



# New public management and collaboration in canterbury, New Zealand's freshwater management



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## ABSTRACT

Reconciling often-conflicting economic and environmental values, uses, and interests for freshwater is a policy challenge worldwide. Examining the Canterbury region of New Zealand's South Island between 1999 and 2010, this paper focuses on the outcome of neoliberal reforms intended to achieve the political-economic imperative of environmental protection alongside economic prosperity. Linking the literature of multiple clientelism with New Public Management, we use the concepts of 'authority' and 'autonomy' to evaluate the challenges faced by local government to implement its decisions to manage freshwater in this neoliberal context. The case study shows that local government struggled to attain authority and autonomy over freshwater under a New Public Management regime, which has resulted in the degradation of freshwater quality and quantity in the region. The paper concludes that the adoption of collaborative governance in response to the failures of New Public Management has the potential to entrench the problems it seeks to resolve.

## 1. Introduction

This paper examines freshwater management in New Zealand's South Island region of Canterbury where New Public Management (NPM) has been the dominant governance paradigm for 30 years. After 30 years of dominance environmental governance is shifting towards a "post-NPM" style in New Zealand (Duncan and Chapman, 2010), in part by transitioning towards collaborative governance. This paper investigates one local government's efforts to manage freshwater in a period of transition from NPM to collaborative governance.

Following Paul Culhane (1981) we focus on local government's struggles for authority and autonomy. The NPM and collaboration literatures propose different degrees of authority and autonomy in policy creation. The NPM literature argues that policy is often captured by vested interests, and as such, politicians should retain a high level of autonomy which is exercised through a hierarchical bureaucratic decision-making structure (Boston et al., 1996; Flinders and Buller, 2006). By contrast, the collaboration literature argues that public, private, and community actors ought to be engaged within the decision-making process, and that neither actor ought to dominate the others (Emerson et al., 2012; Purdy, 2012; Weber, 2003).

Given this, we ask: 1) how did the Environment Canterbury Regional Council (ECRC) try to attain authority and autonomy over freshwater from 1999 to 2010; 2) did these attempts succeed and; 3) what do the attempts and their degrees of success reveal about NPM,

post-NPM collaborative governance, and freshwater management in New Zealand? The paper proceeds as follows: Part 2 describes the methods. Part 3 constructs a conceptual framework through which to evaluate the empirical resources we draw on. Part 4 presents the case study. Part 5 links the theory with the case study results and discusses. Part 6 concludes (Table 1).

## 2. Methods

This paper employs a qualitative case study examining the ECRC between 1999 and 2010 (Yin, 2013). The first author collected the primary data through semi-structured interviews and the secondary data from an analysis of archives and documents. After a preliminary literature review of secondary resources such as newspapers, magazines, and journals, key stakeholders were identified who contributed to, or were affected by, decisions, processes, and actions in Canterbury's freshwater politics (Freeman, 2010). Twenty-nine stakeholders were interviewed in which, following Gillham (2005), confidentiality and anonymity were offered.

## 3. Conceptual framework

NPM is a global public management reform project which placed "a new (or renewed) stress on the importance of management...in public service delivery, often linked to doctrines of economic rationalism"

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**Table 1**  
Timeline of key moments in Canterbury's freshwater politics – 1999–2010.

