Cultivating health:
Community gardening as a public health intervention

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Manaaki whenua, manaaki tangata, haere whakamua
Care for the land, care for the people, go forward

“We must cultivate our garden”
(Voltaire in Candide, 1759)
Abstract

Internationally and locally, interest in community gardening is growing. It is being seen as part of the solution to address local, national and global challenges that range from poor nutrition and food insecurity to environmental sustainability and cultural revitalisation. Community gardening covers a variety of horticultural activities that either have a community component or are located on public land. In the New Zealand context, this includes allotments, communal gardening, marae gardens, shared gardening on private land and community-based initiatives to encourage home gardening. In the last few years, the New Zealand health sector has begun to identify gardening as a possible way to help reduce the high prevalence of avoidable chronic conditions among communities with poor health.

The research for this thesis found there is a diversity of community gardening initiatives in Auckland and Wellington. The data also identified revivals in Māori gardening and in home gardening integral to the current interest in community gardening in Aotearoa New Zealand. The research involved qualitative interviews with 35 community garden coordinators and stakeholders in the Auckland and Wellington regions and observations of community gardening working bees and meetings. It found that one of the purposes and benefits of community gardening initiatives is reconnecting people with how food is grown and produced. Interviewees highlighted that to be successful a community garden requires active community involvement, time, passion, a suitable site and adequate resources.

In the interviews, stakeholders and garden coordinators talked about a wide variety of health benefits for the individuals, households and whānau involved and also for the communities in which garden initiatives are located. These benefits covered all four domains of Te Whare Tapa Whā model of health. They included improved
nutrition and access to fruit and vegetables, increased physical activity, stronger communities and enhanced mental and spiritual health. Community gardening attracts a variety of people for a diversity of reasons and has the potential to create inclusive spaces.

There are, however, some areas for caution. Creating community gardens is not always easy. Their establishment and maintenance requires hard work, their success is not guaranteed and expectations may exceed what is possible. The findings also suggest that to change lifestyle risk factors, garden initiatives need to be part of a comprehensive approach that may include learning about how to prepare food or changing the local food environment. In addition, gardens will only be successful in reducing inequalities if attention is paid to factors such how resources are distributed, cultural competency and preferences, and ensuring effective community involvement.

These findings assist in building the picture of the potential of community gardening as a public health intervention. The analysis in this thesis suggests that community gardening can assist in improving health outcomes and addressing health inequalities through establishing links with food and food production, increasing availability of healthy food options and creating a place and activity focused on nutritious foods.
Preface

My initial interest in studying community gardens came from working in health policy. I noticed that international publications were suggesting community gardens as a potential solution in topics as broad as healthy urban environments, prisoner health and the health of rural communities. As a keen gardener who had rented an allotment on the Wellington Town Belt and been a member of a community garden in Doncaster, Melbourne, I was interested to find out more about how community gardening could improve the health of urban communities.

Preparing this thesis has been an enjoyable journey and I would like to thank the many people who made this possible. Firstly, I would like to acknowledge those who shared their ideas and experiences about community gardening, particularly the garden coordinators and stakeholders who agreed to be interviewed for the research. Their willingness to talk frankly about their experiences made it easy to gain a real sense of what is happening with community gardening in Auckland and Wellington. I want as well to thank my supervisors, Geoff Fougere and Robin Kearns, who adeptly guided me through the journey of developing the research and writing the thesis. Also, the New Zealand Centre for Sustainable Cities for providing a scholarship.

Thanks also to my family for their support and perseverance. Graham, Alice, Tom and Mike have been patient, encouraging and helped me in many practical ways. I have also appreciated the practical and technical support provided by friends and other family members. In particular, my thanks to Anne for being my wheels in Auckland, Louisa for transcribing some of the interviews and Katie for her assistance with proofreading.
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Chapter 1: Introduction: Community gardening as an emerging health intervention

The New Zealand health sector has begun to identify gardening as a community intervention to assist in reducing the impact of chronic conditions like diabetes and to improve nutrition outcomes for high-deprivation neighbourhoods. While the initial focus was on supporting the establishment of edible gardens in schools and early childhood centres, more recently the health sector has started supporting community-based garden projects.

The health sector is not the only stakeholder that has identified potential benefits from promoting gardening. Te Puni Kōkiri recently set up a Maara Kai (edible gardens) fund to assist the establishment of gardens in educational settings, on marae and in the community. At the same time, environmental groups and, in some regions, local authority politicians and staff are encouraging communities to use vacant land to grow edible gardens. Reasons include enhancing social networks, minimising organic waste, reducing dependency on peak oil, showcasing environmental sustainability, and promoting organic gardening and permaculture techniques.

In this context, community-based gardening initiatives are being seen as part of the solution to addressing local, national and global challenges that range from poor nutrition and food insecurity to environmental sustainability and cultural revitalisation. However, little is known about the nature and extent of community gardening in Aotearoa New Zealand and in particular it’s potential as a public health intervention.
The following introductory chapter provides the context for this thesis on community gardening and health. It begins by summarising the health challenges facing Aotearoa New Zealand, in particular persistent health inequalities and high rates of chronic conditions. This is followed by a brief description of the growth in interest in community gardening. The next section introduces the research question for the thesis and summarises the processes used to gather information to answer this question. The chapter ends with a description of the content of each chapter in the thesis.

1.1 Health challenges facing Aotearoa New Zealand
While many people in Aotearoa New Zealand live in good health, this is not the case for everyone. The health of Māori is poorer than that of non-Māori and while in recent decades there has been some narrowing of the difference between health outcomes for Māori and non-Māori, a sizable and unacceptable gap still persists. Pacific people, South Asians and those on low incomes also have poorer health than other New Zealanders. These inequalities are particularly evident in data for avoidable chronic conditions. Social and economic determinants of health mean that the lifestyle risk factors for these chronic conditions, such as poor nutrition and lack of physical activity, are unevenly spread across the population.

Ethnic and socio-economic inequalities in health outcomes are also evident in other developed countries. These inequalities impact not only on those with the poorest health but on the health of the whole population. A recent report from England has highlighted the costs, both economically and in terms of human health, of not addressing these inequalities. It also emphasised the need to tackle the determinants of health inequalities together with the factors contributing to climate change (Marmot, 2010).
In Aotearoa New Zealand, the high prevalence of chronic conditions has led the health sector to place increased emphasis on promoting physical activity and healthy food choices. At the same time, local research suggests that food security is becoming a greater problem for those living in low-income urban neighbourhoods (Woodham, 2009). In these neighbourhoods there tends to be an overabundance of “unhealthy” food outlets and a paucity of affordable healthy food options. In the current economic recession, the rising cost of food is making nutritious options even less accessible to people on low incomes.

Focus group research with Māori, Pacific and low-income people has identified a variety of approaches to improving access to healthy food options. These include increasing income, making healthy food more affordable and promoting community and individual gardens (Lanumata, Heta, Signal, Haretuku, & Corrigan, 2008; Woodham, 2009). Community groups have also identified gardening as a suitable nutrition and physical activity intervention when making applications for Healthy Eating Healthy Action (HEHA) funds and to agencies such as the Health Sponsorship Council. In 2008, Counties-Manukau District Health Board (DHB) set up a successful Gardens4Health project that now covers all three DHB regions in Auckland. However, few of the community garden initiatives supported by the health sector have been evaluated and the evidence for the health benefits of community gardening relies on a small range of overseas studies.

1.2 Growing interest in community gardening

While Aotearoa New Zealand has a strong tradition of home vegetable gardening, it is only recently that the opportunities presented by community gardening have begun to capture the imagination of local body politicians and health and social service agencies. Community gardening covers a variety of horticultural initiatives that either have a community component or that are located on public land. It
includes allotments, communal gardens, marae gardens, teaching gardens and shared gardening on private land.

Community gardening is usually seen as a relatively recent phenomenon in Aotearoa New Zealand when compared with its long and diverse history in some cities in North America and Europe. In reality, community gardening has an unrecognised and disjointed history in this country. The history of Māori communal gardening long pre-dates European settlement and the first allotments on urban public land may have been established as early as the 1860s. While a strong tradition of home vegetable gardening has existed in Aotearoa New Zealand, interest in “growing your own veges” began to decline once food became more accessible from supermarkets and households had less time for gardening. As a result, today’s younger generations have limited experience with growing and harvesting food.

In the last few decades, there has been renewed interest overseas in community gardening. This is partly due to concerns about food security and environmental sustainability. More recently, interest in community gardening has become apparent in Aotearoa New Zealand. The health sector, environmental groups, local authorities and Te Puni Kōkiri have identified that there are social, health, cultural and environmental gains to be made from supporting community gardening. Community groups have also seen the potential of using gardens to promote understanding between communities or to provide meaningful activities for unemployed youth or people with mental health conditions or impairments.

This has resulted in the situation where there is growing awareness of community gardening and an expectation that establishing a community garden will create health benefits for those involved and be good for the local community and for the environment. But is this expectation realistic? While there is a growing body of
international research on community gardening, there is little published literature about it in Aotearoa New Zealand and very limited local research on the impacts that community gardening could have on the health of communities.

Setting up and sustaining a community garden is not easy and most garden projects face a variety of challenges. Establishing a community garden requires passion, a suitable site, community involvement, knowledge and resources. It takes time to set up the project and for plants to grow and not all crops will be successful. This means there are many potential reasons why community garden initiatives could fail or not achieve their intended benefits.

The current research seeks to provide some insights about the nature of urban community gardening in Auckland and Wellington and to look at its potential to improve health outcomes and reduce health inequalities.

1.3  **Overview of research approach**

An initial search for publications located a variety of local newspaper and magazine articles, most of which extolled the virtues of community gardening or described a particular garden project. There were also a small number of postgraduate theses and dissertations by New Zealand students that looked at various aspects of community gardening and a few, mostly unpublished, evaluations of health-funded garden projects.

First impressions from early visits to garden sites were of a diversity of initiatives and differences between the types of projects that had been developed in Auckland and those set up in Wellington. One of the main instigators of community gardening in the Auckland region has been the Gardens4Health project established by Counties-Manukau DHB. Nothing of this scale appeared to exist in Wellington,
where gardens seemed to have been mostly set up by community groups or individuals in a neighbourhood.

The results of these initial investigations suggested that a study of community gardening and health would first require an understanding of the types of community gardening in Aotearoa New Zealand. To keep the research for the thesis manageable, it has focused only on community-based gardens and not included those set up in schools and early childhood centres. However, as the initial investigations had identified that community gardening was likely to have different characteristics in Auckland and Wellington, it was decided to include gardens from both regions.

Based on this scoping, the following research question was formulated:

*In what ways do community gardening initiatives in Auckland and Wellington have the potential to improve health outcomes and reduce health inequalities?*

The data for the research were gathered from interviews with stakeholders and community garden coordinators. A total of 27 interviews were undertaken with 35 participants. The stakeholders included local authority staff, health sector employees, staff from sustainability organisations and local authority politicians. The term “community garden coordinator” covered people in a range of leadership roles in community gardens. This included paid coordinators, coordinators who worked on a voluntary basis, garden mentors, members of garden steering groups and people who manage community garden programmes. Of the 35 interviewees, 16 were from Auckland and 19 from Wellington. Visits to garden sites and observations of community garden meetings and working bees supplemented the information gathered from the interviews.
The potential of community gardening as a public health intervention was assessed in several different ways. Firstly, interviewees’ views on the health benefits of community gardening were analysed using Te Whare Tapa Whā model of health (Ministry of Health). Also, the potential of community gardening to reduce health inequalities was considered using several health sector tools (Blas & Kurup, 2010; Ministry of Health, 2002b; Signal, Martin, Cram, & Robson, 2008). In addition, the information gathered about community gardening was assessed against the five prioritisation principles developed in the New Zealand health sector (National Advisory Committee on Health and Disability, 2004).

This is the first qualitative study in this country to examine a variety of community gardening initiatives and include interviews with both stakeholders and garden coordinators. This is also the first time research in Aotearoa New Zealand has asked such a diverse sample for their views about the health benefits of community gardening. The research also adds to international understanding about the potential for community gardening to improve health outcomes and reduce health inequalities.

