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**IN HOT WATER: THE FAILURE OF NEW
ZEALAND'S RESOURCE MANAGEMENT SYSTEM
TO RESPOND TO CLIMATE CHANGE INDUCED
EVENTS**

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Abstract

The health and vitality of the Kaimaumau-Motutangi wetland in Northland relies on a constant supply of freshwater from the Aupōuri Aquifer. The Kaimaumau-Motutangi wetland is a nationally significant wetland which provides a natural habitat for threatened indigenous flora and fauna. Two group consents to draw over 7,000,000 m³ per year to service avocado orchards pose a potential threat to the replenishment of freshwater to the wetland. After the granting of these two group consents a significant fire began in December 2021. The effect of this fire is yet to be fully realised but significant damage to the wetland ecosystem is expected. The frequency of adverse environmental events, such as fires, is expected to increase due to anthropogenic climate change. Therefore, we must ensure we have a responsive resource management system to preserve our natural resources in the face of significant environmental events. Proponents of our current system argue that statutory powers to review resource consents and adaptive management regimes are capable of warning against environmental changes. This essay argues that review powers under the Resource Management Act 1991 have limited effectiveness in the context of environmental changes. The efficacy of adaptive management regimes relies on appropriate trigger levels and effective responses from consenting authorities. This essay concludes that existing mechanisms are inadequate in responding to changes in environmental conditions.

Keywords

Water management – climate change – Resource Management Act 1991 – adaptive management – consent conditions

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Abbreviations

AAWUG: Aupōuri Aquifer Water Users Group

GMCP: Groundwater Monitoring and Contingency Plan

MWWUG: Motutangi-Waiharara Water Users Group

NBEA: Natural and Built Environments Act

NPS-FM: National Policy Statement for Freshwater Management 2020

NRC: Northland Regional Council

NZCPS: New Zealand Coastal Policy Statement 2010

pRPN: Proposed Regional Plan for Northland

RCPS: Regional Coastal Policy Statement

RMA: Resource Management Act 1991

I Introduction

Anthropogenic climate change is the biggest challenge for the sustainable management of our natural resources. Climate change is impacting the availability and quality of natural resources.¹ Major environmental events, induced by climate change, introduce significant uncertainty to the management of our natural resources. Accounting for this uncertainty as major environmental events become more frequent is essential to maintain the integrity of our natural ecosystems in order to sustain supplies for future generations.

The management of natural resources in Aotearoa is governed by the Resource Management Act 1991 (RMA). Despite explicit references to the effects of climate change in the RMA the resource management system in Aotearoa is ill-equipped to deal with changes in environmental conditions caused by climate change. The poor management of our natural resources will continue the degradation of our natural environment.²

The potential risk of poor management of natural resources is exemplified by the granting of resource consents in Northland. In 2018 and 2021 group consents were granted to extract over 7,000,000 m³ of water per year from the Aupōuri Aquifer. The Northland Regional Council concluded that any adverse effects to surface water bodies could be managed through an adaptive management regime. In 2021 a significant fire burnt through the Kaimaumau-Motutangi wetland which is supplied by the Aupōuri Aquifer. This wetland is a nationally significant wetland with areas of significant indigenous vegetation. This fire will likely add significant stress to the hydrology of the area.

This paper assesses the adequacy of the mechanisms in place to review or cancel resource consents of this nature where there has been a change in environmental conditions. This includes both statutory powers under the RMA and mechanisms agreed to in the adaptive management plan. This paper concludes that the current resource management system does not adequately account for changes in environmental conditions.

II Background

¹ Sheila Olmstead “Climate change adaptation and water resource management: A review of the literature” (2014) 46 Energy Economics 500.

² Ministry for the Environment and Stats NZ *Environment Aotearoa 2022* (New Zealand’s Environmental Reporting Series, ME 1634, April 2022).

A Environmental setting

The Aupōuri Aquifer (the Aquifer) covers approximately 788 square kilometres of the Aupōuri Peninsula.³ Currently there are 112 resource consents to take water from the Aquifer, totalling an annual abstraction of over 14,000,000 m³/yr. The purposes of these resource consents include municipal, domestic, horticultural, and agricultural uses. The Aquifer is primarily recharged by rainfall which permeates through the soil.⁴

The Kaimaumau-Motutangi wetland is a 2.6 square kilometre nationally significant wetland on the eastern side of the Aupōuri Peninsula.⁵ The wetland provides habitats for unique indigenous biodiversity. The most recent report on the ecology of the Kaimaumau-Motutangi wetland was completed by the Department of Conservation in 2001.⁶ This report identified 11 threatened plant species in the wetland. A 1988 fire at the Kaimaumau-Motutangi wetland impacted the survival of these threatened species. The fire furthered the spread of exotic weeds which outcompete the native species.⁷ The 2001 report identified the black mudfish, Northland green gecko, bittern and fernbird as fauna species with conservation value.⁸

B Significance to iwi

The Kaimaumau-Motutangi wetland falls under Ngāi Takoto rohe. In their Environment Plan Ngāi Takoto note the concealing nature of wetlands.⁹ The Kaimaumau-Motutangi wetland is used by Ngāi Takoto to conceal taonga. The koiwi of Ngāi Takoto tupuna are still concealed in the wetland today. The wetland is also a significant site for harvesting, collection, hunting and gathering. A lake found in the Kaimaumau-Motutangi wetland, Lake Waikaramu, was named after the tupuna Waikaramu. The lake was given this name because, like Waikaramu, the lake was “never around when you needed it”.¹⁰ Ngāi Tokoto highlight in their Environmental Plan that abstraction and water takes are impacting the life supporting

³ Scott Wilson and Ali Shokri *Aupouri Aquifer Review* (Lincoln Agritech, 1056-1-R1, April 2015).

⁴ At 23.

⁵ Boffa Miskell Limited *Kaimaumau-Motutangi Wetland Mapping: Methods, Wetland and Vegetation Descriptions and Constraints* (Prepared for the Department of Conservation, 21 June 2018).

⁶ DL Hicks, DJ Campbell, and IAE Atkinson *Options for managing the Kaimaumau wetland, Northland, New Zealand* (Department of Conservation, Science for Conservation 155, March 2001).

⁷ At 6.

⁸ At 62.

⁹ Te Iwi O Ngāi Takoto Environmental Plan.

¹⁰ At 57.

properties of wetlands. Saltwater and nitrate intrusion, and insufficient flow are threats to the ability to safely gather mahinga kai species.¹¹

C Wetland conservation

Wetlands provide a number of ecosystem services which benefit people around the world. Despite only covering 1.5% of Earth's surface, wetlands provide 40% of ecosystem services.¹² Some of these important ecosystem services are outlined below.

Firstly, wetlands provide the environmental conditions for a diverse range of flora and fauna. Wetlands are found mostly in low-lying positions which allows nutrients and sediments to accumulate and settle.¹³ These nutrients promote vegetation growth which in turn provides habitat for birds, fish, insects and reptiles. The abundance of flora and fauna in wetland area are an important source of food and materials for people. In Aotearoa wetlands are essential mahinga kai sites as well as sites for harvesting harakeke and collection of plants for rongoā.¹⁴

Secondly, wetlands can minimise the effects of natural disasters. Wetlands reduce the force of floodwaters by storing large quantities of water and regulating water flow. Research has shown that directing funding towards restoring wetlands, rather than river engineering, can provide a more effective and sustainable solution to flood mitigation.¹⁵ A 2007 Department of Conservation study found that a natural flood control scheme managed by the Waikato Regional Council in the Whangamarino Wetland saved over \$7m during a 100-year flood in 1998.¹⁶

Finally, wetlands provide significant carbon storage. The role of wetlands in mitigating climate change is explored further below.

¹¹ Te Iwi O Ngāi Takoto Environmental Plan, above n 9, at 147.