1999	<b>January</b> – Canterbury's water supply at critically low levels as a result of a multi-year drought. <b>December</b> – Plan to dam the Rangitata River revealed.
2000	<b>January</b> – Fish and Game propose WCO for the Rangitata River to prevent damming. <b>March</b> – The Minister for the Environment accepts the WCO application for the Rangitata River. <b>December</b> – Central Plains Irrigation argue that their mid-Canterbury irrigation scheme could create 4000 jobs and inject \$600 million annually into the Canterbury economy.
2001	<b>February</b> – ECRC Councillor, Diana Shand, argues that WCO's could be placed on multiple Canterbury rivers due to the ECRC's failure to implement a regional plan. <b>March</b> – Fish and Game accuse the Minister for Agriculture of unfairly influencing the Rangitata WCO process. ECRC approve the Barhill Chertsey irrigation scheme which would provide water to 40,000 ha of land. <b>April</b> – Canterbury enters a period of drought. <b>July</b> – Fish and Game begin 'dirty dairying' advertisement campaign. <b>October</b> – Rangitata WCO Tribunal hearing begins.
2002	<b>February</b> – Christchurch City Councillors split regarding their support for the proposed Central Plains irrigation scheme. Meridian Energy releases plan to dam the Waitaki River known as <i>Project Aqua</i> . <b>August</b> – Christchurch City Council give Central Plains Water \$625,000. <b>October</b> – The Minister for the Environment approves WCO for the Rangitata River. <b>November</b> – The Minister for the Environment approves WCO for Te Waihora Lake Ellesmere. ECRC formally decide to appeal the WCO for the Rangitata River at the Environment Court.
2003	<b>March</b> – ECRC begin hearings on <i>Project Aqua</i> . <b>May</b> – Fonterra announce the <i>Clean Streams Accord</i> , a voluntary accord which suggest ways dairy farmers can limit their environmental impact. <b>October</b> – Environment Court hearing into the Rangitata WCO commences.
2004	<b>February</b> – Lynton Dairy submits application to abstract groundwater. <b>March</b> – Meridian Energy abandon <i>Project Aqua</i> . <b>May</b> – ECRC release groundwater zoning plans. <b>July</b> – ECRC reject Lynton Dairy's groundwater consent application. Lynton Dairy decide to appeal decision at the Environment Court. <b>August</b> – Environment Court recommend WCO for the Rangitata River.
2005	<b>February</b> – Construction of the Benmore Irrigation Scheme in the Mackenzie Country begins. <b>August</b> – Rivers and groundwater plummet to record levels due to lack of rain over winter. Lynton Dairy Environment Court appeal begins. During the Court hearings, Judge Jeff Smith declares Te Waihora Lake Ellesmere "technically dead" and in "serious ecological condition". <b>September</b> – Environment Court overrule ECRC's decision regarding Lynton Dairy, approving the consent with conditions for ten years. <b>November</b> – ECRC release report into Canterbury's groundwater which suggest aquifer levels are at historic lows.
2006	<b>February</b> – Drought conditions persist in Canterbury. <b>April</b> – Hurunui District Council moot plan to dam the south-branch of the Hurunui River. The Hunter-Down Irrigation Scheme is also proposed for the first time. <b>June</b> – Central Plains Water request \$1.1 million loan from the Selwyn District Council towards feasibility work. <b>July</b> – ECRC announce Restorative Programme for Lowland Streams in which they review 600 groundwater consents.
2007	<b>March</b> – Independent commissioners overturn ECRC's decision to reject 69 groundwater consents in the Rakaia-Selwyn groundwater zone. <b>June</b> – Christchurch City Council approve a third-party \$350 million loan to the Central Plains Water Scheme. <b>October</b> – ECRC election results in the appointment of new pro-environment councillors.
2008	<b>September</b> – Record winter rainfall refills lakes and groundwater. <b>November</b> – The National party form a new minority government following central government elections. <b>December</b> – <i>Consumer Magazine</i> reports that fifteen Canterbury waterways are unsuitable for swimming due to faecal contamination.
2009	<b>January</b> – ECRC release the Canterbury Regional Environment Report which argues that water is over-abstracted in some catchments. <b>March</b> – Rumours spread of conflicts of interest within the ECRC council. <b>May</b> – The Ministry of Agriculture and Forestry give funding to the Hurunui Water Project and four other South Island irrigation schemes. <b>June</b> – ECRC demand water metering in groundwater 'red zones'. The new National-led government outline support for water-storage in Canterbury. <b>September</b> – The Canterbury Water Management Strategy is published. ECRC chairman Kerry Burke is replaced. Four councillors receive letters from the Auditor-General stating they are being investigated for conflicts of interest in setting water charges. Canterbury's Mayors send letter to the Local Government Minister outlining their concerns with the ECRC's performance. <b>October</b> – Review of ECRC ordered by the Local Government and Environment Ministers. The review is led by former Parliamentarian Wyatt Creech. <b>December</b> – Auditor-General clears ECRC councillors of conflict of interest charges.
2010	<b>February</b> – Rumours emerge of a new Canterbury Water Authority to replace the ECRC. <b>March</b> – Central government replace elected ECRC councillors with commissioners given the recommendations of the Creech Report. <b>April</b> – Commissioners given new powers to manage Canterbury's freshwater through the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act. The Act also suspended elections due to take place in 2010. <b>June</b> – Central Government moot funding Central Plains Water Scheme. <b>September</b> – A large earthquake strikes mid-Canterbury damaging local irrigation systems and pipes.

(Hood, 2001; p. 12553). NPM shifted the emphasis of public management from "process accountability towards accountability for results" (Bach & Bordogna, 2011; p. 2284). Accountability for results is ensured by establishing goals and specifying outputs to meet these goals. This process is strengthened by testing "with well-defined output performance indicators" to determine whether the strategy taken was successful or not (Klijn, 2012; p. 205).

Scholars argue that the NPM reform agenda was influenced by economic-based theories of politics as well as private sector managerial practices (Aucoin, 1990; Boston et al., 1996). One of these economic-based theories of politics is Public Choice Theory. Public Choice Theory assumes that politicians, bureaucrats, and voters are all self-interested, and given this assumption, uses tools of analysis derived from economics to understand "the traditional problems of political science" (Tullock, 2008). NPM reformers also advocated for the adoption of

private sector managerial practices in the public sector. As a result, NPM reforms introduced short-term contracts with tightly specified details (Put and Bouckaert, 2011), performance linked pay, and the development of strategic and corporate plans (Hood, 1995; p. 97) into the public sector.

NPM reforms were introduced to New Zealand after the election of the fourth Labour government in 1984. Scholars praised New Zealand's NPM reforms – initiated between 1984 and 1999 – for their speed, depth, innovation, and sophistication (Hood, 1991; Halligan, 2007; Whitcombe, 2008). A comparative analysis of NPM reforms in thirteen different countries concluded that New Zealand's reforms were "probably the most comprehensive and radical set of public management reforms of any OECD country" (Pollitt and Bouckaert, 2004, p. 280). NPM reforms are associated with neoliberalism – a theory of political economy that extends markets and economic thought into public and

private sectors (Kelsey, 1997; Larner, 2000).

New Zealand's Treasury encouraged NPM reform. The Treasury, in a briefing to the incoming Labour government, argued that reform was necessary, in part, because government policy had been captured by bureaucracies and interest groups in the past (Treasury, 1984, p.44). Policy capture occurs when a narrow coalition of internal or external interests dominate policy, especially policy relating to the distribution of scarce goods or resources (McFarland, 2004; p.33). Treasury used the example of irrigation investment to highlight the problem of policy capture in New Zealand. Treasury noted:

The benefits from community irrigation are captured entirely by private landowners within the schemes. There is no evidence to indicate that the benefits from irrigation investment are of any more value to the nation than the benefits of other types of investment. Put simply, the 'public good' aspect of investment in irrigation schemes are [sic] the same as those of any other private investment. Indeed, it is more correctly stated that a social cost is involved in those instances where irrigation schemes use scarce water resources for which they are not charged (Treasury, 1984, p.44).