1.4 Overview of thesis

The information gathered during this thesis is presented and analysed over seven chapters. The next two chapters summarise the literature relevant to the research question. Chapter 2 provides an overview of the literature on community gardening. It firstly briefly summarises the overseas history of community gardening, particularly in Europe, North America and Australia. This is followed by an overview of the published information on community gardening in Aotearoa New Zealand, beginning with a description of the critical role communal gardening played in Māori society prior to European colonisation. The rest of the chapter examines what is known about the early history of community gardening on public land in Auckland and Wellington and the recent growth in interest in community
gardening and what has been written locally about creating successful community gardens.

Chapter 3 explores the health context for this thesis. It begins by briefly describing the persistent health inequalities and high rates of avoidable chronic conditions in Aotearoa New Zealand. This is followed by consideration of what is needed to address these health challenges and discussion on four interconnected areas for action: protecting and promoting Māori health; addressing lifestyle risk factors; addressing the wider determinants of health; and addressing health inequalities. The section on health inequalities outlines their far-reaching impact. The rest of the chapter summarises the literature on the potential health benefits of community gardening. It highlights that the international literature has identified that community gardening has the potential to improve nutrition and access to fruit and vegetables, increase physical activity, strengthen communities and enhance mental and spiritual health. This is followed by a summary of the literature on community gardens as a public health intervention.

The process used to develop the research approach for the thesis is outlined in Chapter 4. The chapter firstly describes the identification of an appropriate research question. This is followed by discussion on the approaches used for data gathering and analysis.

Chapter 5, 6 and 7 present the findings of the current research. These findings are presented under three topics. Each chapter describes the information gathered on one of these topics and reflects on how this fits with existing New Zealand and overseas research.

The first of the three topics is the forms of community gardening in Auckland and Wellington. Chapter 5 begins with a description of the diversity of community
gardening initiatives identified in the research and then looks at some of the specific aspects of this: the role that community gardening plays in reconnecting people with food; the revival of Māori gardening; and the close relationship between community gardening and encouraging gardening at home. A case example of the Manukau Parks Teaching Gardens is provided to illustrate the link between community-based gardening initiatives and home vegetable gardens. Two ways of classifying community gardening initiatives are then suggested. The first considers the extent to which gardening is the purpose of an initiative. The second classification is based on the extent the community is involved in the establishment of an initiative. The chapter concludes with the research findings on who is involved in community gardening. This focuses particularly on community gardens creating inclusive places and involving low-income and ethnically diverse communities in gardening initiatives.

The second topic considered by this research is what resources are needed to set up and sustain a community garden. Chapter 6 describes the challenges community gardens face, including the implications of public and stakeholder expectations and experiences of vandalism and theft. This is followed by a description of the four components identified in the research as being essential to setting up and sustaining a community garden: active community involvement; passionate, practical and hardworking people; a suitable site; and time, knowledge and equipment. The case examples of Innermost Gardens in Wellington and Te Maara @ Cornwall in Porirua illustrate the challenges associated with accessing these resources. The chapter finishes with a summary of the information gathered about the costs and funding of community gardens.

Chapter 7 summarises the information gathered about the relationship between community gardening and health, which is the third topic of the research. This topic is looked at in four ways. First is an analysis of interviewees’ views about the
health benefits of community gardening. These benefits are presented using Te Whare Tapa Whā model of health. What the interviews revealed about health sector involvement in community gardening in Auckland and Wellington and the potential for partnerships between the health sector and other agencies form the second section. These findings are illustrated by the case example of the Gardens4Health project. The third section outlines what interviewees said about community gardening and Māori health. In the last section, the potential of community gardening to reduce health inequalities is considered using three health sector tools.

The final chapter reflects on the information gathered during the thesis and considers whether community gardening has the potential to improve health outcomes and reduce health inequalities. The chapter begins with a brief summary of what the research discovered about community gardening in Auckland and Wellington, and then assesses the findings using the five health sector prioritisation principles. This is followed by suggestions about what the next steps might be in terms of further research and changes to practices and policies in Aotearoa New Zealand. The final section considers how the current research adds to the local and international findings about community gardening.

Figure 1: Harvest from working bee, Te Maara @ Cornwall, Porirua
Chapter 2: The development of community gardening

This chapter describes the development of community gardening as outlined in the overseas and New Zealand literature. Community gardens have an extensive history overseas, particularly in North America and Europe. The history of community gardening in Aotearoa New Zealand is relatively unknown and mostly unpublished. The reasons for the establishment of past community garden initiatives provides a context for the rising interest in community gardening both in this country and overseas and some indication about the range of potential health and other benefits associated with community gardening.

The current growth in interest in community gardening both overseas and in Aotearoa New Zealand sets the scene for the health sector’s recent support for community gardening. It also provides some indications as to what is needed to set up successful community garden initiatives and the challenges that agencies need to be cognisant of how to support community gardening.

The chapter begins with a brief description of community gardening and then summarises its history overseas and in what is known about community gardening in Aotearoa New Zealand. Consideration is then given to why there has been resurgence in community gardening in the last few decades and also what the New Zealand literature says about the challenges associated with setting up and maintaining a community garden.

2.1 What is community gardening?
Community gardening covers a wide range of community-based horticultural activities. As the term suggests there are two important components – “community” and “gardening”. “Community” may mean that public land is used
or that the gardening is done as a group. “Gardening” can cover a range of types of horticulture including growing edible plants and revegetation programmes.

While “community” is an essential component to the community garden concept, there is a huge variation in what is meant by community and in who benefits from these gardens. Kurtz concludes after analysing aspects of three community gardens in Minneapolis in the USA that “variability among gardens is related to the localized ways in which the concepts of community and garden are imagined and embodied in the gardens themselves” (Kurtz, 2001, pg 668).

The variety within community garden arrangements is reflected in a classification developed by Stocker and Barnett after assessing gardens in Australia and overseas. They identified three types of community gardens based around how the plots are gardened and who benefits from the work. These were individual plots; communal plots for the benefit solely or largely of those who garden them; and collectively worked plots for the benefit of the broader community (Stocker & Barnett, 1998).

Community gardens are sites that enable a unique combination of activities and in an urban setting can bridge the separation from nature that often occurs in cities (Watson, 2006). One of the attractions of community gardening is the potential for multiple and inter-related benefits. Some of those identified in the New Zealand literature are waste minimisation (Fortune, 2010); an agricultural alternative to the current political economy (Pauling, 2001); encouraging environmental sustainability and changing patterns of consumption (Pauling, 2001; Watson, 2006); food security (Bowers, Carter, Gorton, et al., 2009; Phang, 2003); developing a sense of community (Phang, 2003; Watson, 2006); and providing green spaces and an active meeting and learning environment (Watson, 2006).
2.2 An international history of community gardening

“There is a long history of the use of community gardens to improve psychological well being and social relations, to facilitate healing and to increase supplies of fresh food” (Armstrong, 2000, pg 319).

Urban community gardening has an established history in the United Kingdom, the United States, Canada and parts of Europe. Many communities have depended, and some still depend, on community-based agriculture for their survival (Trotman & Spinola, 1994). English archaeological sites include small Celtic fields at Lands End where communal gardening was taking place around 100BC. In the sixteenth century AD, as a result of the enclosure of the common lands in England, allotments were established attached to tenant cottages and later established in many UK urban areas (Bartolomei, Corkery, Judd, & Thompson, 2003). In the United States, urban community gardens began in the late nineteenth century at a time of economic hardship (Hall, 1996).

Over the past 120 years, community gardening in Europe and North America has taken a variety of forms, and the level of interest has varied with changes in social and economic conditions. Table 1 summarises the long and diverse history of community gardening in the United Kingdom, Europe, the United States, Canada and Australia. It illustrates that the various waves of community garden philosophies and approaches (eg Victory gardens, leisure gardens) were not necessarily sequential but often co-existed in the same time period. The history of community gardening varies between countries and is linked to factors such as cultural attitudes toward land, gardening and growing; the costs and availability of food; and the history of gardening practices in the country (Trotman & Spinola, 1994).
<table>
<thead>
<tr>
<th>Place</th>
<th>History of community gardening</th>
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| United Kingdom | • Allotment gardening dates back to 100BC and the small Celtic fields of Lands End (Bartolomei, et al., 2003)  
• During the reign of Elizabeth I, the common lands were enclosed and commoners were compensated with “allotments” of land attached to tenant cottages (Bartolomei, et al., 2003)  
• Allotments began in villages and were later established in urban areas as a result of working class agitation for land. Most were in marginal areas, frequently difficult to cultivate and landlords did not provide resources like fencing and water (Crouch, 1989).  
• The 1908 Allotments Act consolidated requirements for local authorities to provide allotments if there was demand (Bartolomei, et al., 2003)  
• During the twentieth century, food production from allotments took prominence in the two world wars and allotments were promoted as the solution to depression-era unemployment (DeSilvey, 2003)  
• In the last 40 years more than half the allotments in Britain have been lost as food has been plentiful and affordable and other leisure activities became achievable (Watson, 2006)  
• Recently community gardens have linked up with the focus on urban sustainability and social inclusion (DeSilvey, 2003). |
| Europe      | • The European concept of community gardening began in the nineteenth century in Germany with establishment of children’s gardens (as part of playground development). These soon defaulted to family plots and became combined with summerhouse colonies and were places where urban dwellers could escape from stresses of rapid urbanisation. Later on they provided shelter to Jews and dissidents during World War II (Hall, 1996).  
• In other Western European countries, such as the Netherlands, allotment gardens also developed in response to rapid urbanisation and poverty during war. With a more affluent post-war society the focus moved to recreation and beautification (Hall, 1996)  
• In France, allotment holders were uprooted peasants with strong bonds to agricultural production. The allotments were part of a housing and social policy designed to influence the construction of a society into self-supporting family units. They received protection in law in 1941, but in the post-war period the demand for allotments reduced. Many sites were lost with urban expansion. In 1979 new sites were created through funding and legislation (Hall, 1996). |
| Canada      | Community gardening in Canada can be classified into six movements (some of which overlapped in time): (1) Railway gardens; (2) School gardens; (3) War gardens; (4) Vacant lot gardens; (5) Counter culture gardens; (6) Contributing to Community Open Space System (Hall, 1996). |
| **United States** | Community gardens began in the late nineteenth century to supplement the earnings of impoverished workers and new migrants during times of economic depression (Bartolomei, et al., 2003; Hall, 1996; Kurtz, 2001; Trotman & Spinola, 1994).
In the early 1900s, educational reformer and philosopher, John Dewey, promoted gardens in schools. By 1910 there were around 80,000 school gardens across the USA (Bartolomei, et al., 2003).
As in Europe, vegetable production in allotments was an important part of the US effort during World War I (Liberty Gardens) and provided subsistence during the 1930s depression (Armstrong, 2000; Kurtz, 2001).
During World War II, the Victory Gardens Program was established and approximately 40 percent of US fresh vegetables was produced from 20 million gardens (Armstrong 2000).
During the late 1960s and 1970s community gardens re-emerged in many US cities. This was a result of various environmental movements and increasing food prices (Watson, 2006).
The motivation for creating urban community gardens in the US can be traced back to the civil rights movement of the 1960s, and later to the massive urban development programs that resulted in vacant sites in inner city areas (Bartolomei, et al., 2003).
In a number of US cities, community gardens have been developed as a positive initiative for “de-industrialised” or “blight” urban neighbourhoods (Glover, 2003; Hanna & Oh, 2000; Sverson, 1990).
Almost every major US city has a network of active community gardens (Bartolomei, et al., 2003).
In some situations, for instance New York, gardeners and activists have fought to retain their community gardens by opposing proposals to use the land for other purposes (Bartolomei, et al., 2003; Kurtz, 2001; Schmelzkopf, 2002; Smith & Kurtz, 2003). |
| **Australia** | First urban Australian community garden was established in 1977 in Nunawading, Melbourne. Soon after this the Collingwood Children’s Farm and Brunswick City Farm were set up. These initiatives arose from increasing concern about environmental issues (Bartolomei, et al., 2003).
Community gardens have been established on grounds of public housing estates in Sydney and Melbourne through the assistance of state agencies (Bartolomei, et al., 2003).
By the early 2000s it is estimated were around 23 community gardens in the Sydney urban area (Bartolomei, et al., 2003).
By 2006, there were 46 community gardens around Melbourne city (Kingsley, Townsend & Henderson-Wilson, 2009).
Current interest in community gardens can be linked to factors such as the promotion of composting as a means of waste management and urban permaculture initiatives (Bartolomei, et al., 2003). |
In general, the community gardens of the late nineteenth and early to mid-twentieth centuries were set up for three main reasons: to provide vegetables in times of economic hardship or to communities without resources; for educational objectives (especially among children); and to promote leisure and beautification. It also appears that in most of these countries there was a period during the mid twentieth century when there was little focus on community gardening.

