaka Pai café

Mr North complained about the fees he was being charged for every music performance that took place on the square at the corner of Ardmore and Helwick Streets. He stated that at \$172 for every performance plus insurance it was too high and forced him not to play music or only when it represented a good commercial opportunity. He sought a sensible resolution, adding that no fee had been payable previously when only busking was going on.

He was opposed to a single learn to swim provider at the new Wanaka Pool. He sought an assurance that the full Council would determine the final outcome on this matter.

**QUEENSTOWN LAKES DISTRICT COUNCIL****23 MARCH 2018****Page 3**7. Tim Erlington

Mr Erlington tabled a petition signed by people opposed to a Special Housing Area development in Cemetery Road in Lake Hawea or the development of an urban master plan for the site. The petition asked the Minister for Housing and Development, the Mayor and Councillors to reject any proposal on the community's behalf. He delivered the first three pages which contained 72 signatures, noting that this represented only a week of collecting signatures.

8. John Glover, Glenorchy Community Association ['GCA']

Mr Glover stated that he was confused about what decision the Council was being asked to make in relation to chlorination of the district's water schemes. He detailed various inconsistencies in the report which had led to his confusion, especially whether chlorination was an interim or permanent measure. The Glenorchy Water Safety Plan did not require permanent chlorination but only for such a measure to be investigated. By chlorinating the water, the Council was prejudicing the process to determine the best option for Glenorchy's water/wastewater scheme and there was no requirement explicit in law to require chlorination. Mr Glover suggested an amendment to the recommendation to reflect this.

9. Sue Bradley

Ms Bradley tabled a letter signed by more than 360 residents of Arthur's Point opposing and seeking a postponement of the decision to permanently chlorinate the area's water. This postponement would allow time to look for alternatives to chlorination. She noted that this action was supported by the Arthur's Point Community Association and there were people in the Arthur's Point community committed to setting up a consultative group to consider options other than chlorination.

**On the motion of Councillors McRobie and MacLeod  
the Council resolved that Standing orders be  
suspended to extend the Public Forum.**

10. Paul Fraser

Mr Fraser presented his mihi. He asserted that Council had not consulted with local iwi on permanent chlorination. He stressed the close relationship of Māori with water and the Council's duty to consult with them when making any important decision. He asked the Council not to make a final decision on permanent chlorination of all water supplies until local iwi had been consulted.

11. Jennifer Gilmore

Ms Gilmore noted that New Zealand had been the first country in the world to grant a river the legal status of a person which signalled its regard for water. Tourism was built on New Zealand's clean green image but waterways were starting to show the effects of dairying and there were now all kinds of bacteria in the water. She asked the Council not to approve permanent chlorination of all the district's water schemes without alternative plans being in place. She felt it was the Council's role to provide other options and she expressed concern that the current approach felt more like a dictatorship than a democracy.

**QUEENSTOWN LAKES DISTRICT COUNCIL****23 MARCH 2018****Page 4**12. Chris Streat

Mr Streat advised that he was the technical representative on water for Arthur's Point and he was very keen to work with the Council as a technical expert. He questioned why Council was only considering chlorination as an option, whilst plans to investigate chlorination on an ongoing basis were at odds with the recommendation to permanently chlorinate. He had communicated with the author of the Havelock North study and stated that there were big differences between the state of Havelock North's water system and that in Arthur's Point which had never presented problems. He asked the Council to reject the report recommendations.

13. David Reid

Mr Reid stated that he was a director of Bright Sky SHA. Most of the public feedback had been very supportive and the objective was to design something of high quality that was affordable and to maximise the site and visual aspects. The buildings would be up to three storeys high but their heights would be disguised by a 5m rise in the land. Time and considerable effort had been put into preparing the master plan to prevent against haphazard subdivision.

Mr Reid acknowledged that there was a problem with speculation on affordable housing developments. He underlined however, his desire to provide a legacy for the town. He spoke about the efficiencies that could be achieved with building more than 280 houses.

14. Paul Miller

Mr Miller stated that he supported the Bright Sky SHA development. He worked as a real estate agent and considered that the best way of addressing housing price increases was to satisfy the demand for housing. He agreed that speculation was an issue and the only guarantee against this practice was to put some sort of covenant over the property in place. He noted that cycle and walkways were including in the plans.

15. Peter Herbert

Mr Herbert advised that he lived in Aspiring Retirement Village which was the closest residential area to the Bright Sky SHA development. His residence was only about 300m from the proposed site but some properties would be within 80m of the densest zone. He agreed that the community needed affordable housing but not right at others' front door. He asked the Council to keep him informed about the SHA.

16. Turid Heiler and six others representing pool users

Ms Heiler and several companions stated that multiple swim school providers was their preferred option for the new Wanaka community pool. The Council's request for expressions of interest suggested that a single provider was sought, but they hoped that there was still the opportunity to consult on this. They did not know how one provider could provide lessons for all the children who wanted them and they were concerned that children's skills would decline if they could not access lessons because there was only one provider.

**QUEENSTOWN LAKES DISTRICT COUNCIL****23 MARCH 2018****Page 5**17. Sue Richard

Ms Richard suggested that a regional sports and recreational strategy was needed. She expressed concern that the Council's 10-Year Plan contained funding to develop a gym and studio at the new Wanaka Recreation Centre, as Wanaka was already well catered for in terms of gyms. Only 10% of the population got involved in commercial fitness offers and a further gym would spread this already limited market across too many providers. She considered the town was already saturated with gyms and the Council should reconsider its plans to establish a new one. She asked for more consultation on this proposal.