Many of the NPM reforms introduced in the 1980s were designed to prevent perceived policy capture. For example, the government stopped negotiating policy with powerful interest groups such as farmers and organised labour (Perry, 1992), and policy advice was split from policy delivery to avoid internal capture by bureaucrats (Boston et al., 1996; pp. 27–28). These coincided with other reforms such as a shift to output accountability, devolution of managerial control, the splitting of large bureaucracies, a preference for private ownership of large infrastructure, and the emulation of private sector managerial practices in the public sector (Boston et al., 1996: 27–28). As Treasury foreshadowed, these reforms had a significant effect on freshwater and agricultural policies. The Labour government sold publicly-owned irrigation schemes to users (Farley, 1994), eliminated subsidies for farmers (Cloke, 1989; Smith and Saunders, 1996), and devolved responsibility for freshwater management to regional councils (Bassett, 1988) under the new Resource Management Act 1991 (RMA).

The RMA required regional councils to ensure sustainable management of freshwater by managing the effects of freshwater use on the environment (RMA, 1991, section 5 (2)(c)). This is achieved through a hierarchical decision-making structure whereby central government establishes overarching national policy statements which set broad objectives for resources use, and regional councils set rules for resource use through regional policy statements and plans (McDermott, 2000; Gunningham, 2008; Lomax et al., 2010; MfE, 2014). Regional councils also issue consents for freshwater takes. Section 14 of the RMA states that "no person may take, use, dam, or divert" freshwater in a way that "contravenes a national environmental standard or regional rule unless the activity is expressly allowed by a resource consent", or it is a permitted activity under a regional plan (RMA, 1991, section 14 (1)(a)).

Prior to the RMA, New Zealand's environmental management and planning legislation sanctioned particular activities in permitted areas (Peart, 2007, p.15). The RMA reformed environmental management by introducing a *laissez-faire* approach in which decisions were made on the basis of the effects of activities; as such, entrepreneurs determined the location of resource use while regional councils were asked to regulate and manage the effects of resource use (Berke et al., 1999, p. 450). But after the RMA's introduction, regional councils received little guidance on how to exercise authority over natural resource use. Initially, regional councils were asked to only restrict consents if the individual or cumulative effects of resource use were clear (Upton, 1991; p. 3018). Additionally, New Zealand's central government did not create a National Policy Statement for Freshwater until 2011, leaving regional councils without guidance on potential national standards its regional plans would have to recognise (Gunningham, 2011, p. 42; Logan, 2013; pp. 139–164). As a consequence, the ECRC struggled in the early 1990s to understand what the components of a

regional policy statement or plan ought to be, or what policy statements or plans should try to achieve (G. McFadden, pers.comm). These uncertainties and a lack of guidance resulted in the regional councils managing resource use through quantifiable outputs, such as resource consents, rather than planning for long-term resource use.

NPM reforms resulted in farmers owning irrigation infrastructure, but without subsidies from central government to boost individual earnings or to fund new irrigation schemes.<sup>1</sup> Regional councils became responsible for issuing consents for irrigable freshwater, however the new mandate of 'sustainable management' posed potential constraints on future irrigation development if irrigation was deemed to have a significant individual or cumulative effect on the environment. The absence of a National Policy Statement for Freshwater between 1991 and 2011 to guide regional councils on bottom-line freshwater quality and quantity standards added to the uncertainty. Throughout the 1990s and the early 2000s farmers, environmentalists, and the ECRC were confronted by the reality of the NPM ethos which resulted in hands-off environmental policy which focused on managing the effects of activities. But by the end of the 2000s scholars were wondering if the NPM era was coming to a close (Jun, 2009; Duncan and Chapman, 2010).

Post-NPM scholars cited the growth of new innovative management techniques, such as public-private partnerships, and the recentralization of government bureaucracies, as evidence for a shift away from NPM's dominance in public management (Jun, 2009). Despite this, scholars argued these reforms were too piecemeal and insignificant to represent a new paradigm of public management (Lodge and Gill, 2011). As scholars debated whether New Zealand had shifted to post-NPM local governments began busily adopting collaborative decision-making.

Collaborative governance is defined as "the processes and structure of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished" (Emerson et al., 2012, p.3). Proponents have argued that collaboration can resolve wicked problems which often arise during the distribution of scarce resources such as freshwater (Rittel and Webber, 1973; Leach et al., 2002; Weber, 2003; Eppel, 2013, 2015). But detractors have argued it risks being "less than democratic, less than fair, and less than good for the environment" (Brower, 2016, p. 390).

Collaborative governance has been promoted in New Zealand to manage freshwater (Land and Water Forum, 2012; MfE, 2013). Freshwater is valued in New Zealand for economic use, as well as meeting a range of social, environmental, and cultural values (Mayoral Forum, 2009; MfE, 2014), but freshwater allocation has led to disagreements between different stakeholders because competing uses for freshwater conflict at interacting scales (Gunningham, 2011). Irrigators demand more freshwater for economic use but abstraction results in reduced environmental flows (Jorda-Capdevila and Rodriguez-Labajos, 2015), diminished water quality, and intensified agricultural practices contribute to pollution of freshwater through nutrient losses and microbial growth (PCE, 2013). There is competition between agricultural uses of freshwater, municipal needs, and environmental groups that are concerned with abstraction and intensified farming as it threatens the social, environmental, and cultural values associated with freshwater ecosystems. Collaboration is promoted as a means which can mediate and resolve these tensions.