The literature suggests that interest in community gardening has been growing for several decades. The re-emergence of community gardens began first in the USA in response to increasing food prices and environmental awareness (Watson, 2006) and as a use for the growing number of vacant lots in inner city areas (Bartolomei, et al., 2003). It has been suggested that in the UK the rising popularity of community gardening in the 1970s and 1980s was mainly a response to rising food prices (Trotman & Spinola, 1994). In Australia, the establishment of the first community gardens in the late 1970s has been attributed to a range of contemporary factors including the growing environmental movement (Bartolomei, et al., 2003). The international history of community gardens shows global diffusion of the concept and approaches, but with adaptations that respond to local social, environmental and political scenes.

2.3  A history of community gardening in Aotearoa New Zealand
Community gardening is usually considered to be a relatively recent phenomenon in Aotearoa New Zealand, but it is not a new idea. Communal gardening has a long and sometimes overlooked history in Māori communities. In addition, the New Zealand gardening literature makes mention of citizens being able to lease allotments in towns, like Wellington, at some stage during the period between 1862 and 1882 (Raine, 1995). The history of community gardening on public land in Aotearoa New Zealand cities is unclear and yet to be written.
Growing your own “veges” has strong social and cultural roots in Aotearoa New Zealand. Gardening was an important survival skill for both Māori and early European settlers and gardening organisations and activities were set up very early in the nation’s colonial history. For instance, the Wellington Horticultural Society’s first exhibition of locally grown vegetables was held in January 1842 (Dawson, 2010). In subsequent decades, home gardening remained a popular form of recreation and an important source of fresh food. When state housing was introduced in the late 1930s, the sections were designed so that “every family, irrespective of income and social status, could have a garden” (Dawson, 2010, pg 230). The tenants were provided with hedge plants, fruit trees and a garden shed. According to Bee Dawson, “growing your own vegetables wasn’t just encouraged – it was little short of a moral obligation” (Dawson, 2010, pg 232). While gardening has remained a national pastime, by the 1960s the production of fruit and vegetables in backyard gardens was declining as the focus moved to growing decorative plants (Walker, 1995).

Now, in the early twenty-first century, interest in edible gardening is rising again due to a greater focus on organic produce, carbon footprints, food miles and concern about poor economic forecasts (Dawson, 2010). The 2007/08 Active New Zealand Survey found that gardening had the second highest participation rate of the sports and recreational activities studied and calculated that over the previous 12 months, 43.1% of all New Zealand adults had participated in gardening at least once (SPARC, 2009).

### 2.3.1 Māori gardening

Māori brought from the Pacific a rich agricultural tradition and a selection of edible crops. Five of these became the staple foods in Māori gardens – taro, kūmara (sweet potato), uwhi (yam), gourds and ti (the cabbage tree) (Bulmer, 1995). Gardening
was a collective activity. A large and organised labour input was required to make gardening successful. Tasks like clearing vegetation were carried out on a shared basis by multiple hapu, then smaller groups gardened specific parts of the new area (Furey, 2006).

Gardening was interconnected with other aspects of Te Ao Māori (the Māori world), including social and spiritual dimensions. Food was acknowledged as coming from atua (gods) and the tasks of gardening, including when to plant and harvest, were controlled and maintained through tikanga (customary practices), particularly the use of tapu (Bowers, et al., 2009; Dawson, 2010).

Auckland and Wellington are both sited on land where Māori gardens were located. The establishment of gardens on the Tāmaki isthmus (now the site of Auckland city) began around the thirteenth century. Forest and unwanted stones were cleared and gardens developed around the villages and towns located on the volcanic cones (Leach, 1984). A series of 24 stone-walled garden systems were scattered across this 150 square kilometre area (Bulmer, 1995). Further south, Māori gardens were located in a number of coastal areas around Te Ūpoko o te Ika a Māui (the southern tip of the North Island). Remains of garden terraces have been found by the Porirua Harbour, at Pauatahanui and at Makara (Leach, 1984). Te Aro Pā on the southern foreshore of Te Whanganui ā Tara (Wellington Harbour) had gardens and cultivations “located as far away as Owhiro Bay and Island Bay and also across the Te Aro Flat to Puke Ahu (Mount Cook) and Te Aro Valley” (Wellington Tenths Trust, n.d.).

Early European visitors to Aotearoa, and later on European settlers, brought with them a variety of edible plants. Māori gardeners quickly adopted some of these plants, in particularly potatoes and corn. They were used both for their own consumption and for trade. By 1850, Auckland was growing rapidly and most of its
vegetables came from Māori gardeners. Likewise early Wellington settlers purchased potatoes and other vegetables from Ngāti Toa (Leach, 1984).

The first half of the nineteenth century was a very successful time for Māori gardening. The plants brought by the Europeans expanded the edible foods available and provided a cash livelihood for Māori (Bulmer, 1995). Helen Leach suggests that Māori gardening might be “one of the few aspects of Māori life to profit from the arrival of the Europeans” (Leach, 1984, pg 109).

This situation changed in the later part of the nineteenth century. At this time, Māori market gardening faced strong competition from European gardeners; Māori lost increasing quantities of land through land sales and confiscation; European immigration accelerated; and pests, diseases and weeds brought from Europe reduced the productivity of Māori and European gardens (Bulmer, 1995). Te Aro Pā gardens remained for a while alongside the growing town of Port Nicholson (later renamed Wellington), but the population of the Pā declined with the introduction of European diseases and the pressures resulting from growing European settlement (Wellington Tenths Trust, n.d.). The Māori groups who were able to maintain flourishing gardens tended to be those who managed to maintain a physical or spiritual separation from European affairs (Leach, 1984).

Māori gardening knowledge and practices have continued but on a much more limited basis. During the course of the current research, several people have talked about their experiences of Māori gardening in rural areas. They have described the expectations that everyone would help with the garden and the vital role local gardens played in supplying local marae and hui. This scenario is also mentioned in a couple of articles about community gardening (Fox, 2009; Tanczos, 2009). However, Māori who migrated to urban areas in the mid-twentieth century tended to lose touch with this knowledge and skills.
By the end of the twentieth century a revival in Māori gardening was underway with many in younger generations keen to learn the old skills and knowledge (Bulmer, 1995). There has been a resurgence in establishing and re-vitalising marae gardens and in growing traditional varieties of Māori foods, like kūmara and plants for rongoa (Māori medicine) (Tanczos, 2009). In Hamilton, Te Parapara Garden has been established as a joint project between Te Maana Toopu o Kirikiriroa and the Hamilton City Council. This site includes records of traditional knowledge, interpretive material and ceremonies all focused on the heritage and tikanga associated with the local area (Hamilton Gardens, 2011). Also there is a thriving Māori organics movement, Te Waka Kai Ora.

In 2009, Te Puni Kōkiri (TPK) set up a Maara Kai funding programme which provides a grant of $2,000 to gardens in schools, on marae and set up by community groups. This programme comes under “Te Ao Māori” – one of four key outcomes for TPK. This outcome is described as “Māori succeeding as Māori, more secure, confident and expert in their own culture” (Te Puni Kōkiri, 2010).

2.3.2 Gardening on public land in Auckland and Wellington
Wellington has a history of allotments on public land that may date back as early as the 1860s (Raine, 1995). Later during the depression of the late 1920s and early 1930s, eight hundred allotments were established on the city’s Town Belt, but by 1934 only 300 of these were “being used and properly maintained” (Galloway, 1976). Then during World War II there was a resurgence in the use of public land for growing vegetables. This was under the banner of the “Dig for Victory” campaign, which also encouraged citizens to dig up their own sections and plant vegetables. In 1939 two hundred plots were designated on the Town Belt and there were 500 further plots in reserves around the city. Demonstration gardens to teach citizens how to grow vegetables were placed in the Botanic Gardens, Kent Terrace
and in front of the Star Boating Club (Galloway, 1976). At the same time, residents in the Hutt Valley were encouraged to make spare land available to other citizens who required land to grow vegetables (Hutt Gardens Co-operative System, 1943). It appears that during this period public land in Auckland was not used for allotments to the same extent. However, three acres of Potters Park were ploughed up and planted in tomatoes, beans, potatoes and pumpkins to raise money for the war purposes fund (Dawson, 2010).

After World War II, a small number of allotments remained on Wellington Town Belt. A map of the site of Alexander Road in 1977 shows 40 allotments sites (Wellington City Corporation Parks and Reserves Department, 1977). In the late 1980s the lease arrangements for these allotments were discontinued.¹ Around the time that the allotments off Alexander Road were closed, a new community garden was set up on Town Belt land in Tenara Park above Aro Valley. Initial attempts to set up this garden in 1985 were unsuccessful and it was finally established in 1989 by Nga Taurahere ki Poneke (Jordan, 1995). The focus of the allotments on this site was to enable low-income households, particularly tenants from the local council flats, to grow vegetables.

### 2.4 Recent interest in community gardening
In the past three decades there has been growing interest in establishing community-based gardening initiatives in both Auckland and Wellington. In the Auckland region, community gardens were established on sites in Newton, Devonport, Herne Bay, Mangere and Otara during the 1980s and 1990s. Kelmarna City Organic Gardens began in Herne Bay in 1982 as a work skills programme to teach basic organic horticulture (Little, 2010). Today, Kelmarna is a certified organic garden and the site of a vocational therapy programme run by the Framework Trust

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¹ Along with two other households, my flat leased two allotments on this site in the mid to late 1980s. Initially most of the 40 allotments were occupied but by the end of the 1980s the council had closed the gardens.
for people with mental illness. In the early 1990s, vacant land in Mangere was
developed into a garden for unemployed people to grow vegetables and in Otara
offenders doing community service grew vegetables which were distributed to
those in need by Runanga a Iwi o Otara (Trotman & Spinola, 1994). In central city
Newton, the St Benedicts Community Garden was established in Basque Reserve in
1993. However, in 2000 the local community board decided to remove it following
discontent from some of the neighbours who were not happy about the garden’s
messy look (Little, 2010; Murnane, 2000). The controversy around Basque Park led
to the Auckland City Council establishing a community gardens policy. This policy
describes the context in which community gardens are appropriate, specifies the
process for applying to establish a garden on Auckland City Council land, and
details the responsibilities of tenants (Auckland City Council, 2002).

In Wellington, community gardens initiatives continued to be slowly developed
during the 1990s. Operation Green Thumb was established in 1994 with the aim of
setting up “new gardens for those people who have no land of their own so they can
grow low-cost food” (Operation Green Thumb). Through Operation Green Thumb,
allotments have been set up and supported in Wellington City Council housing
sites. As well, public gardens have been established in both Wellington and the
Hutt Valley, including a site in Kilbirnie. There are currently 120 plots on nine sites
(Operation Green Thumb). Also in the mid-1990s in Upper Hutt, periodic detention
workers were growing vegetables on land owned by a charitable trust and the
produce was donated to the food bank and families in need (Trotman & Spinola,
1994).

In the past decade, a variety of community gardening initiatives have been
established in the Wellington region, including Common Ground in Island Bay, Te
Maara @ Cornwall in Porirua, Innermost Gardens’ sites in Newtown and Mount
Victoria, Brooklyn Community Orchard. Wellington City Council published its
community garden guidelines in 2009. These set out the council’s role in community gardens and detail the application process for organisations that want to establish a community garden on council land. In the Hutt Valley, Moera Community Garden is one of 30 community gardens established recently by the local Transition Towns group (Catherall, 2010).