¹² Joy B Zedler and Suzanne Kercher "Wetland Resources: Status, Trends, Ecosystem Services, and Restorability" (2005) 30 Annual Review of Environment and Resources 39.

¹³ Beverley Clarkson, Anne-Gaelle Ausseil and Philippe Gerbeaux "Wetland ecosystem services" (2013) Ecosystem Services in New Zealand – conditions and trends 192.

¹⁴ At 194.

¹⁵ Marjan van den Belt, Thomas Bowen, Kimberley Slee and Vicky Forgie "Flood Protection: Highlighting an Investment Trap Between Built and Natural Capital" (2013) 49 JAWRA 681.

¹⁶ Department of Conservation *The economic values of Whangamarino Wetland* (Department of Conservation, DOC DM-141075, May 2007).

Wetlands have been drained globally to support agriculture and urban development. Globally 50% of original wetland area has been lost. In Aotearoa we have lost 90%, which represents one of the highest extents and rates of loss in the developed world.¹⁷ Between 1996 and 2018 5,760 hectares of freshwater wetlands and 180 hectares of saline wetlands have been lost in Aotearoa.¹⁸

D Waihārara fire

On the 18th of December 2021 Fire and Emergency were alerted of a vegetation fire at Waihārara, on the western side of the Kaimaumu-Motutangi wetland area. Over 100 firefighters worked for 52 days to put out a 2,400-hectare fire which burnt through vegetation and peat.¹⁹ Despite the Fire and Emergency departing on 7th February 2022 the fire was still smouldering underground, feeding off peat, as of the 2nd of March 2020.²⁰ It was expected that these fires would not be fully extinguished until significant rainfall in winter.

The extent of damage to the wetland ecosystem is to be fully determined. The Department of Conservation national fire manager Aroha Hughes expressed concern about the local species already threatened.²¹ Forest and Bird Northland conservation manager Dean Baigent-Mercer labelled the fire an ecological “catastrophic disaster”.²²

The first potential impact of the Waihārara fire is on the wetland itself. According to a 2005 Department of Conservation study, wetlands in Aotearoa take approximately 10 years to return to pre-fire composition and vegetation structure.²³ Whilst fires naturally occur in wetland areas, they do not provide any benefit to conservation values or ecological processes.²⁴ The second potential impact is to the drainage and recharge to the wider Aupōuri Aquifer. Fires can

¹⁷ Karen Denyer *The root causes of wetland loss in New Zealand: statistics and backstories* (National Wetland Trust, October 2020).

¹⁸ “Wetland Area” (14 December 2021) Stats NZ < <https://www.stats.govt.nz/indicators/wetland-area>>.

¹⁹ Fire and Emergency New Zealand “Whanaungatana on Display at Waihārara” *Ignite* (New Zealand, Autumn 2022).

²⁰ Fire and Emergency New Zealand “Outdoor fires discouraged as Northland braces for strong winds and dry weather this week” (press release, 2 March 2022).

²¹ Denise Piper “Far North fire one of NZ’s most complex, recovery could take up to 15 years” (8 January 2022) Stuff < <https://www.stuff.co.nz/national/127450068/far-north-fire-one-of-nzs-most-complex-recovery-could-take-up-to-15-years>>.

²² “Kaimaumu fire labelled an ecological 'catastrophic disaster' for near-extinct species” (23 December 2021) RNZ < <https://www.rnz.co.nz/news/national/458523/kaimaumu-fire-labelled-an-ecological-catastrophic-disaster-for-near-extinct-species>>

²³ Peter Johnson *Fire in wetlands and scrub vegetation; studies in Southland, Otago and Westland* (Department of Conservation, DOC Research & Development Series 215, July 2005).

²⁴ At 37.

cause a number of hydrological effects. Ash from wildfires interacts with topsoil to create an impervious layer. This increases runoff which in turn increases erosion.²⁵ Greater runoff has been linked to a reduction in groundwater flow.²⁶ The greatest hydrological effect is observed 14 months after fire. Therefore, the Waihārara fire could impact the fulfilment of water takes from the Aupōuri Aquifer as well as the long-term ecology of the area.

E Role of wetlands in climate change

In the context of climate change wetlands are a vulnerable ecosystem, but also pose a solution for climate mitigation and provide a mechanism to exacerbate climate change. The Intergovernmental Panel on Climate Change identifies wetlands as an ecosystem which will suffer irreversible impacts as a result of an increase in global mean temperature over 1.5°C.²⁷

1 Effect of climate change on wetlands

The biggest threat climate change poses to wetlands is an alteration to hydrological regimes.²⁸ This can occur through changes in precipitation, increased evapotranspiration, more frequent fires and increased extreme weather events.²⁹ Ministry for the Environment projects that days with very high or extreme fire danger will increase by 70% by 2040.³⁰ Therefore, it is likely that wildfires, such as the fire on the Kaimaumu-Motutangi wetland, will become more frequent. Only months after the Waihārara fire another significant fire spread through 1350 hectares of the Awarua-Waituna wetland area in Southland threatening wahi tapu sites and indigenous biodiversity.³¹

In a climate changed future the Kaimaumu-Motutangi wetland will likely experience higher precipitation in summer and autumn and significant decreases in precipitation in winter and spring.³² The wetland, being on the coastline, is also vulnerable to sea level rise. The NZ

²⁵ Benjamin Johnk and David Mays “Wildfire Impacts on Groundwater Aquifers: A Case Study of the 1996 Honey Boy Fire in Beaver County, Utah, USA” (2021) 13(16) *Water* 2279.

²⁶ Johnk and Mays, above n 25.

²⁷ Intergovernmental Panel on Climate Change *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Cambridge University Press, Working Group II Contribution to the IPCC Sixth Assessment Report, 2022).

²⁸ Kevin Ewrin “Wetlands and global climate change: the role of wetland restoration in a changing world” (2009) 17 *Wetlands Ecology and Management* 71.

²⁹ At 72.

³⁰ Ministry for the Environment and StatsNZ *Our atmosphere and climate* (New Zealand’s Environmental Reporting Series, ME1523, October 2020).

³¹ Press Release: Fire and Emergency NZ “Awarua Fire Update #13” (11 April 2022) Scoop News <<https://www.scoop.co.nz/stories/AK2204/S00187/awarua-fire-update-13-monday-11-april.htm>>.

³² Ministry for the Environment *Climate Change Projections for New Zealand: Atmosphere Projections Based on Simulations from the IPCC Fifth Assessment, 2nd Edition* (ME1385, September 2018).

SeaRise map predicts 20-40 cm of sea level rise by 2050 for a coastal location adjacent to the Kaimaumau-Motutangi wetland.³³ This sea-level rise is likely to exacerbate saltwater intrusion,³⁴ which is already a threat to groundwater abstraction from the Aupōuri Aquifer.³⁵

2 *Effect of wetlands on climate change*

Environmental groups such as Forest and Bird and the Environmental Law Initiative argue that wetlands are a “climate change secret weapon”³⁶ and should be leveraged in climate policy as a nature-based solution.³⁷ The importance of protecting and restoring wetlands for climate change mitigation is threefold. Firstly, wetlands release stored carbon as they are drained and dried which accelerates climate change. For example, this is seen with significant amounts of carbon being released from thawing permafrost.³⁸ Secondly, restoring wetlands will promote carbon sequestration.³⁹ Research shows that mitigating carbon emissions will not be sufficient; removing carbon from the atmosphere will be key.⁴⁰ Utilising our natural systems, such as wetlands, can be an efficient way to promote sequestration.⁴¹ Finally, wetlands are an important tool for mitigating the effects of extreme weather events which will become more frequent as a result of climate change. As stated earlier, wetlands can store and regulate flood water flow.