We propose that NPM and collaboration offer different normative arguments about the role of local government in policy formation. By examining these differences in light of collected data, some preliminary statements about NPM, post-NPM, and collaborative governance can be

<sup>1</sup> In the 2010s New Zealand's government established the *Irrigation Acceleration Fund* which began re-investing in irrigation schemes.

made. The literatures on NPM and collaboration are rich. To understand the relationship between NPM, collaboration, and New Zealand's freshwater politics, we add Paul Culhane's (1981) theory of multiple clientelism.

Multiple clientelism is a theory of natural resource management which analyses local government authority and autonomy under interest group influence (Culhane, 1981). Multiple clientelism argues that local governments establish relationships of patronage with various interest groups to gain authority and autonomy over natural resource management decisions (Culhane, 1981; p. 334). Culhane concludes that local governments will be influenced by multiple interest groups, and in response, local governments establish relationships of patronage with competing interest groups (Culhane, 1981; Mohai, 1987). This grants a local government authority and autonomy over contentious natural resource decision-making. We define authority as "the right or capacity, or both, to have proposals or prescriptions accepted without recourse to persuasion...or force" (Reeve, 2009). We define autonomy as a local government agency having independence from non-governmental groups to set proposals, prescriptions, and/or instructions (Mann, 1984).

Given the literature presented on NPM, collaborative governance, and multiple clientelism, we argue that the ECRC ought to exercise different degrees of authority and autonomy under NPM than under collaborative governance. We argue that NPM limits the influence of interest groups over policy, while simultaneously encouraging local government agencies to focus on managing the effects of activities rather than prescribing activities or planning for long-term outcomes. Given this, a NPM-driven ECRC should exercise a low degree of authority and a high degree of autonomy over freshwater decisions. By contrast, collaboration requires a local government agency to negotiate with non-governmental interests in the creation of policy. Collaboration aspires to a degree of consensus amongst participants. If consensus is reached, a local government agency might not need to use persuasion or force to exercise authority. Given this, a collaboration-driven ECRC should exercise a high degree of authority and a low degree of autonomy over freshwater decisions.

#### 4. Case study – Canterbury's freshwater politics from 1999 to 2010

The active NPM reform era in New Zealand, led by consecutive Labour and National governments, ended in 1999 following the election of the fifth Labour government (Whitcombe, 2008). Labour noted stress on New Zealand's public management system following significant restructuring between 1984 and 1999, but rather than revoking NPM reforms, the incoming government chose to evaluate its success through reports, ministerial statements, and reviews of the state of New Zealand's public management (SSC, 1999, 2001; Whitcombe, 2008; p.9). As a result, between 1999 and 2010 the ECRC – which was established in 1989–was responsible for freshwater management in Canterbury in a public management environment still dominated by NPM.

During 1997 and 1998 Canterbury suffered a severe drought. Farmers with access to freshwater for irrigation were able to withstand the drought but those without suffered. Consequently, farmers desired new private irrigation schemes in Canterbury. Environmentalists opposed new irrigation because they were concerned with the effects of existing and new irrigation on freshwater ecosystems and the environment. This conflict resulted in several legal cases during the 2000s regarding the ECRC issuing, or not issuing, resource consents for freshwater use (e.g. Keast, 2004, 2007; Lynton Dairy Env. Court, 2005; Bennetts, 2006; White, 2009)

One legal contest was over the Rangitata River in Mid-Canterbury. In late 1999 Rangitata South Irrigation and Ruapuna Irrigation declared their plan to build a dam on the Rangitata River to provide irrigation to farmers south of the river (Pickering, 1999, p.2). In response, the New Zealand Fish and Game Council<sup>2</sup> applied for a Water Conservation

Order (WCO) to be placed on the river (Worrall, 1999, p.1). WCOs are a legislative tool to protect freshwater in New Zealand (Hughes et al., 2014), and the argument provided by Fish and Game in support of the WCO was that the Rangitata River was an outstanding fishery of introduced and native species, and that a dam threatened the fishery and recreational amenities like rafting (Worrall, 1999, p.1).

Fish and Game created draft rules for the river's management in the WCO. These rules would:

- 1) Restrict damming the river,
- 2) Restrict altering the river's unique braided patterns,
- 3) Limit total abstraction of freshwater to 33 cumecs,
- 4) Set a minimum flow of 20 cumecs in summer and 15 cumecs in winter,
- 5) Restrict ECRC from granting a resource use which would affect the water quality,
- 6) Require maintenance of fish passages (New Zealand Fish and Game Council, 1999, pp. 7–8 [sec. 17, 18, 19, 21, 22]).

The Ministry for the Environment established a Tribunal to receive submissions for and against the proposed WCO. The Tribunal's decision legally superseded ECRC's right to manage the river, and consequently if the WCO was successful the ECRC would lose authority to have unimpeded decision-making power over the river's future. If the WCO was successful damming the river would be banned. However, if the WCO application was unsuccessful farmers could still lobby the ECRC for the necessary consents to dam the river.