18. Mary-Louise Roulston

Ms Roulston stated that the proposed redevelopment of the Lake Wanaka lakefront was unnecessary because it was already one of the most scenic areas in the world and did not need further embellishment. She also opposed removing vehicles from the lakefront as this would disadvantage elderly people accessing it and people with children or carrying equipment. She asked when the Council would resolve Wanaka's parking issues by constructing a parking building. She considered that the Council should spend money on important infrastructure for Wanaka rather than trying to beautify things that were already beautiful.

19. James Gardner-Hopkins and Shaun Kelly

Mr Gardner-Hopkins addressed the Council about Kawarau Jet's ongoing discussions with Council about an uplift of the speed limit for vessels on the Kawarau River above the Arrow confluence. They sought a long-term dispensation from the provisions of the Navigation Safety Bylaw which continued to preserve the rule that prohibited powered vessels beyond the Arrow confluence. K-Jet had sought consent to operate on this stretch of the river before the current version of the bylaw had been notified and at a time when the Council's position on long term dispensations was unknown. The application had been on hold since 2015 in light of the prohibition that had come in with the 2014 Navigation Safety Bylaw. Mr Gardner-Hopkins asked for the provision that K-Jet thought it could rely on to be returned. Mr Kelly provided an assurance that K-Jet would operate safely on this stretch of the river.

20. Jude Battson

Ms Battson expressed support for the Council introducing separate glass recycling in Queenstown. She urged the Council to include provision for construction waste and compost toilets in its waste plans. She warned against the Council appointing a single swim school provider at the new Wanaka Community Pool. She noted that the Council had been through a similar process in 2002 and it had not worked then. She believed that the Council should learn from this earlier mistake. She was also concerned about the SHA proposal that had been presented to the Hawea community.

21. Susan Moore, Public Health South

Ms Moore noted that there were 11 registered water supplies in the district and only one was fully compliant with the NZ drinking water standard. It was a legal requirement for all to be compliant. She detailed the principles for protecting

**QUEENSTOWN LAKES DISTRICT COUNCIL****23 MARCH 2018****Page 6**

water schemes from contamination, noting that suppliers were responsible for the safety of their water and must apply a safety risk management approach. She considered the Council was taking good steps towards achieving compliance and the report demonstrated this. The district had a lot of untreated water schemes and contamination was highly likely without disinfection.

**22. Kurt Kurtis**

Mr Kurtis stated that he swam regularly in the lake and had recently been noticing a major decline in water quality. He attributed this not only to the effects of dairying but also to a high number of motor boats, especially those with two stroke engines, leaking petrol into the water. Although he wore goggles his eyes were irritated. He had come to New Zealand to get away from poisonous substances and he did not believe that the community had time to make more mistakes.

The Mayor advised that maintaining water quality was Otago Regional Council's responsibility and he encouraged Mr Kurtis to make ORC aware of his concerns.

**23. Danelle Jones, Acting Chair Sustainable Glenorchy**

Ms Jones noted that temporary chlorination of the Glenorchy water supply had been implemented just before Christmas 2017. On 27 February Council had met with Glenorchy residents and agreed a safe water supply for the town. The Council was tasked with determining whether to retain the status quo or approve permanent chlorination but the Glenorchy community wanted a third option, namely, that chlorination be temporary only until the Water Safety Plan came into force which should have happened by 2014. Council needed to focus on the maintenance and replacement of leaking tanks, leaking boreheads and backflow prevention in new residences.

**On the motion of Councillors McRobie and Stevens  
the Council resolved that Standing Orders be  
reinstated.**

**Confirmation of agenda**

The agenda was confirmed without addition or alteration.

**Confirmation of minutes**

8 February 2018

**On the motion of Councillors MacDonald and Clark  
the Council resolved that the minutes of the public  
part of the ordinary meeting of the Queenstown  
Lakes District Council held on 8 February 2018 be  
confirmed as a true and correct record.**

## **Appendix H - Ashburton District Council Report: Community Feedback on Lot 9 Water Issue**

Pages 28-30 summarise several of the concerns raised by residents in the Ashburton district with regards to the prospective water bottling operation in the Lot 9 Business Estate.

Pages 34-41 include a deposition prepared by the Bung the Bore movement, in which the members elaborate their case against water bottling in Ashburton. It also shows the actions they were willing to take if their concerns were not adequately approached.



# REPORT

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Date: 28 July 2016  
Report to: Council  
From: Community Relations Manager  
Subject: Community Feedback on Lot 9 Water Issue

## 6.5 Community Feedback on Lot 9 Water Issue

### 6.5.1 Summary

Council has received feedback from various interest groups in the community regarding the sale of Lot 9 and its associated water consent at the Ashburton Business Estate. This includes a deputation from Bung the Bore; an online petition from Action Station; numerous emails, letters, phone messages, and Facebook posts; and direct correspondence from Ngai Tahu and Arowhenua Runanga about the consultation process followed.

This report sets out the summary of the different feedback Council has received, and makes a recommendation to help Council meet its statutory obligations in consulting and considering community views on matters of significance.

### 6.5.2 Recommendation

**That** Council:

- 1 Receives the report and acknowledges the concerns expressed by different communities about the process around the consultation for the application and sale of the water consent for Lot 9;
- 2 Retains the water consent for future use on Lot 9; and
- 3 Works towards improving the framework for obtaining Ngai Tahu and Arowhenua Runanga engagement on matters of interest to Maori.