F Framework for wetland conservation in Aotearoa

1 Resource Management Act 1991

The preservation of the natural character of wetlands from inappropriate subdivision, use or development is listed as a matter of national importance in the Resource Management Act 1991.⁴² Additionally section 6(c) of the RMA requires consenting authorities to provide for

³³ NZ SeaRise “Taikwā NZ SeaRise map” <
<https://searise.takiwa.co/map/6233f47872b8190018373db9/embed>>.

³⁴ Intergovernmental Panel on Climate Change *Freshwater Resources and their management* (Cambridge University Press, Contribution of the Working Group II to the Fourth Assessment Report of the IPCC, 2007).

³⁵ Jacob Scherberg and Jon Williamson *Aupouri Aquifer Groundwater Model Factual Technical Report-Modelling* (Williamson Water & Land Advisory, WWLA0184, 5 February 2020).

³⁶ “Restoring peat wetlands- our climate change secret weapon” (2 February 2021) Forest and Bird <
<https://www.forestandbird.org.nz/resources/restoring-peat-wetlands-our-climate-change-secret-weapon>>.

³⁷ “Leveraging wetlands in NZ’s climate change response” Environmental Law Initiative <
<https://www.eli.org.nz/research-legal-cases/wetlands-emissions-reductions>>.

³⁸ William Moomaw, GL Chmura, Gillian Davies, CM Finlayson, BA Middleton, Susan Natali, JE Perry, N Roulet and Ariana Sutton-Grier “Wetlands In a Changing Climate: Science, Policy and Management” 38 *Wetlands* 183.

³⁹ At 197.

⁴⁰ At 184.

⁴¹ At 197.

⁴² Resource Management Act 1991, s 6.

the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.⁴³ Wetlands are often sites of indigenous vegetation or habitats for indigenous fauna. “Wetland” is defined in the RMA as including “permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.”⁴⁴

The Resource Management Act delegates responsibility for wetland management to regional and territorial authorities.⁴⁵ Regional councils have a responsibility to control the use of land to maintain and enhance water quality and quantity.⁴⁶ This responsibility includes the drafting of wetland drainage rules. Section 30 also confers a responsibility to maintain and enhance ecosystems in water bodies.⁴⁷ Controlling wetland vegetation clearance falls on regional and territorial councils under a requirement to control actual or potential effects of the use, development, or protection of land.⁴⁸ A survey of regional policies and plans, conducted by the National Wetland Trust, found great diversity in the strength and specificity of measures protecting wetlands.⁴⁹

2 *National Policy Statement for Freshwater Management and National Environmental Standards*

The 2020 National Policy Statement for Freshwater Management (NPS-FM) lists preventing further loss of natural inland wetlands, protection of their values, and promoting their restoration as one of fifteen key policies. NPS-FM requires regional councils to include a policy in their regional plans which promotes restoration of wetlands and prevents further loss.⁵⁰ A subclause is included which sets out the council’s obligations when considering a resource consent which would result in the loss of extent or values of a natural inland wetland.⁵¹ The consenting authority must be satisfied that the applicant has demonstrated that the effects management hierarchy will be applied to loss of extent or values of wetlands.⁵²

⁴³ Resource Management Act 1991, s 6(c).

⁴⁴ Section 2.

⁴⁵ Sections 31 and 31.

⁴⁶ Section 31.

⁴⁷ Section 30(1)(c)(iia).

⁴⁸ Section 31(1)(b).

⁴⁹ Karen Denyer *The root causes of wetland loss in New Zealand: regional policies and rules* (National Wetland Trust, October 2020).

⁵⁰ National Policy Statement for Freshwater Management 2020, at 3.22.

⁵¹ At 3.22(3).

⁵² The effects management hierarchy required for the management of adverse effects on natural wetlands is seen in Resource Management (National Environmental Standards for Freshwater) Regulations 2020, reg 56(e). The

Alongside the NPS-FM, the National Environmental Standards for Freshwater came into force in 2020. The new rules prohibit activities which are likely to drain wetlands and such activities are classified as non-complying if they occur within 100m of a natural wetland.⁵³

Research by the National Wetland Trust found that councils have difficulty implementing NPS-FM and NES.⁵⁴ In particular, issues have arisen over the definition of a wetland. In NPS-FM the definition of “wetland” was narrowed to exclude artificially constructed wetlands and areas of improved pastures. This definition creates uncertainty in identifying wetlands as there is no specification at which point a wetland becomes “artificially constructed”. Furthermore, the narrower definition in the NPS-FM than in the RMA has created uncertainty as to whether the NES would apply to wetlands within the coastal marine area.⁵⁵ The High Court considered this issue in an appeal of the proposed Regional Plan for Northland. The Court concluded that the Environment Court had erred in finding that the NES only applied to the coastal marine area where a wetland is upstream from a river mouth.⁵⁶

III The resource consents

There are currently 112 consents to take over 14,000,000 m³ of water from the Aupōuri Aquifer per year.⁵⁷ 39 of these resource consents are split between two group consents. Before these recent group consents, abstraction volume was 1,800,000 m³/yr from the Aupōuri Aquifer.⁵⁸

A 2018 Motutangi-Waiharara Water Users Group consent

The first group consent was granted to the Motutangi-Waiharara Water Users Group (MWWUG) in 2018 by Northland Regional Council (NRC). The consent allocated 2,446,350 m³/yr across 17 separate applications to service avocado orchards in the area. The NRC issued one composite decision for the 17 applications, but each application stands alone in terms of

effects management hierarchy progresses from avoidance to offset or compensation. Avoidance is the preferred approach but if avoidance is not possible the consent holder may move down the effects management hierarchy.

⁵³ Resource Management (National Environmental Standards for Freshwater) Regulations 2020, reg 38.

⁵⁴ Denyer, above n 49.

⁵⁵ *Minister of Conservation v Mangawhai Harbour Restoration Society Inc* [2021] NZHC 3113.

⁵⁶ At [125].

⁵⁷ Scherberg and Williamson, above n 35.

⁵⁸ Hangjian Zhao and Jon Williamson *Motutangi-Waiharara Groundwater Model Factual Technical Report* (Williamson Water & Land Advisory, WWLA0026, 31 August 2017).

consent conditions and appeal rights.⁵⁹ The applications for resource consent were limited notified to 1047 identified owners or occupiers of adjacent properties and to nine iwi groups.⁶⁰ The resource consent was approved by independent commissioners for NRC David Hill and Peter Callander.

1 Kaimaumau-Motutangi wetland

There was contention on the issue of the potential impacts to the Kaimaumau-Motutangi wetland and the weight these impacts should be given according to the relevant statutory documents. Mr Williamson, hydrogeologist for the applicants, gave expert evidence of low permeability between the Kaimaumau-Motutangi wetland and wider aquifer. This evidence was disputed by Department of Conservation (DoC) hydrologist and hydrogeologist.⁶¹ DoC's key concern was the lack of information of the groundwater connectivity of the wetlands and recommended further investigations.⁶²

In line with *Environmental Defence Society Inc v New Zealand King Salmon Company Ltd*,⁶³ the Commissioners considered the New Zealand Coastal Policy Statement (NZCPS) due to the incomplete coverage in the Northland Regional Policy Statement. It was concluded that Kaimaumau-Motutangi wetland would fall under the meaning of coastal environment in the NZCPS. The guidance under the NZCPS is to avoid adverse effects, a higher requirement than in the National Policy Statement.⁶⁴ The Commissioners concluded that the adaptive management plan, as detailed below, was sufficient to detect adverse effects to the wetland.