Following the announcement of the WCO Tribunal, the ECRC released a competing draft management plan in an effort to establish authority over the river's management (Worrall, 2001; McKinlay, 2001). ECRC's draft plan contained similar rules to Fish and Game's proposed WCO, such as banning a dam on the main-stem of the river, but it differed by not placing a cap on total freshwater abstraction and by proposing a higher minimum flow for the river (Worrall, 2001). ECRC justified its plan by arguing that it would provide new irrigators with a chance to abstract water, and that the higher minimum flow would protect the river's ecosystem (NZPA, 2001). The losers from ECRC's plan would be existing irrigators whose irrigation reliability was threatened by higher minimum flow rates and no cap on new abstractions. The result was that irrigators – both existing irrigators and those proposing a dam on the Rangitata River – did not support the ECRC's autonomous plan.

The WCO Tribunal proceeded despite the ECRC's proposed plan. The submissions in support of the WCO focused on the river's fisheries, birdlife, and Māori cultural connections to the river (Pickering, 2001a, 2001b). The submissions against focused on the economic opportunities provided by a dam (Pickering, 2001e, 2001f). ECRC also presented at the Tribunal, arguing that its plan would provide a better balance for irrigators and environmentalists than the WCO (Pickering, 2001d, p.15).

During the Tribunal hearing Fish and Game, irrigators, and ECRC councillors met to discuss potential compromises. This discussion resulted in an off-river storage plan. All parties agreed that when the river experienced high flows (above 110 cumecs) it becomes unsuitable for fishing and other recreational activities. It was proposed that irrigators ought to be able to abstract water into off-river storage ponds when the river's flow was above 110 cumecs (Pickering, 2001c).

On the 30th of October 2002 the Tribunal recommended that a WCO be placed on the river. The Tribunal's recommendation included the off-river storage compromise (MfE, 2002). Notwithstanding its

<sup>2</sup> The Fish and Game Council represent anglers and hunters in New Zealand. The 1987 Conservation Act grants the Council the mandate to "advocate generally and in any statutory planning process the interests of the New Zealand Fish and Game Council" in regard to management of fish, game, and habitats (Conservation Act, 1987, p. 118 [sec 26C (g)]).

involvement in the Tribunal and the proposed off-river storage compromise, the ECRC challenged this decision in the Environment Court (Pickering, 2002), as the ECRC claimed its plan was more suitable for the river. The ECRC wanted to pursue authority and autonomy over the river through its own planning process. ECRC's director of policy and planning told the Environment Court hearing that the Council:

wishes to ensure the terms of any Order made do not unnecessarily compromise the ability of Environment Canterbury [Regional Council] to maximize the well-being obtained from Canterbury's water resources (Talbot, 2003, p.4)."

The debate in the Environment Court resembled that of the WCO Tribunal. Opponents of the WCO cited the economic benefits of damming and proponents cited the ecological effects of damming. On the 4th of August 2004 the Environment Court concurred with the original Tribunal and recommended the establishment of a WCO with the amendments negotiated during the original WCO Tribunal. Fish and Game argued that the decision stopped the deterioration of a major river, while farmers were disappointed and believed they had presented a good case for the dam (NZPA, 2004).

By the mid-2000s, the Rangitata, Rakaia, and Ahuriri Rivers in Canterbury were protected by WCOs, while the Waitaki River was used exclusively for hydro-electricity generation. Given this context, Canterbury farmers pursued groundwater abstraction as an alternative water source to irrigate their land. In 2003 ECRC observed a growth in groundwater consent applications (Hayman, 2003). ECRC's consent manager argued the applications were being made to secure future irrigation supplies because farmers were concerned that some areas were reaching sustainable abstraction limits. In the same year, the ECRC granted 84% of freshwater consents for the maximum allowable period of 35 years. This guaranteed farmers access to irrigable water for a generation. It was also the largest percentage of approved water consents from all regional councils in New Zealand (NZPA, 2003b). The growth of groundwater abstractions resulted in the ECRC pursuing authority by imposing limits on abstraction, which resulted in litigation between farmers and the ECRC.

Traditionally, groundwater abstraction for irrigation in Canterbury occurred near the Pacific coast where aquifers are close to the surface. However, in the early-2000s farmers began abstracting freshwater from deeper aquifers inland. The inland wells were often drilled 90–200 metres underground (NZPA, 2003a; Cameron, 2009). Abstraction from deep wells concerned farmers and the ECRC; both were worried about sustainable abstraction levels. These concerns resulted in a series of studies into groundwater abstraction in Canterbury in the early-2000s.

Research was undertaken by the Aqualinc research group which culminated in the Canterbury Strategic Water Study (CSWS) (Morgan et al., 2002) and the creation of the Aqualinc groundwater model (Aqualinc, 2005). Aqualinc created a model which would "predict the response of the groundwater system to changes in land use and groundwater abstraction" (Weir, 2007; p. 1). Aqualinc's model differed from a model developed by the ECRC which was produced in tandem.

The different outcomes predicted by the two models resulted in the ECRC and farmers' disagreeing over how much groundwater was available for sustainable abstraction (Weber et al., 2011). The models differed in how they conceived the flow of groundwater below Canterbury. ECRC's 'bathtub' model conceived a relatively continuous flow of groundwater between shallow and deep aquifers. Aqualinc's stratified-cell model conceived limited flow between shallow and deep aquifers (Weber et al., 2011; p. 50). Aqualinc's model supported continued abstraction of groundwater from deep inland aquifers because it predicted minimal effects on shallower aquifers which feed lowland streams. By contrast, ECRC's model predicted a looming groundwater crisis with deep aquifer abstractions affecting the flow of shallow aquifers and lowland streams.

