Partnerships and participation in catchment scale restoration: A study of the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project

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Abstract

With a changing climate, rapidly declining ecosystems and an increasing population, the time to act and redefine society's relationship with the environment is upon us (Chapin et al., 2012; Jenkins, 2018). Collaborative approaches to environmental management have emerged across the globe to better provide holistic and sustainable outcomes for people and the planet (Fenemor et al., 2011; Reo et al., 2017). At the heart of landscape scale collaboration lies the formation of multistakeholder partnerships. This study investigates the factors that influence the formation of successful multistakeholder partnerships in collaborative catchment scale restoration, in an Aotearoa New Zealand setting.

Using a case study, the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project, this research explores the interconnected social, political, economic and environmental factors at play in a collaborative partnership. Ostrom's (2007, 2009) social-ecological systems framework guided the organisation and analysis of this study. Qualitative research methods comprising a comprehensive literature review, nine semi-structured interviews, document analysis and observations were carried out in this case-study analysis.

The findings show that purposeful and ongoing participatory processes are required to support the development of an effective partnership and a shared understanding. Participants in this study are largely motivated by a connection to the environment and a community, with a sense of stewardship or sense of place being key to supporting participation and ongoing behaviour change. Organisational barriers and challenges, including that of funding, capacity issues and the need to further strengthen relationships between some stakeholder groups were identified. Project planning and funding models that allow for adaptative management and social and ecological learning were also identified as being highly valuable to establishing effective collaborative partnerships. This thesis contributes to the field of multistakeholder partnership and social-ecological systems research, with a specific focus on catchment scale collaborations in an Aotearoa New Zealand context.

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Introduction

With a global focus on climate change and the rapid decline of ecosystems, it is recognised that we are approaching a tipping point—a limit of acceptable environmental change (Chapin et al., 2012, p. 1). Thus, there is an urgent need to reconsider society's relationship with the environment and in turn to explore opportunities for conservation at a local scale (Chapin et al., 2012). Recognising this necessity opens the door to the complex socio-ecologically interconnected world of catchment scale restoration, a topic about which there is more to learn (Gilvear et al., 2012; Metcalf et al., 2015).

This introductory chapter aims to position the reader in the context of the forthcoming case study project, a collaborative catchment scale restoration project in the Waikato region of Aotearoa New Zealand. The chapter begins by outlining the importance of understanding social-ecological systems (SES) and how SES and multistakeholder partnership research can help to provide more sustainable and holistic environmental management practices. This chapter then describes the case study research project—the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project—and the research questions that have guided this research. As this research is based in an Aotearoa New Zealand setting, the important definition of tangata whenua as the Indigenous people of the land is provided. The chapter next explains how historical human-environment interactions have negatively influenced modern ecological conditions to the point where we now see an extreme risk of biodiversity and habitat loss. The subsequent section introduces the case study project, a collaborative partnership brought about to improve freshwater quality and increase Indigenous biodiversity in a nationally significant environment. The chapter concludes with a summary of these ideas and provides an outline of the remaining chapters.

1.1 Understanding Social-ecological Interactions

Social-ecological interactions are a lesser understood aspect of ecological restoration (Metcalf et al., 2015). However, social and political processes underpin the physical outcomes of restoration and, if we want to manage resources effectively in today's complex and changing world, multiple partners must work together (Metcalf et al., 2015; Miller &

Schelhas, 2009). Localised and effective multistakeholder partnerships that provide a more holistic approach to land and water management have been identified as a key approach to redefining our relationship with the natural world, and research into how to enhance such partnerships is needed (Chapin et al., 2012; Fenemor et al., 2011; Rollason et al., 2018; van Tulder et al., 2016).

Many researchers have utilised Ostrom's (2009) social-ecological systems framework (SESF) to better understand the interconnections and interactions that occur within complex social and ecological systems, including those which involved integrated catchment management and collaborative resource management. The SESF's first- and second-tier variables guide researchers in the exploration of the social, political, economic and related ecosystem factors that influence a social-ecological system (SES) (McGinnis & Ostrom, 2014; Ostrom, 2009). This deep analysis of relevant variables allows researchers to explore issues such as power, social learning and discourse and how these can ultimately affect interactions of stakeholders and the subsequent outcomes of collaborative restoration projects (Barrett et al., 2019; Ostrom, 2009).

To better understand this world of social, political, cultural and ecological interconnection, this research explores a case study: The Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project. Through document analysis, stakeholder interviews, field observations and an extended literature review, the findings of this study contribute to knowledge about collaborative catchment scale restoration projects, including how the action situations of these complex SESs can be better understood to support and enhance participation in such efforts. This research focuses on what factors are motivators or enablers and what barriers to partnership and participation exist, with a view to understand how complex socio-ecological interactions are played out and managed in a developing project in the real world.

The study addresses the following questions: 1. What factors influence the formation of successful multistakeholder partnerships in collaborative catchment scale restoration in an Aotearoa New Zealand setting? and 2. How can a shared understanding be facilitated to enhance a multistakeholder partnership in collaborative catchment scale restoration? The study aims to contribute to both the academic and practical knowledge base on collaborative

restoration, with the ultimate aim of supporting the participation of diverse stakeholders in current and future catchment scale restoration projects.

1.1.1 *Defining the term Tangata Whenua*

In an Aotearoa New Zealand setting, it is paramount to recognise Māori as the Indigenous people of the land. Aotearoa New Zealand stands out internationally due to its formalised treaty between the Crown (now government agencies) and Māori—the Treaty of Waitangi[1] or Te Tiriti o Waitangi (Harmsworth et al., 2016). Despite many ongoing challenges, the Treaty and its principles influence current legislation and policy design, strengthening rights of Māori in decision-making, including in environmental and resource management (Harmsworth et al., 2016). Throughout this thesis, I will use the term tangata whenua to describe the Māori people who belong to and have deep historical connection to a place (Taonui, 2019). This connection can be described as one "akin to the umbilical connection between an unborn child and its mother" or "those who have become one with the land through occupation over generations" (Waitangi Tribunal, 2016, p. 25).

Although legislation such as the Resource Management Act (1991) attempts to define 'tangata whenua' as the iwi or hapū who hold 'mana whenua' and to define 'mana whenua' as the customary authority exercised by iwi and hapū, it should not be assumed that any one group has the sole interest in or authority over a place (Waitangi Tribunal, 2016). Māori had no formalised land boundaries, and areas of overlapping occupation and interest were frequent (Waitangi Tribunal, 2016). Mana whenua is a term now widely used by Māori and non-Māori, particularly while discussing land management. However, I will use the term tangata whenua, acknowledging both that more than one group may hold this connection to a place and that I have not spoken exclusively to all those that may have interest in and the right to speak for the land I am studying. While I have had the privilege to connect with the Ngāti Apakura Rūnganga Trust chairperson to hear some of his perspectives, aspirations and experiences as tangata whenua, we both acknowledge that there are other whānau, hapū and iwi groups who are tangata whenua of this land and who may hold differing views.

[1] The scope of this research project does not include the detailed and important histories and effects of land confiscation and colonisation within Aotearoa New Zealand after the arrival of European people and the signing of Te Tiriti ō Waitangi/the Treaty of Waitangi. Knowledge and recognition of these events informs the writing of this thesis, but the narrow focus and word limit of the thesis means a full discussion of these issues is beyond its parameters.

1.2 A Developing World, a Changing Climate and Agricultural Intensification

The intensification of agriculture, horticulture, forestry and urban development continues to put immense pressure on natural ecosystems (Ministry for the Environment and Stats NZ, 2022). Driven by economic incentive and the needs of an increasing population, the prioritisation of the productive capacity of the environment has resulted in the intensification of land use, including intensification for the purpose of agriculture (Ministry for the Environment and Stats NZ, 2022).

A productivity-focused land management approach, which has been represented by long phases of agricultural intensification, is reflective of a productivism discourse. Productivism has been defined as "a commitment to an intensive, industrially driven and expansionist agriculture with state support based primarily on output and increased productivity" (Lowe et al., 1993, p. 221). This discourse was dominant in the postpioneering era, from the 1930s onward, based on the drive to maximise food production through evermore intensive farming techniques, including the use of biochemicals and the densification of crops and stocks (Wilson, 2001; Wright, 2015).

Productivism, and therefore agricultural intensification, involves increasing the use of fertilisers, pesticides, irrigation systems, energy, stock populations and larger-scale often monocrop productions (Jay, 2004; Ministry for the Environment and Stats NZ, 2022). At its core, productivism-focused farming can provide essential food production for an increasing population and support the livelihoods of farmers, landowners and workers in the agricultural sector. Ensuring food security for both the domestic and international markets, particularly after World War II, drove policy and the focus of the government and agricultural industry toward the productivist regime and approach to land management (Lowe et al., 1993; Wright, 2015).

Productivism discourse is marked by a deep belief that sustained progress is the best means through which to increase economic efficiency and that science and technology have limitless possibilities for resolving humanity's problems—and the problems caused by increased growth and intensification (Wright, 2015). However, long periods of productivism-focused land use and agriculture have led to the accumulation of pollution in streams and ground waters, soil loss and degradation (Jay, 2004; Wright, 2015).

Nonpoint source pollution caused by the discharge of fertiliser, faecal matter, urine and sedimentation into waterways and soils can result in the long-term degradation of ecosystems (Amblard, 2019; Ministry for the Environment and Stats NZ, 2022; Wright, 2015). Point source pollution enters the affected ecosystem at an identifiable location, while nonpoint source pollutants follow indirect and diffuse pathways into the environment (Amblard, 2019). The accumulation of nitrogen and phosphorus levels in water due to overgrazing and intensive agricultural practices resulting in biodiversity loss and affecting the economic and recreational uses of waterways is an example of nonpoint source pollution (Amblard, 2019). The contamination of a particular waterway or stream from a polluted tributary is an example of clear point source pollution. Ongoing grazing pressures and overgrazing can also result in greater erosion and sedimentation in waterways, creating examples of both cumulated or diffuse nonpoint source pollution and point source pollution at place and in wider catchment areas (Jay, 2004). These pollution sources not only decrease water quality, but also support populations of invasive plant and animal pests, further degrading natural ecosystems (Ministry for the Environment and Stats NZ, 2022; Parliamentary Commisioner for the Environment, 2013; Poelina et al., 2019). Historically, in phases of productivist and hyperproductivist land management there has been limited regulation of these cumulative effects of pollution (Wright, 2015).

Continuing land management in such an intense and productivity-focused manner is now recognised by many as an unsustainable approach to resource management for future generations (Chapin et al., 2012; Ministry for the Environment and Stats NZ, 2022). This approach reflects a postproductivism discourse which Jay (2004) defines as:

> A loss of hegemonic dominance and a move away from agricultural fundamentalism; to comprise a wider agricultural community of policy makers; to involve new market relationships and changing consumer behaviour; to involve less emphasis on commodity production and less state support; to involve reduced intensity of farming, less environmental damage and a shift towards sustainable agriculture and conservation or restoration of valued landscapes and habitats. (p. 2)

Legislative reforms, such as the introduction of the Conservation Act (1987) and the Resource Management Act (1991), reflected a clear shift toward postproductivism discourse, as the relationship between New Zealand society and the environment changed (Jay, 2004, 2006). The Conservation Act (1987) created the Department of Conservation, enabling an

integrated and consolidated administration of a Crown-owned conservation estate (Jay, 2004; Wright, 2015). The Resource Management Act (1991) brought together 70 pieces of legislation, creating an integrated framework for environmental management to enable the use, development and protection of land, air, water and coastal seas, providing there are no significant detrimental environmental effects (Jay, 2004; Wright, 2015). The Act incorporates sustainability and public participation and is relevant to both urban and rural development, including agriculture (Jay, 2004). Legislation that ensured greater protection of the environment, including the conservation of indigenous fauna and flora, demonstrated that the environment was no longer seen as a source of unlimited primary production, but held material and nonmaterial values outside of agriculture (Jay, 2004).

While the above and ongoing legislative changes reflect a shift away from productivism to postproductivism, these two forms of agriculture continue to coexist within the social and agricultural spaces in the New Zealand context (Jay, 2004). The actions and worldviews pertaining to productivist and postproductivist approaches to agriculture lie on a spectrum, and they are not easily definable entities that farmers, landowners or policy makers subscribe to (Wilson, 2001). Behavioural change in conjunction with regulatory change to better conserve, restore and protect natural ecosystems is an ongoing and important journey in Aotearoa's environmental management.

Another key reason for action, and the need for behavioural and regulatory change in land management and conservation, is climate change. A warming and changing climate caused by increased greenhouse gas emissions is resulting in increased drought, higher average temperatures and more extreme weather events (Intergovernmental Panel on Climate Change, 2021; Ministry for the Environment and Stats NZ, 2022). These events further exacerbate issues to do with water quality and create a cycle of ongoing and continued degradation resulting in hardship for ecosystems and in turn people.

The draining, ploughing and burning of wetlands is another example of how natural ecosystems are being degraded for the intensification of human land use (Ministry for the Environment and Stats NZ, 2022). Wetlands are the most depleted ecosystem type in Aotearoa New Zealand, with over 90% of naturally occurring wetlands lost, primarily to nonnatural causes, such as draining and irrigation schemes over the past 150 years (Denyer & Peters, 2020; Wright, 2015). This significant loss of wetlands has in turn resulted in huge

losses of cultural and ecological resources (Ministry for the Environment and Stats NZ, 2022). As well as hosting a large diversity of flora and fauna, wetlands can help to reduce the disastrous effects of flooding after extreme weather events due to their ability to absorb water and gradually release it. Wetlands also help to reduce the effects of erosion by stabilising riverbanks and maintaining groundwater levels in times of low rainfall (Department of Conservation, n.d.). Additionally, wetlands are long-term carbon sinks, with carbon sequestration occurring both by the growth of vegetation within and also in the long-term storage of carbon in wetland soil after the vegetation dies (The Wetlands Initiative, n.d.). In Aotearoa New Zealand, wetlands have significant cultural value for Māori. Wetlands can be used for mahinga kai (gathering food) and are home to taonga (culturally significant) species such a native fish, birds, tuna (eels) and plants (Harmsworth, 2020). Wetland plants also hold significant cultural value for their practical use, for example for weaving and carving (Harmsworth, 2020).

Issues of wetland loss, flooding, erosion, sedimentation, water quality decline and water allocation limitations have resulted in the work of catchment scale management by communities and regulatory bodies (Lees et al., 2012). In addition to the aforementioned legislation, national and local government have issued regulations and standards for freshwater management such as the National Policy Statement for Freshwater Management, with which landowners are required to comply (Ministry for the Environment, 2020). Additionally, by 2025 all farms in Aotearoa New Zealand will be required to have a Farm Environment Plan (FEP) that caters to freshwater management and quality improvement; plans for FEPs that consider biodiversity, soil and greenhouse gas emissions are due to be introduced in the future (DairyNZ, 2022; McAleer, 2021a).

FEPs are individualised and adaptable tools that support farmers in their ability to monitor, manage and take action to improve freshwater quality and improve the natural environment both on their private farms and the surrounding catchments that their waterways feed into (DairyNZ, 2022; McAleer, 2021a). The Our Land and Water National Science Challenge (McAleer, 2021a, para 2) states that “individual FEPs need to be linked with the wider catchment context to solve the many unique problems that put pressures on our waterways”. This statement highlights the need for catchment scale restoration efforts and partnerships between landowners and stakeholders within catchment communities.

Active participation of catchment communities in restoration work is critical, particularly because the majority of waterways, wetlands and streams lie on private land and are affected by the actions of landowners (Bos & Brown, 2015). Individual and local ownership of catchment management can result in greater commitment, open debate and opportunities to ensure locally relevant restoration efforts (Lees et al., 2012). Furthermore, a sense of place and ownership can motivate stewardship and encourage conservation action (Chapin et al., 2012). Through a better understanding of the people working to restore their place and greater understanding of what would motivate more people to participate in large-scale restoration efforts within catchments, we can support better ecological outcomes and thereby make a greater difference to ecosystems and future generations at a time when this is more needed than ever.

1.3 Collaborative Catchment Restoration at Place: The Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project

1.3.1 *History of the Catchment*

The Manga-o-tama[2] catchment covers an area of approximately 7707 hectares and sits within the central Waikato basin in the Waipā district, New Zealand (Denyer & Scarlet, 2020). The Manga-o-tama stream flows from east to west connecting with the Waipā River near Ngahinapouri (Denyer & Scarlet, 2020; Russell, 2020). The Manga-o-tama stream's catchment is significant as it is centred around the nine nationally and internationally unique Waipā Peat lakes which are the largest collection of such wetland types in New Zealand and support unique flora and fauna (Denyer & Scarlet, 2020). Significant lakes, i.e., Wairoto, Wairotoiti[3], Lake Ruatuna and Lake Mangakaware, lie within the catchment boundary. Tangata whenua identify several wāhi tapu (sacred places), including the site of the Battle of Hingakākā at Wairoto, which is said to be the largest battle in Māori history with over 10,000 participants, and where many lives were lost (Waipā District Council, 2019). This area was also once home to an abundance of taonga species such as tuna (eel) and kōura (freshwater

[2] The Manga-o-tama or Mangaotama stream can be spelled both ways. To provide consistency with the official documentation of the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project, I will continue to use the hyphenated spelling (Manga-o-tama) for the duration of this thesis.

[3] Wairoto and Wairotoiti are peat lakes conventionally referred to as (Lake) Ngāroto and (Lake) Ngārotoiti. However, due to the aspirations of tangata whenua, Ngāti Apakura and Ngāti Hinetu for the lakes to be renamed Wairoto and Wairotoiti, I will continue to refer to them as such out of respect for their position as tangata whenua and kaitiaki (guardians) of these lakes. Additionally, the word 'lake' will be omitted from the name of any peat lake containing the te reo Māori word 'roto' (meaning lake), despite the current convention of including the word lake, in order to avoid needless repetition and to reflect correct the te reo Māori translation.

crayfish) and was a renowned ‘food basket’ of the region. The development of a successful catchment group in the Manga-o-tama catchment would see the collaboration of local government, nongovernmental organisations (NGOs), iwi and hapū, Living Water (a Department of Conservation and Fonterra partnership) and up to 50 landowners (Denyer & Scarlet, 2020; Russell, 2020).

In 2002, the Waipā Peat Lake and Wetland Accord was signed by Environment Waikato, Waipā District Council, the Department of Conservation, Auckland/Waikato Fish and Game and Ngā Iwi Tōpu o Waipā (a collective representing iwi and hapū in the Waipā area). The purpose of this accord was “to align the activities of management agencies when working with landowners, Mana Whenua and interested parties, towards the restoration and enhancement of lakes and wetlands in the Waipā District” (Waikato Regional Council, 2009). An active desire from landowners and other stakeholders within the Manga-o-tama catchment to act further on this accord and to plan and prioritise work together to restore and improve the unique landscape was a catalyst in progressing and formalising the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project.

Prior to the establishment of the formal Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project there was considerable catchment restoration work occurring in the Manga-o-tama catchment (Russell, 2020). The Manga-o-tama Stream and Wetland Restoration Trust was established in 2020 and initially included three landowners from within the catchment area. The Waipā District Council (WDC), Living Water Partnership (a 10-year partnership between the Department of Conservation and Fonterra, New Zealand’s largest dairy co-operative) and Waikato Regional Council (WRC) supported restoration work in this catchment too, with funding and support towards plant and animal pest control and planting projects to support significant natural areas and streams, including the ecologically and culturally significant Waipā peat lakes. However, it was identified in 2020 that both a more collaborative approach to restoration and an integrated catchment management approach would be more effective in improving the water quality and restoration efforts within the catchment. A collaborative approach to restoration can provide opportunities to share resources, services and funding and can address common pressures and barriers (Russell, 2020).

1.3.2 *A Vision for a Collaborative Restoration Project*

From these aspirations, the vision for the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project[4] (henceforth the Project) was born. In December 2020, an inaugural meeting, which was organised by the Living Water Partnership, was held between potential stakeholders in an integrated catchment approach to managing the Manga-o-tama catchment. These potential stakeholders included representatives from the Living Water Partnership, New Zealand Landcare Trust, Fish and Game, tangata whenua, local landowners, Waikato Regional Council, Waipā District Council and a biosecurity consultant. During this meeting, different organisations and agencies shared their involvement in the catchment and their individual context as regards its management. At this meeting the informal collective agreed that future projects should demonstrate a commitment to working under mātauranga Māori[5] principles. Additionally they identified the need for a formalised future plan, greater sponsorship and funding and the creation of a formal understanding between participants such as by way of a memorandum of understanding (Russell, 2020).

In October 2021, the Living Water Partnership (DOC and Fonterra) in partnership with the Manga-o-tama Stream and Wetland Restoration Trust, Waipā District Council, Ngāti Apakura, New Zealand Landcare Trust and Waikato Regional Council put forward an application to the Waikato River Authority's Waikato River Clean-Up Trust. This application was successful, with the Waikato River Authority (WRA) awarding the collective $388,000 to "implement remediation actions on public and private land on and around the Manga-o-tama Wetland" from the start of 2022 (Patterson, 2022, p. 1). Additionally this project was allocated approximately $480,000 worth of funding from the Living Water Partnership "until 2023 to contribute to strategic scoping and implementation of remediation actions on public and private land on and around the Manga-o-tama Wetland" (Patterson, 2022, p. 1). In-kind and direct funding contributions from the Waikato Regional Council and Waipā District Council will also be made over the course of the Project, which has currently been given a period of 21 months, from March 2022 to December 2023 (Patterson, 2022). With the confirmation of significant funding for a period of 2 years, the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project was formalised.

[4] This is the formalised name of the catchment scale restoration project as recognised in the Mana Enhancing Agreement signed by all Project partners. Henceforth, I will shorten this project name to the 'Manga-o-tama Catchment Restoration Project' or refer to it as the Project for much of the case study analysis.
[5] "Matauranga Māori- the body of knowledge originating from Māori ancestors, including the Māori worldview and perspectives, Māori creative and cultural practices" (Te Aka, 2022).

1.3.3 *A Formalised Partnership*

As of November 2022, the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project is made up of a formalised partnership between Ngāti Apakura (tangata whenua), the Manga-o-tama Stream and Wetland Restoration Trust (a collective of landowners within the catchment), New Zealand Landcare Trust (a nongovernmental organisation), Fonterra Co-operative Group Ltd., Waipā District Council, Waikato Regional Council, the Department of Conservation and the Living Water Partnership (Patterson, 2022). This partnership has agreed upon and signed a Mana Enhancing Agreement (MEA) (This is explored in more detail in chapter 6.), with a shared vision statement as follows:

> The vision for the Manga-o-tama Ōhaupō Peat Lakes to Waipā River Connection project is to make a measurable improvement to water quality by working with Iwi partners, a range of stakeholders and farmers to make the catchment more visually appealing, filter out sediments, nutrients and pathogens and provide habitat to indigenous birds, bats, fish, and invertebrates. (Living Water, 2022a, para 3; Patterson, 2022, p. 10)

Alongside the MEA, a restoration plan has been prepared, with its implementation being led by the Living Water Partnership. Goals that include gaining a better understanding of what impacts water quality within this catchment and supporting the maintenance of past restoration work have been set for the 2-year project (Living Water, 2022a). Additionally, the goal of supporting 100% of Fonterra-supplying farms within the catchment and six other non-Fonterra farms to complete FEPs by the end of the Project has been set (Living Water, 2022a). While this project is limited to a 2-year plan and funding cycle, a final goal is to develop a "robust catchment restoration project plan" to support ongoing restoration in a future Stage 2 Implementation of the restoration (Living Water, 2022a, para 4).