Several reasons have been suggested as to why this growth in community gardens has occurred. Firstly, changes in urban design and living arrangements mean that quarter-acre sections with room for large home gardens are no longer the reality and many urban dwellers now have “pocket handkerchief” backyards and virtually no front yard (Barnett, 1995; Pauling, 2001). In her survey of 72 community gardeners in the South Island, Caroline Watson found that 30% of respondents did not have land available for a garden where they lived. However, only 7% mentioned that lack of space for vegetable gardening among their reasons for getting involved in a community garden. Other reasons given included social interaction; interest in and learning about gardening; health and wellbeing; and concern about the environment (Watson, 2006).

Economic factors may also have encouraged the establishment of urban community gardens. Jonathon Pauling suggests that the social impacts of the neo-liberal reforms of the late 1980s and early 1990s played a part in the development of community gardens (Pauling, 2001). Another reason suggested in the New Zealand literature is that establishing a home garden can be expensive and requires knowledge and skills. Community gardens provide an alternative way of accessing fresh fruit and vegetables and knowledge about how to garden (Bowers, et al., 2009).

It appears that community gardening initiatives appeal to a wide variety of people in Aotearoa New Zealand. In Caroline Watson’s survey of community gardeners
the respondents included both males and females and a range of ages. Just over 70% of the gardeners were European, 22% were Māori and the others came from a variety of countries and ethnicities. Forty percent of the respondents indicated that they had a disability or health problem (Watson, 2006). Magazine and media articles describe community gardens that involve Māori communities, school children, university students and staff, older people and people with disabilities (Fox, 2009; Hooper, 2003; Jordan, 1995; Rock, 2003; Tanczos, 2009).

As well as allotments and communal gardens, other forms of community gardening are emerging in New Zealand towns and cities, like shared gardening (where a resident makes land available for others to set up a garden). In Maraenui, Napier, an informal “kapai kai” project involved a dozen households who dug up their backyards to grow food for their own use and to share with the community (Fox, 2009). At the “extreme end of community gardening” is guerrilla gardening (Little, 2010). This is when residents unofficially garden and plant public spaces, such as grass verges, reserve areas and traffic islands.

In the last few years, the health sector has started to support community gardens. In many cases this has involved utilising HEHA (Healthy Easting Healthy Action) funding (Bridge, 2009). Garden projects have also been funded through the Health Sponsorship Council’s Feeding Our Futures initiative (Health Sponsorship Council). The Grab a Bite That’s Right programme set up in the Whanganui region to support urban and rural communities to develop nutrition and physical activity programmes included a community garden (Batten, 2008; Pirikahu, 2008). A community garden was also set up by the Porirua Union and Community Health Service on a vacant site next door to the service (“Promoting health through gardening,” 2003). In Canterbury, the District Health Board has made land available for a community garden on the Lincoln Maternity Hospital grounds (Canterbury District Health Board, 2008).
2.5 Creating a successful community garden

A New Zealand magazine article suggested that three key elements to developing a successful community garden were “commitment of local leadership and staffing; involvement of volunteers and community partners and availability of skill-building opportunities for participants” (Fortune, 2010). The findings of Caroline Watson’s survey of community gardens and local authorities confirmed these elements. In addition, she identified the importance of dedicated people and of having good relationships with stakeholders and partners, such as community groups, local government and local businesses (Watson, 2006).

Ivy Phang also identified the importance of community involvement in her study but focused more on the practical requirements of setting up a garden, such as site selection, acquisition and layout, and equipment. She highlighted that it is important to be clear what is meant by “success” and defined three aspects of success. The first is environmental success, which she defines as stewardship of the natural environment. Secondly, she identifies economic success, which is described in terms food security, especially for low-income people, and developing local food production. The third aspect she identifies is social and cultural success, which is seen in terms of enhancing urban living (Phang, 2003).

In regards to economic success, a few US studies have examined the potential cost savings of growing vegetables in a community garden. Armstrong cited a study by Hlubik that estimated savings of between $50 and $250 per season for community gardeners (Armstrong, 2000). A study of community gardens in Newark, New Jersey calculated the input costs per garden to be $25 and the average garden saving as $475 per annum (Patel, 1991). Blair at al. carried out a study at around the same time, and found a lower level of return. The researchers found that the net value of garden plots was $113 per annum and noted that these figures were consistent with
the values calculated from the US National Gardening Association’s survey of community gardening, which was published in 1985 (Blair, Giesecke, & Sherman, 1991). More recently, a 2008 survey of home and community gardens by the US National Gardening Association calculated that on average a 600 square foot garden will produce worth $600 per annum for which the expenses will be $70, giving a net return of $530 per annum (National Gardening Association, 2009).

In her survey of community gardeners in the South Island, Caroline Watson asked them to estimate how much they saved each month as a result of being part of a community garden. Of the 57 respondents who answered this question, all but one considered that they saved money. Fifty-eight percent (33 participants) estimated that they saved $10 or less a month and seven estimated that is was over $30 a month. Their estimates did not include the cost of running the garden sites and some garden coordinators indicated that they were unable to rely on funding to cover all their costs and so had tried a variety of ways to become more self-sufficient, such as selling surplus vegetables to the public and running educational workshops (Watson, 2006).

The literature also describes some of the challenges associated with establishing and maintaining community gardens. These include high turnovers in membership and different perspectives on how to do things, which can jeopardise the smooth functioning or viability of a garden (Phang, 2003). Caroline Watson also concluded that getting sufficient people involved in the garden and vandalism and theft were common problems experienced by community gardens (Watson, 2006). Vandalism was also a problem for the community garden set up in Whanganui as part of the “Grab a Bite That’s Right” initiative (Pirikahu, 2008).
2.6 Summary

The literature discussed in this chapter provides the historical context for considering the current growth in interest in community gardening and what makes a garden project successful. The literature reveals that community gardening is not a new concept in Aotearoa New Zealand. In the past, both Māori gardening and urban allotments have played an important role in feeding families and communities. Interlinked with this is a strong social and cultural tradition of home gardening.

The local and overseas literature also show that community gardens have been more prevalent at times when economic conditions are difficult. In times of economic hardship like war and depression they have been a way of providing locally grown fresh vegetables in overseas cities and also in Wellington. While economic conditions may be one of the factors encouraging the current growth in community gardening, changes in urban settlement, interest in food and nutrition and concern about the environment are also contributing to this growth. The New Zealand health sector has begun to support community gardening through providing funding and land and supporting the establishment of garden initiatives.

The New Zealand literature suggests that there are a number of ways of determining whether a community garden initiative is successful. In terms of economic success, studies suggest that community gardens save gardeners money as well as providing them with fresh fruit and vegetables. The literature also describes a variety of challenges that groups have experienced in Aotearoa New Zealand in setting up and maintaining community gardens, including attracting and retaining members and instances of vandalism and theft.
Chapter 3: Improving health in Aotearoa New Zealand

This chapter explores the health context for this thesis on community gardening as a public health intervention. It firstly describes aspects of the health of populations in Aotearoa New Zealand that have prompted recent support for community gardening initiatives. It also summarises the existing literature on the health benefits of community gardening and introduces some of the tools that are used in this thesis to consider the potential of community gardening as a public health intervention.

Data on health outcomes in Aotearoa New Zealand paint a scenario of persistent and unacceptable health inequalities and high rates of chronic conditions that are unevenly spread across the population. Addressing these challenges requires careful consideration of the potential impacts of interventions. Four interconnected approaches are suggested in this chapter: promoting and protecting Māori health; addressing lifestyle risk factors; addressing the wider determinants of health; and addressing health inequalities. The discussion on health inequalities outlines their far-reaching impact and describes the tools that have been used to assess the potential of community gardening to reduce health inequalities.

The second part of the health context in this chapter is a consideration of the evidence about the health benefits of community gardening. There is a growing international literature on this topic, but it mostly relies on a few key studies. These studies are described and discussed. The final section summarises what has already been written on community gardening as a public health intervention.

3.1 Persistent health inequalities and high rates of chronic conditions
Most people living in Aotearoa New Zealand are in good health but this is not the case for all people and large health inequalities exist between population groups
(Ministry of Health, 2008). This is particularly evident when the health of Māori is compared with that of non-Māori. The health of people from Pacific nations, South Asians and refugees is also generally poorer than for other people living in Aotearoa New Zealand (Ministry of Health, 2008; Scragg, 2010). In addition, health inequalities are evident when the health outcomes for adults and children living in neighbourhoods with high socio-economic deprivation are compared with those living in neighbourhoods with low deprivation (Ministry of Health, 2008).

Health inequalities can be seen clearly in the mortality and morbidity data for chronic conditions. Chronic conditions include physical conditions such as asthma, diabetes and cardiovascular disease and also long-term mental health conditions and poor oral health (Ministry of Health, 2010b; National Advisory Committee on Health and Disability, 2007). In Aotearoa New Zealand, chronic conditions contribute the major share of inequalities in life expectancy for Māori, Pacific peoples and people on low incomes (Ajwani, Blakely, & Robson, 2003).

The risk factors for chronic conditions, such as lack of exercise and high intakes of sugar and fatty foods, are also unevenly spread across the population. Many of the risk factors for these conditions are preventable and the high prevalence of chronic conditions in Aotearoa New Zealand is partially influenced by an increase in lifestyle risk factors (National Advisory Committee on Health and Disability, 2007).

The distribution of lifestyle risk factors is strongly influenced by the social and economic determinants of health, such as income, education and housing (National Advisory Committee on Health and Disability, 1998). This means that to reduce the prevalence of chronic conditions and the differences in health between population groups requires a focus on both the lifestyle risk factors and the wider determinants of health. It also requires an understanding of how health inequalities operate and on how to protect and promote Māori health.
3.2 Protecting and promoting Māori health

Article three of the Treaty of Waitangi guarantees that Māori will share equally in the benefits of modern society (Durie, 2001). The Treaty created a special relationship between iwi and the Crown, which is the basis of He Korowai Oranga: the Māori Health Strategy. Under the Treaty, the Crown has a responsibility to protect the health of Māori to ensure that Māori have at least the same level of health as non-Māori; and to safeguard Māori cultural concepts, values and practices (Ministry of Health, 2002a).

Māori health is gradually improving but remains poor when compared with the overall population. For instance, in the period from 1981 to 2004, Māori experienced the highest mortality rates at all ages, although the rate of decline of Māori mortality was higher than the rate for European/Other (Blakely, Tobias, Atkinson, Yeh, & Huang, 2007). The latest New Zealand Health Survey confirmed that when the data for Māori are compared with that for the total population, large inequalities still exist across a range of health outcomes and risk factors (Ministry of Health, 2008).

Health inequalities between Māori and non-Māori have both historical and contemporary causes. Historical events such as the signing of the Treaty of Waitangi and subsequent land confiscations set the scene for present health patterns (Ministry of Health, 2002b). These events directly affected Māori health through factors such as narrowing the Māori economic base, as well as reducing Māori political influence (Durie, 1998).

Hauora (Māori health and wellbeing) is a fundamental component of te ao Māori (the Māori world). As Professor Mason Durie explains in his book The Dynamics of Māori Health, strong and interconnected foundations contribute to hauora.

“Platforms for Māori health are constructed from land, language and whānau; from marae and hapū; from Rangi and Papa; and from the ‘ashes of
colonialism’; from adequate opportunity for cultural expression; and from being able to participate fully within society.” (Durie, 2001, pg 35-6)

In recent decades a variety of Māori models have been developed to illustrate the scope and complexity of Māori understanding about health and to help identify appropriate ways of improving hauroa. These include Te Whare Tapa Whā (Ministry of Health, n.d.), Te Pae Māhutonga (Durie, 1999) and Te Wheke (Turuki Pere, 1991). All these models illustrate the wide range of factors that are seen as being part of, and relevant to, hauroa. In the current research Te Whare Tapa Whā has been used to analyse interviewees’ views on the health benefits of community gardens.