### 6.5.3 Background

Ashburton District Council has a long history of being involved with the procurement of water consents, over and above the requirements for the use of potable water, in the interests of promoting economic growth in the district. Council owns 40% of the shares in the Rangitata Diversion Race Management Ltd, a water procurement company which has supplied water for hydro-generation, irrigation and stockwater in Ashburton District for more than 70 years. The Ashburton Community Water Trust was established by Council in 1999, where among other things the Council has spent close to \$1million to obtain a consent to abstract water from the Rakaia River to help stimulate economic growth.

Ashburton District is home to one of the largest stockwater race networks in New Zealand, totaling 2,381 km through 27 intake consents and 100 discharge points through the district. Council is closing down its stockwater race network to meet the goal of the Canterbury Water Management Strategy of reducing abstractions from the Ashburton River by 2023, and is in the process of working with stockwater race users and irrigation companies to investigate other options for supply of stockwater where it is still required.

Council developed the Ashburton Business Estate (ABE) in 2008 after community consultation to encourage economic growth within the district.

Businesses located at the ABE use the town water supply. Council recognised the limitations this could have on any potential factory or processing plant with high water needs purchasing a land parcel in the estate. Hence, Council sought a consent to abstract water from the aquifer to future-proof any potential sales.

In May 2011, Council applied to Environment Canterbury (ECan) for the water consent for Lot 9 on the Ashburton Business Estate to take water from the aquifer, with an associated consent application to recharge the water through a natural filtration system. ECan as the consenting authority granted these consents to Council for the purpose of using the water for commercial purposes, including bottling. At the time of the consents being granted in 2011, ECan published the consents and the relevant details on their website. Ashburton District Council treated the sale of Lot 9 and the associated consent as a commercial transaction which needed to be undertaken in accordance with normal business practices.

Lot 9 has been the subject of negotiation for a number of years between Council and a potential purchaser who sought the associated consent to establish a water bottling plant. Water bottling is a legally permitted activity that would comply with the consent conditions for this site.

#### ***Bung the Bore Deputation***

On 30 June 2016, Council received a deputation from a local lobbyist group called Bung the Bore. The deputation is attached in Appendix One. ***Pages 34-41***

The main concerns outlined in the deputation are outlined below:

1. Appropriateness of the use of water for bottling
2. Climate change impact on future water demands
3. Recharge provisions for the consent on Mitcham Road
4. Social responsibility of allowing the quantity of water to be bottled in plastic
5. Financial implications of failing to meet recharge consent conditions under TPPA
6. The viability of the Managed Aquifer Recharge system currently being trialled
7. The fact the consent was granted as a non-notified consent without wider consultation
8. The integrity of Council in its business dealings

This report does not attempt to counter the concerns raised on a point-by-point basis. Council's position is that the amount of water for this particular consent was not considered excessive (approximately 0.013% of water currently used in the district), and the RMA consultation conditions required were met at the time of the application. The potential economic benefits of an industry that would create more jobs, help reduce Council debt, and potentially move the rail yards from the centre of town to the ABE were of greater benefit to the community in Council's view than what was considered to be a moderate intake of water from the aquifer. Any concern about the consent notification process should be directed to the consenting authority and not ADC. Community consultation on Council's role as a property developer and supporter of economic development is carried out annually through the Annual Plan or Long Term Plan consultations.

Bung the Bore's deputation asks Council to remove the water consent from the sale of Lot 9. They oppose the attachment of consent CRC111706/7 to the sale of Lot 9 for the purpose of water bottling. The group has stated it intends to take legal action if Council does not remove the consent by 30 July 2016. Exactly what legal action and against whom (ADC or ECan) is not clear. It is thought any judicial review would be directed to the consenting authority, ECan, to try to overturn the consent it granted in 2011.

### **Action Station Petition**

At the same meeting on 30 June, Council received an online petition organized by Action Station, a Wellington-based branch of an international lobbyist group, with support from SumOfUs, a New York-based activist group. The online petition reportedly contained 40,000 signatures. The cover page states “40,000 New Zealanders say NO TO YOUR \$ELL OUT OF OUR WATER” (attached in Appendix Two with a sample page of signatures). **Pages 42-43**

Questions do arise about the validity and format of the online petition. Due to the online nature of the petition, no verification is possible of the names contained. All Council has received are sheets of paper with names and countries (which may be of origin or residence, it is unclear). There are no email addresses provided. It is impossible to determine how many of the names listed belong to Ashburton residents, Cantabrians, New Zealanders or foreigners residing overseas. Many of the names only contain a first name. Reports of fictitious signatures have been received and been the subject of correspondence to the editor in The Ashburton Guardian.

The petition does not follow the Petition Guidelines Council adopted in 2015 (see Appendix Three) which align to Council’s Standing Orders NZS 9202:2003 and comply with Part 4 and Schedule 7 of the Local Government Act 2002, and Part VII of the Local Government Official Information and Meetings Act 1988. **Pages 44-55**

The petition does not state the action it seeks Council to take with regards to Lot 9. The only statement is to not sell water, which technically is incorrect, as Council was selling the consent, not the water itself. However, despite the above, the overall intent of the petition should be read as many people are opposed to the sale of Lot 9 for water bottling.