Over the currently planned 2-year period, the ecological milestones of this project specifically include: the maintenance of 30 hectares of planted areas; the retirement of two hectares of farmland with extensive fencing along waterways and wetlands; riparian planting of 16,000 native plants; and pest plant control (Living Water, 2022a). This work aims to improve the ecological state of the catchment by increasing the natural filtration of point source pollution from farm run-off and the creation of ecological corridors for native birds and bats (Living Water, 2022a). The formalised partnership between the stakeholders of the Manga-o-tama Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project guides this ambitious ecological restoration, with the partnership hoping to achieve more through

resource sharing and collaboration. This project and partnership—a real-time action situation in a complex SES—is and will be continually influenced by the social, cultural and political subsystems that are at play alongside the ecological landscape and will undoubtedly influence the ecological outcomes that are possible.

1.4 Chapter Conclusion

In order to adequately understand the factors that influence the outcomes of ecological restoration in collaborative projects, we must endeavour to also understand the social and political processes that underpin SESs and the ways in which people and the environment interact (Chapin et al., 2012). This understanding becomes increasingly important as more land and water managers explore multistakeholder partnerships and collaborative approaches to environmental management to achieve more holistic and ecologically sustainable outcomes (Deitch et al., 2021; Fenemor et al., 2011). Ostrom's (2007, 2009) SESF provides us with a tool to examine the subsystems and variables at play within SESs, including those that influence the formation of multistakeholder partnerships. By using case study research methodology, this thesis seeks to understand what factors influence the formation of successful multistakeholder partnerships in catchment scale restoration in Aotearoa New Zealand.

It was hypothesised that the diverse partners in the Project would bring with them different worldview, histories, motivations and challenges which influence their participation in such a project and collaborative partnership. Therefore, in order to understand the discourse and worldview of partners, it was important to understand the past and current land uses and common approaches to environmental management. These include the history of a productivism discourse, where the intensification of agriculture was championed by post World War II governmental and economic drivers (Lowe et al., 1993; Wright, 2015). The significance of the area to tangata whenua must also be considered in an Aotearoa New Zealand setting. During times of pre- and early colonisation, the catchment area was also a bountiful landscape for Māori to live in, with an abundance of kai (food) in the waterways and its highly fertile lands. The area also holds wāhi tapu (sacred sites), including the battle ground of Hingakākā at Wairoto. However now, after generations of highly intensive land-use practices, nonpoint and point source pollution have resulted in the cumulative degradation of waterways, including the Waikato and Waipā peat lakes which hold high ecological and cultural value. In this region and across the country there has been widespread

wetland and habitat loss, with many species of native birds and freshwater fish now under threat.

With a discursive shift toward postproductivism, legislative requirements and climate change as a driver more locally driven approaches to environmental restoration are emerging. The case study project—the Manga-o-tama Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project—is a new collaborative restoration project, with several diverse partners. These include central and local government, private industry, tangata whenua, a community-led trust and a nongovernment organisation. This project brings together diverse stakeholders within the catchment to carry out restoration work toward the common goals of improving freshwater quality and increasing habitat for indigenous fauna. This research project provides an in-depth analysis of the inner workings of this emerging partnership, and its aim is to help guide the future establishment of such collaborations and projects.

The forthcoming chapters of this thesis are structured in such a way as to help the reader to understand both the catchment that the project occurs within and the Project itself. Chapter 2 provides an in-depth review of the literature about multistakeholder partnerships and collaborative restoration. Chapter 3 explains the methodology and methodological approaches that guide this research, in particular the case study analysis. Guided by Ostrom's SESF, chapters 4, 5 and 6 use data gathered from the document analysis and semistructured interviews to analyse the Manga-o-tama Catchment Restoration Project. Chapter 4 focuses on the resources and governance systems within the SES, while chapter 5 deals with the actors and those factors which influence their participation as individual partners. Chapter 6 is an inquiry into the interactions that occur within the Project. The concluding chapter summarises the findings in relation to the research questions and provides recommendations for future research.

Chapter 2

Participation in Multistakeholder Partnerships and Collaborative Restoration: A Review of the Literature

Our planet, with its warming climate, growing populations and uncertain future, requires us to band together to find solutions to the issues that plague our current and future populations (Jenkins, 2018). Environmental restoration has been identified as a problem that does not have a one-size-fits-all solution and as one that requires collaboration in order address it. A one-size-fits-all approach to environmental restoration does not cater to our diverse communities; moreover, prescriptive, top-down approaches to addressing environmental degradation are neither always effective nor always sustainable. A primary reason is that, simply put, societies and the environment are inextricably linked. Humanity's complex social, economic and cultural relationships with the Earth's ecological landscapes are difficult to disentwine. Climate change is a super-wicked problem, fed primarily by the actions of humans (Levin et al., 2012). In order to overcome the broad spectrum of problems emerging from our changing climate, we humans, who are responsible for its cause, are the ones who need to take action to solve this issue (Levin et al., 2012)[6]. With a global focus on climate change and the rapid decline of ecosystems, which may be approaching the limits of acceptable environmental change, there is urgent need to consider society's relationship with the environment and conservation at all scales, international, national and local (Chapin et al., 2012; Levin et al., 2012).

This literature review explores the world of collaborative resource management (CRM) and integrated catchment management (ICM) within complex social-ecological systems (SESs). It seeks to better understand how these approaches, at varying scales, can support the regeneration of waterways by involving multiple stakeholders, diverse knowledge bases and innovative approaches to restoration.

[6] It is imporant to acknowledge that not all humans are equally responsible for the ecological destruction that our planet has experienced. Dominant groups that have historically held greater economic wealth, power and the ability to (ab)use resources for their capitalistic benefit are responsible for far more of the destruction of natural resoruces and the ever-increasing threat of climate change. Minority and vulnerable populations are regularly subject to social injustice, including an inequitable access to vital natural resoruces and the negative externalities of climate change.

In the first section of this literature review I explore Ostrom's (2007, 2009) social-ecological systems framework (SESF) and its application as a tool in the analysis of and communication about SESs. Multistakeholder partnerships are an important element of the forthcoming case study analysis and are frequently analysed using the SESF. Accordingly, the second section of this literature review unpacks multistakeholder partnerships, identifies what they are, why they are important and how they can work to benefit collaborative restoration efforts. Power, politics and leadership styles influence the true degrees of collaboration in restoration projects, and they are also explored in this section. Thirdly, this literature review focuses on the fundamental elements of collaborative restoration and conservation and what it means to collaboratively manage ecosystems at a catchment scale. This section draws on examples of ICM and collaborative restoration principles and processes from around the world. In this section, I will unpack some frameworks and approaches to ICM that have been used in this area of research, in an Aotearoa New Zealand context. The last section of this literature review hones in on the critical feature of collaboration—the intricate world of shared decision-making. This section incorporates perspectives on diversity within stakeholder groups, including Indigenous cultural perspectives and acknowledging alternative knowledges within restoration projects and plans.

While collaboration may not be the sole solution to a more sustainable and equitably managed future, the benefits that it can provide to both the environment and humanity are extensive and thus demonstrate the need for ongoing and wide-reaching research into how we can improve partnership and participation in environmental management in diverse communities.

2.1 Social-ecological Systems Framework

Our world faces considerable damage and losses to natural resources and biodiversity, as climate change provides a threatening uncertainty for our environment and therefore our relationship with it (Angelstam et al., 2013; Ostrom, 2009; Ostrom & Cox, 2010). All human interactions with, dependencies on and uses of the environment and natural resources are embedded in complex social-ecological systems (SESs), and the links between human societies and ecosystems are ever changing and evolving (Angelstam et al., 2013; Fischer et al., 2015; Ostrom, 2009). As human populations, economic growth and development increase, human-environment interactions have become more complex (Ostrom & Cox, 2010). Historical evidence shows that this relationship is becoming increasingly negative, and

ecosystems are being compromised for the sake of the advancement of human wellbeing (Angelstam et al., 2013; Fischer et al., 2015). Understanding the dynamic ways to sustainably manage diverse ecological systems, as well as human engineered systems, has become increasingly difficult; however, such understanding is now more important than ever (Fischer et al., 2015; Gain et al., 2019; Ostrom & Cox, 2010). Understanding the dynamics and interconnections within complex SESs is essential to creating relevant, fit-for-purpose management approaches that are sustainable long term (Gain et al., 2019; Ostrom, 2007, 2009; Ostrom & Cox, 2010). Enter the SESF (McGinnis & Ostrom, 2014; Ostrom, 2007, 2009).

Elinor Ostrom (2007, 2009) created the SESF to identify the critical elements and basic working parts that are essential to consider when studying SESs (McGinnis & Ostrom, 2014). Ostrom's SESF has become a widely used and useful diagnostic tool, as it provides a systematic list of variables needed for the analysis of SESs and a shared set of concepts that can support scholars in cumulating and communicating knowledge about SESs and the outcomes of their management (Hinkel et al., 2014; McGinnis & Ostrom, 2014; Palomo & Hernández-Flores, 2019; Partelow, 2015; Schlager & Cox, 2018). Ostrom's original SESF was designed to analyse the social-ecological systems within common-pool resources (CPR) such as fisheries, coastal marine system, water management, irrigation systems and forestry (Binder et al., 2015; Gain et al., 2019). However, the application of the SESF has progressed beyond CPR to more complex SESs where "different types of actors obtain multiple goods and services from the SES" and has been identified as being able to analyse all types of SESs where human-environmental interactions occur (Binder et al., 2015, p. 1; Farreras & Salvador, 2022; McGinnis & Ostrom, 2014).

The SESF provides a structure for scholars to draw on when developing and contributing to the body of work focused on understanding the complex and changing world of SESs (Schlager & Cox, 2018). Ostrom (2014, p. 269, as cited in Schlager & Cox, 2018, p. 216) states that "a framework provides a shared orientation for studying, explaining and understanding a phenomenon of interest." The SESF presents a structure through which to examine SESs in a diagnostic, multidisciplinary and contextual manner and from which theories can be developed and outcomes explained (Partelow, 2015; Schlager & Cox, 2018; Xie et al., 2019). The SESF has been likened to the way in which medical practitioners treat patients through diagnosis; medical practitioners ask questions about symptoms to ascertain

information about underlying health problems, with diagnosis being an essential step towards understanding and effective treatment (McGinnis & Ostrom, 2014; Partelow, 2015). Ostrom (2009) suggests that the SESF can support researchers to dissect and harness the complexity of SESs by using the specific and related variables to understand the sum of the complex whole.

Ostrom's extensive work in the field of analysing CPR and other social dilemmas led to the elaboration of the earlier institutional analysis and development framework (IAD) to create the social-ecological systems framework (SESF) (Schlager & Cox, 2018). This SES framework is a multitiered hierarchy, with each SES being made up of first-tier subsystems and then second-tier variables, which can then be further broken down into deeper-level variables.

Using the context of a nature reserve or park, Ostrom (2009) explains the first-tier variables, also called subsystems, as follows:

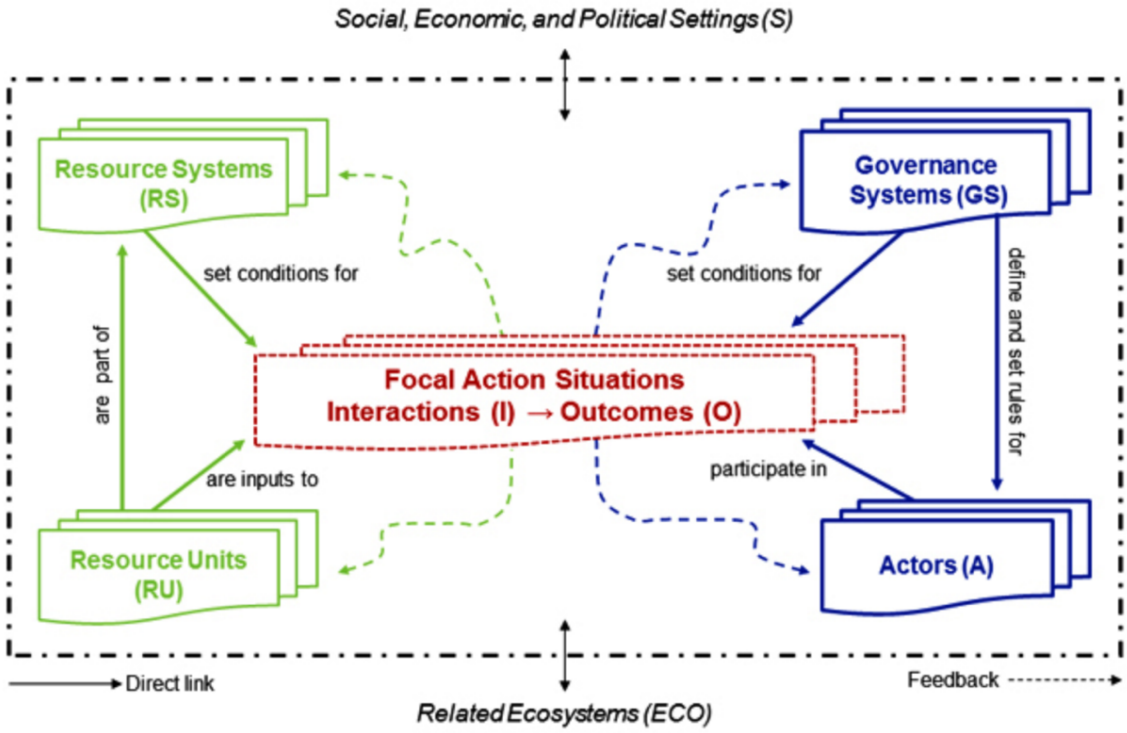
> (i) Resource Systems (RS) e.g., a designated protected park encompassing a specified territory containing forested areas, wildlife, and water systems;
> (ii) Resource Units (RU) e.g., trees, shrubs, and plants contained in the park, types of wildlife, and amount and flow of water;
> (iii) Governance Systems e.g., the government and other organizations that manage the park, the specific rules related to the use of the park, and how these rules are made; and
> (iv) Users e.g., individuals who use the park in diverse ways for sustenance, recreation, or commercial purposes. (p. 420)

These four first-tier variables are linked to and affect the social, economic and political settings (S) within which they occur and the related ecosystems (ECO) which are included in the SESF (Ostrom, 2009).

At the centre of the SESF lie 'action situations'. These are made up of the interactions (I) and outcomes (O) of the other components of the SESF. Ultimately, these are the expressed and observable realities of the SES—and the SES itself has been identified as the most probable unit of analysis, with the nested tiers identified and unpacked to support the analysis of the bigger picture, the SES (Schlager & Cox, 2018).

In a later revision of the SESF, McGinnis and Ostrom (2014) replaced the subsystem of users with actors, allowing for the examination of those who are direct participants through activities in an SES, rather than restricting the analysis to participants who extract, consume or use products of SESs. They additionally adapted not only the original framework to recognise that multiple examples of each first-tier subsystem may be present and influential within an SES, but also other changes to reflect that "multiple sets of actors consume diverse resource units extracted from multiple interacting resource systems in the context of overlapping governance systems" (McGinnis & Ostrom, 2014, p. 7). Figure 1 shows the revised SESF as outlined in McGinnis and Ostrom (2014). It is this updated version of the SESF that will be referred to and utilised in this thesis.

Figure 1
The Revised Social-Ecological Systems Framework (SESF) (McGinnis & Ostrom, 2014, p. 4, adapted from Ostrom, 2009)



The second-tier variables identified in Figure 2 break down the first-tier subsystems into more detailed and specific variables (Binder et al., 2015). Second-tier, and beyond, variables can support researchers in collecting data about and within SES case studies. However, not all second-tier variables may be relevant within all SES case studies. Instead, they provide a

broad basis through which to understand the potential and complex system components at play within SESs of different foci ranging from fisheries, to water, forestry and even to the planet Earth (Binder et al., 2015; McGinnis & Ostrom, 2014; Partelow, 2015; Schlager & Cox, 2018).

Figure 2

First-tier Variables with Second-tier Variables of Social-ecological Systems (McGinnis & Ostrom 2014, p. 5, adapted from Ostrom, 2009)

Table 1. Second-tier variables of a social-ecological system. Source: Adapted from Ostrom (2009:421).

First-tier variable	Second-tier variables
Social, economic, and political settings (S)	S1 – Economic development S2 – Demographic trends S3 – Political stability S4 – Other governance systems S5 – Markets S6 – Media organizations S7 – Technology
Resource systems (RS)	RS1 – Sector (e.g., water, forests, pasture, fish) RS2 – Clarity of system boundaries RS3 – Size of resource system RS4 – Human-constructed facilities RS5 – Productivity of system RS6 – Equilibrium properties RS7 – Predictability of system dynamics RS8 – Storage characteristics RS9 – Location
Governance systems (GS)	GS1 – Government organizations GS2 – Nongovernment organizations GS3 – Network structure GS4 – Property-rights systems GS5 – Operational-choice rules GS6 – Collective-choice rules GS7 – Constitutional-choice rules GS8 – Monitoring and sanctioning rules
Resource units (RU)	RU1 – Resource unit mobility RU2 – Growth or replacement rate RU3 – Interaction among resource units RU4 – Economic value RU5 – Number of units RU6 – Distinctive characteristics RU7 – Spatial and temporal distribution
Actors (A)	A1 – Number of relevant actors A2 – Socioeconomic attributes A3 – History or past experiences A4 – Location A5 – Leadership/entrepreneurship A6 – Norms (trust-reciprocity)/social capital A7 – Knowledge of SES/mental models A8 – Importance of resource (dependence) A9 – Technologies available
Action situations: Interactions (I) → Outcomes (O)	I1 – Harvesting I2 – Information sharing I3 – Deliberation processes I4 – Conflicts I5 – Investment activities I6 – Lobbying activities I7 – Self-organizing activities I8 – Networking activities I9 – Monitoring activities I10 – Evaluative activities O1 – Social performance measures (e.g., efficiency, equity, accountability, sustainability) O2 – Ecological performance measures (e.g., overharvested, resilience, biodiversity, sustainability) O3 – Externalities to other SESs
Related ecosystems (ECO)	ECO1 – Climate patterns ECO2 – Pollution patterns ECO3 – Flows into and out of focal SES

Ostrom's (2007, 2009) SESF has been used in the literature as a diagnostic tool for analysing SESs (Cinner et al., 2012; MacNeil & Cinner, 2013). The broad spectrum of SES cases that are represented in the literature include: the comanagement of international fisheries (Cinner et al., 2012; MacNeil & Cinner, 2013); small scale fisheries in South America (Trimble & Berkes, 2015); agroecosystems in organic farming (Farreras & Salvador, 2022); coastal floodplain management in the Ganges-Brahmaputra delta (Gain et al., 2019); nature reserves and collectively owned forests in China (Xie et al., 2019); drinking water quality management and nonpoint source agricultural pollution in France (Amblard, 2019); and river and estuarine re-diversion in semirural New Zealand (Barrett et al., 2019). These broad and varied examples of SES research demonstrate that much work is being done in this field. In many of these examples, multistakeholder partnerships exist or are developing for comanagement or collective environmental action. The SESF provides a tool to understand the complex social and ecological elements that could be at play and influencing these partnerships.

2.2 Multistakeholder Partnerships

2.2.1 What are Multistakeholder Partnerships?

Multistakeholder partnerships, also known as multistakeholder platforms, trans-disciplinary collaborations or cross-sector partnerships, have been identified in the literature as an effective means for gaining a more holistic approach to environmental management and as a popular approach for the management of complex SESs (Allen et al., 2011; Clarke & MacDonald, 2019; Fenemor et al., 2011; Rollason et al., 2018; van Tulder et al., 2016). When multistakeholder partnerships bring together more than one sector (such as government, business and civil society), issues of mutual importance can be explored as diverse perspectives are brought together (Clarke & MacDonald, 2019; Collins et al., 2020). Intentional participatory processes can result in inclusive decision-making processes, voluntary participation and collaboration, the building of networks and trust and the pooling of resources (Ananda & Proctor, 2013). From these, broadened and more contextually relevant solutions can occur beyond what is found in top-down and siloed management processes (Ananda & Proctor, 2013).

2.2.2 *Power, Politics and Leadership in Collaborative Partnerships*

Leadership in multistakeholder partnerships can sit on a spectrum between top-down or command-and-control frameworks where actions emanate from a central authority and are often based on Western science and bottom-up processes that include the voices of stakeholders and community and which incorporate local ecological knowledge into action and management plans (Deitch et al., 2021). The success of community-based collaborative projects can often be attributed to the bottom-up approach to leadership where effective leaders who are great communicators ensure that all stakeholders are listened to (Deitch et al., 2021; Mitchell, 2007).

A key role of the leader in such projects is to bring together diverse partners and stakeholders so as to collectively pool, expand on and explore a range of ideas to create plans for and delivery of the goals of the environmental project and the people involved in it (Collins et al., 2020; Mitchell, 2007). Participatory processes that better support shared decision-making can reduce individual partner autonomy and imbalances of power by these actors. However, time and effort are required to ensure that typical hierarchies of knowledge and authority are not defaulted to (Allen et al., 2019; Barrett et al., 2019).

Typical initiatives that aim to incorporate Indigenous, local or non-Western science-based expertise often replicate colonial power dynamics (Barrett et al., 2019). The mechanisms of 'informing' or 'consulting' are widely used, but these represent the lowest degree of power sharing in processes of shared decision-making (Hughey et al., 2017; Rollason et al., 2018). If this information is not genuinely and sincerely utilised in the decision-making process, the voice of the dominant and more powerful parties prevails, resulting in inequitable, imbalanced or nonexistent partnerships. Higher degrees of power sharing include advisory approaches where groups have input but no decision-making ability and, higher still, cooperative approaches where a true partnership exists in decision-making (Hughey et al., 2017).

Reducing the dominance of one voice or the voices of particular actors who hold more power or agency requires a diverse and representative stakeholder group that is empowered to actively contribute to the decision-making process (Deitch et al., 2021). Hemmati (2002) identifies that in order for minority representation to be effectively heard, the group's representation needs to be above a certain critical level, with gender representation levels

being about 15-20%. Participatory processes that support representation and therefore power sharing and shared decision-making are a widely studied field across a range of contexts, as are the benefits of acting purposefully to reduce inequity and increase representation of stakeholders in collaborative environmental management projects (Reo et al., 2017).