The ECRC responded to the predictions of its own model by splitting Canterbury into different groundwater zones. Each geographic zone

received a colour rating which indicated estimated groundwater use against estimated groundwater recharge (Aitchison-Earl et al., 2004; Hayman, 2004). Zones coloured red were areas where the ECRC argued abstraction was exceeding recharge, and ECRC indicated that no new groundwater consents should be issued in these zones.

ECRC admitted that their method of calculating sustainable groundwater abstraction – through tallying 50% land-surface recharge and 15% of rainfall in each zone against estimated use – was a "conservative approach" (Aitchison-Earl et al., 2004: 1). ECRC also noted that all calculations should be considered interim until there was better data and greater hydro-geological understanding of Canterbury's groundwater (Aitchison-Earl et al., 2004: 26). Farmers who were in the process of applying for groundwater consents in red zones were angered that their applications were affected by this conservative and interim approach. As a result, two large farms – Lynton and Pine Grove Dairies – challenged the ECRC's decision to reject their groundwater consents in the Environment Court.

Lynton and Pine Grove Dairies used the Aqualinc model to challenge the findings of ECRC's groundwater model in the hope that it would convince the Court there was more groundwater to abstract. The Environment Court considered several issues regarding issuing the consent. These included local well drawback, nitrification of groundwater, cumulative effects on groundwater, and the efficiency of the proposed abstraction (Lynton Dairy Env. Court, 2005). The effects on local wells had been negotiated among neighbours and the nitrification effects were considered minor.

The cumulative effects on groundwater supply from the new abstraction were then considered by the Court. Using the Aqualinc model, the Court concluded that the effects of the proposed abstraction "would be minimal everywhere except possibly in the immediate vicinity of the wells where local draw down effects may be evident" (Lynton Dairy Env. Court, 2005, p.37 [sec 134]). These effects were mediated by the private agreement between neighbours. The second cumulative effect considered was the impact of the proposed consent on lowland streams which are fed by shallow aquifers near the coast. The Court concluded that there were aquifer buffers between shallow aquifers and the deep aquifers that the applicants were proposing to abstract from (Lynton Dairy Env. Court, 2005, p. 38 [sec 139]). The Court argued that due to these aquifer buffers there would be minimal effect on lowland streams from the proposed abstraction.

The Court concluded that Aqualinc's model was a more plausible representation of the groundwater system than ECRC's model. The Court then criticised the ECRC for managing abstractions from deep aquifers inland the same as abstractions from shallow aquifers near the coast. The Court noted that shallow aquifer abstraction had caused an ecological crisis in lowland streams and Te Waihora Lake Ellesmere, a shallow brackish lake on the coast. The Court argued:

...there is no probative evidence to support the alleged link between abstractions in the [inland] Te Pirita area and the effect on lowland streams. We have concluded that there is a direct correlation between abstractions from bores surrounding the Irwell; particularly within two kilometres of the Irwell River [shallow aquifer]; and other tributaries and drains leading to Lake Ellesmere (Lynton Dairy Env. Court, 2005, p.53 [sec.194]).

The Court overturned the ECRC's initial ruling, permitting Lynton and Pine Grove to abstract freshwater for ten years. Following the Court's decision, there were several high-profile legal challenges of the ECRC's groundwater zones, all of which ended in favour of the farmer applicants (Eleven, 2007; Milne et al., 2007). Paul White, a hydrologist hired by the ECRC to analyse the cases, noted that ECRC's limits were "suitably conservative" but ultimately not successful (White, 2009; pp. i-ii). White argued that Aqualinc's model analysed the environmental effects of abstraction which aligned with the effects-based RMA, whereas ECRC's bathtub model was not suited for this purpose (White, 2009).

The Rangitata River WCO and the groundwater zoning debates typify the difficulties ECRC experienced in exercising authority and autonomy over freshwater decisions during the 2000s. These problems coincided with a decline in freshwater ecosystem health as a result of increased groundwater nitrification and reduced flows in lowland streams (PCE, 2013). These ecological issues combined with political crises. In 2009 ECRC councillors were investigated by New Zealand's auditor-general for conflicts of interest in setting water charges, and ECRC's chairman lost the confidence of the council (Provost, 2009; Peter, 2009, p. 14). ECRC also struggled to issue consents for resource use. Between 2007 and 2008 ECRC only processed 29% of consent applications within statutory timeframes, which was the worst performance by a New Zealand council during this period (Crech et al., 2010, p. 25).

These failures – as well as concerns with the RMA's consenting system being unable to address cumulative effects, resulting in expensive and time-consuming litigation (Jenkins, 2011; Russell and Frame, 2011) – encouraged the ECRC to experiment with collaborative planning as a new pathway for freshwater management. ECRC sought the support of competing farming and environmental interest groups during this period, asking these groups to arrive at a compromise over future freshwater policy. The result was a collaborative process and the creation of the non-statutory Canterbury Water Management Strategy (CWMS).

The origin of the CWMS was the publication of the Canterbury Strategic Water Study (CSWS) in 2002 (Morgan et al., 2002). The CSWS argued that approximately one million hectares of land could be irrigated in Canterbury but that infrastructure needed to be built to reach this goal. Despite the opportunities for irrigation development in Canterbury it became clear that the scope of the study needed to include consideration of the social and political implications of new irrigation (B.Jenkins, pers.comm). Following the Canterbury Mayoral Forum<sup>3</sup> taking responsibility for the CSWS from the ECRC, a steering committee of diverse stakeholders was established to discuss the social and political implications of expanded irrigation in Canterbury.