### **Public Correspondence & Feedback**

Council has received direct feedback via its website, online feedback form, letters, emails, phone calls and Facebook posts mainly criticising the decision to sell Ashburton’s water to overseas investors and shipping it to foreign Asian countries. Many of these comments had strong racist undertones about specific cultures, and resorted to personal attacks about elected members and the Chief Executive Officer. Some members of the public adopted a more respectful expression of their disappointment of NZ water being sold overseas. A small minority of responses have been in support of Council’s position.

The proposed sale raised the national issue about the principles behind the commercial activity of water bottling throughout New Zealand. This went far beyond the scope of the proposed land sale and the water consent for Lot 9. The various emails and letters were not responded to individually. Council officers engaged instead with local media to put factual information into the public domain. However, national media tended to focus on the sensationalistic and often factually incorrect emotional argument about selling NZ’s water overseas.

### **Ngai Tahu and Arowhenua Runanga**

Council’s Chief Executive Officer and Mayor have received correspondence from Ngai Tahu and Arowhenua Runanga about their concerns with the Lot 9 sale, stockwater closures and the impact on mahinga kai. The main issue highlighted is one of engagement with local iwi for water matters in general.

Discussions have commenced between the Council and Ngai Tahu to work towards developing an improved framework around engagement with mana whenua at the strategic level for stock water race systems and other matters of interest for Maori around land and water.

Public Forum - Council 30/06/16

Submission to  
ASHBURTON DISTRICT  
COUNCIL

In opposition to the attachment of  
consent  
CRC111706/7  
to the sale of Lot 9  
Ashburton Business Estate  
For the purpose of Water Bottling.

Presented by Jennifer Branje  
On behalf of  
Bung the Bore Action Group  
Ashburton  
30 June 2016

The following submission outlines our concerns regarding the sale of Lot 9, Ashburton Business Estate, including the water take and recharge consents (CRC/111706-CRC/111707).

Please also note our **absolute and unreserved opposition** to the extraction of any water for the purpose of bottling in our 'Red Zoned' district.

### **1. Appropriate use of water.**

In an area prone to drought, that is subject to major water quantity and quality issues, we question whether exercising the above mentioned consent for the purpose of water bottling, is a sound and reasonable use of water from an over allocated and 'red zoned' area.

When that water has left our district, it has no intrinsic value to our community and is no longer available to do so. Given that our district is currently engaged in a Managed Aquifer Recharge trial to replenish our depleted groundwater, we cannot find any cohesive reason to allow 40 billion litres of our pure, potable water, to be extracted and gifted to a commercial entity for **their long term gain**. It is our submission that with groundwater at a 66 year low, gifting our water resources for the purpose of bottling is an ill considered proposal.

### **2. Climate change**

Just as Ecan accepted virtual tests on draw down affects to bores surrounding Lot 9 in their consideration of this consent, we ask that you consider current climate change models. Recent modelling and forecasting of climate changes predict that the Ashburton District, and in fact, the whole East Coast of New Zealand will become hotter and **drier** in the near future, which will undoubtedly increase demands for water, **while supply is reduced**. We consider that our deep aquifers, while remaining relatively 'untapped', afford our community a form of 'insurance' for clean, potable water in the future. We also believe that continued mass extraction **for any purpose** must be allocated with careful consideration and take into account current climate change predictions, economic and social benefit, and sustainability. Should those entrusted to manage and govern our water resources continue to ignore the warning signs, the future of our district will most definitely be compromised.

There have already been documented incidences of sea water incursion into some aquifers along our coastline. With little natural recharge, and

the uncertainty surrounding effectiveness of the MAR, continued low flows and pressure reduction in our aquifers may contribute to continued sea water incursion, rendering some coastal artesian water unfit for use or consumption.

### 3. Recharge provisions

We do not agree that any actual recharge will occur in the exercise of consent CRC111707.

In the recharge proposal, water will be diverted to ground via the stock water system, sourced from the Ashburton/Hakatere River. This water **already exists**. It is not 'new water', so cannot be considered recharge. Given that differing hydrological reports state that the loss of stock water to ground in the races is documented at between 82% - 97%, that water is already going to ground. The water existing in the stock water system is already recharging our groundwater at upper levels. In a live radio interview with Bill Bayfield, CEO of Environment Canterbury, the issue of recharge was openly discussed. Mr Bayfield admitted, publicly, during the interview that any water diverted for the recharge component of the consent would **not reach the aquifer that the water will be extracted from**. What is the point of a recharge component if the water that already exists, and is in fact, already recharging our upper aquifers, will not permeate to the deep aquifer where water will be taken? We concede that there is possibly a 'pro' to this fact in that surface water may not have the opportunity to degenerate the purity of the deep aquifer while taking with it during the 'leeching' process, upper level nitrates and any other possible surface contaminants.

We also question the suitability of the site at Mitcham Road chosen for the recharge pond. This site has been identified by previous land users as a farm waste pit containing all manner of industrial waste along with household refuse. We asked Deputy Commissioner of ECan, David Caygill if there had been any soil samples taken for analysis at the proposed site to identify its suitability. According to ECan, there were "none that we know of". It is our view that the suitability of such an important and defining component of the consent application has been overlooked, and if not addressed may well contribute to contamination of the upper aquifers.

We question why the ratepayers of the Ashburton District had no say in their obligation to be fiscally responsible for all aspects of the recharge component of this consent. Why would our Council concede to give away all the tools required for an investor to make a profit that obligate

Ashburton District Ratepayers to financial responsibility for 35 years?  
The 'recharge' component is an absolute nonsense concocted to appease the requirements of a consent application for allocation within a Red Zone.