2.2.3 *Benefits of Multistakeholder Partnerships*

At times, top-down government regulation can have an important role to play in environmental management (Collins et al., 2020). However, it alone cannot address the complex socio-ecological interconnections that exist, nor can it realise the ultimate outcomes that could be achieved if more holistic approaches to land and water management were taken (Collins et al., 2020). Instead, collaborative approaches to land and water management can provide the opportunity to broaden perspectives about the issues at hand, rather than following narrow legal mandates or sector-distinct approaches (Ananda & Proctor, 2013; Reo et al., 2017; Rollason et al., 2018). It is widely agreed that the connection of diverse stakeholders, including governmental and nongovernmental organisations, can result in partnerships that draw on diverse strengths, knowledge bases and resources for the purpose of a more sustainable approach to land and water management (Clarke & MacDonald, 2019; Deitch et al., 2021; Reo et al., 2017).

Multistakeholder partnerships can provide the opportunity to share and utilise locally grounded knowledge and context, successfully empowering participants to take ownership of the issues that affect their communities (Allen et al., 2011; Clarke & MacDonald, 2019; Collins et al., 2020). It has been highlighted that collaborative management programmes can provide the opportunity to connect scientific knowledge and community-driven aspirations, creating opportunities for consensus on how ecosystems can be managed (Deitch et al., 2021). Researchers have identified that collaboration in environmental management, with particular reference to integrated catchment management, can result in the implementation of more responsive, contextualised, locally appropriate solutions that if built upon trust, empowerment and shared understanding can result in more sustainable environmental and social outcomes (Allen et al., 2011; Collins et al., 2020; Deitch et al., 2021).

2.2.4 *Challenges to Multistakeholder Partnerships*

While many scholars recognise that ideal multistakeholder partnerships can result in collaborative working relationships that involve shared decision-making, in reality there are many challenges to establishing positive participatory processes; furthermore, the gap between the vision of such partnerships and the reality may be wide (Ananda & Proctor, 2013). The existence of a multistakeholder partnership does not provide a guarantee that the outcome of the relationship and participatory process will be equitable or effective (Verhallen et al., 2007). While Clarke and MacDonald (2019, p. 299) claim that in multistakeholder partnerships "all stakeholders are welcome and encouraged to participate in the solution", in many cases there lie deep-seated barriers at several stages in the participatory process that may prevent or inhibit genuine participation.

Funding compliance has been described as a limiting factor to ongoing and meaningful community engagement, with decision makers forced to maintain tight control on the planning and implementation of the catchment interventions in order to meet the requirements of the funder (Rollason et al., 2018). This strict criteria for project development does not allow for "unfocused local aspirations" to significantly influence the path of the project (Rollason et al., 2018). Marshall et al.'s (2010) research highlights that, despite a shift towards 'talking about' collaborative management, some organisations or institutions still reflect a path dependency regarding their processes and procedures and that opportunities for true collaboration and participatory processes are compromised. This insight is echoed in the research by Barrett et al. (2021) who highlight that, while the sharing of different forms of knowledge were encouraged in their estuarine restoration case study, the potential for radical shifts was minimised by the decision-making powers and processes of the responsible government authority.

If collaborative decision-making processes are nonexistent or are not followed, stakeholder relationships may deteriorate, particularly between the likes of landowners and policy makers, government agencies or the governing body within projects (Metcalf et al., 2015). Numerous studies identify that partnership does not just mean consultation and that one-way communication and engagement with the community for the sake of box ticking can actually lead to negative stakeholder relationships and distrust (Barrett et al., 2021; Collins et al., 2020; Metcalf et al., 2015; Rollason et al., 2018).

Several researchers have highlighted that even when multistakeholder partnerships 'get the right people in the room', there are identified difficulties in navigating differences in opinions, worldviews and access to resources between diverse stakeholders (Clarke & MacDonald, 2019; Verhallen et al., 2007). Furthermore, it is highlighted in the literature that logistically creating effective participatory processes that enable an equitable representation of views between stakeholders takes a lot of strategic and creative preplanning, preparation and time (Hemmati, 2002). Additionally, efforts to establish robust participatory processes can bring forth additional and unanticipated difficulties for policy makers and scientists driving CRM projects (Allen et al., 2001). These difficulties arise because plans for action can no longer be outlined at the outset; instead time must be set aside to build partnerships, resulting in plans for action that may shift and need to be re-shaped based on the experiences, worldviews and concerns of those who are a part of the ongoing participatory process (Allen et al., 2001).

Additional special considerations, activities and engagement methods may be required to support and understand the participation of stakeholders who bring diverse cultural, religious or other worldviews (Hemmati, 2002). Meeting time and place, childcare, accessibility and transport are additional potential barriers that must be considered in efforts to equitably engage all those that 'should be in the room'. In addition, while those leading the process may be doing so for their job, often for many participants in collaborative restoration and multistakeholder partnerships this is not the case; instead, they are making a voluntary commitment outside of work (Hemmati, 2002). Taking the time to understand participants' needs and taking steps to ensure participatory processes are inclusive demonstrates respect for the individuals or groups and sets foundations for the development of ongoing relationships and trust.

2.2.5 *Trust, Respect and Relationships*

It has been conclusively shown that effective multistakeholder partnerships are built on the establishment of effective working relationships (Allen et al., 2001; Allen et al., 2011; Allen et al., 2019; Collins et al., 2020; Deitch et al., 2021; Reo et al., 2017; Rollason et al., 2018). Collaborative relationships built on firm foundations of trust and respect better enable participants to appreciate the position of others, creating the basis for the development of shared goals, a common vision and the ability to address shared issues (Allen et al., 2019;

Barrett et al., 2019). As Watson (2007, p. 44) states, outcomes of collaboration are not determined solely by the institutional structures and processes involved; rather, it is the people who have the greatest influence, and "there are no substitutes for mutual respect, patience, dedication, trust, negotiation skills and endurance".

Considerable time is required to establish the social capital for trusting and effective working relationships, and this is often described as the first phase in participatory processes and the foundation upon which collaborative approaches to environmental management can take place (Allen et al., 2001; Allen et al., 2011; Collins et al., 2020). Bos and Brown (2015) credit an extended community engagement process to the ability to build trust within a community. The following strategies are listed as ways to build trust in restoration projects nested within complex social-ecological systems: using various methods and forums for communication and engagement; early adoption of stakeholder engagement strategies; facilitating meaningful dialogue which contributes to project processes and outcomes; and the building of relationships through the completion and success of smaller scale projects (Metcalf et al., 2015). However, as highlighted earlier, the requirement from some funding bodies for projects to meet particular time and project milestones can mean that efforts are not directed toward adequate stakeholder engagement processes and the building of a strong relational foundation (Allen et al., 2011; Rollason et al., 2018).

2.3 Developing a Shared Understanding Between Diverse Stakeholders

Simply attempting to integrate Indigenous knowledge into existing ways of working, predetermined project plans or frameworks can limit Indigenous communities' participation, as their ability to utilise and share their knowledge in a way that aligns with their worldview may be compromised (Barrett et al., 2021). Instead, researchers and project planners should develop participatory processes for environmental management that take into account different discursive approaches towards the environment. This approach can create space for a greater focus on the role of Indigenous knowledge, as evidenced in a case study involving the re-diversion of the Kaituna River in Maketu, New Zealand over a period of several years (Barrett et al., 2021; Barrett et al., 2019).

Previous attempts to manage the Kaituna River and estuary in 1996 had seen no consultation with tangata whenua and resulted in a subsequent erosion of cultural values impacting the health, wellbeing and cultural knowledge of tangata whenua (Barrett et al., 2019).

Waterway health is vital to the health and wellbeing of many Indigenous populations throughout the world, including those in Aotearoa (Poelina et al., 2019). Tangata whenua bring an understanding of waterways and catchments as holistic entities and an understanding of what is important to waterway health and therefore the physical and cultural wellbeing of people (Sinner, 2021).

Indigenous peoples, including tangata whenua of Aotearoa, often bring different perspectives to those of Western science, which reflect their history and local mātauranga (knowledge) about waterway behaviour and changes over time and about taonga (treasured) species and wāhi tāpu (sacred sites) (Sinner, 2021). Western science and environmental policy and management are slowly adapting to acknowledge the place and value of traditional knowledge (Poelina et al., 2019). In the more recent project developments of the Kaituna River re-diversion, the grounded and experiential knowledge of a local kaumatua (elder) resulted in the river's intake point being shifted a kilometre upstream (Barrett et al., 2019). His local knowledge of the river and estuary, and the implications that the initial design for re-diversion would have on the salinity of the waterway was well respected by the Council and reflected a deep level of engagement in consultation and steps taken towards a shared decision-making process (Barrett et al., 2019).

By considering the different discourses at play in the re-diversion of the Kaituna River and the varied knowledge and histories of the diverse stakeholders, the highly politicised dynamic of environmental management was challenged (Barrett et al., 2019). This move included challenging the longstanding and dominant colonial and imperial discourses that are often present in environmental management (Barrett et al., 2021). These social and political barriers which are based on institutional cultures and processes are recognised barriers to genuine participatory processes (Allen et al., 2011). Additionally, the discounting of nonscientific forms of knowledge and institutional cultures within policy and decision-making can work against genuine participatory processes (Allen et al., 2011). In contrast, providing processes that allow for social learning, ongoing dialogue between stakeholders and adaptive management approaches can build a shared understanding and successful partnerships that are able to achieve common objectives (Allen et al., 2011; Allen et al., 2019).

2.4 Adaptive Management as a Strategy to Support Stakeholder Engagement

Several researchers highlight that adaptive management principles can support increased community engagement and better enable the integration of diverse perspectives, including those of Indigenous communities (Barrett et al., 2021; Deitch et al., 2021). Adaptive management is the cyclical process of learning-by-doing, with ongoing processes of goal setting, implementation, and evaluation leading to opportunities for hypotheses to be modified and to be accommodated within the complex environmental, political and social elements of CRM (Bos & Brown, 2015; Deitch et al., 2021; Miller & Schelhas, 2009). Adaptive management is commonly associated with natural or biological sciences, but it can also be applied to scenarios where social systems are present, including where there is a need to evaluate and manage stakeholder participation and engagement (Deitch et al., 2021). Adaptive management strategies can be used to adjust project plans to accommodate both the scientific knowledge at hand, as well as the priorities and needs of the stakeholder community, thus integrating the worlds of science and social science in a practical sense (Deitch et al., 2021; Marshall et al., 2010). Miller and Schelhas (2009) coined the term 'adaptive collaborative restoration' when describing strategies of adaptive management in collaborative multistakeholder environmental restoration projects.

2.5 Stakeholder Motivations in Collaborative Restoration

Not all stakeholders within a catchment, nor within any project, are guaranteed to be inclined to positively contribute, collaborate or be involved in participatory processes. One cannot assume a predisposition on the part of all players to cooperate, and research has found that some sections of communities may remain unwilling to participate in collaborative projects such as those involving environmental management, despite generous financial incentives to do so (Bos & Brown, 2015; Mitchell, 2007). Bos and Brown (2015) highlight that efforts should be made to identify motivations and barriers for participants' participation, and this understanding is best developed with an in-depth knowledge of the community involved.

Capitalising on a shared sense of place, identity and interest can be a motivator for initiating a shared environmental stewardship and protection (Chapin et al., 2012; Deitch et al., 2021). Stewardship is defined in the Merriam-Webster (n.d.) dictionary as the "careful and responsible management of something entrusted to one's care". And a 'sense of place' is defined in the literature as "the collection of meanings, beliefs, symbols, values and feelings that individuals and groups associate with a particular locality" (Williams & Stewart, 1998,

as cited by Chapin et al., 2012, p. 2). Thus, the encouragement of an emotive sense of collective responsibility and attitude of care toward a place can result in greater participation in ICM or other environmental management efforts.

Although community awareness, attitudes of care and education can be motivators to participation, it is also recognised in the literature that competition, self-interest and the identification of win-win outcomes can also motivate participation in projects of environmental management (Bos & Brown, 2015; Jenkins, 2018; Mitchell, 2007). Partnerships do not need to be emotionally invested and can instead be based around the core values and business of the parties involved and on negotiating plans based on common interests and mutually acceptable goals (Allen et al., 2019; Jenkins, 2018; Kilvington & Allen, 2007).

2.6 Collaborative Restoration and Frameworks

The acknowledgement of the benefits and possibilities within multistakeholder partnerships and the ever-increasing need for collaborative, holistic approaches to restoration has led to integrated catchment management (ICM) and collaborative resource management (CRM) being well-documented areas of research (Deitch et al., 2021; Dentoni et al., 2018; Fenemor et al., 2011). ICM is defined by Fenemor et al. (2011) as:

> A process that recognises the catchment as the appropriate organising unit for understanding and managing ecosystem processes in a context that includes social, economic and political considerations, and guides communities towards an agreed vision of sustainable natural resource management in their catchment. (p. 314)

In Aotearoa New Zealand, social learning frameworks have been honed and tested to support the engagement of stakeholders in ICM projects (Allen et al., 2001; Allen et al., 1998; Kilvington & Allen, 2007; Kilvington et al., 2011). In addition, other frameworks that investigate the interconnections within collaborative resource management projects such as the SESF described above are also utilised and explained in the scholarship (McGinnis & Ostrom, 2014; Ostrom, 2009) and in Marshall et al.'s (2010) best practice principles (These are discussed later in the chapter.).

2.6.1 *The Integrated Systems for Knowledge Management (ISKM) Approach*

The integrated systems for knowledge management (ISKM) framework provides a set of principles and methodologies to guide long-term engagement approaches within real-world action situations, including integrated catchment management (Allen et al., 1998; Kilvington et al., 2011). Developed "during a long-term, multidisciplinary research programme in the highly contested and often polarised area of high country management in the South Island of New Zealand,", this framework can be regarded as "a project management process for developing and sharing information when participation of multiple actors and a situation of high complexity demand a focus on systems thinking, collaborative decision-making and experiential learning" (Kilvington et al., 2011, p. 543). The ISKM framework is designed to be iterative, with multiple stages carried out simultaneously, with the overarching premise being designed around the two phases of adaptive management—finding out about a situation and then taking action to improve this situation (Allen et al., 1998; Kilvington et al., 2011). The steps within the ISKM can be summarised as follows (see also Figure 3):

1. Scoping goals and objectives—developing a common understanding of a perceived issue and the specific needs and goals of the interest groups involved
2. Accessing relevant knowledge—bringing both local and scientific knowledge together
3. Community dialogue—developing a shared understanding and cooperative, collaborative plans
4. Implementation—the 'on the ground' action
5. Monitoring and evaluation—of the outcomes and processes (Allen et al., 1998; Kilvington et al., 2011).

A successful application of this approach would mean that ongoing flows of information and feedback constantly update and reformulate the problem and the actions taken, strongly reflecting an adaptive management approach (Allen et al., 1998; Kilvington et al., 2011).

2.6.2 *Marshall et al.'s (2010) Best Practice Principles*

By carrying out an extensive case study literature review of international ICM, Marshall et al. (2010) identified 13 overarching principles for good practice in ICM. They then further investigated the applicability of these in different contexts with eight specific ICM cases in the United Kingdom. A summary of some of the key principles within their framework

includes: accommodating related issues and interconnections that cut across catchment boundaries; acknowledging achievement and celebrating early successes; ensuring flexibility through adaptive management; using open and accountable decision-making processes such as consensus; utilising appropriate engagement strategies that are realistic for the stakeholders' capacity to be involved; ensuring effective communication flow between all stakeholders; managing conflict by understanding stakeholder needs and avoiding misunderstanding and misrepresentation; effectively utilising existing forums and partnerships; having efficient processes; clearly defining roles and responsibilities; clarifying spatial scale and how environmental and political boundaries affect stakeholder engagement; and considering timescales and allowing time for processes to develop (Marshall et al., 2010, pp. 66-67).

While the principles identified above support an understanding of best practice within ICM, context is key (Marshall et al., 2010). Marshall et al. (2010, p. 85) state that "the success of catchment management is not dependent on a single type of process and cannot be assessed simply by using a single, inflexible set of criteria". Successful collaborative resource management, and ICM, is not able to be achieved by following a tick box or linear process. Instead flexibility in the application of best practice principles, as well as a thorough understanding of the external factors that influence each individual context, are key to supporting meaningful and sustainable collaboration and the achievement of the project's desired outcomes (Marshall et al., 2010).

2.7 Collaborative Capital

The intentional building of 'collaborative capital' between stakeholders to develop a partnership can also support effective collaboration, which can in turn provide more equitable and fair solutions to problems, build more public and political buy-in and commitment and improve the coordination of multiple actors working together (Watson, 2007). Watson (2007, p. 39) describes collaborative capital as the "vitally important asset which represents the networks, processes, structures, communication mechanisms and cultures that enable different organisations and interests to work effectively together". Watson (2007) goes on to identify seven features that can build collaborative capital and which in turn can guide the design of effective collaborative programmes. In summary, these include: ensuring a common vision is held; maintaining adaptive capacity to change; providing adequate resources; enabling shared decision-making while still supporting independence; enabling the

representation of diverse groups; ensuring the forum is action-orientated; and monitoring and evaluating outcomes for effectiveness (Watson, 2007).

Ensuring that collaborative processes to be truly successful does not rely to the institutional structures or framework used; ultimately success comes via the people who determine the outcomes of collaboration. As Watson (2007), notes, collaborative capital should not be treated as a 'silver bullet' for environmental management (Watson, 2007). Collaboration, or its varying degrees, will not always be the most appropriate response to environmental issues, nor is it always possible given circumstances such as location, scale and time (Watson, 2007).

2.8 Chapter Conclusion

There is a growing recognition that effective multistakeholder partnerships can provide more sustainable social and ecological outcomes in environmental management (Collins et al., 2020; Deitch et al., 2021). Multistakeholder partnerships that address issues of environmental management are always positioned within SESs, the place where people and the environment interact. These interactions are becoming increasingly complex due to our changing climate and the uncertainty that this brings for natural resources and ecosystems (Ostrom & Cox, 2010). Ostrom's (2007, 2009) SESF provides an effective tool to better understand the systems, subsystems and variables nested within it that influence the interactions and outcomes that occur within an SES. The SESF therefore provides an effective tool for analysing multistakeholder partnerships.

In the creation of multistakeholder partnerships, intentional participatory processes that create room for shared decision-making and the incorporation of diverse knowledges beyond the typical dominant voices are needed. In these processes, the creation of networks of communication and relationships that are built upon trust, respect and the building of collaborative capital are fundamental (Allen et al., 2019; Watson, 2007). When engaging diverse stakeholders in collaborative restoration, consideration of the motivations of actors is important, and this is best done by understanding the communities involved (Bos & Brown, 2015). Motivations for collaborative environmental action may include a sense of stewardship or sense of place; or they may be more pragmatic and take the form of identifying win-win situations and common interests for the parties involved (Chapin et al., 2012; Jenkins, 2018).

There are obvious and reported benefits of collaborative partnerships in environmental management, including resource sharing and the ability to reach more holistic and responsive solutions to environmental issues for the communities which they affect (Allen et al., 2011; Clarke & MacDonald, 2019; Deitch et al., 2021). However, we must be aware that actions which support such collaboration must be intentionally factored into timing, funding and institutional structures and processes (Walpole et al., 2017).

With collaboration come many barriers and challenges, as the bringing together of diverse worldviews can also bring conflict and involve situations where not all participants have equal nor equitable opportunities to have their voices heard (Allen et al., 2019). While collaboration is a valuable tool in achieving a sustainable future relationship with the environment, we must remember that collaboration is complex and not necessarily a 'silver bullet' that can solve our issues of environmental management (Watson, 2007).

As described in the literature, a number of consistent themes can be found in frameworks for collaboration; these involve supporting social learning processes and removing rigidity from the development of projects through the use of adaptive management (Kilvington et al., 2011; Marshall et al., 2010; Watson, 2007). Additionally, the balancing of power to make sure that people have greater opportunities to contribute their diverse knowledge bases is important, as it is a way to ensure that institutional and colonial hierarchies do not continue to dominante environmental decision-making (Barrett et al., 2021). Intergenerational and local Indigenous knowledge is becoming increasingly recognised for the value it brings to environmental management (Barrett et al., 2021; Poelina et al., 2019). Genuine participatory processes such as those that include principles of adaptive management support the inclusion of Indigenous knowledge in environmental decision-making (Barrett et al., 2021).

Multistakeholder partnerships, their benefits, frameworks to establish them and barriers to achieving them are a well-researched field. However, there is more to learn about how we can encourage collective action in an ever-changing climate (Sullivan & York, 2021). There is a need to continue the pursuit of knowledge surrounding effective partnerships in environmental management and where diverse worldview and knowledge inform one another to reach sustainable and just future outcomes (Barrett et al., 2021). To achieve this end, research should inquire into the discursive contexts within real-time projects and the realities of how multistakeholder partnerships play out, including what SES factors influence

participation and decision-making in local contexts. As there has been less research on partnership and participation in SES-based environmental projects in Aotearoa New Zealand, further questions can be asked about what factors impact the formation of successful multistakeholder partnerships in collaborative catchment scale restoration, in Aotearoa New Zealand settings specifically, at both the stakeholder and wider SES level.

Chapter 3
Research Methodology

A discursive shift in the world of agriculture and food production from productivism and hyperproductivism toward the more future-oriented and sustainability-focused discourse of postproductivism has resulted in ecological restoration moving to the forefront of land management and political conversations. These conversations are increasingly about who manages what and who is responsible for what (both the good and the bad). A critical question however remains: What can be done to pull our natural ecosystems of unique biodiversity back from the tipping point of irreversible degradation and toward a re-establishment of healthy waterways, flourishing indigenous biodiversity and the building of thriving communities? Addressing this question involves a complex conversation that must consider the opinion and experiences of a variety of actors. Approaches to answering this issue must also be underpinned by an understanding of how people and the environment are inextricably connected and how the interactions within these SESs influence the outcomes we observe (Ostrom, 2009).

The forthcoming case study analysis examines the SESs of the Manga-o-tama catchment and the Manga-o-tama Catchment Restoration Project. This case study analysis aims to build knowledge and communicate about the interactions and outcomes that can occur when people and the environment interact in an SES action situation and to identify what factors influence collaboration in a diverse multistakeholder partnership.

This chapter outlines the research methodologies used in the case-study analysis which follows. The chapter begins with a justification of why qualitative and case study research methodology is the most appropriate for this analysis and then describes the research methods used in the field work, including the emphasis on semistructured interviews. A discussion of how participants were approached for this study follows, along with a reflexive acknowledgement of my positionality within the Project as a researcher. Lastly, the data analysis methods and organisation are explained, including the use of the SESF as a theoretical framework to support an analysis of the research findings.

3.1 Qualitative and Case Study Research

This research examines a catchment scale restoration project (the Project) that is positioned within a complex social-ecological context. Neither the Project nor its ecological outcomes can be considered in isolation from the social, cultural and political settings in which it is embedded (Metcalf et al., 2015). This research is an example of qualitative research. Qualitative research provides researchers with the ability to examine and interpret phenomena as they occur in the world, using empirical data gained from research methods such as case study analysis, ethnography and interviews to understand the contextually rich topics they study (Denzin & Lincoln, 2000).