Stage three of the CSWS was a report written on the collaborative stakeholder engagement of the steering group. The steering group concluded that irrigation development and environmental protection had to occur simultaneously, and that major alpine rivers and lowland streams ought to be protected (Whitehouse et al., 2008 p.4). The success of this collaborative process encouraged the Canterbury Mayoral Forum and ECRC to replicate it for the new Canterbury Water Management Strategy (G. McFadden, pers.comm).

The CWMS is a planning document for the strategic use of water resources that promoted new priorities, principles, and targets for Canterbury's freshwater management (Mayoral Forum, 2009; Lomax et al., 2010; Eppel, 2015). The document argued that stakeholders “whether environment or production-driven, repeatedly asked that they be given the opportunity to resolve their differences and find solutions together” (Mayoral Forum, 2009, p.40). There were a variety of different processes through which stakeholders influenced the CWMS. Consultation and the creation of the document occurred in five stages, including:

- 1) An initial stakeholder and community engagement to develop strategic options,
- 2) Definition of strategic options,
- 3) Re-consulting with the community on the preferred strategic options,
- 4) Investigating potential outcomes, and
- 5) Undertaking a sustainability appraisal of all options (Jenkins and

Henley, 2013; p.4).

A new steering group composed of farming interests, environmental interests, hydro-electricity representatives, academics, and local Māori were assembled to guide the process through all five stages. The initial stakeholder and community engagements were critical in defining strategic options and linking those options to specific projects (e.g. an aspiration for economic development to irrigation projects) (Jenkins and Henley, 2013). The early consultation highlighted a desire for both development of irrigation and protection of the environment. The strategic options were then taken to the steering committee grouped into four broad options:

- A – Business as usual,
- B – Environmental protection before infrastructure development,
- C – Integrated infrastructure and protection side-by-side,
- D – Development first; protection second (Mayoral Forum, 2009, p.35).

The sustainability appraisal rated the scenarios (Jenkins et al., 2014). Scenario A scored poorly on environmental criteria. Scenario B scored well on environmental criteria but poorly on economic criteria. Scenario C scored poorly on both criteria, with scenario D scoring well on economic criteria but poorly on environmental criteria (Jenkins and Henley, 2013; p.9). The ECRC then sent 150,000 households information on the scenarios and received positive feedback on option B (environmental protection) and D (economic development).

Following consultation and collaboration the CWMS still needed to find compromise between economic and environmental aspirations, such as the Rangitata WCO off-river storage plan, something which the ECRC had struggled to do under its NPM regime in the 1990s and 2000s. The result was a document that set twin-targets for environmental protection and economic development to be achieved in parallel (Mayoral Forum, 2009, p. 38). The CWMS began by envisioning a new paradigm in Canterbury's freshwater management, which included:

- “1) a shift from effects-based management of individual consents to integrated management based on water management zones,
- 2) management of the cumulative effects of water abstraction and land-use intensification,
- 3) allocation decisions that address sustainable environmental limits and climate variability,
- 4) actions to protect and restore freshwater biodiversity, amenity values, and natural character (Mayoral Forum, 2009, p.7)”.

The strategy sets non-binding priorities and targets for freshwater management in Canterbury to achieve this new vision. The document also promotes further collaborative mechanisms such as the establishment of catchment-based zonal committees (Mayoral Forum, 2009, p.11). The Strategy argued that freshwater planning and management ought to be “nested” in specific national, regional and local scales given the problems experienced during the last 20 years (Mayoral Forum, 2009, p.15).

Farming and environmental interest groups were critical of the proposed collaborative catchment committees in Canterbury. The South Canterbury Irrigation Trust believed that South Canterbury had too little expertise to fill three separate zonal committees, and argued for one instead. Dairy exporter Synlait had “serious concerns with the governance structure proposed by the Strategy” because it was too complex. The Rangitata Diversion Race agreed that three scales of governance would result in tensions and inconsistencies.

Environmental interest groups were also skeptical. The Canterbury-Aoraki Conservation Board argued that the relative authority of local, regional, and national scales needed to be clear, and that significant decisions ought to be made at a regional rather than a local scale. Forest and Bird argued, in agreement with the South Canterbury Irrigation Trust, that there would be too many committees covering a small

<sup>3</sup> The Mayoral Forum is an umbrella group with membership from all the mayors and chief executives of Canterbury's Territorial Authorities. The ECRC's chairperson and chief executive are also members.

population. Furthermore, the local scales might not result in “effective and lasting decision making”.

Any uncertainty over the future of Canterbury’s freshwater management following the publication of the CWMS was removed when New Zealand’s central government passed the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act in April 2010. The ECan Act substituted elected councillors with appointed commissioners, and gave these commissioners new powers to manage freshwater in the region, such as the ability:

- 1) To enforce moratoria over freshwater consents,
- 2) To amend or remove Water Conservation Orders in Canterbury, and
- 3) To limit access of appeal to the Environment Court (ECan Act, 2010; Smith, 2010, p.11).

The ECan Act also instructed the new commissioners to acknowledge the vision and principles of the CWMS when utilising these new powers (ECan Act, 2010, pp. 32). The ECan Act was controversial and divisive. Environmental groups opposed the legislation whereas farming interest groups were broadly in support (NZPA, 2010, p.4).

## 5. Results and discussion

The case study examined the transition from a governance system dominated by a hierarchic output-focus to one which embraced collaboration and consensus decision making. ECRC struggled to exercise authority and autonomy over freshwater decisions between 1999 and 2010. This, along with the ecological crisis in Canterbury’s freshwater (Holley and Gunningham, 2011), led to the adoption of a collaborative planning.