#### 4. Social Responsibility

What is our Council's policy in regard to social responsibility, considering it makes, and has made, decisions that have far reaching and continuing effects on our community?

We believe that is to make all decisions with consideration of long term benefit, not short term gain.

In a world that is becoming increasingly devoid of clean water, and filled with plastic products, does our council believe that encouraging further production of non bio degradable containers is sustainable or responsible? What understanding does our Council have of the social value of our water resources?

In actioning this consent for the purpose of bottling water, our Council in fact **devalues** the importance of water and projects a false sense of availability not only to our community, but to those whose greed and opportunistic attitudes contribute our declining water resources. The comparison of the proposed 'take' at Lot 9 to the volume of water a dairy farm uses is abhorrent. It is in fact, the assurance of water given to the dairy industry that has led us to a time where we now recharge our aquifers with water diverted from rivers. The argument that the volume of water we would be giving away is the same that a medium dairy farm would use is abhorrent. **The take at Lot 9 is equivalent to the annual use of our whole town, for 35 years. With dairy farms taking a similar amount seasonally, this furthers our argument that we should not be giving any water away.** Our rivers can ill afford the continual surrender of water to alleviate farming practices that are unsuitable in our natural environment, and should certainly **not** be used as a means to appease a commercial consent for extraction to bottling! The unconsidered impact on the social value of water that arises from allowing our pure, deep water to be bottled will undoubtedly reduce public perception and understanding of the true state of our water resources and their availability. In turn, this does not encourage personal consideration of water conservation in domestic water users, and a flippant 'she'll be right' attitude from those who continue to use huge amounts of water for little economic benefit **to themselves**, let alone our wider community.

The production of plastic bottles uses 0.3% more water than the bottle

itself contains. Where will this 'extra' water come from considering our pure, deep water will be used to fill the bottles?

By allowing water bottling for export, we may also be contributing to environmental issues other countries have with discarded plastics. It is our view that a collective and global responsibility should be considered when entering into the supply of consumable products.

We also bring to the fore recommendations by the Chief Medical Officer for rural mothers to use bottled water in preparation of their infant formulas to avoid the dangers of 'blue baby syndrome'. This very advice should be screaming at those who manage and allocate our water that nitrate levels are in fact at a life threatening level for our district's infants.

How long will it be until Mid Canterbury's water quality is so poor that the adult population are also encouraged drink water **bought** in from other districts because we have sullied and/or given away our own pure water?

We question also, why a 'whole of life' assessment was not undertaken in regard to the impact of the longevity of the Lot 9 consents. As previously referred to, ECan accepted 'virtual' data relating to the affects the Lot 9 bore would have on surrounding bores. It is our suggestion that until the consents are expired, the true effects of this extraction are immeasurable, and indeed, unpredictable. In the 30 years since the introduction of large irrigators to our district, groundwater has declined in both quantity and quality. With no restrictions on current water takes, and the inability of ECan to correctly monitor and 'police' current consents, we question whether the Lot 9 bore would even be correctly monitored.

##### **5. Financial responsibility to industry.**

Ashburton District Council has absolutely no mandate to be trading or offering our resources to buyers as part of the sale of public land.

We are extremely alarmed about the possible fiscal responsibility of our district to any overseas investor should the water take at Lot 9 be compromised. It is our understanding that the recharge facility must run in concurrence with the bore at Lot 9 and we have serious concerns about being responsible for the delivery of water to both the Lot 9 bore, and the recharge site.

The Trans Pacific Partnership Agreement has recently passed it's first reading in Parliament. There are provisions in the TPPA for any overseas



investor to sue and/or bring litigation against any promise of product that cannot be delivered, and for compensation to be awarded to those investors for loss of profit.

Should there be any adverse event, environmental issue, or malfunction of the recharge site or Lot 9 bore, our Council and its Ratepayers, will be responsible for that compensation to which there is no bounds. At 45 seconds per litre, every minute that system does not deliver will incur a huge loss of profit to any investor. We do not agree to being susceptible to that risk in any way shape or form! We would also like to point out that at times, the Ashburton River falls below the intake level to the stock water race and at those times water is not available for **any** use.

## **6. M.A.R**

We cannot positively receive the fact that our Council and ECan are now diverting water from the protected Rangitata River to the recently completed MAR site.

Managed Aquifer Recharge is used for one reason only, to **attempt** to rectify the damage of over allocation and badly managed water take. Attempts by ECan and the Ashburton District Council to 'wow' people with an elaborate 'trial' to replenish our aquifers, does not alert people to the **reason** for doing it.

The fact that our aquifers are in such a dire state that this 'trial' is even necessary, completely contradicts any proposal to give away 40 billion litres at no benefit to our community. We are even more concerned that the Ashburton District Council will consider recharged groundwater as a town supply option **should the MAR work**.

## **7. Non notified consent**

We are at a loss as to how the Ashburton District Council came to the conclusion that Mr & Mrs 'C' and Silver Fern Farms would be the only parties affected by the Lot 9 take.

Subjecting ratepayers to the expense of lowering bores for affected parties, paying their legal fees, and assuring them a clean and continuing water source should have been a community decision, just as the giving away of 40 billion litres should have been.

As the consent to take was considered on 'virtual' data, and no real testing as to the affect on surrounding bores, Ashburton District Council can only assume the affects.

The residents of Taits Road are currently being encouraged to accept town water and abandon their domestic bores. Is this because their bore water quantity and quality may be affected by the Lot 9 take and

associated recharge?