Case study research, as a qualitative research methodology, provides the grounds for an empirical enquiry of a contemporary phenomenon (the case) from which the researcher is able to obtain a holistic and real-world perspective (Yin, 2014). Case study research can include the study of both defined small group behaviour and organisational processes within an identified phenomenon (Yin, 2014). This style of research can involve the use of documents, artifacts, interviews and observations to better understand the particular complex social, physical and situational world that is being studied (Liamputtong, 2013; Yin, 2014).

The nature of this thesis' research clearly reflects many of Yin's (2014) applications of case study research, indicating its relevance toward the research design of this study. This thesis project describes and evaluates a real-time social-ecological intervention in the real-world—the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project (the case). By understanding the case being studied, it is possible to explore and explain the causal links within the real-world phenomenon. In addition, applying mixed methods of data collection provides a substantive spread of evidence for analysis that could not be achieved through surveys or more simple research methods. While this thesis project explores an ecologically grounded restoration project, human elements are ever present and influence the mechanisms, interactions and interconnections within the Project.

In the research design phase, which was guided by Yin (2014), a clear research question was established, and relevant theoretical propositions were investigated to guide data collection and analysis. It was at this stage that Ostrom's (2007, 2009) SESF was identified as an appropriate framework to guide this research. The SESF also provides a framework and criteria for analysis, so that the variables at play within the case could be effectively and

methodically unpacked and understood in a manner that is theoretically sound and recognised within the scholarship. Semistructured, in-depth interviews were used within the case study research to gather comprehensive data for analysis and to formulate a large proportion of the methodology used for data collection in this research.

3.2 Research Methods

This research project used the following research methodologies.

3.2.1 *Semistructured Interviews*

Interviews are one of the most commonly used and powerful ways in which researchers can attempt to better understand their fellow humans, their relationships and the complex interconnection of the social and ecological world (Fontana & Frey, 2008). Semistructured interviews, as carried out in this thesis, provide the grounds for a precise capture of data that follows predominantly preestablished themes, yet maintains the flexibility to explore the complex behaviours, worldviews and experiences of participants (Fontana & Frey, 2008; Lewis-Beck et al., 2004). Effective interviews do not ignore the contextual, societal and interpersonal elements of the participants' lives that they are willing to share, with the dynamic social interaction of interviewer and interviewee creating a space for the active construction of knowledge through the process of asking and responding to questions (Fontana & Frey, 2008; Lewis-Beck et al., 2004).

During the semistructured interviews participants were provided with a hard copy map of the catchment area so that they could map out their personal connection to and use of the land and to guide further discussion throughout the interview process (Rollason et al., 2018). Establishing these connections provided a starting point for the interviews in that they placed the participants metaphorically within the SES and catchment system and enabled the interview to home in on the local, personal and contextually centred knowledge that the participants brought with them. Four key themes of connection to the catchment, participation in the Project, partnership and project processes were explored in the interviews, with several questions being nested under each overarching theme. These questions were designed to both delve deeper into each theme and to learn about the participants' personal connection to and involvement in the studied catchment and restoration project. Appendix B provides the full interview questions.

3.2.2 *Research Participants*

Participants contacted for interviews were identified through the Mana Enhancing Agreement (MEA) document. The Project lead and a Living Water employee shared this document with me. This document outlines the organisations which have made a formal commitment to the Project, stating their in-kind and financial capacity to be involved for a minimum period of 1 year. The involvement of the signatories to this MEA was further explained by the Project lead who identified which participants had an active role in the Project and who represented a wider organisation at a managerial or official level. These conversations also identified the names of the people who were the on-the-ground actors in the Project. In cases where these individuals differed from the actual signatory, it was deemed more appropriate to approach them and to ask for their participation in this study, given that they had first-hand involvement and experience in the Project. All participants identified from the MEA and aforementioned stakeholder mapping conversations were contacted via email or telephone. Stakeholders who were not personally known to me were introduced via the Project lead. I then contacted these individuals via email or a phone call.

The following participants took part in this study. These individuals were selected because they represented both their respective stakeholder group and had their own experiences within collaborative restoration:

- Living Water Partnership and DOC—represented by Living Water site lead for this region and project lead for this project, employed by DOC (1)
- Fonterra—represented by past sustainable dairy manager involved in this catchment and project (1)
- Tangata whenua—represented by the chairman of the local iwi rūnanga trust board (1)[7]

[7] The Manga-o-tama catchment is a place of significance to several iwi who have resided here and acted as kaitiaki (guardians, in the simplest sense of the translation) of the lands, waters and taonga species over the past several hundred years. For this study, I interviewed the chairperson of the Ngāti Apakura Rūnanga Trust Board. Ngāti Apakura and Ngāti Hinetu are iwi who are tangata whenua for this area alongside other iwi and hapū who have historical connections to this land. The Ngāti Apakura Rūnanga Trust Board's chairman representative speaks on behalf in terms of his own personal experiences, and of the Rūnanga Trust. He does not however speak on behalf of all Māori or tangata whenua for this rohe (area). While I greatly appreciate the opportunity to include the perspectives of tangata whenua, I freely acknolwedge that by no means have I represented the perspectives, aspirations and experiences of all Māori or all tangata whenua for this rohe.

- Local Regional Council—represented by an employee involved in catchment restoration works and the Waipā peat lakes (1)
- Local District Council—represented by an employee involved in this catchment restoration project (1)
- Manga-o-tama Stream and Wetland Restoration Trust (MSWRT)—represented by two leading members, a landowner and a farmer (2)
- Further farmers active in the Project (4, one full interview with two people, and two email responses)
- New Zealand Landcare Trust (NZLT) —represented by the local catchment group coordinator (1).

The participants' identities have been anonymised using pseudonyms. At times, I have further anonymised their contribution by removing their group and referring to them only as 'Participant'.

3.2.3 *A Review of the Literature*

Prior to the commencement of field work, I carried out an in-depth analysis of literature on the topic of social-ecological systems, multistakeholder partnerships and collaborative resource management. This primary and secondary literature was sourced predominantly from the University of Waikato library database. Relevant literature was identified by searching for key words and phrases relating to integrated catchment management (ICM), multistakeholder partnerships (MSPs), collaborative restoration and conservation and social-ecological systems (SES).

3.2.4 *Document Analysis*

Throughout the duration of the research, document analysis assisted in the building of knowledge about the case study project. Primary documents from the case study dating from its inception to the present day were supplied by the Living Water Project lead for the Manga-o-tama Catchment Restoration Project. These documents included planning schedules, funding applications, meeting minutes and the Mana Enhancing Agreement. While the semistructured interviews provided the majority of the data used in the analysis; in addition, the use of shared documents helped to clarify the systems and processes present

within the catchment restoration project and provided insightful background about the inception of the Project.

3.2.5 *Observations*

I was also fortunate to attend two meetings about the catchment restoration project and to meet with several of the partners prior to conducting the semistructured interviews. This opportunity gave an insight into how decisions in the Project were made and what role different partners had to play.

I was also involved in organising four school planting days for the catchment restoration project as a part of my role at my work. These activities provided another opportunity to see the catchment first hand and to observe both the ecological and community initiatives being carried out.

3.3 Reflexivity and Positionality

It is well recognised in qualitative research that the reciprocal process of knowledge sharing and generation is not necessarily a neutral process and that the data gathered within this space is often sensitive and/or personal (Fontana & Frey, 2008; Lewis-Beck et al., 2004). The semistructured interviews were designed and conducted in such a way as to provide opportunities for the participants to influence and steer the path of the interview. Each participant was given the chance to tell their story in their own way (Lewis-Beck et al., 2004). Taking this approach therefore helped to equalise any unequal power dynamics that may have been present between interviewer and interviewee. From my perspective, each participant was the holder of their own contextually-based knowledge, and my goal as researcher was to support the sharing of their true worldview and perspective in a comfortable and trusting environment. Researchers must be acutely aware of their positionality and influence within the high-trust environment that often stems from the use of qualitative research methods such as interviewing and observation. For this reason, reflexivity formed an integral part of this social science research project (Fontana & Frey, 2008; Liamputtong, 2013).

Ongoing and critical reflexivity, as well as open and honest communication with my participants, were crucial elements of my research practice throughout the entirety of this research project. A key reason for their importance is the fact that I am an employee of one of

the stakeholder groups and that the opportunity and idea for this research stemmed from discussions with the Living Water Partnership local Project lead for the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project. Garnered from his experience in previous projects, the aspiration to better understand the motivations and barriers to the participation and engagement of diverse stakeholders was shared and became the eventual basis for this thesis project. The additional opportunity was offered to me to evaluate an emerging collaborative restoration case study to strengthen the value of the research design and findings by placing it within a real-world context.

Due to the circumstances of my employment and involvement in various aspects of the Project such as the planting days, I needed to ensure this research met strict academic ethical standards. Prior to undertaking my field work, a University of Waikato Human Research Ethics Application was therefore lodged and approved, thus ensuring an ethical standard was followed throughout the entirety of this research. Participants were supplied with a research information sheet (Appendix C) and consent form (Appendix D) to review prior to interviews taking place. Participants were also given the opportunity to ask any questions about my research prior to signing the consent form, and were informed of their right to withdraw from the study or decline to answer any questions throughout the interview process. Throughout the research it was made explicit to all participants that my role as a researcher was independent from that of my regular work and work place, and that no bias or influence would therefore be reflected within the research design and findings. It was clearly communicated to all participants that the sole purpose of this thesis project was to better understand and evaluate a real-world case study and contribute to the field of collaborative restoration and participation and engagement in social-ecological action situations. Researcher supervisors from the University of Waikato supported the research design and ongoing processes throughout this project.

3.4 Qualitative Data Analysis

The primary lenses used for the qualitative analysis carried out within this study are those of critical inquiry and phenomenology (Gray, 2013; Liamputtong, 2013). The lens of critical inquiry acknowledges that power relations in society influence ideas and actions (Gray, 2013). A critical inquiry lens maintains the understanding that the facts and truths presented within the function of society are inextricably linked to ideology and the self-interest of dominant groups (Gray, 2013). Phenomenology as a theoretical lens acknowledges the

experiences of participants and how their social reality and cultural understandings influence their understanding of and connection to phenomena (Gray, 2013; Liamputtong, 2013). The use of these theoretical lenses and the emphasis on data collection from interactions with active participants in the chosen restoration project support a grounded and human-centred analysis and thus help to provide a better understanding of the social and cultural elements that influence restoration and community engagement in the real world.

Data collected from the semistructured in-depth interviews was transcribed using transcription software and then thematically analysed using Nvivo software coding. The use of thematic analysis ensured that ideas that were interesting and potentially important in answering the research question were coded (Clarke & Braun, 2017). Recurring codes were then grouped into themes. This approach provided a systematic way through which to identify patterns and organise the qualitative findings derived from the personal and conversation-based interactions that occurred in the interviews (Clarke & Braun, 2017).

3.5 Using the Social-ecological Systems Framework

The SESF (McGinnis & Ostrom, 2014; Ostrom, 2007, 2009) is the primary framework used to analyse the case study restoration project. Upon completion of the interviews and thematic analysis, McGinnis and Ostrom's (2014, adapted from Ostrom, 2009) list of first- and second-tier variables was used as a diagnostic checklist and platform for organising the relevant themes and variables present within the SES studied.

Chapters 4, 5 and 6 each begin with a table which demonstrates how I have positioned the Manga-o-tama Catchment Restoration Project within the SESF and highlight how the working parts of the case study fit alongside the identified second-tier variables. The variables identified for each chapter are those deemed relevant and important in the analysis of this particular case. Schlager and Cox (2018) explain that it is not necessary for a researcher to utilise every one of the original SESF variables; the researcher can instead focus on the most appropriate elements for the system under study. This approach allowed for the emergent findings of the case study SES to be explored and analysed against the well-established conceptual framework, thus allowing the use of other research and relevant literature to be used to evaluate the findings (Palomo & Hernández-Flores, 2019).

3.6 Chapter Conclusion

This research contributes to the knowledge about collaborative catchment scale restoration and multistakeholder partnerships by analysing a real-time, grassroots, collaborative restoration project based in the Waipā district of Aotearoa New Zealand. After conducting an extensive literature review, I combined commonly used qualitative research techniques including semistructured interviews, document analysis and observation. These methodological approaches were used to formulate the case study analysis of the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project. I was privileged to interview several participants, all of whom had diverse roles and involvements as partners in the catchment scale project. In these interviews and guided strongly by conversation and the participant themselves, I explored several themes relating to participation, partnership, the idea of a shared understanding and processes of collaboration. The study's qualitative, thematic analysis was guided by Ostrom's (2009) social-ecological systems framework. This framework's first- and second-tier variables were used to organise the themes identified from the field work. The findings of this study are presented in the forthcoming chapters, which focus on identifying those factors which influence collaborative catchment scale projects and partnerships in an Aotearoa New Zealand setting.

Chapter 4
Governance, Resource Systems and Resource use within the Manga-o-tama Catchment

Landowners and land managers in a fragmented landscape will frequently have varying goals and perspectives regarding the way that the environment should be managed and what ecological, economic, cultural and social elements should be prioritised over others. Using Ostrom's (2009) SESF to guide the analysis of the Manga-o-tama Catchment Restoration Project as a case study, this chapter aims to establish the foundation of the SES at the heart of the restoration project, by understanding the resource units, resource system and governance systems at play within the Manga-o-tama catchment itself. By understanding the resources that exist within the catchment landscape and the histories of the land and people, we are better able to understand how people and the environment interact within the modern catchment environment.

Table 1 demonstrates which of the second-tier SESF variables are most relevant to this case study, and it can therefore be used to better understand the findings of the field work. When considering the social, economic and political settings (S) of the SES, the economic development of the area was linked most closely to the highly productive agricultural landscape. The resource system (RS) and resource unit (RU) variables of this case study prompt an inquiry into this productive agricultural landscape and the freshwater systems that run through the catchment, which include the ecologically and culturally significant Waikato and Waipā peat lakes and wetlands, both of which are key to the economic and ecological prosperity of the area. The variables relating to sector, SES boundaries, productivity, economic value and the interactions between resources within the catchment were used to guide the analysis of these ecological systems and resources.

The interaction of people and ecological systems and resources brings us to the governance systems (GS) variables explored in the analysis. The exploration of how land and water are managed in the catchment includes variables such as: the organisations involved in the catchment; the network structure of those involved in the catchment; the property rights systems; the constitutional rules such as legislation; and the collective rules like the MEA.

The chapter begins by discussing both the private and public land management within the catchment. This section reflects which governmental and nongovernmental organisations are involved in the SES and how a network of these organisations has been formed through both the Manga-o-tama Catchment Restoration Project and the preexisting Waipā Peat Lakes and Wetlands Accord. Importantly, the prioritisation of a partnership with tangata whenua is discussed, as it is highlighted by several of the participant organisations. This chapter then explains how national acts and regulations, including farm environment plans (FEPs), influence the way land is managed. The last two sections of this chapter draw heavily upon the worldviews of the participants in order to understand their relational connection to the land in the SES, how they use it and what a healthy catchment may look like in today's and a future landscape. The need for balance is communicated in modern catchment management so that ecological restoration can occur alongside sufficient economic prosperity and the assurance that a social foundation is maintained for farmers and communities alike.

Table 1
SESF Variables Explored in Chapter 4 in the Analysis of the Manga-o-tama Catchment Restoration Project (McGinnis & Ostrom, 2014, p. 5, adapted from Ostrom, 2009)

FIRST-TIER VARIABLE	SECOND-TIER VARIABLES	CASE STUDY DESCRIPTION	KEY THEMES DISCUSSED IN THIS CHAPTER
SOCIAL, ECONOMIC, AND POLITICAL SETTINGS (S)	S1—Economic development	Highly productive agricultural landscape, predominantly dairy farming	Land use and management (S1, RS1, RS2, RS3, RS5, RS9, GS1, GS2, GS3) Policy and legislation (GS1, GS4, GS7, RU3)
RESOURCE SYSTEMS (RS)	RS1—Sector (e.g., water, forests, pasture, fish	Agricultural landscape (pasture) Freshwater	A (modern) healthy catchment (S1, RU3, RU4)
	RS2—Clarity of system boundaries	Established catchment boundary based on the path of the Manga-o-tama Stream	Balance in resource management (S1, RU3, RU4)
	RS3—Size of resource system	7707 hectares	
	RS5—Productivity of system	Highly productive farming landscape	

	RS9—Location	Central Waikato basin, Waipā district
GOVERNANCE SYSTEMS (GS)	GS1—Government organisations	Central government heavily involved (DOC) through Living Water Partnership Local government—strong involvement of Waipā District Council and Waikato Regional Council at present and in the past
	GS2—Nongovernment organisations	Dairy co-operative Fonterra heavily involved through Living Water Partnership and on-farm Tangata whenua NGO NZ Landcare Trust involved in restoration of peat lakes in catchment Manga-o-tama Stream and Wetland Restoration Trust
	GS3—Network structure	Manga-o-tama catchment restoration project—a developing partnership of actors. Waipā Peat Lakes Accord for authorities managing peat lakes (also outside of this catchment)
	GS4—Property-rights systems	Privately owned farmland Public land managed by local and central government bodies Partnership with mana whenua, a principle of public land management in central and local government
	GS5—Operational-choice rules	FEPs influence terms of supply for farm environmental standards
	GS6—Collective-choice rules	Mana Enhancing Agreement
	GS7—Constitutional-choice rules	National Acts and Regulations (e.g., RMA, National Policy Statement for Freshwater Management) influence central and local government's

		mandated land management for private and public land
RESOURCE UNITS (RU)	RU3—Interaction among resource units	Nonpoint and point source pollution and freshwater quality
	RU4—Economic value	Productive pasture results in increased milk production. Dairy accounting for 23% of national export and food and fibre export revenue expected to reach more than $52.2 billion for New Zealand economy in 2022 (Ministry for Primary Industries, 2022; The Treasury, 2022)
	RU6—Distinctive characteristics	Nationally and internationally significant peat lakes. Wetlands.

4.1 Land Use and Management

The Manga-o-tama catchment encompasses 7707 hectares in the Waipā district of Aotearoa New Zealand. The catchment is currently home to a highly productive dairy landscape, speckled with unique peat lakes and wetlands in varying states of ecological health. As mindsets shift toward a more sustainable and future-focused view of the land, many landowners and land managers seek to restore what of the highly significant ecological and cultural landscape has been lost over years of intensive land use and to protect what is left of indigenous biodiversity. Restoration and conservation in such a developed landscape can be an incredibly difficult task, given that the land is still highly productive, with many communities relying upon what the land produces and the agricultural practices that harness these resources for their own livelihoods and the economic stability of the country. In 2021, the dairy industry alone contributed 5.3% of gross domestic product, and it is New Zealand's largest export earner, accounting for 23% of total export value (The Treasury, 2022).

Within the Manga-o-tama catchment, land and natural resource ownership and management are varied, with public and private land managed by several different organisations and institutions. In the management of public estate Crown entities such as local and central government organisations, these endeavour to work under principles of comanagement with Māori. These processes are continually under review and improvement to better recognise the

histories, hurt and effects of colonisation and to better reflect the rights of Māori as tangata whenua and Te Tiriti ō Waitangi (the Treaty of Waitangi) principles.

The Department of Conservation and Waipā District Council manage much of the public land in the catchment (many of the lakes, streams and rivers) in partnership with tangata whenua. The Waipā District Council highlights partnership with tangata whenua as a principle in the council's vision (Waipā District Council, 2022)**.** Section 4 of the Conservation Act (1987) states: *"*This Act shall so be interpreted and administered as to give effect to the principles of the Treaty of Waitangi." This short but highly significant section underpins the work of the Department of Conservation and its legislative commitment to working with tangata whenua on the lands and waters it administers. Additionally, Treaty of Waitangi settlements between some iwi and the Crown explicitly outline cogovernance and comanagement agreements for both the Department of Conservation and regional councils regarding their participation in natural resource management decision-making *(*Waikato Regional Council, 2021*).* Private landowners and farmers also manage the private farmlands and residential properties in the catchment. National dairy companies such as Fonterra and Open Country Dairy have stakeholder interests and involvement in this landscape, as farmers supply milk to them as part of shareholder or contractual arrangements.

The Waipā Peat Lakes and Wetlands Accord (commonly referred to as the Peat Lakes Accord) is an "interagency agreement between Waikato Regional Council, the Department of Conservation, Waipā District Council and Auckland/Waikato Fish and Game Association" (Waikato Regional Council, 2022, para. 21). In recent years, it has also included representation from both the New Zealand Landcare Trust due to its involvement in the restoration and management of some of the peat lakes and also the Living Water partnership by proxy through DOC's involvement in the partnership and the Peat Lakes Accord. This accord aims to support the collaborative work of authorities responsible for managing the peat lakes and wetlands in the Waipā district, including work with landowners, iwi and interest groups (Waikato Regional Council, 2022). The Peat Lakes Accord was seen as a positive collaborative initiative, as described by the Regional Council spokesperson below:

> *"It does give us an opportunity as organisations and mana whenua to come together to talk about things that impact the lakes and wetlands in the Waipā area … I think*

it's been an amazing initiative and works pretty well … it's not perfect but it works pretty well." Nicola, Regional Council

The role that the Waipā Peat Lakes and Wetlands Accord plays in building cohesion and collaboration among stakeholders in the Manga-o-tama Catchment Restoration Project is explored in more depth in chapter 7.

4.2 Policy and Legislation

The Resource Management Act (1991) and the National Policy Statements issued under it provide national direction for the sustainable management of significant natural resources (Ministry for the Environment, 2022). Alongside these are national environmental standards (NESs) that promote consistent environmental standards at the regional and district plan level (Environment Foundation, 2021). The Waikato Regional Plan establishes lake levels that are protected by consented water control structures and also lays out rules for the quality of wetlands in the region (Waikato Regional Council, 2022). Additionally, as administered by the Department of Conservation, the Conservation Act (1987) and the Reserves Act (1977) provide statutory regulations for the management of public conservation land, with several reserves existing within the case study catchment. FEPs, which are soon to be a compulsory supply requirement of all dairy companies such as Fonterra, also help to provide a mechanism for environmental action at the on-farm level.

The following quote captures the practical challenges of meeting policy and standards for freshwater management in a developed catchment and fragmented landscape:

"Meeting the NPS [National Policy Statement] and NES [National Environmental Standards] for freshwater in the regional plan, it's like woah what do you do in developed catchments like this, and it's really hard." Nicola, Regional Council

It is well-known that the long-term effects of productivity and growth-focused land use have put pressure on our environment, with ill effects now seen at the landscape scale. This degradation stems from human practices, many of which are still carried out and relied upon today for food production and economic growth. Therein lies the need for landscape scale cohesion and action at all levels, including individual landowners and farmers and government entities working together (Januchowski-Hartley et al., 2012; Ministry for the

Environment and Stats NZ, 2022). This is particularly true when considering freshwater ecosystems due to the fact that the effects of nonpoint source pollution on waterways that can cause dynamic and flow-on effects on ecosystems is sometimes not visible for long periods of time. The vision for what a healthy catchment could look like in a modern landscape and the elements of value that would reflect such a landscape is a vision shared by many of the participants who were interviewed.