2 Adaptive management

DoC opposed the resource consent application on the basis that there was an insufficient evidential foundation to establish an adaptive management regime, as required by *Sustain Our Sounds v New Zealand King Salmon (Sustain Our Sounds)*.⁶⁵ The Commissioners concluded that the adaptive management regime developed by the applicant's hydrogeologist "is capable of delivering an appropriately cautious and responsive regulatory regime."⁶⁶

⁵⁹ Northland Regional Council "Decision by Independent Hearing Commissioners on the Motutangi-Waiharara Water Users Group resource consent application" (REQ.581172, 7 June 2018).

⁶⁰ Northland Regional Council, above 59, at 8.

⁶¹ At 90.

⁶² At 92.

⁶³ *Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd* [2014] NZSC 38 at [90].

⁶⁴ Northland Regional Council, above n 59, at 103.

⁶⁵ *Sustain Our Sounds v New Zealand King Salmon* [2014] NZSC 40 at [125].

⁶⁶ Northland Regional Council, above n 59, at 123.

The Commissioners approved a Groundwater Monitoring and Contingency Plan (GMCP) which set out a four-stage approach to development of the abstractions. This includes a one year low-level abstraction to establish a monitoring baselines. After the first twelve months a trigger for groundwater levels will be set. If this level is exceeded all MWWUG consents must reduce their daily allocation volume by 50%.⁶⁷ The Council will then commission a Groundwater Trigger Exceedance Report to assess the cause of the trigger level exceedance. If the trigger level is still exceeded after twenty-one days, the consent holder will have to reduce abstraction to 25% the daily volume.⁶⁸ The Commissioners rejected DoC's recommendation to monitor the Kaimaumu-Motutangi wetland itself on the basis that,⁶⁹

there are many influences on the wetland that are far greater than the MWWUG abstractions and any effect from these abstractions will best be identified from the groundwater level monitoring that is proposed in the GMCP.

B Appeal to the Environment Court

The MWWUG resource consent was appealed to the Environment Court by the Department of Conservation and Mr Burgoyne, with the first decision delivered in February 2019.⁷⁰ Mr Burgoyne represented his personal interests and speaking for Te Taumatua o Ngati Kuri Research Unit. Mr Burgoyne sought amendments to the conditions on the basis of the Treaty of Waitangi. DoC sought amendments to the resource consent conditions to provide for more monitoring and identification of trigger levels.⁷¹ The Court identified the key issue as whether the method laid out in the resource consent is an adequate method of adaptive management, as required by *Sustain Our Sounds*.⁷² The judgment was delivered in two decisions. Following the first decision the parties were directed to consult on unresolved issues and file their preferred consent conditions to the Environment Court.⁷³ The second decision made minor amendments to the consent conditions.⁷⁴

1 New Zealand Coastal Policy Statement

⁶⁷ Northland Regional Council, above n 59, at 161.

⁶⁸ Motutangi-Waiharara Water User Group Groundwater Monitoring and Contingency Plan, condition 27.

⁶⁹ Northland Regional Council, above n 59, at 123.

⁷⁰ *Burgoyne v Northland Regional Council* [2019] NZEnvC 28.

⁷¹ At [6].

⁷² At [14].

⁷³ At [84].

⁷⁴ *Burgoyne v Northland Regional Council* [2019] NZEnvC 137.

Whether the NZCPS is engaged affects the requirements on the Council to avoid adverse effects. The applicant and NRC argued that the Regional Coastal Policy Statement does not include the Kaimaumau-Motutangi wetland in its delineation of the coastal environment.⁷⁵ The Court took the view that the wetland was clearly within the coastal environment, meaning the NZCPS applies.⁷⁶ NZCPS Policy 11 is engaged due to the indigenous biological diversity of the Kaimaumau-Motutangi wetland. This imports an obligation to avoid adverse effects on the indigenous ecosystem.⁷⁷

2 *Adaptive management*

A number of significant changes were made to the adaptive management regime which the Court viewed as fulfilling the requirements under *Sustain Our Sounds*.⁷⁸ Firstly, the conditions were amended to reflect the obligation in the NZCPS to avoid adverse effects. Secondly, the conditions were amended to require consent holders to suspend abstraction in the event the trigger levels were exceeded. Thirdly, condition 31 was amended to require the NRC to review the resource consent under section 28 of the RMA if the trigger level was exceeded.

The Court was concerned that a lack of monitoring of effects to the Kaimaumau-Motutangi wetland in the first twelve months would be inconsistent with the obligations in the NZCPS and the requirements for adaptive management in the *Sustain Our Sounds* decision.⁷⁹ The proposed resource consent did not set a trigger level for wetland water level for the first twelve months due to a lack of monitoring results. The Court concluded that a water level must be set for monitoring in the first twelve months, as a proxy for effects to the Kaimaumau-Motutangi wetland. If this trigger level is exceeded further investigations by wetland ecologists and hydrologists will determine whether this change is due to natural fluctuations.⁸⁰

The conditions of the resource consent explicitly note the power under s 132 of the RMA to cancel a resource consent if there are material inaccuracies when granting the application.⁸¹ The Court states that an adverse effect on the Kaimaumau-Motutangi wetland would be a

⁷⁵ *Burgoyne v Northland Regional Council*, above n 70, at [18].

⁷⁶ At [19].

⁷⁷ New Zealand Coastal Policy Statement 2010 Policy 11.

⁷⁸ *Burgoyne v Northland Regional Council*, above n 70, at [32].

⁷⁹ At [42].

⁸⁰ At [44].

⁸¹ Motutangi-Waiharara Water User Group Groundwater Monitoring and Contingency Plan, condition 31.

material inadequacy allowing the cancellation of the consent.⁸² This is due to the clear intention of the parties to avoid adverse effects on indigenous biodiversity in the resource consent conditions.

The Court concluded that the adaptive management regime is sufficient to avoid adverse cultural effects.⁸³ According to the Court the adaptive management regime will maintain the mauri of the area and may improve the mauri due to the resource information required by the regime.

C 2021 Aupōuri Aquifer Water User Group consent

In 2021 the Northland Regional Council granted a second group consent to the Aupōuri Aquifer Water User Group (AAWUG). This time the consent was to take 4,606,260 m³/yr across 24 resource consents. Again, the consent application was limited notified to neighbouring landowners and iwi groups. During the proceedings the revised National Policy Statement for Freshwater Management and accompanying National Environmental Standards were released. The Council took a lengthy adjournment to assess the bearing these standards have on the consent application. The consent was granted by the same commissioners as in the MWWUG consent, David Hill and Peter Callander.

1 Effects on surface waterways

Hydrogeologist for the applicants, Mr Williamson, argued that the degree of hydroconnectivity in the wetland is not sufficient to require allocations to be limited by Policy H.4 of the proposed Regional Plan for Northland (pRPN). However, DoC argued that Mr Williamson's groundwater model failed to account for local effects. The Commissioners concluded that any potential adverse effects on the Kaimaumau-Motutangi wetlands are minor. The Commissioners were confident that the adaptive management regime was sufficient to provide a cautious approach to the implementation of the resource consent.⁸⁴

2 Effect on existing consents

⁸² *Burgoyne v Northland Regional Council*, above n 70, at [53].

⁸³ *Burgoyne v Northland Regional Council*, above n 70, at [62].

⁸⁴ Northland Regional Council "Decision by Independent Hearing Commissioners on the Aupōuri Aquifer Water User Group resource consent application" (REQ-596300.01.01, 1 September 2021).