Drawing insight from multiple clientelism, we predicted that the ECRC would not bargain or compromise with non-governmental interest groups over policy under NPM dominant public management, and the case study reflected this. The ECRC pursued its own plans for freshwater policy during the Rangitata River and groundwater zoning debates, even though it was not ultimately successful. We also argued that the ECRC would adopt a hands-off approach to natural resource management under NPM dominant public management. The case study revealed that ECRC tried to exercise authority through autonomous plans and limits, but these were only drafted when the ECRC’s autonomy was threatened or when the cumulative environmental effects of freshwater takes became clear. Ultimately, the ECRC pursued authority through consents and other quantifiable outputs over prescribing activities and planning for long-term outcomes. This approach failed, and the ECRC were blamed by the public for diminished water quality and quantity in the region. Facing an impending water crisis, the ECRC was unable to gain the support of non-governmental interest groups, which resulted in a number of lengthy and expensive Court cases.

ECRC tried to resolve its failures to exercise authority and autonomy through collaborative planning. We predicted that the ECRC would relinquish autonomy to negotiate with non-governmental interest groups during collaborative decision-making. We found that the ECRC ceded some autonomy over freshwater policy during the development of the CWMS. Critically, the CWMS was guided by the Canterbury Mayoral Forum rather than the ECRC. This created a non-litigious venue whereupon the ECRC was able to negotiate with non-governmental groups to develop a strategic plan for water which is difficult, if not impossible, to achieve through litigation in the Courts.

We also argued that ECRC would seek consensus between non-governmental groups during collaborative decision-making. The CWMS sought consensus but was unable to resolve the differences between farming and environmental aspirations, and as a solution the Strategy included dual-goals for economic development and environmental protection. This perpetuated the tension present in the RMA, economic development occurring in parallel to environmental protection. The

RMA envisioned these tensions would be resolved by mitigating environmental effects rather than prescribing activities. However, between 1991 (when the RMA bill was passed by Parliament) and 2010 there was little evidence to suggest the RMA was achieving this goal in regard to Canterbury’s freshwater management. The failure to create a National Policy Statement for Freshwater during these years resulted in the ECRC being unsure as to how to develop plans, while economic imperatives encouraged unbridled access to freshwater resources. In our opinion, this resulted in an imbalance in which economic development through irrigation was pursued despite the growth of significant cumulative environmental effects.

To address the research question, the ECRC initially attempted to attain authority and autonomy over freshwater decision-making by pursuing its own plans and limits. The ECRC attempted to exercise a high-degree of autonomy over freshwater policy, as we expected given the predominance of NPM in the late 1990s and early 2000s. However, as the case study illustrates, the ECRC’s attempts did not succeed. Consequently, the ECRC adopted collaborative planning mechanisms in order to regain authority over freshwater decision-making. By adopting collaborative planning, the ECRC ceded autonomy to a variety of non-governmental and governmental groups to avoid litigation over the draft CWMS. This strategy succeeded, however the ECRC gained greater authority only after central government intervened with the ECan Act, which eliminated any chance that non-governmental groups could challenge the ECRC’s future planning decisions through Environment Court appeals or WCOs.

The case study results suggest that NPM inspired freshwater decision-making is ineffective in the New Zealand context. Central government bureaucrats also appear to have reached this conclusion. Although there are some examples of freshwater collaborations forming in New Zealand without central government intervention (e.g. Sinner et al., 2016), the government plans to amend the RMA to ‘fast track’ (Duncan, 2017) collaborative solutions for freshwater management in the hope that collaboration will produce plans that “better reflect community values and will thereby reduce litigation costs and lengthy delays” (Resource Legislation Amendment Bill 2016, Explanatory Note).

But the case study also suggests that collaborative mechanisms struggle to resolve the tension between economic development and environmental protection embedded in the RMA. Given this, we conclude that collaboration is simply a plug-in for the old NPM system, a new way of doing business-as-usual dressed up as collaboration. This refutes the premise that collaboration is an example of post-NPM reform in New Zealand’s environmental management. Rather, collaboration is a way of managing conflicts between pro-development and pro-environment interest groups who, prior to the ECan Act, had the ability to influence freshwater management through Environment Court appeals and WCO applications. These litigious venues were expensive, combative, and resulted in piecemeal planning. Collaborative planning through the CWMS resolved many of these problems, however the debate over how to prioritize economic development and environmental protection was not resolved.

The adoption of collaboration is perhaps the most positive outcome from NPM’s freshwater management failures in Canterbury. Some of the more pronounced consequences of NPM in Canterbury’s freshwater politics include the weakening of existing WCOs which protect Canterbury’s rivers, the removal of citizens’ rights to appeal decisions to the Courts, as well as the substitution of a democratically elected council and the imposition of government appointed commissioners. All of this occurred while freshwater quality and quantity in the region continues to degrade due to the expansion of irrigated farming.

## 6. Conclusion

The failures of NPM have given way to the enthusiastic embrace of collaboration as a solution to New Zealand’s freshwater management

dilemmas. However, we conclude that collaboration is simply a way of continuing NPM without radically reforming either the RMA, New Zealand's regional government, or the New Zealand central government's current goal of an economy led by primary production export growth. The debate over how to balance economic development and environmental protection is not solved by the adoption of collaborative governance. New Zealand is still searching for an answer to its freshwater policy conundrum.

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