4.3 A (Modern) Healthy Catchment

The interviews with participants revealed a shared aspiration between ecologists and landowners alike for a healthy catchment, and this aspiration was a common motivation and catalyst for collaborative action to occur. Both Western science and cultural indicators of health were discussed during the interviews. In reference to Western science indicators of water quality, the two real-time water quality monitoring stations positioned at two points along the Manga-o-tama stream were celebrated as both a way to measure progress and motivate further action. These stations feed real-time data on measures of water quality via satellite to an application. Freshwater ecosystem health was also explained as being able to be measured by the abundance or scarcity of taonga species and indigenous biodiversity present:

> *"The return of native manu to the area, we're seeing some of that, but by far the biggest issue right now is the lack of tuna. You know this was a tuna centre." Barry, Iwi Rūnanga Trust Chairperson*

> *"A healthy catchment is … dominated by native biodiversity and the freshwater is good quality. So, there would be more tuna and native fish than pest fish, for example. And there would be more native biodiversity trees and birds and things." Nina, NZ Landcare Trust (NZLT)*

The presence of taonga species, such as tuna (eels), kōura (freshwater crayfish), as well as the increased presence of birdlife due to more habitat being established through native plantings, were seen as tangible measures of success for restoration projects, which achieve both ecological and cultural aspirations for the area. Alongside ecological indicators, the reestablishment of cultural uses of the land also signal restorative success, as explained below by the District Council representative:

> *"We have Ruatuna as an example of what a lake should look like. Ecologically you've got your quantitative indicators such as water quality … you've got sure ecological monitoring, your abundance of bird counts … we know how to measure ecological health. But, for instance, you've got cultural use; you've got quite a bit going on in terms of using the site as an education facility. Ngaroto would be at the complete other end of the spectrum in terms of all those quantitative measures of ecological health." Hannah, District Council*

Here, Hannah identifies the cultural use of Ruatuna, which refers to a pā harakeke garden that has been planted for the purpose of supporting the revival of weaving in the area. Additionally, Hannah acknowledges the educational facility at Ruatuna by providing us with two examples of how the social and cultural pillars of sustainability can intertwine with the environmental, thus forging a greater connection to nature. The quote below highlights that a modern healthy catchment can bring people together, thus creating opportunities to further improve the environment:

> *"It's the community really coming together, and recognising their neighbours and talking to each other and finding a collective way forward." Pia, Fonterra*

In order to achieve a greener and more sustainable future, particularly for the highly degraded peat lakes, drastic action is needed now. Action that takes into account the human element of modern land use and draws upon the cultural and social pillars of sustainability can encourage more people to reconnect with nature. Drawing in entire communities toward environmental restoration by way of collaborative projects such as the Manga-o-tama Catchment Restoration Project can bring forth diverse knowledges and the sharing of resources that can work toward sustainable outcomes (Allen et al., 2019; Clarke & MacDonald, 2019; Deitch et al., 2021). When the responsibility for ecological restoration falls on a few, it is often too large and too costly to make the large-scale changes needed. Additionally, the environment is intertwined with our modern economy and way of living and action must therefore acknowledge this reality.

4.4 Balance in Resource and Land Management

A diverse range of stakeholders from within the catchment highlighted the need for a balanced approach to how resources are managed, and this view is evident in the following quotes:

> *"If you fly over this area, you see the dotted peat lakes and connected wetlands and this sea of a developed, intensively agricultural landscape. And so, in one sense, that breaks my heart. And in the other sense, I understand why and how." Nicola, Regional Council*

> *"So, it's getting the right balance, you know, and that's what the real trick is here. Because we've got to be realistic with everyone's still got to make a living off their bit of land. But we still want catchments that are going to be sustainable forever." Andrew, farmer*

> *"I'd love to see all the waterways, even marginal banks, hillsides that aren't really productive, I'd love to see that back into native … to me I think it enhances everything … I still think it can be done in a way that can keep the land productive, because if you're not profitable and productive, well, you know, if you don't look after yourself, you can't look after anything else." Mike, landowner and MSWRT representative*

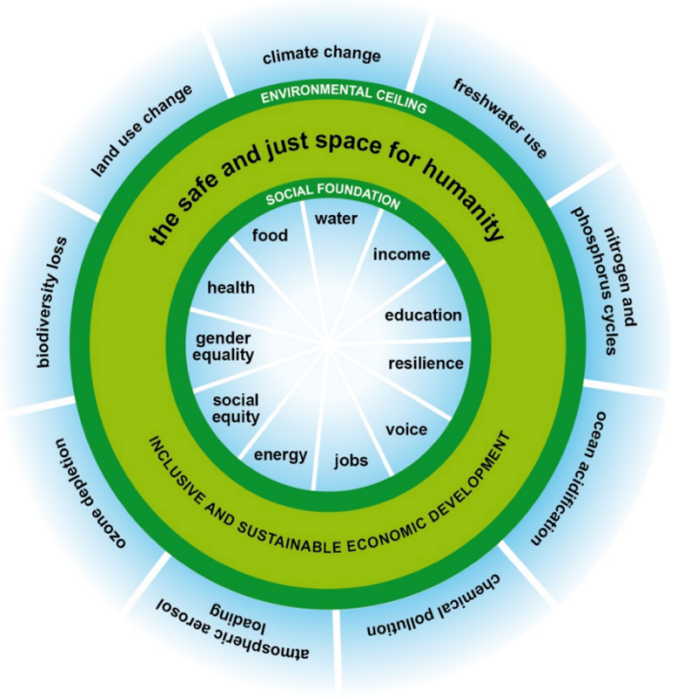
The final quote from Mike reveals his desire for ecological restoration, but also the need to 'look after yourself' so you can then look after the environment too. This position captures the idea of a balance between environmental restoration and economic viability. Therefore, although transformative behaviour and systems change are required to reach a greener future, there must be a consideration of the externalities of environmental action for both the immediate producer and then wider society.

Of course, increased regulation, environmental standards and intentional action are needed to curb the long-standing patterns of environmental degradation associated with the use of ecosystems for the benefit of people. However, these participants' responses also revealed the need to recognise how current agricultural practices are critical to the functioning of the country's economy. Available statistics show that the primary industries (agriculture, forestry, fishing and mining) accounted for 7% of New Zealand's gross domestic product

(GDP) in 2020 (Stats NZ, 2020), which means that New Zealand has a degree of current path dependency on the scale and productivity of the agricultural industry, as it upholds both the livelihoods of the producers involved and represents a large contribution to the economic prosperity of the country, which in turn contributes to the 'social foundation'. Raworth (2012) identifies the social foundation as the set of essential needs such as food, income, water and education, that when provided for allow people to live in a manner that does not also result in actions that cause the exceedance of the 'ecological ceiling'. Exceeding the ecological ceiling results in disastrous phenomena such as the loss of biodiversity, lack of freshwater and climate change, all of which we are seeing today around the world.

It is indeed a balance, and adequate production must be carefully weighed up alongside profit. As Raworth (2012) so clearly puts it, the safe and just space for humanity, where sustainable development can occur, is inside 'the doughnut'. Remaining inside this doughnut will surely require a sacrifice of profit from those who have more than 'enough' and continually reap financial reward from the services of ecosystems. However, one can understand the need for balance which ensures the pillars of sustainability (particularly the social and economic pillars) maintain stability so that a social foundation is forged and does not collapse for those who are most vulnerable.

Figure 3
Raworth's (2012, p. 4) Doughnut Model—The Safe and Just Space in which Humanity can Thrive



4.5 Chapter Conclusion

The historic and modern land and resource use practices in the Manga-o-tama catchment provide an insight into the complex interactions of stakeholder groups who are connected to it through economic, social, political or cultural ties. This knowledge of the past and present underpins the way that stakeholders interact as they form partnerships and helps to lay a foundation for the development of shared goals, aspirations and understandings. The productive agricultural landscape of the catchment has resulted in high levels of dairy farming, an industry that makes a large contribution to Aotearoa New Zealand's export and local economy. However, looking ahead to the future, the partners in this project have highlighted a clear shift toward ensuring more sustainable farming practices as well as a keen desire for ecological restoration to protect the ecological, cultural and economic resources within the catchment.

Policy and legislation such as the Resource Management Act (1991) and the national policy statements issued under it provide guidance for environmental management for both private landowners and Crown entities alike. In addition, council-issued district and regional plans provide further legislative requirements for modern land use, including setting lake levels and

standards of water and wetland quality. There are challenges to administering this legislation to its fullest extent in a modern catchment landscape that has been subject to generations of environmental degradation and productivity-focused land use. However, emerging collaborative restoration projects such as the case study and the use of FEPs provide a mechanism for action across all stakeholder levels. An important partnership that exists in this Aotearoa New Zealand setting, and which must be considered in all environmental action, is that with tangata whenua.

Through the Treaty of Waitangi, local and central government organisations must work alongside tangata whenua in environmental management (and in other contexts). This partnership was identified as foundational and a priority for the government organisations in this case study. Tangata whenua environmental aspirations stem from an intergenerational connection to the land, a desire to see wāhi tapu protected and a reestablishment of taonga species and indigenous biodiversity, as well as the return of cultural practices at place. These core indicators of catchment health are highly aligned with Western science; however, as these are expressed and communicated in different ways, there is a demonstrable need for aspirations to be communicated and understood between partners so that a shared understanding can be formed.

While supporting a shared vision for ecological restoration, the participants recognised that an understanding of each stakeholder's worldview and way of living is required so that restorative environmental action can occur alongside the maintenance of livelihoods. Furthermore, as we hope to shift modern economic path dependencies away from unsustainable land use practices, we do not want to crumple the social foundation of those involved or those most vulnerable (Raworth, 2012). Having established an understanding of the place and the physical and political mechanisms that interact within the case study SES, we next turn to the people. Chapter 5 therefore seeks to explore the factors that may encourage or inhibit participation in collaborative catchment scale restoration.

Chapter 5
People (Actors) and their Place in the Social-ecological System

When a diverse multistakeholder partnership is developed, people's participation in collaborative projects may be driven by different motivations, worldview and experiences. They may also be influenced by varying histories, agendas and their personal ability to be involved. Not only must stakeholders be willing and able to take part in collaborative processes and work, but the participatory processes at the organisational level must allow for their involvement. Additionally, if participatory processes are well delivered, then a fair and equitable representation of diverse worldviews can be used to guide collaborative projects, rather than allowing the voice of dominant or more powerful groups to prevail. This chapter focuses primarily on the actors within the case study SES—the Manga-o-tama Catchment Restoration Project. Using McGinnis and Ostrom's (2014) SESF second-tier variables relating to the first-tier actor variables, I have carefully identified which variables are relevant to this case study, the SES that it is positioned within and which elements relate to or may influence the findings of the research field work. The factors deemed important to understanding the contributions of the participants in terms of understanding who is an actor in the SES include: an acknowledgement of the histories and past experiences of the diverse actors; processes of leadership; an understanding of what social norms are at play and what social capital exists; recognition of what mental models, discourse or worldview influence actor participation; and the value of the environmental resources held by the diverse actor groups.

The second-tier variables mentioned above (see also Table 2) are explained in detail in this chapter, with findings grouped in key themes. Ultimately, this chapter identifies the partners in the Project and the reason behind their participation. This chapter explores how changes in mindset and worldview tell the story of a shifting discourse about environmental management and how motivations that centre on a sense of care for the environment and community run through the participant group. The chapter then explores the concept of working with diverse groups of people and discusses the inclusion of Indigenous perspectives, i.e., those of tangata whenua in this Aotearoa New Zealand context. Participants share some of their barriers and challenges to participation in the Project. By understanding what factors influence successful partnerships and participation in this case study, we can surmise what must be considered

when continuing or establishing collaborative restoration projects built upon multistakeholder partnerships with diverse actors.

Table 2
SESF Variables Explored in Chapter 5 in the Analysis of the Manga-o-tama Catchment Restoration Project (McGinnis & Ostrom, 2014, p. 5, as adapted from Ostrom, 2009)

FIRST-TIER VARIABLE	SECOND-TIER VARIABLES	CASE STUDY DESCRIPTION	KEY THEMES DISCUSSED IN THIS CHAPTER
ACTORS (A)	A1—Number of relevant actors	Eight stakeholder groups as identified in MEA The strong desire to include more actors from the SES into the official project (iwi, landowners, community members)	Partners in the Project (A1)
	A3—History or past experiences	Land confiscation from Māori in late 1800s Productivism discourse-driving intensive agriculture and wetland drainage Motivations for participation in current project: care, community, environmental improvement partnered with productivity Barriers for participation in current project: capacity, maintenance, funding	Working with tangata whenua (A1, A7) Changing mindsets and narratives (A5) Motivations and enabling factors (A3, A6, A7, A8)
	A5—Leadership/entrepreneurship	Landowner-driven Manga-o-tama Stream and Wetland Restoration Trust; Living Water Partnership	
	A6—Norms (trust-reciprocity)/social capital	Trust, respect and relationships at varying degrees between partners; value and trust of experts; a sense of community acts as a motivator	Diverse worldview (A7) Barriers and challenges (A3)
	A7—Knowledge of SES/mental models	Existing partnerships in Waipā Peat Lakes Accord. Knowledge (or lack of) about other actors and their roles Diversity in worldview between actors Working across land management jurisdiction	
	A8—Importance of resource (dependence)	Wāhi tapu (sacred places) for tangata whenua Sites of cultural significance and historical events	

5.1 Current Partners in the Manga-o-tama Catchment Restoration Project

True collaboration occurs when a partnership exists. Therefore, it is important to establish the difference between the terms ‘stakeholders’ and ‘partners’. While there may be multiple groups represented in a multistakeholder partnership, when a partnership is upheld and a working relationship is built the members shift from being stakeholders (with interest) to partners (with say). The definitions used in this thesis to distinguish the two terms are similar to those in the world of business. Stakeholders can influence or have an interest in a firm, business or activity, but they do not directly participate in it. A partner takes an active part in the firm or activity through stable relationships (Social Business Design, n.d.). This is an important clarification when considering the role of actors within social-ecological systems and the types of relationships established between these groups of actors.

In a catchment community, there are many stakeholders who may have an interest in and be affected by the actions of others, for example, the outcomes of the Manga-o-tama Catchment Restoration Project. The stakeholders who have agreed to a partnership become the ‘partners’. Henceforth, I refer to those who signed the Mana Enhancing Agreement (MEA) at the commencement of this project (listed on p.11) and those they formally represent. It was a formal requirement of the Waikato River Authority funding received for this project to quantify the partnership between actors in the form of a memorandum of understanding or similar; thus, the MEA emerged. The MEA “places the principle of mana at the centre of a living relationship to manage expectations, roles and responsibilities of the partners working together on achieving their purpose” (Patterson, 2022, p. 2). This MEA outlines a set of shared values, principles, a shared vision statement and outlines expectations and roles for each partner both in their involvement in the Project and as a partner and member of the collective.

While the initial partner group remains relatively small, as the Project is in the first year of its formal existence, the study participants highlighted the desire to see other stakeholders ‘come on board’ to both enhance the work that is achieved and also to ensure its longevity and

reach. The recent inclusion of four schools, by way of four planting days held on farms, was celebrated by several participants and was seen as an element that could continue to grow:

> *"I just think it's wonderful that the children were involved, because that's where you've got to start off. And if you can teach them good principles about looking after our environment, and the balance of our environment, I think is just so important." Marsha, farmer*

Environmental education is said to enhance connectedness, care and kinship toward the environment (Chan et al., 2020). To further bring forth a truly community-based approach, the participants expressed an appetite for more landowners to take part in the catchment's restoration, with the acknowledgement that "everyone will have something that can be done, even [sic] how minor" (Mike, landowner and MSWRT). Landowners and organisations alike highlighted additional, potential stakeholders such as the New Zealand Transport Association Waka Kotahi as possible partners, particularly due to their ability to create a visual realisation of wetland enhancement along the roadside, a move which may encourage the public to also take part in the Project.

5.2 Working with Tangata Whenua

The involvement of tangata whenua in the Project as signatories and therefore partners of the MEA is seen by those working in council and central government as a foundational partnership that must occur when considering ecological management and restoration, as described below by a District Council representative:

> *"So, our primary partnership ... our founding partnership is with tangata whenua ... that partnership is foundational to any restoration work or any restoration project, that goes without saying." Hannah, District Council*

Due to the Treaty of Waitangi, there exists legislative and organisational priority to partner with and include tangata whenua in decision-making processes for environmental management (Harmsworth et al., 2016). However, there remain many challenges to equitable involvement of tangata whenua in collaborative projects such as this one. Capacity limitations are identified as being a key barrier to participation. With several and often siloed individual government and other organisations requesting tangata whenua involvement, this

responsibility often falls on one person or a small group of people. This challenge is explained by the local Iwi Rūnanga Trust chairperson below:

> *"We don't have the resource or the people available to be able to respond to everything—Waikato River Authority, District Council, Regional Council .... We just can't sit on all of this. But I tend to respond in the role of the chairperson of the rūnanga and supported by a number of key kaumatua inside Ngāti Apakura and Hinetu because I think we need to, or we're not going to progress the things we want to progress in terms of aspirations." Barry, Iwi Rūnanga Trust Chairperson*

With limits to how many issues and projects tangata whenua can be involved in at any one time, the issue of capacity constraints must be addressed particularly when the need to create roles within organisations and projects is being considered (Sinner & Harmsworth, 2015). Such consideration would enable and empower greater, fairer and more manageable representation. Additionally, opportunities that streamline contributions for restoration planning by considering catchments more holistically were suggested as a potential enabler that would support tangata whenua in being involved in such projects in their current capacity.

Another poignant barrier for many iwi and hapū is the expectation or request for their involvement in a volunteer capacity. Barry highlighted the disparity between the payment of environmental consultants for their scientific expertise and tangata whenua for their cultural expertise, with the latter often receiving much lower or no remuneration for their contributions. Processes toward remunerating tangata whenua representatives for their time are being worked on by a number of organisations, including those interviewed in this study; however, remuneration has been widely identified as an area that requires further and rapid improvement in order to ensure equitable opportunities for participation.

At an organisational level, many of those interviewed regarding this project recognise the need to include other iwi and hapū from the area to better represent the voices of tangata whenua, and that to achieve this result, relationships must be built alongside effective participatory processes, both of which take time. At times, elements such as funding opportunity deadlines can mean that restoration planning is progressed without deep levels of

tangata whenua involvement if these relationships are not already preexisting, as we can see in the quote below:

> *"Putting together that funding application was that rushed, we didn't have the opportunity to engage in a way that was respectful, to say we were in a partnership." Dave, Living Water*

The progression of this project without exclusive iwi involvement is a reflection of Whyte's (2020) findings because the time it takes for quality relationships to be forged—often requiring multiple generations of building trust, consent and reciprocity—can be outpaced by the speed at which ecological action must be taken. A 'catch-22' exists where, if urgent action is not taken to resolve many ecological issues, we may reach ecological tipping points where people of all cultures may lose their connection with the environment due to irreversible species and ecosystem losses. Yet, if the rights and values of Indigenous peoples were put at the forefront of all restorative planning and the relationships between non-Indigenous and Indigenous peoples were prioritised with urgency, swifter culturally-appropriate and safe action would be able to be enacted from the outset (Whyte, 2020). Actions that demonstrate intentional and genuine efforts to prioritise Indigenous perspectives, by bringing tangata whenua into positions of power sharing and decision-making, are identified as being key to genuine partnerships, as indicated in the quote below:

> *"I think you got it right the first time, not just a stakeholder but a partner." Barry, Iwi Rūnanga Trust Chairperson*

The shift from being considered as a stakeholder with an opinion to a partner with equal power and decision-making ability requires a mindset and discursive shift for many people as participants or future participants in collaborative restoration. This viewpoint requires a mindset that truly recognises and values the position of Indigenous populations and the generations of locally grounded and experiential knowledge they bring.

5.3 Changing Mindsets and Narratives

Further shifting mindsets, where the intrinsic and relational value of the environment is now prioritised over the instrumental uses of it, was demonstrated by participants (Ministry for the Environment and Stats NZ, 2022). They shared clear considerations of how people are

positioned within the environment, rather than being controllers of it. The shifting mindset of farmers and landowners away from a productivity focus is captured in the quotes below:

> *"I think there's that old school mentality, that every blade of grass is money in the bank. Even Dad said to me, he's 87 ... he lays awake at night thinking what he could have done different on the farm." Mike, landowner and MSWRT representative*

> *"Even I've had a change. Thirty years ago, I wanted to buy a digger and put it all in grass and cows. Now I'm quite happy with it. I go down there and think well this is pretty neat to see all the plants growing and see the bird life has increased immensely." Aaron, farmer and MSWRT representative*

> *(When asked why?) "A bit of maturity, I think. I wanted to put every blade of grass inside an animal and put it in the bank. Where, as you mature, you think, there's a bit more. Let's leave the country a bit better than what we found it in. It's become quite holistic." Aaron, farmer and MSWRT representative*

The attitude and discursive change noted here are resulting in the more willing uptake of restorative action toward the environment as a part of modern farming practices. Additionally, the impending threat of climate change is a motivating factor toward behaviour change and more sustainable farming practices:

> *"There's been such an emphasis in the last especially 5 years on climate change. That's why things that we're doing now are actually important, in that bigger picture." Andrew, farmer*

Whether for reasons of climate change resilience or an increased feeling of stewardship and responsibility for the health of the environment, a discursive shift and changes to the value of nature was displayed by many participants. The historical, dominant discourse of productivism is reflective of people's perceiving nature for its instrumental value and is one where ecosystems are valued for the support they provide in terms of humans' needs and goals. According to this view, ecosystem services exist to provide benefit to individuals or society (Ministry for the Environment and Stats NZ, 2022; Pascual et al., 2017). The more future-focused worldview, as explained by the participants, reflects an increase in the

relational value of nature. The relational value of nature reflects a moral duty of care for the environment, a sense of responsibility to care for it as it supports us and a conscious recognition of the connection between people and nature (Chan et al., 2020; Ministry for the Environment and Stats NZ, 2022).

5.4 Motivations Toward Participation

Intergenerational connections to the land and legacies of those gone before are seen as motivating factors that encourage the ongoing participation in environmental restoration efforts. The following quote outlines how a commitment to the preservation of a kahikatea stand was passed down across generations:

> *"To take one further back, my family have farmed at Koromatua which is right next door ... four generations now and my father, actually years ago, sectioned off what is now Barrett Bush, I think that's one of the largest stands of kahikatea trees ... he did that in a time where it wasn't fashionable to do. And I think it is just that he truly believed that this had to be preserved. And I suppose this was so important for me to do what I did with the bush, to continue what he started." Marsha, farmer*

Marsha's quote explains her longstanding affiliation to environmental action and how this is a continuation of her father's legacy. At a farmer and landowner level, the motivations to participate in the Project and to take part in environmental restoration work are strongly linked to a connection to the land and a feeling of responsibility toward its health, as we can see in the words below:

> *"We're custodians of the land. And I think that's a very responsible position." Marsha, farmer*

> *"Our relationship with the land ... that's probably the biggest motivation." Aaron, farmer and MSWRT representative*

> *"I grew up in the King Country with bush. I think it brings it back ... it enhances ... its good for the community. It's good for people to see ... if you can see this happening, it probably brings a bit more ... not ownership, it's not passion but more*

of a link to the land, even if it's not yours, but if you are within that community … I think it just enriches the whole district" Mike, landowner and MSWRT representative

The words of the participants above demonstrate values of stewardship, responsibility and a sense of place which guide participation and action (Chapin et al., 2012). Therefore, providing partnership platforms, community networks and opportunities to share this ethos and thus capitalising on feelings of a sense of place and stewardship can motivate stakeholders to carry out environmentally focused actions and enact sustainable behaviour change (Chapin et al., 2012).