The presence of persistent health inequalities between Māori and non-Māori indicates that much still needs to be done to improve Māori health and wellbeing (Durie, 2001). Therefore in assessing the effectiveness of public health interventions it is essential that consideration be given to their potential to improve Māori health. For instance, effective interventions for Māori need to recognise that people are interdependent, that the collective and individual wellbeing of Māori are equally important and the need to work with in a social context that goes beyond the treatment of symptoms (Ministry of Health, 2003b).

### 3.3 Addressing lifestyle risk factors for chronic conditions

As already mentioned, lifestyle risk factors for chronic conditions are unevenly spread across the population. When data on these lifestyle risk factors are examined, those for fruit and vegetable intake, physical activity, and body size, cigarette smoking and alcohol use show major areas for concern (Ministry of Health, 2008). The characteristics of lifestyle risk factors associated with nutrition and physical activity and their association with chronic conditions and health inequalities are briefly described below. Some examples of how the health sector has promoted gardening to help reduce these lifestyle risk factors are also mentioned.
Diet and nutritional status play a role in maintaining health and in preventing diseases like hypertension, stroke and some cancers. Adequate fruit and vegetable intake is one of a number of dietary factors that are protective against these diseases (Ministry of Health, 2003b). A New Zealand study of the burden of disease attributable to nutrition-related risk factors demonstrated that even small improvements in risk factor exposure levels could result in important decreases in mortality. For example, it is estimated that an increase of 40g/day in fruit and vegetable intake (about half a serving) might avoid 300 deaths each year, after a five-year period (Ministry of Health, 2003a).

Over the 10 years from 1997 to 2007 there was a decline in the proportion of men and women who consumed three or more servings of vegetables a day but on a more positive note there was an increase in the prevalence of adequate fruit intake\(^2\). Adults living in neighbourhoods with the highest levels of socio-economic deprivation are the least likely to eat the recommended daily intake of fruit and vegetables. Only half of men living in areas of high neighbourhood deprivation (NZDep2006 quintile 5) had adequate daily vegetable intake. There are also ethnic differences in fruit and vegetable intake, with Pacific and Asian adults less likely to eat the recommended level than adults in the total population (Ministry of Health, 2008).

Physical activity is also an important lifestyle factor influencing the prevalence of chronic conditions. For people of all ages regular moderate-intensity physical activity can reduce the risk, and modify the effects, of many conditions, including cancers, diabetes and depression (Ministry of Health, 2003b). The most significant public health benefits of increased physical activity occur when sedentary individuals become moderately active. This is because health-related benefits are

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\(^2\) The New Zealand Ministry of Health recommends that adults eat at least three servings of vegetables and two servings of fruit each day (Ministry of Health, 2008).
linked to physical activity and fitness in a dose-response manner. The greatest difference in death rates for coronary heart disease and some forms of cancer occurs when those who are least physically active or unfit start doing physical activity (Nieman, 2007).

The results of the 2006/07 New Zealand Health Survey show that only 50 percent of adults were regularly physically active\(^2\) and one in seven adults were sedentary\(^4\). From 2002/03 to 2006/07 there was an increase in sedentary behaviour among women, with people over age 65 and Asian and Pacific men and women more likely to be sedentary than the total adult population. Women living in quintile 5 deprivation areas were twice as likely to be sedentary as women living in quintile 1 areas (Ministry of Health, 2008).

This data on nutrition and physical activity show a disturbing picture about the future health of the country’s population. The result of this high and uneven prevalence of lifestyle risk factors will be increased rates of chronic conditions in later life and for some individuals in their early to middle years. This will have high costs for these individuals, their family and whānau and the country’s social support and health systems and the economy (National Advisory Committee on Health and Disability, 2007).

On the other hand, in relation to nutrition and physical activity, small changes in risk factor exposures can lead to significant changes in health outcomes. In seeking to reduce the prevalence and impact of chronic conditions, the New Zealand health sector has recently been focusing on nutrition and physical activity. In 2003, the Ministry of Health launched Healthy Eating – Healthy Action: Oranga Kai – Oranga Pumau. This framework for action, commonly known as HEHA, recognises the

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\(^2\) Did at least thirty minutes of moderate-intensity physical activity on five or more days of the week (Ministry of Health, 2008)

\(^4\) Did less than 30 minutes of physical activity a week (Ministry of Health, 2008)
inherent inter-relatedness between improving nutrition, increasing physical activity and reducing obesity (Ministry of Health, 2003b). Under the HEHA implementation strategy, District Health Boards have allocated funding to a variety of local HEHA projects, including community and home gardening projects.

Another initiative designed to address lifestyle risk factors is the use of Green Prescriptions (GRx) to encourage patients to make lifestyle changes. Gardening is one of the activities prescribed as a suitable form of exercise or recreation. A 2010 survey of Green Prescription patients in Aotearoa New Zealand found that for 16 percent of patients gardening was included in their prescription. The extent to which gardening was prescribed differed depending on the ethnicity, age and regional location of the patients. Pacific patients (24%) and patients over the age of 65 (23%) were more likely to be prescribed gardening (Hickey & Yin, 2010).

3.4 Addressing the wider determinants of health
Factors outside the health sector like housing, income, transport, and urban design influence people’s lifestyle options and their access to health services, which in turn impacts on their likelihood of developing chronic conditions (National Advisory Committee on Health and Disability, 1998; Public Health Advisory Committee, 2010). For instance, if fresh fruit and vegetables are not plentiful in a neighbourhood and high fat, high sugar items are the cheapest food options, this makes it difficult for people on low incomes to choose healthy options. The rise in obesity in recent decades is largely due to changes in social and physical environments that have created incentives for people to consume excess energy through food and drink and not expend adequate energy through physical activity (Ministry of Health, 2003b). Low-density dispersed development means that people in urban areas now spend more time in cars and less time walking and cycling and therefore have fewer opportunities for physical activity. Also, by spending more time in cars and walking less, people become more socially isolated. This tends to
reduce civic engagement and weaken the sense of community (Public Health Advisory Committee, 2010).

A variety of factors influence nutrition. Food prices, food supply and socio-economic status influence what and how much people eat. This in turn affects growth in childhood, the likelihood of developing specific diseases and general resistance to infection (Baum, 2008). For a number of New Zealanders healthy food choice is significantly reduced by a lack of money (Ministry of Health, 2003b). The 2006/7 New Zealand Health Survey found that the prevalence of adequate daily vegetable intake declines with increasing neighbourhood deprivation and only half of men living in areas of high deprivation had adequate daily vegetable intake (Ministry of Health, 2008). In a study of food environments in Porirua, focus group participants identified the cost of healthy food and lack of income as barriers to accessing healthy food. The author of the study concluded that this area could be best described as a “food swamp” as it contained an abundance of less healthy food options (Woodham, 2009). A larger focus group study of people on low incomes, Māori and Pacific people identified “that income and the cost of healthy food are two of the most pressing issues in relation to food security” (Lanumata et al., 2008). In both these focus group studies, the participants identified gardening as a solution to increasing access to healthy food.

Income also influences options for physical activity. For example, households with high disposable incomes have resources to spend on active leisure such as gym membership or outdoor pursuits (Ministry of Health, 2002b). Other factors that impact on the opportunities that people have to be physically active include urban design, pollution, safety when walking and cycling and the availability of green spaces and facilities (Ministry of Health, 2003b). Focus group participants have identified lack of time, lack of motivation, costs and unsafe neighbourhoods in urban centres, as barriers to physical activity (Lanumata, et al., 2008).
Social support, social capital and social cohesion are also structured according to the social and economic resources available to communities and individuals. For instance, people in better-off economic positions are more likely to have useful networks (social capital) that will assist their further advancement (Baum, 2008). Likewise, having an effective social support network is linked to positive health outcomes. It is thought that strong social networks provide a buffer against disease, especially coronary heart disease. Overseas research suggests that people in lower socio-economic groups experience more stress and greater isolation (Baum, 2008).

The presence of urban features like parks and other green spaces can encourage physical activity, increase social cohesion and enhance mental health. A study of inner city high-rise residents in Melbourne and Sydney found that access to nature enhanced their quality of life. Participants who had “good access” to natural environments reported higher levels of quality of life than participants with “poor access” (Henderson-Wilson, 2005).

### 3.5 Addressing health inequalities

Central to the health challenges facing Aotearoa New Zealand are the persistent inequalities in health outcomes described earlier. Recent overseas publications and a significant body of local research have emphasised how essential it is to address these inequalities.

A variety of terms are used to describe differences in health between population groups. In public health, the terms “equity” and “inequality” are often used interchangeably, but can signal differences in emphasis (Baum, 2008). The recent position statement by the New Zealand Medical Association favours the term “equity” because “it recognises that people differ in their capacity for health and their ability to attain and maintain health” (New Zealand Medical Association, 2011,
Some others favour the use of “health inequalities” as when discussing differences in health outcomes it “highlights that there are social inequalities to which these health differences are linked” (Graham, 2009, pg 3). This thesis uses the term “health inequalities”, which has been the term generally used in the New Zealand health sector.

As has already been mentioned, the prevalence of chronic conditions and the risk factors associated with them are not evenly spread across the population. This is because socio-economic advantage brings more health-enhancing resources and less health-damaging exposure to those who have the most resources. In comparison, being poor restricts access to resources that promote health and places people in situations in which they are more exposed to health risks (Graham, 2009). It is also suggested that income inequality affects people’s perceptions of their place in the social hierarchy and for those who are poor this produces negative emotions such as stress and shame. It is proposed that these emotions in turn affect biological processes; encourage stress-induced behaviours, like smoking and over-eating; and are translated into antisocial behaviours (New Zealand Medical Association, 2011).

Ethnic inequalities are to some degree, but only partially, influenced by socio-economic differences (Blakely, et al., 2007). Health inequalities between ethnic groups are also influenced by differences in power relationships, historical and social factors (like colonisation or the experience of being a refugee) and racism. For instance, the association between socio-economic status and race has its origins in historical events but persists because of contemporary structural factors that perpetuate the historical injustices (Jones, 2000).

3.5.1 Inequalities affect everyone’s health
It is often assumed that inequalities mostly affect those who live in the poorest neighbourhoods or experience the most discrimination. However, recent
international analyses have shown that everyone’s health is influenced by the presence of social and economic inequalities. This occurs because of the presence of social gradients of health and through the impact that social inequalities have on the health of the whole population.

Health data in New Zealand and overseas show a gradient relationship between the socio-economic status of neighbourhoods and the health outcomes of their populations (Blakely, et al., 2007; Marmot, 2010; Ministry of Health, 2008). Those in the wealthiest neighbourhoods have the best health. Health outcomes worsen as the level of deprivation of the neighbourhood increases. This means that the health outcomes for neighbourhoods in the middle of the deprivation scale are lower than for wealthy neighbourhoods. In other words, the health of everyone who is not in the highest socio-economic grouping is less than optimal.

The Marmot review in England concluded that “the implications for the social gradient in health are profound” (Marmot, 2010, pg 16). The authors of this review note that if the focus of reducing health inequalities was only on neighbourhoods with the highest level of deprivation, this would only tackle a small amount of the problem. It would not change the health of those people in neighbourhoods that have a slightly lower level of deprivation. They conclude that all citizens must be included in actions to create a fairer society, but that the scale and intensity of interventions should be proportionate to the level of disadvantage. This is referred to as proportionate universalism (Marmot, 2010).

Data from the 2006/7 New Zealand Health Survey show that socio-economic gradients also exist for self-reported health status and many of the lifestyle risk factors of chronic conditions. For instance, the proportion of children who had three or more fizzy drinks, ate fast food three or more times in the preceding week and usually watched two or more hours of television per day all rose with increasing
neighbourhood deprivation. For adults, gradients exist for inadequate vegetable intake, sedentary behaviour and hazardous drinking of alcohol, with those in higher deprivation neighbourhoods having greater exposure to these risk factors (Ministry of Health, 2008). This clustering of risk factors among poorer communities illustrates the disproportionate impact that socio-economic determinants of health have on some populations. It is referred to as *differential vulnerability* (Blas & Kurup, 2010).