DoC raised the issue of potential derogation of right of the MWWUG consent holders.⁸⁵ The applicants noted that the proposed consents could be granted without exceeding the allocation limits in the pRPN.⁸⁶ The Commissioners concluded that interference could be avoided by a gradual implementation regime. This interference refers to the overlap between the staged implementation in the MWWUG and AAWUG consents. The MWWUG consent allowed 25% of the abstraction volume in the first year, 50% in years two and three, 80% from years four to eight, with full abstraction from year nine onwards.⁸⁷ A similar regime was applied for the AAWUG consent with 25% abstraction in the first year, 50% in years two and three, 75% from years four to eight, with full abstraction from year nine onwards.⁸⁸

3 Effect on future use of water supply

The AAWUG consents bring the total allocated volume to between 52-99% of the allocation limits per zone as stated in Policy 4.4 of the pRPN.⁸⁹ The Commissioners noted submitter concern of the future use of the Aquifer by users. It was recognised that Te Mana o Wai is a fundamental concept in NPS-FM. This imports an obligation to balance the health and wellbeing of our freshwater with the health and wellbeing of the wider environment and community.⁹⁰ The Commissioners stated that these concerns are fundamental to their decision.⁹¹ However, the proposed abstraction fits within the allocation limits laid out in the pRPN. The Commissioners also noted that the allocation limits were conservative and that the correct approach results in a “smoothing of the allocations across the zones and makes allocation numbers generally fit more comfortably within the limits.”⁹²

4 Adaptive management

DoC’s arguments were similar to those in the MWWUG consent application and appeal to the Environment Court. They argued that a precautionary approach should be taken given the uncertainty of adverse effects. The need for precaution is only magnified by the cumulative effect of both group consents. According to DoC this precautionary approach is supported by the requirement to avoid adverse effects in NPS-FM and the requirement that dune lake levels

⁸⁵ At 93.

⁸⁶ Northland Regional Council, above n 84, at 161.

⁸⁷ Northland Regional Council, above n 59, appendix 2 at 2A.

⁸⁸ Northland Regional Council, above n 84, at 129.

⁸⁹ At 121.

⁹⁰ National Policy Statement for Freshwater Management, above n 50, at 1.3.

⁹¹ Northland Regional Council, above n 84, at 103.

⁹² At 123.

remain unchanged in Policy 4.2 of the pRPN.⁹³ Again the Commissioners concluded that potential adverse effects were minor, and the adaptive management regime will be sufficient to warn against adverse effects.

D Upcoming appeal

The Department of Conservation has appealed the AAWUG resource consent to the Environment Court. According to an article with Radio New Zealand, DoC was “not confident around the adequacy of data and other aspects being used as the foundations for some of the critical management of the aquifer needed into the future.”⁹⁴ This judgment has yet to be released. A procedural direction from the Environment Court required all evidence to be filed by 13 April 2022.⁹⁵

IV Mechanisms to review or cancel a resource consent

A Introduction

This paper has laid out the national importance of the Kaimaumu-Motutangi wetland, the recent fire, the need to protect wetlands in Aotearoa in the face of climate change, and the freshwater management context for freshwater in Northland. The next section will investigate the mechanisms available to review or cancel the MWWUG and AAWUG consents following the Waihārara fire.

The environmental effects of the Waihārara fire are not yet fully appreciated. However, it is possible that the fire added stress to the hydrology of the area. This could mean that the resource allocations cannot be fulfilled, or the resource allocation contributes additional stress to an already vulnerable system. Whilst it cannot be said conclusively that the Waihārara fire was caused by climate change, similar extreme events will become more frequent. To preserve the life-supporting capacities of our natural resources for future generations it must be ensured that our resource management system is able to account for the types of environmental events which will become more frequent with climate change.

⁹³ At 145.

⁹⁴ Susan Botting “Department of Conservation Appealing Controversial Aupōuri” (21 September 2021) Radio New Zealand < <https://www.rnz.co.nz/news/ldr/452002/departement-of-conservation-appealing-controversial-aupouri>>.

⁹⁵ *Director-General of Conservation v Northland Regional Council* [2022] NZEnvC 015.

It may be argued that review mechanisms, either statutory or through an adaptive management framework, are capable of managing environmental change. However, I suggest that these mechanisms are too narrow in that they rely on predictions of certain adverse effects. Therefore, we need more robust solutions to adapt resource consents in response to significant environmental events.

B Support from high order documents

The review or cancellation of a resource consent where there has been a change in environmental conditions is supported at a high level by the Resource Management Act 1991. The purpose of the RMA is to promote sustainable management of natural and physical resources.⁹⁶ This includes sustaining the potential of natural resources to provide for the reasonably foreseeable needs of future generations and safeguarding the life-supporting capacity of air, water, soil and ecosystems. Significant environmental events, such as fires, create vulnerable natural states. Fires change vegetation composition, create water stress and impact nutrient availability.⁹⁷ In this altered environmental state continuing water abstraction will only add more stress to the natural system. Further water abstraction does not safeguard the life-supporting capacity of affected wetland ecosystems.

Since 2004 the effects of climate change can be considered by decision-makers under the RMA.⁹⁸ Harry Duynhoven in the third reading of the Resource Management (Energy and Climate Change) Amendment Bill stated that having regard to the effects of climate change is “simply good risk management”.⁹⁹ Litigation over the application of s 7(i) of the RMA has focussed primarily on the effects of sea-level rise.¹⁰⁰ For example, the Environment Court in *Buckley v South Wairarapa District Council* upheld the decision of the South Wairarapa District Council to refuse a resource consent for the construction of a property near the coastline.¹⁰¹ The Court had regard to s 7(i) and concluded that due to the effects of climate

⁹⁶ Resource Management Act 1991, s 5.

⁹⁷ Florent Mouillot, Serge Rambal and Richard Joffre “Simulating climate change impacts on fire frequency and vegetation dynamics in a Mediterranean-type ecosystem” (2002) 8 *Global Change Biology* 423.

⁹⁸ Resource Management Act 1992, s 7(i) as amended by the Resource Management (Energy and Climate Change) Amendment Act 2004.

⁹⁹ (26 February 2004) 615 NZPD 11401.

¹⁰⁰ *Buckley v South Wairarapa District Council* EnvC Wellington W004/08, 4 February 2004; *Gillies v Otago Regional Council* EnvC Christchurch C060/08, 11 April 2008; *Save The Point Inc v Wellington City Council* EnvC Wellington W082/07, 20 September 2007; *Otago Regional Council v Dunedin City Council* [2010] NZEnvC 120.

¹⁰¹ *Buckley v South Wairarapa District Council*, above n 100.

change the resource consent would not be consistent with the RMA's purpose of sustainable management.¹⁰² In these cases the effects potential of climate change were on infrastructure and the concern of the Courts was over safety.

The application of s 7(i) of the RMA with the most relevance to the MWWUG and AAWUG consents was in regard to an appeal of an application to take water from the Waimakariri catchment.¹⁰³ The Environment Court concluded that the increase in water temperature predicted with climate change is an additional stressor on native fish inhabiting the Cass River and is a consideration under s 7(i).¹⁰⁴ The Court stated that "the effects of climate change are ... part of the reasonably foreseeable environment".¹⁰⁵ Similarly, the Environment Court considered the effect of warming water temperatures and potential droughts on native fish within the context of an amendment to a Water Conservation Order.¹⁰⁶ These cases are more analogous to the present context than the sea level rise cases because the Court is considering climate change as an additional stressor on the natural environment, rather than on infrastructure. Therefore, there is scope for this type of consideration under the RMA although it has not been widely applied.

The specific obligations on regional councils in the NPS-FM to consider the effects of climate change are only in relation to the setting of limits on resource use and environmental flows and levels.¹⁰⁷ However, it is a key policy that freshwater is managed as part of New Zealand's integrated response to climate change. The NZCPS references climate change more frequently than the NPS-FM.¹⁰⁸ For example, it is a key policy of the NZCPS to adopt a precautionary approach to the use and management of coastal resources vulnerable to the effects of climate change.¹⁰⁹

Therefore, the purpose and principles of the RMA, NPS-FM and NZCPS support a mechanism for reviewing or cancelling a resource consent when there has been a change of environmental conditions due to climate change.

¹⁰² *Buckley v South Wairarapa District Council*, above n 100, at [220].