The final quote above from Mike revealed that his sense of connection to the environment and subsequent considerable involvement and personal time investment in the Project also stemmed from a passion for hunting. Through this sport, he has learned about how interconnected people, wildlife and the environment are in countries in Africa, where communities are so reliant on natural ecosystems. This sense of connection inspired his involvement in environmental projects in his local community. This recognition of the relational value of nature, with feelings of responsibility, custodianship and a deep relationship and link to the land is not unlike te ao Māori values or tikanga.

The tangata whenua representative I interviewed shared a deeply felt responsibility to protect the local environment through the whakapapa (kin relationships) with taonga species and the whenua (land), as well as through a recognition of the historical events and ways of living which represent an intergenerational relationship with the environment. This sense of responsibility was felt to be more than a motivation; rather, it was felt as a kin-like responsibility.

5.5 Considering Diverse Worldviews in Participation

The connection that the participants expressed in terms of the value of nature and a te ao Māori worldview is recognised in the scholarship and by the partners within this case study (Beau Paul, 2019; McAleer, 2021b; Ministry for the Environment and Stats NZ, 2022). This alignment is highlighted by the Fonterra representative's words below:

> *"It's (te ao Māori) actually quite aligned, farming the land well and doing things right ... it would be just the education piece and making sure everyone understood and didn't feel daunted by it or intimidated by it." Pia, Fonterra*

Here, Pia identifies both the potential for education to foster an awareness of the similarities and shared values among participants and that this education can be an opportunity to connect partners and build a shared understanding. By deliberately fostering these relational values, connections and motivations by way of cross-partner communication, relationship building and creating a shared vision and understanding, more collaborative partnerships may be cultivated (Chan et al., 2020). In doing so, negative perceptions or apprehension toward working with diverse stakeholders can be diminished, given that assumptions about other partners can result in negative outcomes and conflict.

A collaborative approach provides a means to address negative assumptions, particularly about the motivations of Māori in their involvement in projects on private land, as expressed by some of the participants. These assumptions were captured in the following quotes, which have been anonymised.

> *"It just worries me that this iwi involvement, this is our land, we paid for it." Participant*

> *"So as long as we're doing the right thing, and for the right reasons. But I don't believe we should be giving up any power (to Māori) ... and dictate what you can do on your land. Because if that happens, then you're not collaborating either." Participant*

Existing mindsets and understandings about the agenda or values of other partners can be a limiting factor toward participation if they are allowed to fester and influence the way in which participants are willing to work together. Additional concerns were shared that some partners were benefitting more than others, having greater access to the funded works, not providing as much personal investment as others were or going to financially benefit from developments that were allowed as a result of environmental restoration works. While outright conflict did not ensue for this particular project, the above quotes and concerns can be seen as potential points of conflict if a shared understanding is not fostered and

relationships of trust established. Identifying the diverse values and worldview of stakeholders can be challenging. However, processes which build relationships and where partners can articulate their own views while respecting those of others support the achievement of a shared understanding and can produce more sustainable outcomes (Pascual et al., 2017; Walpole et al., 2017).

5.6 Benefits of Collaboration and the Factors which Enable it

Participants opined that a constructive outcome of partnerships such as this one offered the opportunity for frank conversations to be had and ideas to be shared. These partnerships provided opportunities to explore ecological solutions that were traditionally discounted due to established historical narratives such as retirement of more farmland along waterway edges, and different approaches to improving lake water quality. It is well recognised in the scholarship on collaborative restoration that pooling perspectives, worldviews and knowledges can bring forth locally appropriate and responsive outcomes (Allen et al., 2011; Allen et al., 2019; Clarke & MacDonald, 2019; Collins et al., 2020). These kinds of participatory processes provide opportunities to manage ecosystems in ways that incorporate community and cultural knowledge with Western science (Deitch et al., 2021). Many of the participants perceived the bringing together of knowledge as a motivator and enabler, particularly as regards appreciation of expert advice:

> *"And the farm environment plan really set out how significant the area was. And I think it was just, right we have actually got this, we should do something to preserve it." Andrew, farmer*

> *"And they all love their farm and love their land and love their water that's going through it. So, they just want to have the right advice." Pia, Fonterra*

Several landowners said that with the help of expert advice, including advice from the Waikato Regional Council, Fonterra-led FEPlans and the Living Water Partnership, they had gained a better appreciation for the native biodiversity that existed on their farm and had acted as a motivation to do more to restore and protect these habitats. Additionally, expert advice that reassured landowners and managers that they are making the 'right decisions' and taking effective actions toward change was a motivating factor that encouraged participation in the Project and in more general environmental action.

One cannot be naive about how economic influence can act as a motivator. Such influence is to be expected where there are stakeholders who make a living and earn income from their involvement in the social-ecological system. Often, a degree of self-interest and personal benefit, rather than a predisposition to collaboration, can strongly encourage participation (Mitchell, 2007). In this setting, an identification of win-win situations that support both the environment and the financial prosperity of the landowner are highly valuable, as we can see from the words below (Jenkins, 2018):

> *"I was prepared to put in that investment because I think it adds to the farm ... it's an asset to the farm ... a growing asset." Aaron, farmer and MSWRT representative*

> *"You've got to look at the big picture, and to do a farm environment plan is a win-win situation. Because it makes us intensify our farm in areas which have been identified as high quality." Andrew, farmer*

Participants believed that the development of FEPs not only encouraged environmental protection practices, but also supported farmers to focus on the land that was most suitable and productive for their purpose and, as a result, to spare the unproductive and often wet and unstable lands that can have a disproportionately negative effect on the environment and waterways with nutrient loading and point source pollution. Additionally, the win-win opportunities that this project raises for public authorities were identified as key motivators for their participation:

> *"It could have sunk without a trace, but I shared it in the Peat Lakes forum because I felt that it's a huge moment. It's an opportunity to continue the Living Water work. It's an opportunity for Waipā to leverage collaborative funding and effort. Because even though Waipā District Council's responsible for the reserve, to the reserve boundaries, it's going to take a catchment effort to restore that lake; to address things like external nutrient load is going to be huge." Hannah, District Council*

> *"Sometimes the agencies don't have the mandate to work in areas ... but if there's a willingness for everyone to work together towards something that's bigger than them, and they're prepared to put aside the fact that they're not going to get all of the glory,*

but they'll get some by association, I think that is going to be what makes it a success ... and success needs to be bigger than any one organisation can do." Nina, NZLT

Typically, public land management can be siloed, with relevant authorities, for example Waipā District Council and Wairoto or the Department of Conservation and Lake Ruatuna, working on and supporting work within their mandated boundary. In this case, despite the crossover of multiple land managers, public and private alike, the opportunity for collaborative funding and efforts that enable work at a catchment scale were a motivating factor. Solving problems collectively, sharing resources and therefore doing more with less and widening the scope of typically narrow mandates is a well-recognised benefit of collaboration for those working in environmental management (Ananda & Proctor, 2013). For the partners in the Project that are involved through their organisations, another enabling factor was identified by all as their ability to harness working hours to be involved in a collaborative restoration project. Yet, in conjunction with this ability, the feeling of belonging to a collaborative group was felt by participants as a motivating factor and is described by a Fonterra representative below:

"We were already doing FEPs, so obviously we had the time and the ability to go along and talk to farmers and be part of the Project. But I guess there was a going back to that belonging, and that responsibility and ownership definitely felt like you wanted to give more. Whatever time you could give ... it wasn't just that it was in my role, it was that I wanted to do it because you felt like you belonged to that." Pia, Fonterra

In addition to allocating hours to this type of work, the connection to a community of actors also motivated actors who were involved in a professional capacity to have even greater involvement in the Project, where possible. The majority of the participants interviewed who were involved in a professional capacity also had a personal connection to the catchment. Several participants lived in or near the catchment and regularly utilised the lakes for recreational purposes; additionally, over their careers, many have carried out several years of restoration work in the studied area.

The participant from the Iwi Rūnanga Trust appreciated his employer's commitment to the Treaty of Waitangi, as this commitment allowed him flexibility in his role to attend hui (meetings) and represent his iwi in projects such as this one.

5.7 Barriers and Challenges to Participation

There were however barriers and challenges to participation. As shown below, Mike, a landowner in the catchment who also represents the Manga-o-tama Stream and Wetland Restoration Trust in a volunteer capacity, acknowledged that his ability to be involved was largely attributable to the fact he was self-employed and that involvement implies some personal cost.

> *"I suppose being self-employed, I can pick and choose. But then I started work at 4.30am this morning so I could have time to go and do that (attend a Project meeting). And I'll work tonight." Mike, landowner and MSWRT representative*

> *"If you add it actually up over time, it's a huge cost. Actually, probably best not to think about it. Even going to set up a bank account, you know, by the time you go to town, it's half a day you've lost. Going to the meetings, in the middle of the day, you've virtually lost a day's work and it adds up." Mike, landowner and MSWRT representative*

Mike's recognition of the personal investment that he makes as a volunteer is also reflective of the challenges that tangata whenua representatives often face, as discussed earlier. While these participants in this Project have worked hard to enable their own participation through flexible working, time is clearly a potential barrier to future participation. This is particularly true for those who are involved in a volunteer capacity and are not remunerated for their participation. These challenges are also recognised in scholarship with costs of meeting time and voluntary contributions among the many special considerations needed in the quest to achieve equitable participatory processes (Hemmati, 2002). Further organisational challenges to participation exist, particularly for tangata whenua, in having to deal with personnel turnover within partner organisations. Changes in personnel limit relationship building and create the need for early-stage participatory processes to be repeated:

"You've got to have those initial conversations as mana whenua with these groups, and you don't want to keep having to keep doing it ... I don't think others can understand how hard that is. We want to be able to tell our own story, but there's a lot of hurt that comes with it. Talking about the tūpuna [ancestors] *who were lost in Ngaroto, that's not easy. But at the same time, who do you get to do it? Because there isn't that understanding there." Barry, Iwi Rūnanga Trust Chairperson*

Building relationships that are based upon "high levels of trust, standards of consent and genuine expectations of reciprocity" can take many years or even generations, and the turnover of personnel in our modern institutional structures can inhibit this (Whyte, 2020, p.4). Barry, as quoted above, identified the hurt that is felt by tangata whenua when they are asked to relive the historical trauma and pain that comes with much of their history to different people and different agencies over again. Enduring relationships that are built up over time help to build social capital and can minimise the need for this important precursory knowledge to be shared over and over again (Allen et al., 2011; Collins et al., 2020; Harmsworth et al., 2016). The importance of relationship building and its role in collaborative restoration is explored in more depth in chapter 7. Other organisational challenges such as budget prioritisation and politics were identified as barriers to participation, as shared by Council representatives below:

"Each organisation is constrained and influenced in different ways. We all have; some are more political than others." Hannah, District Council

"I guess we have to pick our priority sites for the region." Nicola, Regional Council.

At times, the underlying political nature of government organisations and the fact that funding and priority work areas must be established as a part of a bigger picture and wider regional, district or national plan can be challenges to participation for government organisations, despite synergistic goals and values. This outside and organisational influence can at times limit the ability of organisations to commit to new projects, despite the willingness and enthusiasm of the on-the-ground employees. Alongside immediate participation sit long-term considerations toward ensuring the longevity of the gains made. Two farmers, Andrew and Marsha, identified concerns regarding the ongoing financial and

time costs involved in maintaining the gains of the case study project, for example ongoing weed control for newly established planting sites:

> *"The ongoing maintenance of the Project, that's the big question now, to tell the truth, because there's going to be a heck of a lot of work done this year ... it's year 3 and onwards that maintenance, which I see is not a problem, but an issue that's got to be thought through." Andrew, farmer*

> *"Why don't I put my resources and time and money into maintaining the protected bush or actually earning some money off my land. That's where I see there will be a bit of a problem." Marsha, farmer*

When progressing a new idea or project, one must also consider the long-term maintenance and sustainability of the actions and outcomes involved in it. The majority of the work that has taken place in year 1 of the Project has focused on the fencing and planting of riparian margins on farms within the catchment. This work, while celebrated by both landowners and partners alike for the benefits it will bring toward long-term water quality improvement, will require future maintenance, a concern which is echoed by landowners, as seen above. Marsha's comment that maintenance costs may lack priority over production costs for landowners in the future is a challenge that must be factored into project planning. Facilitating good communication in project planning, where individuals are given a voice to air concerns and take part in long-term decision-making results in stronger and more sustainable environmental action and partnerships (Allen et al., 2011; Allen et al., 2019).

5.8 Chapter Conclusion

The actors identified within this SES are those who established a formalised partnership upon signing the MEA. This is a memorandum of understanding-style agreement which sets out the expectations, roles and responsibilities of each partner as they work toward a shared purpose (Patterson, 2022). Each partner has entered this collaboration with diverse worldviews, histories, capabilities and expectations that influence their participation in the Project (Barrett et al., 2019). When considering the discursive context of the case study SES, we observe a shift from historical productivism discourse toward postproductivism where a relational value of nature influences increased action for environmental protection. This developing worldview relates strongly to te ao Māori values, and links between the

aspirations of tangata whenua and landowners can be easily drawn. It is therefore key that participatory processes encourage the sharing of aspirations and epistemologies between stakeholders by pooling local, cultural and Western scientific knowledge (Barrett et al., 2021). This pooling can bring partners together to create jointly developed comprehensive knowledge bases and actions that are most relevant to the needs of communities (Allen et al., 2001).

The factors which motivate, enable and challenge the participation of partners in collaborative catchment scale restoration projects as discussed in this chapter are summarised below in Table 3. We can see that tangible support in the form of expert advice and the identification of win-win situations that support both environmental restoration and more economic land use can enhance the participation of people in projects such as the case study. However, intangible motivators which emanate from a relational and intrinsic value toward the environment and connection to the land are also prominent (Chan et al., 2020; Ministry for the Environment and Stats NZ, 2022). Other motivators and enablers include the financial support for subsidised fencing and planting and, for organisations, the opportunity to pool knowledge resources and funding to achieve more with less outside of typically narrow mandates. Existing relationships are also identified as a major enabling factor, as goals, aspirations and workplans are shared through existing networks of communication such as the Waipā Peat Lakes and Wetlands Accord. Preexisting relationships between both landowners and Living Water and between organisations have enabled more rapid project progress, for example in putting together the Waikato River Authority Funding, project planning and establishing of the MEA. However, the lack of strong preexisting relationships with some iwi and hapū groups has led to barriers to their inclusion due to the urgency of funding and action deadlines.

The stakeholders-*cum*-partners of this collaborative project each face varying challenges or barriers as regards participation; these include organisational and personal capacity, funding, politics and the presence of opposing or diverse worldviews. Many of these factors can be addressed and mitigated through effective and purposeful participatory processes; however, these take time, effort, effective leadership and considerable budget allocation (Walpole et al., 2017). The forthcoming chapter will discuss how interactions and outcomes within the current Project are fostering participation and partnership. The chapter also explores which factors influence the formation of a shared understanding.

Table 3

Summary of Motivators, Enablers and Barriers as Tangible or Intangible Factors Described by Case Study Participants

Role in participation	*Tangible factor*	*Intangible factor*
Motivator	Financial support to carry out ecological restoration work	Personal connection to the environment
	Opportunities to pool funding and resources collaboratively between organisations	Discursive shift—productivism toward postproductivism and regional responsibility
	Visual improvements to the landscape	Histories—cultural and familial
	More efficient and economic land use practices that boost/maintain productivity (win-win)	Sense of community and belonging
	Expert advice to guide environmental action	An understanding of connected ecosystems and the role of people and the environment (relational value of nature)
Enabler	Expert advice to guide environmental action	
	Professional capacity to participate in-role	
	Being self-employed	
	Supportive employer (that respects Treaty of Waitangi and role of tangata whenua)	
	Funding and support—including ongoing support from historical projects and initiatives	
	Existing relationships	Existing relationships

Barrier	Organisational process limitations e.g., funding and funding processes, allocated hours to participate	Historical hurt and the need to continually relive this
	Obtaining funding	Opposing/diverse worldview (not a current barrier but potential challenge)
	Capacity of tangata whenua and adequate remuneration for participation	
	Personal cost of involvement for volunteers	
	Personnel turnover	Lost relationships due to personnel turnover

Chapter 6
Interactions and Outcomes within the Action Situation

In Ostrom's (2007, 2009) social-ecological systems framework, the interactions and outcomes that occur within the SES formulate the action situation. The Manga-o-tama Catchment Restoration Project is the action situation in this case study analysis and so is the first-tier variable of the SESF that guides this chapter. This action situation is the culmination of diverse actors, with varying worldviews, motivations and organisational or personal influences taking purposeful action toward a common goal—the environmental restoration of the lakes, streams and wetlands in a defined catchment area. The motivations and enablers that support the involvement of various stakeholders' joining in a partnership for ecological restoration are varied. However, a shared vision about the need for water quality improvement in the local area drives this collaboration. As action progresses and milestones such as fencing, planting and plant pest control are achieved a question remains about what factors can enhance the multistakeholder partnership and encourage further collective action in a fragmented landscape.

Table 4 below outlines the action situation second-tier variables identified as relevant in this case study. The information sharing and deliberation process variables of the SESF relate to the communication and organisational processes involved in establishing, coordinating and participating in the Manga-o-tama Project partnership. Chapter 5 explored the conflict variable in more detail, and these findings must be considered as we explore the Project partnership's journey toward a shared understanding. Investment activities, both in the partnership and the ecological restoration activities by way of funding and in-kind contributions, are considered and are often at the forefront of discussion in this field. Both the social performance and ecological performance measures feature as important variables for consideration in this case study project. Social and ecological impact are both considered as measures of success, with the vision of achieving long-term ecological change.

With the SESF guiding the organisation of the qualitative data gathered in field work and a focus on the variables that make up the case study action situation, this chapter explores how stakeholder interactions influence a partnership and the workings of a collaborative project. First, the importance of building effective working relationships built on trust and respect is acknowledged. The second section of this chapter turns to discussing how decisions are made

in this Project, reflecting some of the realities of a collaborative partnership with various landowners, managers and contributors. This section includes how funding influences who makes decisions and how the Project is led and coordinated. The concept of reaching a shared understanding is later examined to understand what levels of cohesion are felt between groups of actors. The final section of this chapter explores what impact a partnership such as that of the case-study project can have on environmental restoration and how change is measured in both the social and ecological sense.

Table 4

SESF Variables Explored in Chapter 6 in the Analysis of the Manga-o-tama Catchment Restoration Project (McGinnis & Ostrom, 2014, p. 5, Adapted from Ostrom, 2009)

FIRST-TIER VARIABLE	SECOND-TIER VARIABLES	CASE STUDY DESCRIPTION	KEY THEMES DISCUSSED IN THIS CHAPTER
ACTION SITUATIONS: INTERACTIONS (I) → OUTCOMES (O)	I2—Information sharing	Establishing a partnership Coordination and leadership Aspirations of stakeholders Prioritising Project work—the use of expert assessment Communications—emails and face-to-face meetings Waipā Peat Lakes and Wetlands Accord	Relationships (I2, I3) Decision-making (I2, I3, I4, I5) Cohesion and a shared understanding (I2, I3)
	I3—Deliberation processes	Shared decision-making processes Relationship building—trust and respect Aspirations of stakeholders	Impact and measuring change (O1, O2)
	I4—Conflicts	Participant capacity as a barrier to contributing Funding as a barrier Diverse worldview	
	I5—Investment activities	Funding Administration of funds by Living Water Stakeholder buy-in through personal financial investment	
	O1—Social performance measures (e.g., efficiency,	Measuring social change as a metric for the Projects' success Building of relationships between partners and organisations	

	equity, accountability, sustainability)		
	O2—Ecological performance measures (e.g., overharvested, resilience, biodiversity, sustainability)	Water quality monitoring systems installed and utilised within the catchment	

6.1 Relationships

Relationships between partners in a project are widely recognised as essential enabling factors for collaborative action in ecological restoration (Allen et al., 2001; Allen et al., 2011; Allen et al., 2019; Collins et al., 2020). During the interviews, all the participants acknowledged that there was not only a need for these, but also that the relationships between each stakeholder group in the current partnership depended on their knowledge and previous involvement (if any) with one another. The relationship between each partner in the agreement was varied; some groups were seemingly unaware of the role of others, while in some cases there were very limited interactions between parties, unless these had occurred prior to the inception of the Project. For example, farmers and landowners predominantly spoke about their connection to and involvement with the Living Water partnership, Fonterra or Waikato Regional Council. Similarly, the representative from Waipā District Council expressed a desire to connect with and meet the landowners, as their work in the Project had predominantly been with the other agencies that participate in the Waipā Peat Lakes Accord (DOC, Living Water, NZLCT, WRC, Iwi). The Living Water site lead who held relationships with all the partners was better able to comment on their involvement and understanding of the collective works of the wider catchment.

The building of working relationships is identified as a factor that can influence successful partnerships, with time being a major player in building trust (Allen et al., 2001; Allen et al., 2011; Walpole et al., 2017). It is widely acknowledged that the first steps towards effective participatory processes are those which build social capital and foster connections and

relationships between partners (Allen et al., 2001; Collins et al., 2020). As we can see from Nicola's words below, existing relationships and trust can help facilitate project actions:

> *"Sometimes that time that you spend doesn't pay off for several years. And then you build on the trust, between either mana whenua, or Fish and Game, or whoever it is. And to the point where you can ring up them and go, 'we want to do this project'. And 'oh, yeah, sure go ahead'. Whereas in the past it might have been 'oh, really, what are you …' you know? And then you throw your legislative stuff on top of it." Nicola, Regional Council*

Existing trust is an enabling factor known to increase the immediate effectiveness of collaborative partnerships (Walpole et al., 2017). In addition, someone who sits outside of traditional governing bodies can often build trust more easily where it does not yet exist, as such an outsider may have fewer preconceptions about perceived agendas (Deitch et al., 2021). The Regional Council representative demonstrates this point when talking about Nina (NZLT) and her role in an NGO:

> *"She's (Nina, NZLT) had funding to bring communities together, bring farmers together in this area … And so, because she doesn't represent anyone, she's independent of government. She's really good at that and I think really useful, well connected. And so, I've seen how she works on a number of projects like this one, and maybe even in this one as well, where they're nonthreatening to landowners." Nicola, Regional Council*

The words above highlight New Zealand Landcare Trust's role in bringing communities together. This politically neutral organisation which operates without a legislative agenda has been recognised as a positive influence that encourages landowner participation in restoration. Typically, participatory processes are systematically ingrained with the existence of power and politics (Barrett et al., 2021). A position of neutrality, with the ability to influence and support without a political or economic agenda, can therefore achieve a more 'bottom-up'-led collaboration, particularly when these actors are able to facilitate the sharing of power and ensure that dominant voices do not overpower those who are without typical authoritative statuses (Deitch et al., 2021).