Short of having psychic abilities, the fact is that **nobody** knows what our future holds. Will the giving away of 40 billion litres of our purest water have consequences for future generations? We say that gamble should have been one our whole community gave voice to and should not have been, and remained, in 'committee' without community consultation or referendum.

### **8. Integrity**

Is our Council taking direction from Central Government, Private Enterprise or Federated Farmers?

Who are the people referred to in consent application documents as 'Upper Level' and 'Higher Level'?

Why do you continue to grant extensions to the proposed buyer of Lot 9 when there is another joint venture deal also on the Council table?

We ask you to remember your own personal campaigns leading up to the last Local Body Elections. What promises did you make to the people of Ashburton District, entrusting that your integrity was worthy of the seat you are now warming.

Did you promise to listen?

Did you promise to look to the long term future of our district?

Did you promise to have the people of our community at heart?

Did you promise better and sustainable development of our region?

Did you promise to care for and consider environmental issues in your decisions and discussions?

What did you promise?

Each and every one of you were elected because the people of Ashburton had trust in **your integrity**.

We respectfully ask that when you retire to discuss this submission you consider abandoning the sale of Lot 9 with this consent attached.

We ask that you take into consideration all of the points we have outlined, and those that should already be available to you in documentation you have surrounding this consent. We ask that you stand on your **own**

principles and do not bow down to pressure private enterprise.  
We assure you of our intention to take this consent and it's process to  
Judicial Review should common sense not prevail. In doing so the people  
of Ashburton and indeed, New Zealand, would be asked to fund a  
challenge to save what is already 'ours'. Should there be no decision  
made to abandon this consent by July 30<sup>th</sup>, we will be left with no other  
choice than to instigate legal proceedings.  
The time to stop this deal is now. The decision is in your hands. Those  
same hands that cradle your grandchildren can ensure them a future with  
clean, potable water.

Jennifer Branje [on behalf of]  
Bung the Bore Action Group  
Ashburton.

## **Appendix I - Officer's Report - Application CRC111706 & 111707**

This report documents the application process followed by the Ashburton District Council (as owner of the Lot 9 business estate) as it applied for a water consent before Environment Canterbury. In this report, the Ashburton District Council identifies potential Affected Persons, and demonstrates that these individuals had been properly approached, and that their buy-in had been successfully obtained. This specific aspect of the application was contested by the Bung the Bore movement in 2016, where they argued that the Ashburton residents should have been included in the application as Affected Persons.

**Application CRC111706 & 111707**

**By Ashburton District Council**  
**for a water permit to take and use water, and discharge permit to recharge to ground**

**Section 42A Officer's Report – Stephen Timms**

**Date August 2011**

**INTRODUCTION**

1. Ashburton District Council (the applicant) commissioned Opus International Consultants to investigate a potential groundwater recharge system to enable groundwater to be taken and used by a 'wet industry' at the Ashburton Business Estate. A meeting was held between ADC, Opus and Don Rule, Leo Fietje, Matt Smith and Stephen Timms on 5<sup>th</sup> April 2011 to discuss the proposal, where broad in principle support was given to the concept. ADC have therefore made this application for a water permit to take and use water for commercial purposes at a rate of 45 litres per second. The take and use of water will be subject to the recharge of water to ground at a rate greater than the rate of the take (60 litres a second). Refer to Section 1 and 4 of the Assessment of Environmental Effects (AEE), which accompanied this application for the reasons as to why they are making this application.

**DESCRIPTION OF THE PROPOSED ACTIVITY**

2. In summary, the applicant wishes to take water at an instantaneous rate of 45 litres per second with a volume not exceeding 3888 cubic metres per day. The water will be used by a water bottling plant that will utilise all of the water abstracted, at Lot 9 of the Ashburton Business Estate.
3. The taking of water will only be permitted whilst a discharge of water is occurring at a rate greater than the take, with the recharge sources from ADC stockwater and occurring in part of a disused quarry (pits 239/240), refer to the conditions which have been agreed to by the applicant. These incorporate changes discussed with the applicant to ensure the conditions will provide sufficient mitigation.

**LEGAL AND PLANNING MATTERS**

4. The proposal to take and use water is classified as a **non-complying activity** under Rule WQN13, because the water is sought in a zone that is fully allocated.
5. The use of the water is classified as a **discretionary activity** under Rule WQN18, as the using of water is not classified under other rules.
6. The proposal to discharge water to groundwater (recharge scheme) is a **discretionary activity** because of the volume to be discharged.
7. Although the Ashburton-Lyndhurst zone is 'fully allocated', the proposal to recharge the groundwater system, through a discharge of water to groundwater, at a rate greater than the proposed take is considered to be acceptable and will result in an effect that is 'less than minor' on the overall groundwater zone and availability of water in that zone.