It has also been suggested recently that inequality influences the overall standard of health within a country. This conclusion has been reached from analysis of data for health and non-health outcomes from many developed countries. The analysis indicated that national standards of health and other outcomes are substantially determined by the amount of inequality in a society. The authors of this study suggest that in developed countries the best way of improving the real quality of life, including for those who are better off, is through reducing inequality (Wilkinson & Pickett, 2010).

The human and economic cost of health inequalities is extremely high. It is estimated that in England, 2.8 million years of life are potentially lost to health inequalities each year because of people dying prematurely. This has economic costs in terms of loss of productivity, lost taxes, higher welfare payments and additional healthcare costs (Marmot, 2010).

The Marmot Review also proposes that a focus on environmental sustainability is compatible with, and an essential component of, reducing health inequalities. The authors point out that the poorest countries and communities will experience the greatest impacts from climate change and so in order to reduce health inequalities it is important to address environmental challenges as well. They also note that many
actions to improve health such as active transport and sustainable food production will have environmental benefits as well (Marmot, 2010).

3.5.2 Tools to address health inequalities
Developing effective strategies to reduce health inequalities requires a clear understanding not only of the causes of the inequalities but also of the expected impact that proposed interventions will have. A variety of tools has been developed to assist health agencies to think about the impact of services and interventions on health inequalities and to design approaches to reduce these inequalities. In Chapter 7, the information gathered through the research on community gardening is assessed in terms of criteria included in three of these tools.

The first tool is the Reducing Inequalities in Health intervention framework, which was designed to assist people at all parts and levels of the New Zealand health sector. This framework identifies that action needs to occur at four levels: the wider determinants of health; the pathways through which the wider determinants influence health; health and disability services; and the impacts of poor health and disability (Ministry of Health, 2002b).

The Health Equity Assessment Tool (HEAT) is the second tool. This planning tool was also designed for use by the New Zealand health sector and consists of 10 questions that focus on the potential for an intervention to impact on health equity (Signal et al., 2008).

A more recent tool is the Priority Public Health Conditions Analytical Framework developed for the World Health Organization. This tool illustrates the relationship between five levels of intervention from socio-economic context and position through to individual differential consequences. It highlights that differential exposure to risk factors and access to protective factors occurs at all five levels,
3.6 The health benefits of community gardening

“Community gardens are a tangible way to demonstrate public health efforts through organised, community-centred activities that link many disciplines” (Fortune, 2010, pg 46).

While many articles mention potential health benefits of community gardening, only a limited number of studies have asked gardeners about health benefits or have measured changes in health as a result of participation in a community garden. The main health benefits covered in the literature are: improved nutrition and access to fruit and vegetables; increased physical activity; strengthened communities; and enhanced mental and spiritual health.

3.6.1 Improved nutrition and access to fruit and vegetables

The nutritional benefit for which there is some quantitative evidence is increased consumption of healthy food. The most robust qualitative study was undertaken two decades ago in Philadelphia, USA. It used a case control design and gardeners were selected randomly from community garden coordinators’ lists or recruited directly from community garden sites. Controls were people who wanted to garden and were selected as having the same ethnic and geographical characteristics as the gardeners. Study participants were interviewed about a range of topics including what they ate. Gardeners reported eating vegetables more frequently than the controls and consuming less sweet foods and drinks and dairy products (Blair et al.).

Two more recent US articles report a positive relationship between involvement in community gardening and increased fruit and vegetable consumption. In Flint, Michigan, adults with a household member in a community garden were found to eat 1.4 times more fruit and vegetables and were 3.5 times more likely to eat fruit
and vegetables at least five times a day than other residents. The data used had been collected as part of a community health phone survey and because of the cross-sectional nature of the study the researchers were not able to draw any causal relationships between involvement in a community garden and improved fruit and vegetable consumption (Alaimo, Packnett, Miles, & Kruger, 2008). Likewise, self-reported data from two projects developed under the auspices of California Healthy Cities and Communities suggested that consumption of fruit and vegetables had increased following participation in a community garden (Twiss, Dickinson, Duma, Kleinman, & et al., 2003).

Improved nutrition and access to a wider variety of food have been mentioned during qualitative studies of community gardens in the United States, Australia and Canada (Armstrong, 2000; Kingsley et al., 2009; Ober Allen, Alaimo, Elam, & Perry, 2008; Patel, 1991; Wakefield, Yeudall, Taron, Reynolds, & Skinner, 2007). In a study of community garden youth programmes in Flint, Michigan, participants “mentioned that their involvement in the gardens had induced them to eat more fruit and vegetables and less junk food” (Ober Allen, et al., 2008, pg 430). The researchers concluded that involvement in the gardens had enabled the young people to grow and taste vegetables they had not eaten before and to learn to like vegetables they had not previously enjoyed (Ober Allen, et al., 2008). Access to organic food was mentioned as a reason for getting involved in a community garden by participants in a community garden project in Melbourne, Australia (Kingsley, et al., 2009) and during a survey of community garden coordinators in New York, USA. Over half the garden coordinators in the New York study also mentioned that the garden provided a food source for low-income households (Armstrong, 2000). In addition to the benefits already mentioned, community gardeners in south-east Toronto, Canada, identified being able to grow and eat culturally appropriate foods as a benefit of their involvement (Wakefield, et al., 2007).
3.6.2 Increased physical activity
The physical activity associated with gardening tasks can have a range of benefits. Heavy gardening activities can meet the recommended daily level of moderate physical activity of using 300 calories in a period of 30 minutes. For lighter gardening tasks this will take longer. One of the additional physical benefits of heavy gardening tasks is that the upper body, heart and lungs are given a good work out (Nieman, 2007). The study of community gardeners in Philadelphia found that gardeners spent on average 11.7 hours per week in the garden and on average 5.6 of these hours were spent doing heavier work like hoeing, digging, planting or pulling weeds (Blair, et al., 1991).

Two US studies found physical activity benefits following involvement in a community garden (Austin, Johnston, & Morgan, 2006; Twiss, et al., 2003). In the first study, community gardening was introduced into a senior centre as a pilot therapeutic intervention to encourage physical activity. The pilot included six participants and found that they had an improved level of physical functioning after taking part in the garden (Austin, et al., 2006). Also, the article on community gardens in California reported that participants in one of the garden programmes had increased their physical activity session from 4.9 to 5.2 sessions per week (Twiss, et al., 2003).

Participants in studies of community gardens have varying views about whether involvement in the garden has increased their physical fitness. For instance, in a Melbourne study some participants said that involvement in the garden had improved their physical fitness while others felt that the gardening had not had any impact because they were fit when they started gardening or the work was not strenuous. However, most gardeners noted that getting to the gardens by walking
or cycling was more important to their physical fitness then the gardening itself (Kingsley, et al., 2009).

3.6.3 Strengthened communities

“community gardens are seen to benefit the community as a whole, by improving relationships among people; increasing community pride and in some cases by serving as an impetus for broader community improvement and mobilisation” (Wakefield, et al., 2007).

A common theme in the literature is the potential for community gardening to increase social networks and thereby strengthen communities.

Being connected with the local community has been identified as both a reason for getting involved in community gardens and a perceived benefit (Wakefield, et al., 2007). Nearly all gardeners in the Melbourne study said that they had got involved in the garden because they wanted to be more socially connected. Some of them had recently moved into the area and others wanted to reduce their sense of isolation. (Kingsley, et al., 2009).

Community gardening has been identified as a mechanism to build community capital, which is described as a combination of high levels of social, ecological, human and economic capital and is considered the hallmark of a healthy community (Hancock, 2001). This is because community gardening creates opportunities for people of different ages, ethnic groups and life experiences to get to know and learn about each other. This often occurs through sharing tools, ideas and vegetables (Hancock, 2001; Wakefield, et al., 2007). Among the benefits listed by participants in a survey of community gardens in New Jersey, USA, were socialising, helping others and sharing produce. The authors concluded that “gardening cut across social, economic, and racial barriers and brought together people of all ages and backgrounds” (Patel, 1991). Likewise, a Sydney study found that the gardens were an important site for cross-cultural interactions, sharing and
learning. This study also identified some instances of cultural conflict and misunderstanding and barriers (such as language) that prevented deeper social interaction (Bartolomei et al, 2003). The potential to bring people of different “races” together was a finding from a study of African American and White gardeners in St Louis in the USA. This study also found that community gardens were less racially segregated than other leisure settings (Shinew, Glover, & Parry, 2004).

The potential for garden projects to create interactions between adults and young people is illustrated in the results of the study of the youth community garden programme in Flint, Michigan, USA. Through this programme young people established positive relationships with adults and other youth, and made positive contributions to the community. In addition, a concurrent survey in Flint found that adults who participated in community gardens reported spending more time with local teenagers and children than did non-participating residents (Ober Allen, et al., 2008).

To find out more about how social processes are cultivated by, or supportive of, activities in a community garden, Teig et al analysed data from interviews with 67 gardeners across 29 garden sites in Denver, in the USA. The authors concluded that the place-based social processes found in community gardens support collective efficacy, which they describe as “the link between mutual trust and a shared willingness to intervene for the common good of the neighbourhood”. They suggest collective efficacy is a powerful mechanism for enhancing the role of gardens in promoting health (Teig et al., 2009, pg 1115).

Collective efficacy is evident in the results of several overseas studies. Firstly, the sense of pride in the garden that gardeners develop can lead to a greater sense of community for the gardeners as well as enhancing the physical features of the
community (Wakefield, et al., 2007). Half the New York garden coordinators surveyed considered that the presence of a community garden had improved the attitudes of residents to their neighbourhood. This was seen through improvement in the maintenance of other properties in the neighbourhood, reduced littering and increased pride in a neighbourhood (Armstrong, 2000).

Studies also report that community gardens projects have provided a catalyst for community action, another form of collective efficacy. The researchers in the New York study found that additional neighbourhood beautification, tree planting and crime-watch were common activities arising from the community gardens. They also found that community gardens located in low-income areas were four times more likely than gardens in other areas to lead to other issues in the neighbourhood being addressed (Armstrong, 2000). The survey of community gardeners in Philadelphia found that they were more likely than controls to participate in food distribution projects, neighbourhood cleanups or beautification projects, and neighbourhood barbeques and social events. On the other hand, the researcher surveying the Dig It project in Port Melbourne found that although involvement in the gardens increased social cohesion, social support and social connectedness, at least in the early stages of the garden development, these benefits did not necessarily extend beyond the garden setting (Kingsley & Townsend, 2006).

Community gardens are also described by participants as creating a “place” within their community. This includes a place for learning and a green space that gardeners feel connected to (Kingsley, et al., 2009) and spaces of retreat within densely populated neighbourhoods (Bartolomei, et al., 2003; Wakefield, et al., 2007). Donna Armstrong suggests that the gardens she studied provided a physical location for residents to meet each other, socialise and learn about the local community. (Armstrong, 2000).
3.6.4 Enhanced mental and spiritual health

Qualitative studies overseas have identified that community gardens can enhance both mental and spiritual heath. Some of these reported benefits are associated with biophilia, which is the psychological and physiological benefits of contact with nature (Kingsley, et al., 2009). Benefits also arise from being involved in a community activity.

Participants in studies in Australia and New Zealand have talked about a variety of spiritual benefits associated with gardening. In a New Zealand study of middle-aged women, participants described aspects of “the definable relationship they feel with the outdoors, the earth and the universe” (Kidd, Pachana, & Alpass, 2000, pg 11). This included bringing them closer to God, being in the outdoors and natural world and nourishing their souls (Kidd, et al., 2000). Participants in the Port Melbourne project saw the garden as providing a connection with nature and a sense of spirituality in their life. This connection was described in terms of components like the joy of watching the plants grow, gardening being like meditation and it being good for the soul to handle plants (Kingsley, et al., 2009).

Likewise, some community gardeners in Sydney talked about gardening enabling them to have a close connection with the earth, seasons and the weather (Bartolomei, et al., 2003).