¹⁰³ *P & E Ltd v Canterbury Regional Council* [2016] NZEnvC 252.

¹⁰⁴ At [189].

¹⁰⁵ At [190].

¹⁰⁶ *Re Whitewater New Zealand Inc* [2013] NZEnvC 131.

¹⁰⁷ National Policy Statement for Freshwater Management, above n 50, at 3.14(2)(a)(ii) and 3.16(4)(a).

¹⁰⁸ New Zealand Coastal Policy Statement 2010.

¹⁰⁹ Policy 3.

C Power in the RMA to review or cancel a resource consent

Section 128 of the Resource Management Act 1991 allows a consent authority to review the conditions of a resource consent.¹¹⁰ *Feltex Carpets Ltd v Canterbury Regional Council* held that the power in section 128 is wide and flexible and there is no limit on how far the consenting authority can subtract or qualify a resource consent with new conditions.¹¹¹ However, the power in s 128 does not extend to terminating a resource consent.¹¹² A consenting authority can also review a resource consent if there is a review condition within the consent when granted.¹¹³ Review conditions are often part of an adaptive management regime.¹¹⁴ This allows consenting authorities to reassess the consent conditions as more evidence of the effects of the activity become available.

The MWWUG and AAWUG consents directly incorporate s 128 into the GMCP through a review condition. The MWWUG consent allow a review through s 128 in limited circumstances: either to deal with adverse effects arising from the exercise of the resource consent or to review the water allocation.¹¹⁵ The Environment Court appeal amended the review condition to include the insertion of trigger levels. These circumstances were expanded further in the AAWUG consent to also include the amendment of trigger levels and the reduction of abstraction volume if water use is inefficient or surplus to needs.¹¹⁶ These review powers appear to be significant but rely on meaningful action from the Northland Regional Council. There are a number of reasons why the NRC may be reluctant to exercise these powers, as will be further discussed.

Under section 132 of the RMA a consenting authority can cancel a resource consent if the application included inaccuracies which materially influenced the decision to grant the consent and there were significant adverse effects on the environment as a result of the consent. A consenting authority must conduct a s 128 consent condition review before cancelling the consent under s 132.¹¹⁷ The application of section 132 to the MWWUG consent was noted in

¹¹⁰ Resource Management Act 1991, s 28.

¹¹¹ *Feltex Carpets Ltd v Canterbury Regional Council* [2000] 6 ELRNZ 275.

¹¹² *Minister of Conservation v Tasman District Council* HC Nelson CIV-2003-485-1072 (December 2003).

¹¹³ Hilke Giles and Barry Barton “Adaptive management under the RMA: the tension between finality and flexibility” (2020) 24 New Zealand Journal of Environmental Law 1.

¹¹⁴ *Golden Bay Marine Farmers v Tasman District Council* EnvC Wellington W019/03, at [459].

¹¹⁵ Motutangi-Waiharara Water User Group Groundwater Monitoring and Contingency Plan, condition 31

¹¹⁶ Aupōuri Aquifer Water User Group Groundwater Monitoring and Contingency Plan, condition 32

¹¹⁷ Resource Management Act 1991, s 132(4).

Environment Court appeal. The Court stated that, given the clear intention of the parties to avoid adverse effects on the Kaimaumu-Motutangi wetland, the resource consent could be cancelled if these adverse effects were to occur.¹¹⁸ The adverse effects would be a material inaccuracy from the intention of the resource consent. This reasoning reflects an earlier Environment Court decision which asserted that an inaccurate prediction of environmental effects is a material inaccuracy validating the cancellation of the resource consent.¹¹⁹

1 Cancelling or reviewing resource consents due to environmental changes

A review of council decisions and cases applying ss 128 and 132 of the RMA shows a limited application of the powers of review and cancellation. No example could be found of a case where the consenting authority reduced a water allocation in response to adverse environmental effects under s 128. There are a number of barriers to consenting authorities exercising review powers under s 128. These barriers result in the powers of review being rarely exercised.¹²⁰

The first barrier is administrative. In legal submissions on the Otago Regional Water Permits Plan Change the Otago Regional Council recommended shorter consent durations for water permits rather than longer consents with regular reviews under s 128.¹²¹ The key reason for this recommendation was concern about the effectiveness of the review powers under s 128. Otago Regional Council highlighted that consent review processes are resource intensive.¹²² Consent reviews can also be appealed which further draws out the process.¹²³ Therefore, the Council argues, once a long resource consent is granted it is unlikely the consenting authority will review this consent under s 128.

The second barrier to conducting a consent review under s 128 is the risk of future litigation if the consenting authority restricts rights granted under the resource consent. The High Court in *Aoraki Water Trust v Meridian Energy Ltd* concluded that reducing an existing resource

¹¹⁸ *Burgoyne v Northland Regional Council*, above n 70, at [53].

¹¹⁹ *Pickering v Christchurch City Council* [2017] NZEnvC 68.

¹²⁰ Philip Milne *When is Enough Enough? Dealing with the cumulative effects under the Resource Management Act* (Report Commissioned by Ministry for the Environment, February 2008).

¹²¹ Otago Regional Council Plan Change 7 Env-2020-CHC-127, closing legal submissions for Otago Regional Council (7 July 2021).

¹²² At 194(d).

¹²³ Guy Charlton and Barry Brunette “Sustainable development and water use in New Zealand: water priority and allocation under s 5 of the Resource Management Act 1991 and National Policy Statement on Freshwater Management 2011” (paper presented to Water and Society Conference, Las Vegas, December 2011).

consent in order to grant a subsequent consent would derogate from the original grant.¹²⁴ In reaching this conclusion the Court analogised a water permit to a *profit à prendre*, a property right.¹²⁵ This aspect of the decision was criticised later in *Hampton v Canterbury Regional Council* where the Court of Appeal asserted that a water permit granted under the RMA does not equate to a property right.¹²⁶ However, despite the correction in the Court of Appeal this view of the rights granted by resource consents may explain the reluctance of consenting authorities to exercise powers of review under s 128.¹²⁷

Another barrier to exercising review powers under s 128 is proving a causal link between the resource consent and the adverse environmental effects.¹²⁸ This relies on effective monitoring and an understanding of the interconnected nature of environmental effects. Proving an adverse effect is linked to a particular resource consent is particularly difficult with groundwater takes due to the scale of potential effects.¹²⁹ One downstream effect could be related to a number of water takes, natural fluctuations upstream or other activities in the catchment area. The statement by the Environment Court in the appeal of the MWWUG consent that the consent could be cancelled under s 132 if unexpected adverse effects were to occur appears powerful. However, crucially, it would have to be proven that these unexpected effects were a result of the resource consent. In the Aupōuri Aquifer context the group consents make it more difficult to fairly attribute an adverse effect with the offending consent holder.

These barriers aside, sections 128 and 132 are not effective tools to address a change in environmental conditions. The primary justification for a consenting authority exercising review powers under s 128 is to deal with adverse effects arising due to the exercise of consents.¹³⁰ Unless the consent includes a review condition which allows the consenting authority to review the consent in the event of a significant environmental change there is no power to do so. Therefore, in the context of the Waihārara fire there is no power for Northland Regional Council to review the groundwater takes under s 128 unless the adverse effects can be linked to the resource consent.

¹²⁴ *Aoraki Water Trust v Meridian Energy Ltd* [2004] 11 ELRNZ 207.

¹²⁵ At [29].

¹²⁶ *Hampton v Canterbury Regional Council* [2015] NZCA 509.

¹²⁷ Milne, above n 120.

¹²⁸ At 28.

¹²⁹ At 12.

¹³⁰ Resource Management Act 1991, s 128(1)(a)(i).