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## CONSULTATION

8. Following a WQN10 drawdown interference analysis for bores more than 40m deep five bores were shown to be potentially affected. One bore is owned by ADC and does not need to be considered, three are owned by Silver Fern Farms, and one is owned by Mr & Mrs JL & J Cockburn. Written approvals have been obtained from all potentially affected parties, being Silver Fern Farms and Mr & Mrs Cockburn.
9. The applicant has held pre-application discussions with Mr Don Rule, Leo Fietje, Matt Smith and myself.
10. I have consulted further with Mr Matt Smith (Environment Canterbury Groundwater Hydrologist) in relation to potential effects on the surrounding water users (TRIM ). Mr Matt Smith made the following comments:

*On the whole the application looks okay and is in line with what we had discussed, however para 42 refers to a step test in the conditions, I would remove the word step - this will allow us to ask for a more complete test if required. The reason I have mentioned this is the well interference analysis has excluded wells less than 40m - something that I do not recall agreeing too, however it may be that I did? I would have thought we would agreed to a pumped aquifer cut off of 40m and that the effects of shallow wells would be looked at via a sensitivity analysis - the recharge via the gravel pit will of course reduce the effects on shallow wells, but it would be good to have some analysis/evidence of this rather than commenting that a few short duration tests show no significant response.*

*I would ask to see some consideration of potential effects on shallow wells.*
11. Mr Smith was also aware of the fact that it was proposed to grant the consent and request testing on surrounding wells after the granting of consent, contrary to usual practice. Matt's comments were that *if no testing is to be done this is more of a consents call as to how it is going to be handled, mostly around the test condition.* I have had further discussions with Mr Leo Fietje and Matt Smith who are satisfied with the proposed condition (being condition 1 on consent CRC111706), given the special circumstances of the case.

## NOTIFICATION

12. The proposal involves the taking of water at a rate of 45litres/second from a proposed bore within the Ashburton Business Estate. The applicant has identified 5 deep groundwater bores as being potentially affected by the proposal. One is an ADC bore and the effects do not need to be taken in to consideration (refer s95D of the RMA). Silver fern Farms control three bores and written approval has been received in relation to those, and one is owned by Mr and Mrs Cockburn, and written approval has also been provided from them as affected parties. There are no other deep bores that will be affected and therefore no other parties that need to be notified.
13. The proposal involves both a water take and a groundwater recharge within the same zone (Ashburton- Lyndhurst). Although the zone is considered to be over-allocated at present, the overall proposal will result in more water being available within the zone than at present. For this reason it is considered that the effects will be less than minor, and the proposal does not need to be publicly notified, contrary to the usual process for a groundwater take within an over-allocated groundwater zone.

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14. The submitted AEE (section 8.1) states that the effects on surrounding bores will be less than minor (or written approval has been obtained). This is based on monitoring results from nearby bores, and for shallow bores is based on pumping tests conducted on other deep bores where a conservative estimate predicts no adverse effects on shallow bores. It is agreed that the assessment provided by the applicant is accurate. However, in order to demonstrate strict compliance with the NRRP, and if necessary to demonstrate to surrounding bore owners that there will be no adverse effects, it is proposed to carry out aquifer testing once the bore has been commissioned.
15. In determining whether the proposal can be granted subject to conditions, which require further testing prior to exercise of the consent, particular regard has been had to the potential for interference. Based on the submitted AEE, further discussions with the consultants (Opus) along with Mr Matt Smith and Leo Fietje, I am confident that the consent will be able to be exercised without effects on both surrounding deep groundwater bores and shallow groundwater bores. It has been established through case law that conditions should not be imposed on a consent which would render the consent nugatory (refer to Arrigato Investments Ltd v Rodney District Council A145/2002, 5 July 2002). If the adverse effects of the proposed activity cannot be appropriately avoided, remedied or mitigated without imposing a condition which effectively renders the consent nugatory, the application should be declined. In this case both the applicant and the consent authority are confident that there will be no adverse effects on surrounding bores which would impinge on the exercise of the consent. This is particularly relevant for future consents in that granting of this consent subject to the proposed condition 1 which requires an aquifer test, should not represent a precedence that can be followed for other consents, unless adequate information has been provided and special circumstances exist.
16. For the reasons set out above, and in the submitted AEE, it is considered that both consents can be granted non-notified.

**PRINCIPAL ISSUES IN CONTENTION, SUMMARY OF EVIDENCE HEARD AND MAIN FINDINGS OF FACT.**

17. The application has been accompanied by an AEE which addresses all of the principal issues and is a comprehensive assessment of environmental effects. It would be possible to rely on the AEE and the proposed conditions as amended, to reach a sound decision on this application. However, to provide a record for future reference and completeness, the main issues have been summarised below.
18. I agree with the applicant's assessment and their conclusions in regards to all of the following potential effects, except for proposed condition 1 of CRC111706. The proposed condition 1 to undertake a step test has been deemed incomplete and is proposed to be reworded as a 'test', as this allows for further discretion when assessing any effects on surrounding wells, particularly those less than 40m deep.

**Effect of take on surrounding shallow groundwater users**

19. The applicant has undertaken an assessment of the potential for adverse effects on surrounding shallow bores (refer section 8.1 of the AEE). This has been based on monitoring results for nearby shallow bores during pump tests conducted on other deep bores, which are in fact shallower than the proposed bore for ADC which will be between 150-200metres deep.

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20. In this instance, given the special circumstances of the case, an aquifer test has not been required prior to reaching a decision with regard to notification and to grant the consent. ADC have advised that, due to complex contract negotiations, they do not wish to outlay a significant investment in drilling and testing a bore to illustrate that there will be no effect on other wells. ADC need to have a consent in place to finalise contract negotiations and secure the inward investment of a private company, before committing to spending a significant amount of money on testing. Environment Canterbury have taken a pragmatic approach to this situation as a one off to support ADC as a Territorial Authority, who are not a private company, and do not wish to spend ratepayers money prior to having the security of a consent and agreement with the new industry for the Business park. The applicant has discussed potential effects on this bore with Environment Canterbury Groundwater Scientist Mr Matt Smith, who agrees there is unlikely to be adverse effects on shallow bores, and the consents section have agreed to this approach.
21. It is considered to be only a remote possibility that adverse effects will arise for shallow bores, however an aquifer test is required to be carried prior to the first exercise of this consent, refer condition 1 of CRC111706.