6.2 Decision-making, Leadership and Funding

Various mechanisms for the funding of the different elements of restoration in the catchment are involved in this emerging project, and this funding largely determines what decisions are made and by whom. Many of these actions are either determined and managed in line with the areas and work that the individual partners' organisations administer or they are attributed to the Waikato River Authority funding that the collaborative partnership won at the end of 2021. Following the commitment of each individual organisation to work within the catchment, the collaborative WRA funding was then awarded to bolster a partnership and provide additional funds to complete more planned work. The words of Dave below help to explain how funding processes can be complex and how funds must be managed and administered by a receiving body:

> *"So as part of the agreement with WRA, we had to have a programme or project structure. So, I guess we took it upon ourselves to firstly make Living Water the project recipients of the funds … so it comes to DOC, but we're managing it on their behalf, and with that, in agreement with DOC I would be the project manager for the distribution and delivery of that work." Dave, Living Water*

Dave explains that a reality of funding applications is that a party must receive, administer and report upon the funds awarded. In this case, those responsibilities fall to DOC and the Living Water Partnership rather than to the Project collective. Additionally, funding is generally tagged to work outlined in an application, which must be completed as planned and reported on. The interview extract below highlights a key difference between the funding allocations from the WRA and the Living Water Partnership. A large element of the WRA focuses on ecological remedial actions, and other contributions from other parties are able to focus on more flexible tools that reflect more of an adaptive management style to ecological management:

> *"So, the WRA funding is focused primarily on the more remediation type things like tree work, weed work, planting, fencing. All that has to be done to a specified standard. Whereas the Living Water contribution within the catchment is more focused at applying our Living Water tools and solutions." Dave, Living Water*

Funding that is tagged to particular tasks and actions means that allocating time and financial contributions to participatory processes designed to build social and collaborative capital and relationships can prove difficult. This point is particularly true if these processes are not expressly accounted for in funding applications, because these must often be completed early on or within strict deadlines. This is a recognised barrier in collaborative partnerships, with funders often seeking clear figures for capital expenditure rather than engagement activities (Rollason et al., 2018). Fortunately for this Project, the contributions assigned to apply 'Living Water tools and solutions' allow for flexibility and more adaptive management approaches. These include social tools that aim to facilitate trust and understanding between partners, including fostering capability and capacity to support Māori to exercise kaitiakitanga ('guardianship' is the most simple translation of the concept) and codesign solutions for their catchments (Living Water, 2022b).

Two adaptive tools and solutions used by the Living Water Partnership that help to plan ecologically remedial and socially and culturally restorative actions include the use of a catchment condition survey and the development of an appropriate cultural health index. Catchment condition surveys carried out by consultants analyse the ecological state of the whole catchment and present the partnership with the 20 highest risk areas that can be used to prioritise remedial action. Catchment condition surveys allow for discussion and collaborative planning based on their recommendations. A cultural values assessment or development of a cultural health index is also a tabled action of the partnership and the Project's plan, reflecting the value put on mātauranga Māori and the cultural value of the catchment. A cultural health index is a tool which can be used to formally incorporate cultural perspectives and values into modern environmental management processes and to provide a means for monitoring these measures of cultural health (Ministry for the Environment, 2016). Robb (2014) identifies that cultural health indicators must be developed by tangata whenua to ensure the indicators are culturally and contextually appropriate. These indicators must be specific to the whenua (land) and ecosystems of the area so as to accurately represent the values and perspectives of tangata whenua (Robb, 2014).

Several participants acknowledged the appropriateness of shared decision-making processes that enable partners to contribute to the Project in ways that suit their role and ability. Despite the WRA funding's being administered by one body, these partners are able to further contribute where they see fit without additional administrative barriers being presented.

Nicola, who is a part of another collaborative restoration project, highlights administrative processes as barriers or challenges in collaborative environmental management when she says:

> *"I mean, he who funds does, essentially (in this project). So, I'm involved in the Lake Whangapē catchment restoration project. And that's really heavily governed. You know, we have a formal steering committee; we have a project group; you know, its funding from MFE through the Fresh Water Improvement Fund, WRA, DOC, Regional Council and Waikato-Tainui. And that's almost the other extreme in that (its) highly governed, it's hard. We've pooled our money; it's a hard up and down road … This feels very much that we're just working nicely together." Nicola, Regional Council*

Leadership and coordination are a component of the Project that is not clearly defined between different partner groups; this lack of definition was seen as a positive thing. While in some cases, Dave (Living Water) is recognised as the project manager or key driver of the Project, there are other partners that feel as though leadership and coordination are shared or that they lead their own portion of the Project without contention on the part of any other organisations. This approach reflects principles of adaptive management where decision-making and action can be adjusted to accommodate organisations' changing environmental, political and social conditions (Bos & Brown, 2015). The quotes below reflect the structured flexibility of the leadership of the Project, with Barry and Aaron indicating a shared sense of leadership and Hannah highlighting that, although Dave leads much of the current decision-making, other partners maintain their autonomy:

> *"As I haven't seen anything that signals that there is a single body or a single person that drives it. And that would be true with the Mana Enhancing document. Because if there was, if Dave drove it, or DOC drove it or Living Water drove it, then we wouldn't be part of it." Barry, Iwi Rūnanga Trust Chairperson*

> *"Who drives it? Probably John, Mike and I, I suppose. We tell Mike we need to have a meeting or he will tell us, it's sort of a three-way thing." Aaron, farmer and MSWRT representative*

"We all have autonomy over our own contributions. Dave, I guess is the ultimate decision maker. And he's driving the Project management but we all contribute, and those are the bits we can control … it's a mosaic of decisions." Hannah, Waipā District Council

While acknowledging the autonomy of the other partners and their contribution to project planning, the administration of the collaborative funds and coordination of the actions laid out in the WRA funding does appear to lie predominantly with Dave and the Living Water Partnership group. Although the aforementioned flexibility is valued, structure is clearly necessary in progressing and coordinating action. The participants in this study recognised the complexity of coordinating, engaging and focusing a group of diverse partners in a collaborative project. Below, two farmers capture this complexity from their perspectives:

"It's a role with a lot of hats on; one minute they're trying to seek funding; the next they're trying to keep other landowners happy in terms of a balancing act of when they can distribute; and then they've got to sort of source who are the best contractors who we should be using; and then you've got thrown in there iwi; you've got other legislation and compliance issues, so it's a bugger of a role to expect someone to do." Andrew, farmer

"I think the main role for coordinators is to keep communication lines open. And that can be feedback of how ours are looking, what we actually need to be done next. And maybe think of the next step, to keep the continuation." Marsha, farmer

"I think we've all got a bit of a part in driving it forward. But you definitely need functional structure to keep that vision, you know, tunnelled." Marsha, farmer

The literature also echoes the complex role that a project manager or leader has to perform in terms of being an effective communicator and facilitator. A leader of a collaborative project such as this one must ensure that, while staying focused, the partners' ideas are pooled and explored and that local ecological knowledge is incorporated (Collins et al., 2020; Deitch et al., 2021; Kilvington et al., 2011; Mitchell, 2007). In addition to the tasks noted above, the need for a balance between maintaining momentum and delivering ecological improvement actions and providing processes of shared decision-making are a challenge. Dave and

Nicola's words below not only highlight this challenge, but also that driving a real-time collaborative project is often an iterative and adaptive process:

> *"I'm happy to* [have] *anyone who wants to come on board and share the decision-making, I'd welcome that. But in the short term, you know, we're just moving on and making things happen." Dave, Living Water*

> *"Shared decision-making slows things down. But it can lead to some really cool outcomes." Nicola, Regional Council*

Adaptative resource management principles that work closely with communities and diverse partners do take more time, and they mean that action cannot always be planned for at the outset. An inability to plan fully at the outset of a project often slows down the achievement of restorative efforts (Allen et al., 2001), as indicated in the participants' words above. Consequently, a major question arises: At what point should environmental restoration be pushed ahead while partnerships are still in the developmental stages due to the dire nature of the ecological situation and impending drastic climatic change? These can be described as the ecological and relational tipping points, and they must be considered closely when time-limited funding is available and meeting particular milestones is expected (Whyte, 2020).

6.3 Cohesion and a Developing a Shared Understanding

When asked to rate the level of a shared understanding on a sliding scale of 1 and 10, the participants again made varied choices, with some ranking the level of cohesion strongly, while others recognised this as a point of weakness in the partnership. Table 5 first demonstrates these results; they are then explained below.

Table 5
Ranked Level of Shared Understanding in Manga-o-Tama Catchment Restoration Project

Level of shared understanding held in this project between partners			
Partner	**Current Score**	**Previous/Other Scores**	**Comment**
Andrew, farmer	10	/	It's been very collaborative.
Aaron, farmer & MSWRT	8-9	/	Obviously, we're all heading in the same direction.
Mike, landowner & MSWRT	7-8	/	/
Hannah, District Council	8.5	/	I haven't met the farmers … so it's very good within the organisations, I feel like I need to meet those farmers.
Dave, Living Water & DOC	6.5	8 (intent)	Everyone's got the shared vision or wants the same thing, but we kind of haven't connected up.
Nicola, Regional Council	6	8-9	I think we've got a shared understanding but maybe not the shared vision.
Pia, Fonterra	6	/	I think there's still a lot of work to do to connect the Project. Pockets of it are good; it needs to be connected better.
Barry, Iwi Rūnanga Trust	2.5-3	/	You'd have to do them in sections … Waipā's doing really well at Rotopiko and not so well at Ngāroto … at Ruatuna … we're doing pretty well. If I was maybe averaging it two and a half, three.

The results in Table 5 show a varied perspective as regards the degree of a shared understanding held within the partnership. Overall, there appears to be a well-established collective vision and common goal that is being worked towards by all stakeholders in the partnership, as also highlighted in the quotes below:

> *"I think they all align because we all want to, have a genuine desire to improve the health of the catchment. I think that's what drives everyone that's involved in this project. You wouldn't be in this work if you if you didn't genuinely want to make a difference. And I think that's the overarching alignment really, so. And that tends to*

bring different worldviews into line and provides a forum for us all to share those." Hannah, District Council

"I think all the farmers in that area there have got the same goals and aspirations. I don't think there's ... I think we're all on the same page with what we want ... I think we're all trying to leave this place better than when we started." Aaron, farmer and MSWRT representative

Despite a clear collective vision, with shared aspirational outcomes, there lies an apparent lack of connection between some partners. This gulf may be limiting the achievement of a true, shared understanding whereby action is coordinated and communicated across the catchment. Bittner and Leimeister (2013) define a shared understanding as

> … the ability to coordinate behaviours towards common goals or objectives … of multiple agents within a group … based on mutual knowledge, beliefs and assumptions … which may change through the course of the group work process due to various influence factors and impacts group work processes and outcomes. (p. 107)

The 'previous/other' score mentioned in Table 5 indicates either the perceived intention for or previous feelings about the partnership's shared understanding when compared to present feelings. This difference between perceptions is also recognised by Barry and observed in his divergent score. His comment reflects that, while some work areas within the catchment are seeing success in their collaborative management, there are others that are yet to reach this level of success.

This need to facilitate a wider shared understanding where mutual knowledge, beliefs and aspirations are coordinated over the entire catchment is recognised as a challenge and is described in the extract below:

"So, for whatever reason, despite the fact it's described in the Project plan, and described in the Mana Enhancement Agreement, people kind of revert back to their silo thinking about what they're involved with or their connections." Dave, Living Water

Dave's words demonstrate that while good work is being achieved, there are elements to the partnership that remain somewhat disjointed. Greater cohesion could be built to better recognise each partner's role as a sum of the many parts in their participation in work that contributes to the wider catchment.

The forum that currently promotes the most opportunities for sharing and cohesion is widely recognised as being the Waipā Peat Lakes and Wetlands Accord; however, not all partners, i.e., the landowners, are part of this accord and are thus 'left out of the loop'. Consequently, they are potentially subject to the more dominant political voices guiding the Project and other decisions surrounding environmental regulation and action in their region. This issue is recognised below. Moreover, within the case study's Project, current stakeholders offered solutions that by remedying this weakness could improve communication and thus a sense of cohesion:

> *"Because at the moment, we're a little bit fragmented; we've got the Peat Lakes Accord where many of the stakeholders or partners are present and we can talk about the Project, and then we've got the Manga-o-tama Trust, which we're meeting with next week, who aren't part of that group, and probably don't have visibility of how each of those parties sort of function or want to function. So yeah, so it probably will require a third meeting to bring those parties together to lay that out." Dave, Living Water*

> *"I think we've got to start saying, well, if we're going to meet, we got an agenda. And there's, we've got some written reports to say aye and we all agree and go away quite happy." Andrew, farmer*

The suggestion of more regular, but structured, meetings and opportunities to celebrate the achievements and successes of the collaborative partnership was echoed by several participants. The inaugural meeting in December 2020 was acknowledged by participants for the way it brought the diverse group of potential partners together in one space and supported the development of a shared vision and understanding through open dialogue. Further opportunities such as this that encourage increased interaction between the diverse partners could also help to improve the cohesion and shared understanding within the partnership. However, those leading participatory processes must also be aware that too much

communication can be a bad thing. Participants in this study highlighted that information can be lost or become buried, particularly emails when they are sent too frequently. Nicola, below, suggests a seemingly manageable and effective way to communicate the collective impact of the collaboration, by using a visual infographic style representation of achievements:

> *"But having a project like Manga-o-tama, we can take a step back and go, 'Wow, look at what we've done'. The Accord group before I started in this role put together a poster of everything they'd done in the Waipā; it had a map, it has … three kilometres of fencing at this lake, you know … and I thought that was really cool to take that bird's eye view. It's an amazing resource." Nicola, Regional Council*

Mike from the MSWRT had also created similar maps which visually represented the work that the community-led trust achieved prior to the inception of the case study project. Bringing together these two examples once more for the Project may help to create cohesion by visually demonstrating individual organisations' contributions to the catchment and their collective impact as a sum of many parts. Including opportunities to acknowledge achievement and celebrate successes are also components of participatory processes that encourage the continuation of multistakeholder partnerships (Marshall et al., 2010; Mitchell, 2007). These communication processes of formalised meetings and the sharing of restoration milestones also provide mechanisms for recording and measuring change and the impact of the Project, both in terms of the social and the ecological impact that is being created.

6.4 Impact and Measuring Change

In addition to the ecological milestones laid out in the Project plan and funding applications, another major metric for the success of this collaborative restoration project was said to be the social impact that the Project can have on the catchment community. The value of social impact and behaviour change was also celebrated for the incremental effect it can have on ecological outcomes. This idea is communicated in the words below from Dave:

> *(Lists people involved and who is working where) "that's sort of a metric if we can; it may not be necessarily trustees, but people who are signed up to be part of the programme, then that there will be a measure of bringing people on board." Dave, Living Water*

> *"I guess going into it as restoration, we're not naive enough to think that we're going to make change in 18 months, probably not going to make measurable change in 20 years, you know; it's all about a journey and a lot of the social, because it's all about bringing people on board to do the incremental change on their piece that will accumulate and hopefully give us something measurable at the end of it." Dave, Living Water*

Bringing more people into the Project, either through the formalised partnership or by just participating in the restoration work in the catchment, will help to measure the social reach of the Project alongside its ecological milestones. The cumulative, behaviour change aspirations of the Project are also reflected in the goal for 100% of Fonterra farmers and several non-Fonterra farms to have fully completed FEPs (Living Water, 2022a). Ecologically, new technology such as the two water monitoring stations installed in the catchment were celebrated for their value in providing a scientific metric and baseline data through which to measure the impact that the actions have had on water quality over time. This technology is recognised by one landowner participant as not only a way to measure progress, but also as a means to attract new participants to join the Project, as measures of progress and impact are so readily available. In short, people want to be a part of something that is successful.

As projects progress, flexibility and the ability to adapt to the constantly changing world is recognised as an important feature, both by the study participants and in the literature (Bos & Brown, 2015; Marshall et al., 2010). The words of the Regional Council representative quoted below highlight how the focus of the case study project has shifted several times, reflecting an adaptative management approach:

> *"And then there are some … changed approaches of what DOC, what the Fonterra project should deliver through Living Water. And so, it was the lakes; it was the catchment; it was the farmland; it was the lakes. And now it seems to go back to this more catchment approach. And so, I guess that's the evolving nature of restoration projects, I guess." Nicola, Regional Council*

Nicola's words here highlight the changing nature of restoration projects, as science and stakeholders influence the focus and scope of what action can and is being taken. This evolution reinforces the need for responsive adaptive management when working in complex

SESs. Deitch et al. (2021) explain that adaptive management principles lead to the development of long-term plans of action that are grounded in the current state of scientific knowledge and the priorities of the community and that, while challenging and frequently changing, the iterative nature of adaptive management can allow for increased community engagement (Deitch et al., 2021). Through these processes, project goals and foci are often redefined as those involved in learning-by-doing, and the needs of stakeholders are constructively responded to (Marshall et al., 2010; Miller & Schelhas, 2009).

6.5 Chapter Conclusion

The interactions and outcomes within this action situation, the Manga-o-tama Catchment Restoration Project, are dynamic and still developing as the Project progresses. These interactions are largely influenced by existing relationships which bring some, but rarely all, partners together in a shared space of working and knowing. It was found that partners within the Project had varying relationships with the other participants, with some groups such as the Living Water Partnership having strong connections to all groups and others knowing only two other groups and the work they are trying to achieve in the catchment. As also noted in the literature, the study participants recognised that the building of trust between partners is a core feature of effective collaborative relationships and also that capitalising on existing trust and relationships can bolster new collaborative ventures (Allen et al., 2011; Allen et al., 2019; Reo et al., 2017). Trust is also a factor that was recognised as important in the coordination and leadership of collaborative partnerships such as this one. The ability for project coordination and leadership to remain neutral and support the sharing of power, voice and decision-making was communicated as being important. Yet, it was recognised that the ability to achieve these results not only made leadership an obviously challenging role, but also required the wearing of many hats.

A challenging task in any cross-organisational partnership is the receiving, administration and reporting of funding. The Manga-o-tama Catchment Restoration Project is cofunded, with contributions outlined in the MEA. A large external funding source came from the WRA, and due to the application process, the Living Water Partnership group within the Project now act as the recipients and administrators of this fund. Consequently, they are effectively coordinating the actions tagged to this funding, along with their own contributions. Despite one participant group's having a major administrative role and contribution, the shared governance and decision-making which influenced how other participants contribute their

time and funds was acknowledged as being adaptive, responsive and appropriate for the organisations involved.

The ability to respond to the changing contexts and needs of the participants is an example of adaptive management. Adaptive management is recognised in this study and the scholarship as being a responsive way of working that fits well with both social and ecological learning (Deitch et al., 2021). This way of working includes adapting management approaches to the changing needs, aspirations, priorities and contributions of participants and the recognition that environmental knowledge is dynamic (Barrett et al., 2021). This learning-by-doing approach means that goal setting and the re-prioritisation of actions can occur in an iterative way so as to support the ongoing participation of stakeholders and to respond to learnings to date (Deitch et al., 2021; Miller & Schelhas, 2009).

The partners within the case study project hold a common vision and goal, yet the cohesion and communication between all stakeholder groups is limiting the advancement of a true, shared understanding of the collective. A shared understanding occurs when behaviours and actions are coordinated on the basis of mutual knowledge, beliefs and an understanding of the assumptions that are held within the group as a whole (Bittner & Leimeister, 2013). The missing link between the shared aspirations of the partners and the achievement of a truly shared understanding appears to be the need to better coordinate cross-partner communication and interactions beyond the existing relationships. Mechanisms to encourage more cross-partner communication such as in meetings or the celebration of progress across the wider catchment were recognised as ways that could improve cohesion and therefore a true, shared understanding.

The outcomes of the Project are geared toward both ecological and social impact measures. The ecological measures of success, which are reflective of the shared vision communicated by the partners of the Project, include improved water quality and increased indigenous biodiversity. New technology such as water monitoring stations and Western science techniques mean that progress toward these goals can be relatively easily tracked. However, the social impact is also highly valuable to the Project. Participants recognised that increased participation can also lead to an incremental and cumulative ecological impact due to behaviour change on top of the explicit ecological milestones laid out for the first 2 years of the Project.

The analysis of this case study project has provided real-time, grassroots examples of how collaboration is enacted in a developing multiagency and multistakeholder partnership in an Aotearoa New Zealand setting. It explicitly highlights those factors that influence these partnerships and in turn the ecological and social outcomes that can be achieved. The forthcoming, concluding chapter will position the findings from this case study analysis within the known scholarship and provide a summary of the key findings. In addition, it will provide suggestions for how the interactions and outcomes within this action situation, or other collaborative restoration action situations, may be improved in the future.

Chapter 7
Conclusion

This research has provided an in-depth analysis of a catchment scale collaborative ecological restoration project, the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project. To better understand the nature of the collaborative partnership, this study has examined the SES that the Project is nested within—the place where people and the environment meet. By understanding the complex social, political and cultural drivers and processes at play within SESs, we are better able to understand what factors influence ecological outcomes in a changing world. With a warming climate and the realised cumulative effects of generations of intensive land use practices, there is a clear need for proactive and collaborative efforts toward ecological restoration (Jenkins, 2018). This concluding chapter provides a summary of this thesis' research and its key findings. Then, as informed by the findings of this study, recommendations for supporting multistakeholder partnerships are shared. The theoretical framework utilised in this study, the SESF, is later reviewed and limitations of the study are also identified. This study not only provides a contribution to the knowledge about restoration-focused multistakeholder partnerships, but also identifies further research questions with potential to contribute to this field.

7.1 The Research and Key Findings

Multistakeholder partnerships have the potential to provide holistic and responsive approaches to environmental and resource management and have been increasingly encouraged to address the pressing issues of climatic change, biodiversity loss and the degradation of ecosystems (Allen et al., 2011; Barrett et al., 2021). These super wicked problems, fed by ongoing inaction and growth-driven processes, cannot be addressed by individual governments or organisations in isolation (Levin et al., 2012; Reo et al., 2017). Instead, they require the collaboration of multiple stakeholders to identify outcomes that are both socially and ecologically robust, where resources and knowledge bases can be pooled to respond to the needs of communities (Allen et al., 2011; Allen et al., 2019; Clarke & MacDonald, 2019; Collins et al., 2020).

To contribute to the scholarship in this field and with the aim of supporting future environmental management-focused multistakeholder partnerships, this study employed a

case study analysis to address the following questions: 1. What factors influence the formation of successful multistakeholder partnerships in collaborative catchment scale restoration in an Aotearoa New Zealand setting? 2. How can a shared understanding be facilitated to enhance a multistakeholder partnership in collaborative catchment scale restoration?