In relation to mental health, the New Zealand study of middled-aged women found that the psychological experiences of gardening were central to their motivations to garden. Fifty-nine percent said that they found gardening to be relaxing and rejuvenating. There was no relationship found between the benefits identified by the gardeners and the amount of time they spent gardening. This suggests that gardening can be psychologically and emotionally beneficial to people who are passively involved in gardening or for whom physical limitations reduce the extent to which they can actively garden (Kidd, et al., 2000).
Several of the studies mentioned in previous sections identified positive influences on the mental health of community garden participants. The Melbourne study reported that the garden offered a sanctuary from the pressures of the world, provided a supportive environment and created opportunities and a sense of achievement (Kingsley, et al., 2009). The researchers studying community gardens in Toronto concluded that involvement in a community garden impacted on participants’ sense of mental wellbeing. Participants found the opportunity to interact with nature both relaxing and calming (Wakefield, et al., 2007). In the Philadelphian study, community gardeners gave significantly more positive responses than the controls to all the questions on psychosocial wellbeing and the frequency of meaningful life events. The authors conclude that “though causality cannot be inferred, it appears that those who are involved in gardening find life more satisfying and feel they have more positive things happening in their lives than those who are not” (Blair, et al., 1991, pg 164-5).

Recognition of the psychological benefits of gardening has led to the development of the field of therapeutic horticulture (Kidd, et al., 2000). This covers a range of interventions that use gardening to improve people’s health and wellbeing. Horticultural therapists work with a wide variety of clients including older people, disabled people, people with mental health conditions, offenders and people recovering from drug and alcohol abuse, major injuries or illnesses (Next Step, 2010). Community gardens are often used for therapeutic horticulture, either informally or in a structured way as at the Kelmarna Organic City Farm in Herne Bay, Auckland (Johnstone, 2004).

3.7 Community gardens as a public health intervention
Internationally, a few studies have identified that community gardens have potential as a public health intervention, particularly in the area of nutrition. In her
study of community gardens in New York, Donna Armstrong analysed characteristics of gardens that may be useful to facilitate neighbourhood development and health promotion. She concluded that community gardens involve social support, informal networks and community organising, which she considered to be the main characteristics important for health promotion in minority communities. Armstrong (2000) suggested that one of the strengths of community garden initiatives is that they address multiple risk factors for chronic conditions, rather than narrowly focusing on one aspect of a risk factor. Likewise, Kingsley et al. concluded that the community garden in Port Melbourne offered an environment that can foster improved health and wellbeing and suggest that “community gardens may be a key way of improving public health in Australia” (Kingsley, et al., 2009).

In their study of community gardeners in Denver, Teig and colleagues identified the potential of community gardens to act as a change agent by supporting the spread of healthy food and food-related practices. They concluded that community gardens have “the potential to mediate health by encouraging social support and access to resources that are protective against poor health” (Teig, et al., 2009, pg 1120).

On the other hand, the literature indicates that community gardens are not always the successful component of health promotion initiatives. For instance, a community garden established in Wanganui as part of a health development programme to increase fruit and vegetable intake was strongly promoted but was initially unsuccessful. This contrasts with a nutrition programme at Regent Park in Toronto, where the community garden on a housing estate was the component that thrived and became the centre of the nutrition programme (Labonte, 1986).
3.8 Summary

The persistent ethnic and socio-economic health inequalities in Aotearoa New Zealand need to be addressed. If this is not done, these inequalities will have major, ongoing health, social and economic consequences for the country. The causes of the current and unacceptable health inequalities are complex and so are the solutions. Socio-economic determinants of ill health influence the unequal distribution of lifestyle risk factors for chronic and other health conditions. Factors such as racism, the legacy of our colonial history, and differences in power relationships help perpetuate ethnic health inequalities. The complexity of the causes and the persistence of the health inequalities mean that careful consideration needs to be given to the design of interventions to address these inequalities, including their potential to protect and promote Māori health. Recent international analyses suggest it is important that interventions reduce the clustering of risk factors in populations with the poorest health and lowest incomes; address the social gradient in health; and include a focus on environmental sustainability.

The New Zealand health sector is beginning to support community gardening particularly as a nutrition intervention for low-income, Māori and Pacific communities. Internationally, the small number of quantitative studies that have been undertaken suggest that community gardening has the potential to increase the consumption of fruit and vegetables and possibly increase levels of physical activity. The more numerous qualitative studies have identified a wide variety of self-reported health benefits including creating interest in food and nutrition, strengthening social cohesion and enhancing mental and spiritual health. A small body of overseas literature has discussed the potential of community gardening as a public health intervention. This literature highlights that the multiple health benefits of community gardening initiatives suggest they have the potential to address the multiple risk factors for chronic conditions, rather than just focusing on one aspect of a risk factor.
Chapter 4: Developing the research approach

The following chapter describes the process used to develop a research approach for this thesis on community gardening and health. Establishing a qualitative research approach tends to be an iterative process during which the design of the research gets clearer as more information comes to light about the topic being studied. This chapter therefore describes the process of developing the research approach as well as the methods used to gather and analyse the data.

4.1 Developing the research question

An initial search of the New Zealand and international literature identified that little was written about community gardening in this country, while there was a reasonable body of international literature on community gardens and health. The initial search for articles on community gardens in New Zealand was restricted to articles written in 2000 or later. It used the keywords “community”, “communal”, “neighbourhood” and “garden”. This search located no academic articles, but a small number of articles in magazines like New Zealand Lifestyle Block, New Zealand Gardener and Organic New Zealand that extolled the virtues of community gardening or described a particular garden project. An online search also located some newspaper articles about specific gardens. Through searching the websites of New Zealand universities, a few Honours dissertations and postgraduate theses were located. These looked at various aspects of community gardening, including community gardening as a therapeutic intervention (Johnstone, 2004); a community garden that was set up as part of a health development initiative (Batten, 2008); and a survey that considered whether community gardens were a good use of vacant urban land (Watson, 2006). Eventually a few, mostly unpublished, evaluations of health-funded garden projects were also found (Clinton, McNeill, Broadbent, Silva, & Brown, 2009; Pirikahu, 2008; Regional Public Health, 2007).
The search of international literature was much more fruitful. A combined Medline and PsycInfo search identified a variety of articles that had been written about the health benefits of community and school gardens, including a few that looked at health promotion and community gardening.

The results of these searches indicated a major gap in knowledge about community gardening and health in New Zealand. At the same time, initial visits to community garden sites and projects in Auckland and Wellington highlighted a great diversity of gardening initiatives in these urban areas. In South Auckland, the Gardens4Health project had been established in response to the high prevalence of chronic conditions among Māori, Pacific and South Asian communities. Nothing of this scale appeared to exist in Wellington, where gardens seemed to have been mostly set up by community groups or individuals in a neighbourhood.

As a result of the initial literature search and garden visits, it was concluded that the research needed to find out more about the diversity of local forms of community gardening and what is happening in gardening initiatives. It was expected that such information would provide insights into the connections between community gardening and health. Maximising the variety of community gardening initiatives included in the research would enable the implications of these different forms to be explored and broadly look at the potential for them to improve health outcomes and reduce health inequalities. Therefore it was decided that the research would include a diverse sample of community gardening initiatives, not just focus on one or two sites.

The purpose of public health research is not only to understand what is happening but also to “use that understanding to bring about change” (Baum, 2008, pg 142). Therefore the research design and analysis needed to look not only at whether
community gardening had the potential to influence health outcomes, but also at the factors that would create a conducive environment for creating health gains. This included consideration of the aspects that make community gardens successful; the extent to which those involved in community gardening perceive it as improving health outcomes; and the ways that such initiatives could either increase or reduce health inequalities.

As a result of this initial scoping, the decision was made to focus the research on community-based garden initiatives in the Auckland and Wellington regions. This excluded gardens in schools and early childhood centres from the research, which seemed appropriate as some studies were already underway on this topic.

The initial research question was:

*Does establishment of a community garden on urban public land have the potential to improve the health of participants?*

This research question was gradually refined. Firstly, the focus changed from “community gardens” to “community gardening”. This reflected that the research was looking more at the activity of community gardening rather than the garden site. This was in recognition that it is likely to be the activity of gardening and doing this in a group setting, rather than the location of the garden, that created health benefits. The focus on community gardening also meant that activities such as shared gardening on private land and revegetation projects could be included within the research. In conjunction with this was the decision not to limit the research to community gardens on public land. One of the early findings was that community gardens in Auckland and Wellington have been established on a variety of types of land, so restricting the research to public land seemed to be an unnecessary limitation.

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5 The focus on urban community gardening was consistent with the objectives of the New Zealand Centre for Sustainable Cities, which provided a scholarship for the Master’s research.
As mentioned above, addressing the research question requires gaining an overview of the forms of community gardening in Auckland and Wellington. It was decided that a qualitative approach would be the best way to gather this information. While quantitative measures such as changes in fruit and vegetable intake have been used in a few overseas studies, until there is greater understanding about the forms of community gardening in Auckland and Wellington and the health objectives associated with these initiatives, it would not be clear what to measure. The research question was revised to reflect the qualitative nature of the study and to reflect decisions made about the parameters of the research.

In what ways do community gardening initiatives in Auckland and Wellington have the potential to improve health outcomes and reduce health inequalities?

4.2 Establishing the research approach

Qualitative research includes a variety of methods, such as case studies, participant observation, in-depth interviews and focus groups (Baum, 2008). All these methods were potentially feasible for this study and each would have provided a slightly different snapshot of community gardening in Auckland and Wellington.

As mentioned earlier, it was decided to choose methods that would enable information to be gathered from a diverse sample of community gardening initiatives and thereby allow a full exploration of the possible ways in which community gardening could influence health outcomes and inequalities. This needed an approach that would enable exploration of this diversity within the limitations of the time and resources available. The challenge of how to gather sufficient information to address the question of diversity but at the same time keep the project manageable continued to appear through the research project and impacted on the sample size, interview schedule, timeframe and methods of analysis that were used.
The research approach chosen was in-depth interviews with a range of stakeholders and with those involved in a diverse variety of community garden initiatives. These interviews were supplemented by observations of some of the community gardens, including attending planning meetings, community meetings and working bees. The processes used for interviews and observations are discussed in sections 4.2.2 and 4.2.3 below.

4.2.1 Sampling framework
A sampling frame was developed to identify which community gardening initiatives to include in the research. This was important for two reasons: to ensure that the research included sufficient diversity of forms of community gardening; and to choose initiatives that were most likely to illustrate the potential connections between community gardening and health.

The criteria for including community gardens in the study are listed in the left-hand column of Table 3, on page 59. Of the seven criteria, four were designed to ensure the research incorporated a diversity of community gardening initiatives. These criteria were that the sample included gardens from both Auckland and Wellington and that among the gardens studied there was a diversity of reasons for establishing them and a variety of agencies involved in their establishment, and that their sites were owned by a variety of stakeholders. The two criteria that were included to maximise the linkages between community gardening and health were that the sample included at least one health-sector-funded project and that the gardens studied included people with low incomes and/or poor health among their target group. This second criteria was included so that the data gathered from the research would enable a focus on the potential of community gardening to reduce health inequalities. This would not have been possible if the sample mostly, or only, included garden initiatives that involved affluent residents with good health. The final criterion was that the sample included coordinators from gardens that had not
thrived. This criterion was incorporated because it was considered that valuable information would be gathered from initiatives that had failed as well as those that had succeeded.

It was decided to interview stakeholders such as city council and health sector employees, as well as people involved with community gardening initiatives as these stakeholders have an overview of the community gardening scene in their locality. In this way their experiences and perspectives could complement the more in-depth understandings of those involved directly in garden projects. To be included in the research, stakeholders needed to have experience with supporting community gardening initiatives. The sample purposefully included a few stakeholders who were not entirely convinced of the appropriateness or the benefits of community gardening.

The research did not include as high a level of Māori participation as had been intended. This was partly because of insufficient time to develop the necessary contacts and the extreme busyness of some potential interviewees. Also, some Māori stakeholders were willing to provide information but not so keen to be interviewed. On reflection, this limitation might have been avoided if priority had been given to making these contacts at the very start of the research project.