It is argued, for example by the Otago Water Resource Users Group on the Water Permits Plan Change, that the wide nature of the powers under s 128 provides for a comprehensive review of resource consents.¹³¹ Environment Court Judges Hassan and Kirkpatrick argue that a well-drafted review condition provides an effective mechanism to ensure ongoing sustainable management of the resource.¹³² Therefore, review powers under s 128 provide a potential tool for adapting resource consents to environmental change. However, the theoretical benefits of the review powers under s 128 do not seem to have translated into practice. A resource consent which is responsive to climate change would have review conditions drafted to allow for reviews in the event of such environmental changes. To date, the application of ss 128 and 132 has not been used for adapting resource consents to such wider environmental changes.

D Role of adaptive management

Resource management traditionalists would argue that an effective adaptive management regime is capable of dealing with environmental changes such as the fire at the Kaimaumau-Motutangi wetland. Adaptive management is the approach used in Aotearoa to support a resource consent where the environmental effects are uncertain, complex or could be potentially significant over time. Adaptive management is a mechanism for consenting authorities to retain some flexibility in decision-making over the consent whilst ensuring a final decision is made to allow these activities.¹³³ Adaptive management facilitates an iterative learning process where monitoring of effects advances understanding of the resource and adjusts management of the resource in response.

Adaptive management emerged in the late 1970s and remained largely undefined until the leading case *Sustain Our Sounds Inc v New Zealand King Salmon Co Ltd*.¹³⁴ In *Sustain Our Sounds* the Supreme Court gave guidance on when adaptive management regimes were appropriate and provided some requirements for implementation.¹³⁵ The Supreme Court established the threshold question for the use of an adaptive management regime as whether there is an “adequate evidential foundation to have reasonable assurance that the adaptive

¹³¹ Otago Regional Council Plan Change 7 Env-2020-CHC-127, opening submissions of counsel for Otago Water Resources Users Group (23 March 2021).

¹³² Hassan and Kirkpatrick “Conditions of consent for complex developments” (paper presented at the Resource Management Law Association Roadshow, November 2014).

¹³³ Giles and Barton, above n 113.

¹³⁴ *Sustain Our Sounds v New Zealand King Salmon*, above n 65.

¹³⁵ *Sustain Our Sounds v New Zealand King Salmon*, above n 65.

management approach will achieve its goals of sufficiently reducing uncertainty and adequately managing any remaining risk.”¹³⁶ Additional considerations include:¹³⁷

- (a) the extent of the environmental risk (including the gravity of the consequences if the risk is realised);
- (b) the importance of the activity (which could in some circumstances be an activity it is hoped will protect the environment);
- (c) the degree of uncertainty; and
- (d) the extent to which an adaptive management approach will sufficiently diminish the risk and the uncertainty

The Commissioners in the MWWUG and AAWUG consents, as well as Smith J in the Environment Court, had confidence in the adaptive management regime to warn against adverse environment effects.¹³⁸ The Environment Court found that water level of the Kaimaumau-Motutangi wetland was a sufficient proxy for adverse effects.¹³⁹ If the water level dropped by 25mm below the base level, this would trigger further investigations by wetland ecologists and hydrologists.

The true test will be whether adaptive management regimes are robust in the context of extreme environmental events caused by climate change. One issue is that an adaptive management regime relies on the prediction of environmental changes. There is an underlying assumption of stationarity, the idea that natural systems change within an “envelope of variability”.¹⁴⁰ Adaptive management regimes aim to preserve this “steady” state. Whether this assumption is valid without the effects of climate change is doubted.¹⁴¹ However, the variability and uncertainty introduced to natural systems by anthropogenic climate change has definitely forced environmental changes outside this envelope of variability.

The establishment of an adaptive management regime relies on an adequate evidential foundation.¹⁴² The issue is whether you can rely on this evidential foundation after a significant

¹³⁶ *Sustain Our Sounds v New Zealand King Salmon*, above n 65, at [125].

¹³⁷ At [129].

¹³⁸ *Burgoyne v Northland Regional Council*, above n 70, at [52].

¹³⁹ At [43].

¹⁴⁰ PCD Milly, Julio Bentancourt, Malin Falkenmark, Robert Hirsch, Zbigniew Kundzewicz, Dennis Lettenmaier, Ronald Stouffer “Stationarity is Dead: Whither Water Management?” (2008) 139 *Science* 573.

¹⁴¹ Robin Kundis Craig “Stationarity is Dead- Long Live Transformation: Five Principles for Climate Change Adaptation Law” (2013) 34 *Harvard Environmental Law Review* 9.

¹⁴² *Sustain Our Sounds v New Zealand King Salmon*, above n 65.

environmental event where it is likely the baseline conditions have changed. The uncertainty and degree of environmental risk introduced by a significant environmental event may mean that an adaptive management regime is no longer appropriate under *Sustain Our Sounds*. This can be demonstrated by the fire effecting the Kaimaumu-Motutangi wetland. Groundwater models created by Williamson Water & Land Advisory were relied on heavily as the evidential foundation for both the MWWUG and AAWUG consents. These models estimate the drainage and recharge of the Aupōuri Aquifer based on factors such as soil infiltration, plant available water capacity and evaporation losses.¹⁴³ There is strong evidence that these factors are all impacted by fire.¹⁴⁴ Therefore, considering the likely impacts of the Waihārara fire on the Aupōuri Aquifer the evidential foundation used to justify the MWWUG and AAWUG consents might no longer be valid.

1 Application of adaptive management to environmental changes

Adaptive management regimes allow consent decisions to respond to environmental changes. This responsive decision-making holds promise for decision-making in the face of climate change induced environmental events. This section will assess how adaptive management regimes can be best designed to respond to environmental changes.

The adaptive management regime in the MWWUG and AAWUG consents is unlikely to respond to the change in environmental conditions caused by the fire at Waihārara. One issue is that water level is the only indicator monitored to detect adverse effects to the Kaimaumu-Motutangi wetland. Adverse effects to the wetland outside a drop in water level are not expected and are not monitored. The Court stated,¹⁴⁵

If unexpected adverse effects do occur, in our view this fundamentally contradicts the terms of this consent and would breach the primary purpose of the adaptive management plan and consent conditions.

Without wider environmental monitoring it is not clear how these unexpected adverse effects are to be detected. The fire is likely to create a change in environmental conditions outside of

¹⁴³ Scherberg and Williamson, above n 35, appendix B at B1.

¹⁴⁴ Johnk, above n 35; K Nelson, D Thompson, C Hopkinson, R Petrone, L Chasmer “Peatland-fire interactions: A review of wildland fire feedbacks and interactions in Canadian boreal peatlands” 769 *Science of the Total Environment* 145212.

¹⁴⁵ *Burgoyne v Northland Regional Council*, above n 70, at [82].

water level. For example, fires can cause a change in ecosystem values, nutrient availability and soil health.¹⁴⁶

Another issue is in the specifics of when a trigger level exceedance justifies a reduction in water abstraction. If a drop in water levels below the trigger level is detected this results in a Groundwater Trigger Exceedance Report. This report identifies the cause of the trigger level exceedance to determine whether the change is due to “natural fluctuations”. The process taken in preparing the Groundwater Trigger Exceedance Report to consider the cause of the exceedance could not be identified by this author. According to the AAWUG consent avoiding a change in water level means that the median water level, mean annual fluctuation and patterns of water level seasonality are unchanged.¹⁴⁷ However, it is unclear if a change in water level was detected as a result of the fire whether the fire would be considered a “natural fluctuation”. If it is a natural fluctuation the abstraction would not be reduced. This issue demonstrates that even if water level is an appropriate environmental indicator the effectiveness of the trigger level depends on the phrasing of the condition and the response from the consenting authority.