The case study, the Manga-o-tama Catchment Restoration Project, is a grassroots and real-time project that is centred within a complex SES which has experienced varied and intensive land use over many generations. The diverse partners of the Project include central and local government, private industry, tangata whenua, a community-led trust, local landowners and a nongovernment organisation. The common vision for the Project is to improve freshwater quality and to increase habitat and the presence of indigenous biodiversity within the catchment. To better understand the individual motivations, experiences and worldviews of the Project partners, I carried out nine semistructured interviews, with an additional two responses via email. Document analysis and observation were also used as qualitative research techniques while gathering empirical data for analysis.

Ostrom's (2007, 2009) SESF guided the organisation and analysis of the qualitative data gained through field work. This framework provided a diagnostic tool with clear first- and second-tier variables that highlighted the important working parts at play within the case study SES (Hinkel et al., 2014; McGinnis & Ostrom, 2014; Palomo & Hernández-Flores, 2019; Partelow, 2015). The thematic analysis that followed grouped key ideas into themes that revealed important social processes within the Project and the worldviews of those taking part. The SESF was also used to organise the findings and in turn structure of this thesis' chapters, which focused on governance and resources, the people, and the interactions that occur in the action situation of the Project SES.

The interviews revealed that a worldview which valued connection with the environment and the community greatly influenced participatory motivation. This perspective demonstrates a shift from the historically dominant productivism discourse to a more ecologically minded postproductivism. A sense of the relational value of the environment and cultural and familial histories therefore guided participatory environmental action. Tangible motivators and enablers of participation found in this study were similar to the findings of other SES and multistakeholder scholarship and reflected the value of pooling resources and knowledges,

including that of experts. The identification of win-win situations where productivity for farmers was maintained while reducing environmental degradation was also identified as a priority. It was acknowledged by many participants that a balance in managing the social and economic effects of ecological restoration and regulation was required. Trust developed through existing relationships played a large role in supporting the development of the Project partnership, and where these relationships did not exist, there was a lack of cohesion and understanding among partners.

Barriers to participation identified by participants included organisationally determined restraints, including available funding in an environment where there are many priorities for action. Landowners identified concerns about future maintenance costs. Generally, obtaining funding was highlighted as a challenging process, with application deadlines and reporting milestones influencing who could be involved and what outcomes were prioritised. Funding models which allowed for the development of social and cultural priorities alongside ecological outcomes were shown to be important in developing effective partnerships amongst the diverse stakeholder group.

Participatory processes that encourage shared governance and adaptive management were highly valued by the participants in this study, but there were challenges to realising this type of management. A potential challenge included differences of worldview, with assumptions about the aspirations and motivations of other parties in some cases leading to a hesitation and wariness about working with others. The personal cost of participation for those working in a volunteer capacity, including for tangata whenua, was also highlighted as a challenge. Tangata whenua involvement in this specific Project needed to be fitted in alongside responsibilities in many such projects and other organisational commitments, and there was inadequate resourcing or remuneration for this work for iwi members. Additionally, for tangata whenua and other volunteers this work was carried out on top of regular employment, making attendance at many meetings difficult. The need for tangata whenua to be recognised as a partner in environmental management, with a fair and equitable seat at the table rather than merely being a stakeholder, was strongly felt.

The leadership of the Project, which while largely administrated and coordinated by one person or stakeholder group, was identified as being conducive to a power sharing and shared decision-making approach. It was characterised by being an adaptive and responsive

approach to leadership; such leadership meant that partners, with the advice of consultants and experts, were able to maintain autonomy over their contributions and also influence ecological outcomes. This outcome was consistent with what we know about adaptive governance as a form of adaptive management and its potential to encourage iterative ecological and social learning and where project plans are able to be adjusted to accommodate the changing social, political, economic and environmental landscape of SESs (Angelstam et al., 2013; Bos & Brown, 2015; Deitch et al., 2021).

Finally, the Project participants shared a common vision and aspiration for catchment health. While some described this as the desire to see freshwater improvements, as reported by water monitoring stations or for the return of taonga species to the streams and lakes of the catchment, the underlying vision was the same. Synergies between this shared vision and te ao Māori values were also identified by participants. To better facilitate a shared understanding across all project partners, opportunities to increase the cohesion of the Project's partnership were identified. These included increasing communication between partners through more regular, structured meetings and celebrating the collective milestones of all partner organisations to better recognise the collective impact of the work across the wider catchment.

7.2 Recommendations

The benefits of multistakeholder partnerships in environmental management are widely expressed in the scholarship. This research has shown that participation in multistakeholder partnerships faces both enabling and challenging factors and that these influence the ecological and social outcomes of a project. Guided by the findings of this study, the following recommendations are suggested as ways to support multistakeholder partnerships in collaborative catchment scale restoration projects in an Aotearoa New Zealand setting:

- Project coordinators should allocate ample time and budget to carry out effective and ongoing participatory processes that build social and collaborative capital between stakeholders and which put people at the heart of projects (Allen et al., 2011; Bos & Brown, 2015; Collins et al., 2020). These social learning and engagement processes should foster relationships of trust and respect between all partners (Allen et al., 2011; Allen et al., 2019; Bos & Brown, 2015; Deitch et al., 2021; Kilvington & Allen, 2007; Reo et al., 2017; Watson, 2007). Ongoing dialogue between partners

that communicates perspectives, motivations, aspirations and planned actions can support the facilitation of a shared understanding (Allen et al., 2011).

- Funders should support the inclusion of participatory processes and adaptive management approaches by providing funding categories for activities such as stakeholder meetings, stakeholder mapping and other social learning processes.
- Preexisting relationships should not reduce the need for regular social learning opportunities, particularly if new partners are introduced.
- Collaborative forums for sharing project plans, successes and concerns such as the Waipā Peat Lakes and Wetlands Accord are highly valuable. Ensuring that all partners are included in such forums can ensure traditional dynamics of decision-making and power are not reinforced. Ensuring all partners remain connected to the project is important.
- There is a need to celebrate the successes and achievements of wider catchment restoration work and to communicate these between partners (Marshall et al., 2010; Mitchell, 2007). There are potential benefits for example from creating an infographic map of the cumulative restoration work achieved by all partners each year. Regular communication can improve cohesion.
- Efforts should be made to understand the communities that projects are situated in to better support the formation of partnerships (Bos & Brown, 2015). Attempts should be made to understand the motivations, worldviews and potential barriers for participation for stakeholder groups so that more purposeful participatory processes can be planned.
- Where possible, a sense of stewardship and connection to nature should be fostered, as these can support long-term ecological outcomes by enhancing social outcomes through long-term behaviour change (Chapin et al., 2012).
- Tangata whenua should be provided with an equitable seat at the table as partners and not just stakeholders. Tangata whenua should be remunerated for their cultural expertise in the same way as one would remunerate an environmental consultant for their scientific expertise. Mechanisms such as cultural values assessments or cultural health indexes are valuable tools that can measure ecosystem health and values beyond those used in Western science (Ministry for the Environment, 2016; Robb, 2014). If developed specific to each area and ecosystem by tangata whenua, they can be used to formally communicate Māori perspectives and monitor indicators of

cultural significance in projects such as the case study (Ministry for the Environment, 2016; Robb, 2014).

7.3 A Review of the Theoretical Framework

The theoretical framework used in this study was Ostrom's (2007, 2009) SESF. The SESF provided a useful observational frame and diagnostic tool that supported the organisation of the qualitative data gained during field work and a systematic approach to data analysis. The semistructured interviews carried out were between 25 minutes and 1.5 hours long, meaning that a lot of information was gained. The analysis of this data was supported by the SESF's preestablished structure that helped draw attention to which findings were most relevant to the research questions.

Moreover, by using the concepts and variables identified in the SESF, the findings of this research are able to be communicated in a way that contributes to the wider field of SES research (Schlager & Cox, 2018). The SESF provided a diagnostic framework that helped to identify the variables at play within the SES in terms of the governance arrangements, resources and resource use and the interactions of actors. This framework proved extremely valuable, as it became clear that each SES first-tier variable and the histories of these variables influence the formation of modern-day partnerships. Using the SESF to guide this study meant that a holistic understanding of the case was gained (Palomo & Hernández-Flores, 2019).

The SESF is designed to be used flexibly and contextually, and not all variables within the SESF need to be examined. Instead, it is suggested that researchers focus on those most appropriate for the system under study (Schlager & Cox, 2018). While this flexibility means that the SESF can be utilised across a broad range of SES contexts, it does highlight a risk that the focus of SES analysis could vary from case to case and between researchers.

A challenge I encountered in working with the SESF related to decision-making in assigning data to variables. In particular, this process involved maintaining a degree of separation between actors and their interactions within the action situation. My chosen method of organisation provided an effective structure for telling the story of the SES and the case study Project; however, an alternative structure may have also captured the interacting variables in a different light. Looking at variables in isolation helped provide snapshots of the working

parts of the SES; nonetheless, it is the interactions of all variables that culminate in the action situation and the outcomes observed.

Nevertheless, the SESF provided a highly useful analytical and organisational tool in this SES research and supported a more holistic understanding of this particular SES. It also provided a framework of shared language, concepts and variables that can be used in ongoing future research to support the comparison and communication between cases in this field (Hinkel et al., 2014; Schlager & Cox, 2018). Researchers must be aware of the individual licence to utilise different variables when working with different SES case studies, ensuring key variables and concepts overlap if carrying out comparison.

7.4 Limitations of the Research

A limitation of this research was that only the partners of the Project, those who had signed the MEA, were included as participants. This decision to limit the scope of the Project was required to make the study manageable with in a circumscribed timeframe. It would have been valuable to have included participants who attended the inaugural Project meeting prior to its formalised inception in order to gain perspectives about how they would have liked to have been involved and the challenges they faced in doing so. This is particularly true for the inclusion of other iwi groups, and would have helped gain a better understanding of how to support the involvement of tangata whenua in such projects.

As mentioned in an earlier footnote, this research does not include a detailed discussion about the histories and effect of land confiscation and colonisation within Aotearoa New Zealand after the arrival of European people. A full discussion of these significant events, and the ongoing hurt and effects that these have had, was outside of the scope and word limit of this thesis, although its inclusion would have provided valuable context.

Another limitation was that I did not attend a meeting or event where all partners were present. Instead, this study was a snapshot in time. Interviews were carried out during a time when partners had not met all together for an extended period. Future meetings that brought all partners together may influence the degree of felt shared understanding between partners, as may future communications about project plans. The limited timeframe did not allow for ongoing conversations as the Project progressed, including the transition toward the planned end date of the Project next year.

The use of deliberative processes or focus groups to 'truth' the findings with the contributing participants was originally planned as a part of the proposal of this research project. However, due to the limited timeframe of a 1-year master's thesis, it was not feasible to carry out these activities.

7.5 Further Research

This research was a snapshot of a new collaborative project nearing the end of the first of its 2 funded years. An interesting future research project would be a longitudinal study of this, or a similar, initiative that traced the process from inception to completion. Such research could track how decisions toward future maintenance and sustainable outcomes are made and the perspectives of partners throughout the process.

The case study project presented mechanisms of shared decision-making and governance, where each organisation maintained its own autonomy. Research into truly cogoverned multistakeholder partnerships where a formalised board of decision makers with completely pooled resources and finances would contribute further to this field. Comparing the decision-making and participatory processes between these two types of collaborations would also be an interesting study.

While touched on during the discussion about the Project partners' worldviews, this research did not carry out an in-depth discourse analysis. To further understand the discursive contexts within multistakeholder partnerships and the worldview of participants in these collaborative SES landscapes, a systematic and comprehensive discourse analysis would be a valuable study.

Finally, due to the timeframe and scope of this research, this study did not provide an in-depth analysis about how to facilitate the involvement of tangata whenua in collaborative restoration. Further research in this field, with studies that provide contributions to how cogovernance can be facilitated in ways that emanate consent, equity and the important place of Māori and the Indigenous people of Aotearoa New Zealand, would greatly support the knowledge in this field. This knowledge would also support the establishment of more effective multistakeholder partnerships and collaborations in environmental management.

7.6 Chapter Conclusion

This study contributes to the fields of multistakeholder partnerships and collaborative environmental management by examining a case study project based in Aotearoa New Zealand. Purposeful participatory processes were found to be critical in supporting successful multistakeholder partnerships in collaborative catchment scale restoration. These include processes that support adaptative management, social learning and the understanding and communication of each partners' aspirations and worldview. Participants in this study are largely motivated by a connection to the environment and a community, with a sense of stewardship or sense of place being key to supporting participation and ongoing behaviour change. The use of Ostrom's (2007, 2009) SESF helped to provide a holistic understanding of the SES within which the case study project was positioned. This analysis drew attention to the broader factors such as histories, governance, resources and the interactions of actors that have contributed to the development of a shared understanding between the diverse partners of the case. This research presents findings that can be used to inform future collaborative catchment scale restoration projects in an Aotearoa New Zealand context and beyond.

Collaborative approaches to land and water management are being increasingly used to address the urgent need to protect our valuable natural resources and ecosystems. More can be learned about how collaborative partnerships are enacted in the real world at local, national and international scales so as to inform ways in which we can redefine society's relationship with the environment (Chapin et al., 2012). Ultimately, we must work together in the quest to achieve holistic and sustainable future outcomes for both people and the planet.

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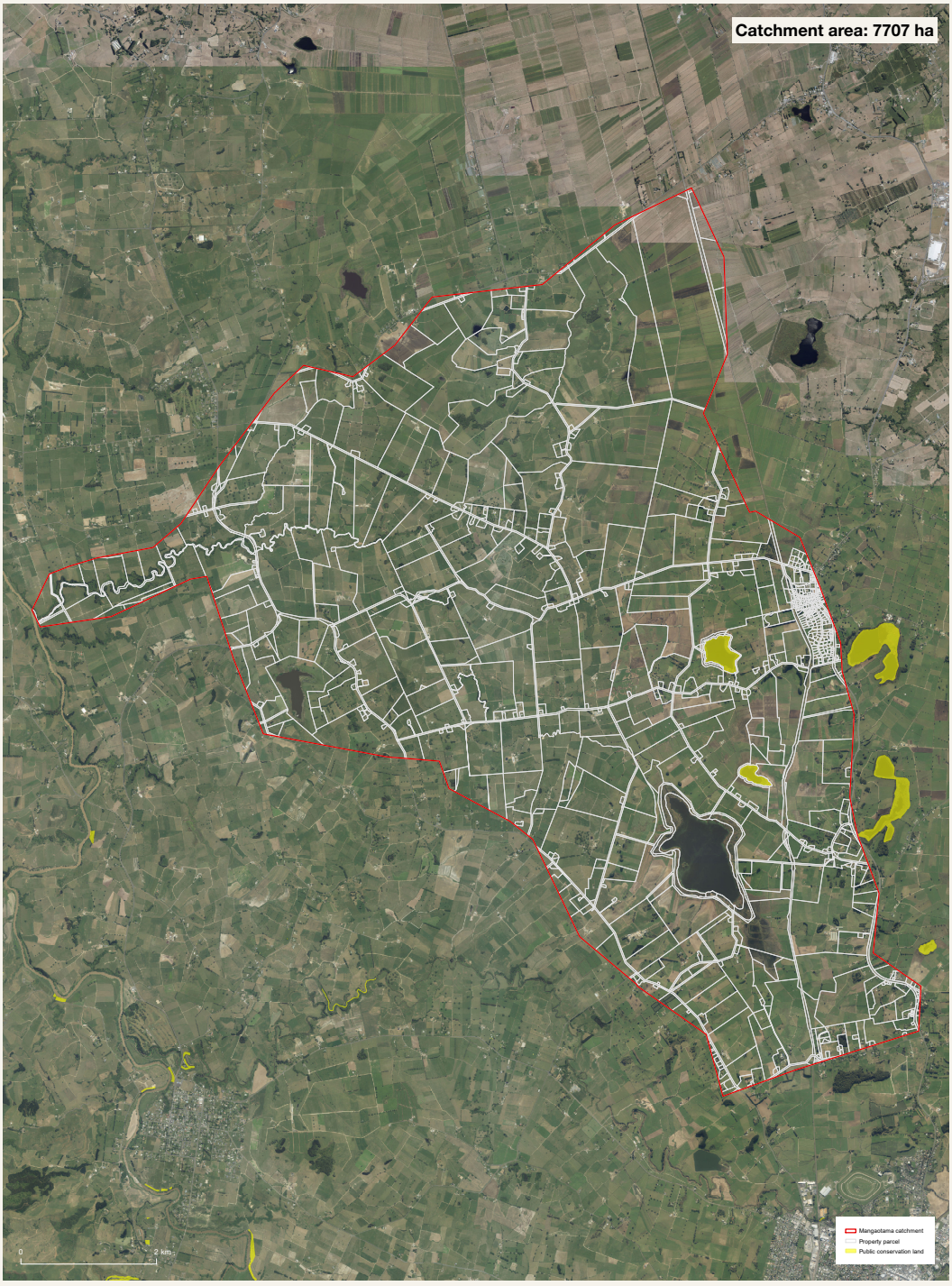
Appendices

Appendix A: Manga-o-tama Catchment Map

Map supplied with permission from Living Water project lead and the Department of Conservation.



Appendix B: Semistructured interview questions

Interview questions:

Connection:

- Tell me about the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River **Catchment** and your connection to it? *(Place not project).*
  Show a map, map connections and meaningful locations.
- What does a healthy catchment system (considering economic, cultural, social, ecological aspects) look like for you?

Participation:

- What is your involvement in the Manga-o-tama Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project (The Project)?
- How did you get involved in The Project?
- How connected do you feel to The Project?
- What enables you, or supports your participation in The Project? (Actions that you do, and actions of others).
- Do you see ways that you could be more involved in The Project?
  What are they?
  Are there barriers that exist to limit or stop this?

A shared understanding / partnership:

- Who else is involved in the Project?
- Who else could or should be involved in The Project?
- What extent do you think your voice is being heard, or guides meaningful action in The Project?
- During the December 2020 inaugural meeting for this anticipated project, it was asked of the group if they would consider working under principles of Mātauranga Māori, to which the answer was a resounding yes. What does this mean to you?
- What opinions or actions within this wider group align with your own?
- What opinions or actions are polarising or challenging for you?
- On a sliding scale (1-10) how much of a shared understanding / shared vision is held within the current state of The Project?

- Do you think you could see this improving in the future?
  What might that look like?

Processes:

- In your opinion, who drives this project?
- Who has decision-making power?
- Who funds and what needs funding? (large and small scale, personal costs to be involved and external costs that are needed)
- Who contributes to decisions?
- What are your thoughts on this? Does it work? Is more or less shared decision-making needed?

Appendix C: Participant Information Sheet

UNIVERSITY OF WAIKATO
DIVISION of ARTS, LAW, PSYCHOLOGY & SOCIAL SCIENCES
HUMAN ETHICS RESEARCH

RESEARCH INFORMATION SHEET

Research Title: Partnerships and participation in catchment scale restoration: A study of the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project.

My name is Tash Kingsford, I am a Master of Environment and Society student at the University of Waikato. For my thesis I am carrying out research about the Manga-o-tama, Ōhaupō Peat Lakes to Waipā River Catchment Restoration Project .

Through this research I hope to identify best practice for building processes of participation and engagement in collaborative catchment-scale restoration projects, and to understand how stakeholders are motivated and supported in being involved in a project such as this one.

I am seeking stakeholders in the Mangaotama Catchment Restoration Project to be participants in my study.

Participants will take part in a semi-structured interview to discuss their motivations, worldviews and involvement in the Mangaotama Catchment Restoration Project. Interviews will be approximately 45-60 minutes in length, and will be held at the participant's location of choice, e.g., their home or farm, workplace, or at a café or restaurant. Interviews can alternatively be held over the phone, or online using Zoom or a similar video-calling programme.

Participants will be required to sign a consent form indicating that they understand the details of the research and are happy to participate. Participants are welcomed to ask any questions about this research, its purpose or processes at any stage during their involvement.

Participants in this study have the right to:

i) Decline participation or withdraw from the study up to three weeks after interviews have taken place. To withdraw within this timeframe, please contact me via telephone or email
ii) Decline to answer any question, or only partially answer any question
iii) Terminate the interview at any stage
iv) Amend personal details or things they have said during the interview, up to three weeks after interviews have taken place

The identity of all participants will be anonymised using pseudonyms during the transcription stage of the data collection. The stakeholder group/organisation that the participant belongs to will be identified and used in the research findings. However, this can be generalised to the broader group e.g. council worker, hapū representative, if requested. Any photographs of land or restoration works will only be taken and published with the full permission of the participant concerned.

Interviews will be audio-recorded using my personal password protected cell phone (unless requested otherwise), and then transcribed and stored on my personal password protected laptop. Information shared during interviews, the recordings or transcripts will not be shared with any other stakeholder or participant. Contact details will not be shared between participants. All raw data collected in this study will remain confidential, with access only available to the researcher and their University of Waikato research supervisors. This information will be stored on a University of Waikato password-protected server and will be deleted from the server after five years, as is standard practice for academic research.

Upon completion of this research the findings will be published in a thesis which will be publicly available. A summary of the research findings will also be written up in a report and will be available upon request. The findings of this research may also be used to publish academic journal articles, conference papers and in other oral and written presentations. Please indicate on the consent form if you would like a copy of the research findings.

"This research project has been approved by the Human Research Ethics Committee of the Faculty of Arts and Social Sciences. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee, email alpss-ethics@waikato.ac.nz , postal address, Division of Arts, Law, Psychology and Social Sciences , University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240."

Please feel free to contact me via telephone or email with any questions regarding this study or your participation in it. I greatly appreciate your interest and time.

Tash Kingsford
MA Environment and Society Candidate
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Appendix D: Participant Interview Consent Form

UNIVERSITY OF WAIKATO

DIVISION of ARTS, LAW, PSYCHOLOGY & SOCIAL SCIENCES

PARTICIPANT INTERVIEW CONSENT FORM

[A completed copy of this form should be retained by both the researcher and the participant]

Name of person interviewed:_____

I have received a copy of the Information Sheet describing the research project. Any questions that I have, relating to the research, have been answered to my satisfaction. I understand that I can ask further questions about the research at any time during my participation and that I can withdraw my participation up to three weeks after the interview.

During the interview I understand that I do not have to answer questions unless I am happy to talk about the topic. I can stop the interview at any time and I can ask to have the recording device turned off at any time. I understand that I can decline the taking of any photographs of land and restoration works during my interview.

When I sign this consent form I will retain ownership of my interview, but I give consent for the researcher to use the interview for the purposes of the research outlined in the Information Sheet.
I understand that my personal identity will remain confidential in the presentation of the research findings. The identity of my organisation/stakeholder group will be used in the research findings unless indicated below.

Please complete the following checklist. Tick [✓] the appropriate box for each point.	YES	NO
I wish to receive a copy of the research findings		
I wish for my organisation/stakeholder group to not be named, instead generalised in the research findings		

Participant :		Researcher:	Tash Kingsford
Signature :		Signature:	
Date :		Date:	
Contact Details :		Contact Details:	