**Effects of take on surrounding deep groundwater users**

22. The applicant has identified nine water supply bores greater than 40m deep within 2km of the proposed bore. Five were identified as potentially affected, and as stated above, written approval has been obtained from all relevant parties (Silver Fern Farms and Mr & Mrs Cockburn). I have relied on the submitted AEE to confirm that these are the only affected parties. Given the above, I agree with the applicant and consider potential effects on surrounding deep groundwater users to be less than minor.

**Effect of unreasonable or inefficient take on other groundwater users**

23. The proposal is for a commercial operation that will involve a water bottling plant that will use all of the water that it is consented to take from the groundwater. The proposal will not result in any wastage of water as 100% will be used in the commercial operation.

**Effect of take on surface water flows**

24. The applicant states the closest surface water body to the proposed bore is located about 3km to the west, being the Waikanui Creek. I agree with the applicant that the proposed water take will not have an effect on the Waikanui creek. The proposal to recharge the aquifer at a rate greater than the proposed water take, together with the location of the recharge system in relation to the Ashburton/Hakatere river, may have a slightly positive effect on surface water flows in the Ashburton river, without any adverse ecological or contamination side effects.

**Effectiveness of the recharge**

25. The proposed groundwater recharge will be an effective way of returning 60 litres per second to the groundwater. A range of conditions will be imposed on consent CRC111707 to ensure that the recharge to ground will not result in any adverse effects on the environment or surrounding properties. The conditions will ensure that groundwater is not contaminated in any way, that the rate of discharge is monitored and can be made available at all times to ensure compliance, and that the design and construction is certified by a Chartered Professional Engineer. I am confident that the 'recharge system' in

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disused quarry 239/240 will operate effectively without adverse effects on the environment.

#### **Effect of use on water quality**

26. The proposed deep groundwater take will have a less than minor effect on the quality of water in the aquifer and will have no effect on water quality for any surrounding surface water bodies.
27. The proposed groundwater recharge from the stockwater race will have a less than minor effect on the quality of water in the aquifer. The proposal will be discharged through gravels in a disused quarry, and will filter through the surrounding material. The quality of water to be discharged will be no different to that which currently soaks away over the length of stockwater races at present. I agree with the applicant's assessment of environmental effects which illustrate that the effects on groundwater quality will be less than minor.

#### **Positive effects**

28. The proposal involves a net increase in the amount of water being recharged in to the Ashburton-Lyndhurst groundwater zone, which will have limited positive effects on surface water flows. Although the proposal will have effects on the environment which will be less than minor, it is worth noting that the proposal will result in positive economic and social benefits. The new industry relying on the water supply will generate economic activity and job creation. The proposal therefore enables people and communities to provide for their social, economic and cultural well-being, while sustaining the potential of natural and physical resources to meet reasonably foreseeable needs. The proposal is consistent with the purpose and principles of the Act as set out in Part 2 of the RMA.

#### **COMPLIANCE HISTORY**

29. I am unaware of any compliance concerns for this applicant. The applicant has suggested the proposed conditions and I am confident they will comply with the recommended conditions, in particular the requirement to operate the recharge and groundwater take concurrently, among other requirements

#### **RECOMMENDATION**

##### **Duration**

30. The applicant has sought a duration of 35 years. Chapter 1.3.5 of the Natural Resources Regional Plan lists matters which we shall have particular regard to when considering the duration of a resource consent. I have taken these matters into consideration, and given the level of investment expected a duration of a maximum 35 years is considered to be warranted. Conditions of consent, and the RMA, enable the regional council to review the consent if this becomes necessary.

##### **Grant or refuse**

31. In accordance with section 104 (1) (a) of the RMA, I have had regard to any actual and potential effects on the environment from the proposal. As discussed above the effects are considered to be less than minor, subject to an appropriate set of conditions.
32. In accordance with section 104(1) (b) of the RMA, I have had regard to all relevant objectives and policies for this application. The relevant objectives and policies are identified in the attached 's42A Addendum'. The addendum also includes a list of the purpose and principles of the RMA which I have taken into consideration when making my recommendation. I do not consider

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the granting of this consent will compromise any of the relevant sections of the RMA or regional plans.

33. s104D states that a consent authority may grant a resource consent for a non-complying activity, only if the adverse effects of the activity on the environment are less than minor, or the proposal is not contrary to the objectives and policies of the plan. This proposal, together with the proposed mitigation in the form of conditions will have effects on the environment that are less than minor.
34. s105 states that for a discharge permit (s15) the consent authority must have regard to the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
35. s107 of the RMA states that the discharge of water into water (among other things) cannot be granted if (after reasonable mixing), the water would give rise to a change in the receiving waters, rendering freshwater unsuitable for consumption by farm animals or other significant adverse effects on aquatic life. The proposal will not result in any adverse effects as listed under s107.
36. The applicants reasons for the proposed choice and any possible alternative methods of discharge, including discharge into any other receiving environment have been considered, and the proposal is considered to be the most appropriate alternative.
37. I recommend granting resource consents CRC111706 and CRC111707 subject to the conditions attached, which have been adopted by the applicant as mitigation measures for their proposal.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: Stephen Timms  
Principal Planner - Consents

**Reviewer's comments:**

Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: [REDACTED]  
*Reviewer*

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