The MWWUG and AAWUG consents also highlight the importance of setting appropriate trigger levels. The Supreme Court in *Sustain Our Sounds* confirmed that appropriate indicators are a central component of an effective adaptive management regime.¹⁴⁸ The selected trigger level must be able to indicate an adverse effect caused by the resource consent. Therefore, there must be evidence that the indicators monitored will provide sufficient warning of the adverse effects. The MWWUG and AAWUG consents used water level as a proxy for wetland health. However, adverse effects on the wetland caused by groundwater takes are broader than only water level. According to a Handbook for Monitoring Wetland Condition prepared by Landcare Research and NIWA there are five different indicators of wetland health.¹⁴⁹ For example, these include change in hydrological integrity, change in ecosystem intactness and change in dominance of native plants. Hydrological integrity can be measured with different methods, including a change in water level, as monitored at the Kaimaumau-Motutangi wetland. However, other measurements, such as the proportion of dryland species, can be a

¹⁴⁶ United States Department of Agriculture, Forest Service *Wildland fire in ecosystems: effect of fire on soils and water* (United States Department of Agriculture, Gen. Tech. Rep. RMRS-GTR-42-vol.4, September 2005).

¹⁴⁷ Northland Regional Council, above n 84, appendix A footnote 1.

¹⁴⁸ *Sustain Our Sounds v New Zealand King Salmon*, above n 65, at [133].

¹⁴⁹ Beverley Clarkson, Brian Sorrell, Paula Reeves, Paul Champion, Trevor Partridge, Bruce Clarkson *Handbook for Monitoring Wetland Condition* (Landcare Research and NIWA, a Ministry for the Environment Sustainable Management Fund Project (5105), June 2003).

good indicator of a change in groundwater recharge and discharge rates which are impacted by groundwater abstraction.¹⁵⁰ Again, choosing only one indicator for wetland health expects a certain adverse effect, leaving other adverse effects undetected. It is likely that water level at the wetland was selected as the environmental indicator as it supposedly has a direct connection to the groundwater abstraction consented. However, it may be that other environmental indicators had not been regularly monitored. The latest report on the ecology of the Kaimaumau-Motutangi wetland was in 2001.¹⁵¹ However, if there was an inadequate evidential foundation of all potential adverse effects, the resource consent should never have been granted.¹⁵²

The MWWUG and AAWUG consents demonstrate that adaptive management regimes need to be able to account for the uncertainty climate change introduces to natural systems. This would mean a shift away from the assumption of stationarity. Jan McDonald and Megan Styles propose two ways in which adaptive management regimes can account for this uncertainty.¹⁵³ Firstly, a statutory requirement could require decision-makers to consider climate change when developing adaptive management regimes. This would incorporate climate change into adaptive management plans. The second proposal would be to shift away from strictly adhering to allocation limits but instead focus on more holistic goals. This could be qualitative goals such as maintaining key ecosystem functions of water resources. These goals may require the resource consent to adapt to changing environmental conditions. McDonald and Styles identified some disadvantages with this approach, including inconsistent application and poor political acceptability.¹⁵⁴ This highlights a key issue in designing a responsive adaptive management regime: striking the right balance between flexibility and certainty.

E Looking forward: resource management law reform

The resource management system is undergoing a significant reform in Aotearoa. This reform provides an opportunity to consider how the resource management system will respond to climate change induced environmental events.

¹⁵⁰ Clarkson, Sorrel, Reeves, Champion, Partridge and Clarkson, above n 149, at 19.

¹⁵¹ DL Hicks, DJ Campbell, and IAE Atkinson, above n 6.

¹⁵² *Sustain Our Sounds v New Zealand King Salmon*, above n 65, at [125].

¹⁵³ Jan McDonald and Megan C Styles “Legal Strategies for Adaptive Management under Climate Change” (2014) 26 *Journal of Environmental Law* 25, at 41.

¹⁵⁴ At 42.

The RMA will be replaced with three different pieces of legislation; the Natural and Built Environments Act (NBEA), the Spatial Planning Act and the Climate Adaption Act.¹⁵⁵ As part of the reform process the Resource Management Review Panel published a lengthy report (the Randerson Report) recommending changes to the system. It was acknowledged in this report that the resource management system needs to be reformed in order to be more resilient and responsive in the face of anthropogenic climate changes.

One area of focus is the tension between existing use protections and a responsive system which can adapt to environmental changes.¹⁵⁶ The ability to change or cancel resource consents is necessary for a responsive system. The Randerson Report suggested requiring regional councils to conduct more regular reviews of regional consents. The New Zealand Fish and Game Council supported this suggestion and noted the reluctance of regional councils to review resource consents, especially complex group consents for the same activity.¹⁵⁷ The Randerson Report also recommended strengthening the existing powers to modify or to extinguish a resource consent.¹⁵⁸ This would address the inefficiency of the powers in ss 128 and 132 to respond to environmental changes. On the other hand, it was recognised in the Randerson Report that applicants for resource consents dedicate a substantial amount of time and money in applying for a consent.¹⁵⁹ Therefore, if consenting authorities have the power to cancel a resource consent the greatest certainty possible should be provided to consent holders.

The Randerson Report recommended that existing use protections remain in place but with two exceptions.¹⁶⁰ The first exception is where there is high risk of significant harm or damage to health, property or the natural environment, for example by the breach of an environmental limit. The second exception is where it is necessary to adapt to the effects of climate change or to reduce risks from natural hazards.

The Natural and Built Environments exposure draft was released in 2021. The improvement in resilience of the environment to natural hazards and the effects of climate change is listed as a

¹⁵⁵ “Key Components of our future resource management system” (12 September 2022) Ministry for the Environment < <https://environment.govt.nz/what-government-is-doing/areas-of-work/rma/resource-management-system-reform/key-components-of-our-future-resource-management-system/>>.

¹⁵⁶ Tony Randerson *New Directions for Resource Management in New Zealand Report of the Resource Management Review Panel* (Resource Management Review Panel, June 2020), chapter 5 at 19.

¹⁵⁷ Chapter 5 at 20.

¹⁵⁸ Chapter 5 at 28.

¹⁵⁹ Chapter 5 at 19.

¹⁶⁰ Chapter 5 at 26.

key environmental outcome.¹⁶¹ If the reformed resource management system were to include powers to overturn a resource consent in the event of an environmental change this would be within the National Planning Framework and Natural and Built Environment Plans. This is where the environmental outcomes are incorporated.¹⁶² The degree to which the recommendations made by the Randerson Report have been implemented into the NBEA is not understood without further information on the contents of the National Planning Framework. This will become clear when the NBEA Bill is introduced into Parliament in October this year.¹⁶³

V Conclusion

The current resource management system does not have the necessary mechanisms to ensure resource consents respond to environmental changes caused by climate change. These mechanisms are in line with science and with the principles and policies of the RMA and other planning documents. The statutory powers in ss 128 and 132 are limited in scope by applying only to adverse effects caused by the resource consent. Therefore, consenting authorities are unable to consider adverse effects not directly related to the resource consent. Adaptive management regimes appear more promising for resource consents to respond to environmental changes. The effectiveness of adaptive management regimes relies on the appropriate setting of trigger levels and a meaningful reaction from consenting authorities when this trigger level is breached.

The ineffectiveness of the current mechanisms to review and overturn resource consents presents strong argument for change. The Randerson Report supported stronger powers to review and overturn consents. The key challenge will be designing a system which account for uncertainty whilst also providing certainty for consent-holders. Significant environmental events such as the Waihārara fire in Northland will become more common. Therefore, there is a strong imperative to find a workable solution to ensure the sustainable management of our natural resources in a climate change future.

¹⁶¹ Natural and Built Environments Bill Exposure Draft consultation draft 2021, at s 8(p)(ii).

¹⁶² Section 13.

¹⁶³ David Parker, Minister for the Environment “Speech to Local Government New Zealand Rural and Provincial Forum” (17 June 2022).

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