4.2.2 In-depth interviews
The initial intention was to interview three groups of people – garden coordinators, stakeholders and gardeners. However, as the interview schedule developed it became apparent that this was not going to be practical because of the large number of interviews this would involve. Recruiting stakeholders and coordinators for the interviews proved to be relatively easy, but it was much harder to recruit people who were active gardeners in these initiatives. So it was decided to interview only garden coordinators and stakeholders.
Once the outline of the research approach was developed, an application was made under the University of Otago’s processes for ethics approval to undertake the research. The research met the criteria for a category B proposal and therefore approval was sought from the Head of Department of Public Health at the Wellington School of Medicine and Health Sciences. The participant information sheet and consent form that were required as part of this application are attached as Appendix A.

Open-ended interview questions were then developed. These questions were designed as prompts to guide the interview rather than an exact script. The questions were developed by identifying what information was needed to address the research question. For instance, interview prompts for garden coordinators included questions about the history and nature of the initiative, what made it succeed or fail, who has got involved, and what they saw as the health benefits. Questions used in overseas studies about community gardens and health were reviewed to identify suitable questions or areas to be covered (Bartolomei et al., 2003; Wakefield et al., 2007). Initially three sets of generic questions were developed; one set for each group of interviewees. These sets of questions are provided in Appendix B.

Potential interviewees were identified from initial visits, existing literature, discussions with stakeholders and an Internet search to locate community gardens in Auckland and Wellington. The identification of further interviewees followed a “snowball” design with most people who were interviewed suggesting further stakeholders or coordinators they thought would add value to the study. Towards the end of the study many more potential interviewees had been identified than could be included in the research. The decision that sufficient interview material had been collected was made partly because there was no further capacity to
undertake interviews and also because in the last few interviews there had been very little new information collected.

Prior to each interview the questions were adapted based on the information available about the garden initiative or stakeholder. Interviewees’ enthusiasm about community gardening made it easy to develop rapport at the beginning of each interview. Having personal knowledge and experience with gardening was an asset and provided a body of shared experience with those interviewed. Even interviewees who had reservations about the merits of community gardening were themselves keen gardeners.

Interviews lasted from 40 minutes to two and a half hours. The length of the interview depended on time available and the interviewee’s experiences of community gardening. For one interviewee, a second interview was carried out at a later date to gather further information.

All interviews were recorded using a Sony digital recorder. Sections that were particularly relevant to the research question were transcribed verbatim. For other sections, the main points made were written down. After all the interviews had been completed, a typist transcribed the remaining interviews.

Twenty-seven interviews were conducted with a total of 35 people. Most were individual interviews but four were with two interviewees and two were with groups of three. Table 2 shows the numbers of interviewees who were garden coordinators and stakeholders and how many were from each of the two regions.

<table>
<thead>
<tr>
<th>Location</th>
<th>Stakeholders</th>
<th>Garden coordinators</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Wellington</td>
<td>11</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>18</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 2: Location and classification of interviewees
The 18 garden coordinators had a range of roles in community gardens, including being employed as a coordinator or mentor, working as a coordinator on a volunteer basis, being a member of the core group that ran the garden, and project managing a large community garden initiative. Table 3 details the characteristics of the garden initiatives with which coordinators worked (right column) against the list of criteria mentioned above for determining whether to include a community garden in the research (left column) (see section 4.2.1).

Table 3: Characteristics of community garden initiatives included in the research

<table>
<thead>
<tr>
<th>Criteria for including a community garden</th>
<th>Number and details</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The sample includes gardens from Auckland and Wellington regions</td>
<td>Ten interviewees from Auckland (from six sites that were part of three gardening initiatives). Eight interviewees from Wellington (from five gardening initiatives).</td>
</tr>
<tr>
<td>• The garden includes people with low incomes and/or poor health among their target groups</td>
<td>Target groups for the gardens included low-income neighbourhoods, Māori, Pacific and South Asian communities, mental health consumers, refugees, migrants and public housing tenants.</td>
</tr>
<tr>
<td>• The sample includes a diversity of reasons for establishing a community gardening initiative</td>
<td>Gardens studied were established to promote sustainability; reduce organic waste; build social networks; improve nutrition; reduce diabetes; increase food security; and teach gardening skills.</td>
</tr>
<tr>
<td>• A variety of agencies have set up the community gardening initiatives included in the sample</td>
<td>Gardens studied were set up by city councils, community organisations, specifically established organisations, and a DHB.</td>
</tr>
<tr>
<td>• The sample includes at least one health sector funded project</td>
<td>Gardens4Health is funded through the health sector (coordinators at three sites and the project manager were interviewed).</td>
</tr>
<tr>
<td>• There is a diversity of land ownership for the sites on which the community garden initiatives are located</td>
<td>Gardens studied are located on city council reserves, church property, public housing land and land managed by government agencies</td>
</tr>
<tr>
<td>• The sample includes coordinators of gardens that didn’t thrive</td>
<td>Coordinators from two gardens that didn’t thrive were included in the sample (both in the Wellington region).</td>
</tr>
</tbody>
</table>
Table 4 below shows the breakdown of the characteristics of the 17 stakeholders interviewed. Four of the city council staff had specific responsibility for a community garden or group of community gardens and two of the garden coordinators were city council staff members who had in the past been given the task of setting up a community garden. The division of interviewees into garden coordinators and stakeholders was therefore not particularly clear-cut. The gardens in which city council staff were involved all met the criteria listed in Table 3 above.

**Table 4: Characteristics of stakeholders interviewed**

<table>
<thead>
<tr>
<th>Region</th>
<th>City council employees</th>
<th>City councillors</th>
<th>Sustainability organisation employees</th>
<th>Health sector employees</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Wellington</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>17</td>
</tr>
</tbody>
</table>

A summary of the key findings from the research will be sent to all interviewees and they will also be advised that they can receive a copy of their interview if they wish. Several interviewees requested transcripts following their interview and these have already been provided.

**4.2.3 Observations and visits**

To supplement the data gathered from the interviews, I visited some of the community gardens mentioned in the interviews with stakeholders. This process assisted in building an understanding of the variety of community garden initiatives in Auckland and Wellington.

In addition, I attended meetings and working bees of some community gardening initiatives. The purpose of these observations was to understand how community garden groups operated, the type and extent of community involvement and how the gardening occurred. As I live in Wellington most of the observations took place at community gardens in the Wellington region. During the course of the study,
Innermost Gardens were establishing its site in Mount Victoria and I got increasingly involved in the activities of this group. I also attended several meetings of the Kai o Te Aro Community Garden, which has been set up and is run by residents in Aro Valley. This provided insights into a garden that was outside the inclusion criteria for the research. Where possible brief notes were taken during the meetings and working bees, and later more extensive notes were written about what had happened and any insights gained through the observation. Details of the observations are outlined in Table 5.

Table 5: Details of observations undertaken

<table>
<thead>
<tr>
<th>Community gardening initiative</th>
<th>Types of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innermost Gardens, Wellington</td>
<td>Attended community meetings, working bees and core group meetings</td>
</tr>
<tr>
<td>Te Maara @ Cornwall, Porirua</td>
<td>Attended steering group meetings and working bees</td>
</tr>
<tr>
<td>Kai o Te Aro, Wellington</td>
<td>Attended meetings</td>
</tr>
<tr>
<td>Gardens4Health, Auckland</td>
<td>Attended stakeholder meeting</td>
</tr>
</tbody>
</table>

4.3 Analysing the data gathered

The current research uses thematic analysis to report on the experiences, meanings and reality of participants. This form of thematic analysis draws on an essentialist or realist method (Braun & Clarke, 2006, pg 81). The analysis of the current research is also “theoretical”. This means it is “driven by the researcher's theoretical or analytical interest in the area” (Braun & Clarke, 2006, pg 84). In this research my interest is to assess the potential of community gardens as a public health intervention.

At the completion of the 27 interviews and observations a large data corpus (Braun & Clarke, 2006) had been gathered. While most of the data were useful in gaining an understanding of community gardening and health in Auckland and Wellington, much of it was not directly relevant to the research question. To organise the material that had been gathered and assist with the thematic analysis, five questions
were identified. These are listed in Table 6, together with details of what information was used to consider each question.

**Table 6: Questions used to analyse data set**

<table>
<thead>
<tr>
<th>Question</th>
<th>Sources of information</th>
</tr>
</thead>
</table>
| 1. What forms does community gardening take in Auckland and Wellington? (Chapter 5) | • Review of local literature and media information  
• Visits to gardens and observations at garden meetings and working bees  
• Interviews with garden coordinators and stakeholders |
| 2. What are seen to be the potential health benefits of community gardening? (Section 7.1) | • Detailed thematic analysis of the responses of the coordinators and stakeholders interviewed  
• Review of overseas and local literature |
| 3. In what ways have communities with limited incomes and/or poor health been involved in the community gardens in Auckland and Wellington? (Section 5.3) | • Visits to gardens and observations at garden meetings and working bees  
• Interviews with garden coordinators and stakeholders |
| 4. What is needed to set up and sustain a community garden in Auckland and Wellington? (Chapter 6) | • Review of local literature  
• Visits to gardens and observations at garden meetings and working bees  
• Interviews with garden coordinators and stakeholders |
| 5. In what ways has the health sector been involved in supporting community gardening? (Chapter 7) | • Review of relevant literature and evaluations  
• Interviews with garden coordinators and stakeholders |

Due to the size of the data set, the broadness of the research question, and the diversity of respondents, most of the thematic analysis was undertaken at a fairly general level. This equates to what Braun and Clarke term “a rich thematic description” of the data set. They suggest this is a useful method when investigating an under-researched area (Braun & Clarke, 2006).

As the data were analysed, it became evident that the five questions related to three broad topics – the forms of community gardening in Auckland and Wellington; the
resources needed to set up and sustain a community garden; and the relationship between health and community gardening. The data gathered about these three topics are summarised in Chapters 5, 6 and 7.

In addition, a more detailed analysis was undertaken of interviewee’s views on the health benefits of community gardening (question 2). The analysis for this question was based around Te Whare Tapa Whā (Ministry of Health, n.d.). In this Māori model of health the sides of a whare (house) represent the four dimensions of well-being. One of the strengths of this model is that it recognises the many interconnected aspects of hauora or wellbeing. This framing of health appeared consistent with the breadth of potential health benefits identified in overseas studies of community gardening.

The data for the analysis of interviewees’ views on health benefits of gardening came from their responses to specific questions about the health benefits of community gardening as well as other relevant comments made in the interviews. This data were entered into a Microsoft Excel spread sheet. Each piece of data was then allocated to one of the four tāhā or domains of health. Once this was done, the data in each domain were reviewed to check that the allocation of data had been consistent. Then each domain was considered separately and themes within each identified. At this point, some data were reallocated to a different domain that they better matched. The findings of this analysis are presented in section 7.1. Chapter 7 also reports on the results of applying the three health inequalities tools mentioned in section 3.5.2 to the data.

Finally, the five principles that were developed to guide decisions about prioritisation of health services in Aotearoa New Zealand have been used to assess the potential of community gardening as a public health intervention. While these principles were developed for health services, rather than specifically for public
health interventions, they do provide a helpful framework when considering where the health sector should invest its resources. The five principles are effectiveness, equity, Māori health, acceptability and efficiency (National Advisory Committee on Health and Disability, 2004). This assessment is outlined in section 8.2.

4.4 Summary
This chapter has described the research approach developed for this thesis and explains the reasons for the decisions that were made about the scope of the research and the methods used both to gather data and to analyse it.

As little has been written about community gardening in Auckland and Wellington, the research was exploratory and gathered information on the forms and diversity of community gardening in these urban areas, as well as potential health benefits. Face-to-face interviews were undertaken with 17 garden coordinators and 18 stakeholders. Sixteen of the interviewees were from Auckland and 19 from Wellington. The data collected also included visits to gardens and observations of garden meetings and working bees. The data were initially analysed under five questions that focused on specific aspects of the research question. The analysis was theoretical, driven by interest in determining the potential of community gardening as a public health intervention. It created a rich thematic description of both community gardening in both Auckland and Wellington and the linkages between community gardening and health. A more detailed analysis was undertaken of interviewees' views about the health benefits of community gardening. This analysis was based around Te Whare Tapa Whā model of health. The data from these analyses are presented under three topics which form the basis of the next three chapters.
Chapter 5: Community gardening in Auckland and Wellington

The forms of community gardening in Auckland and Wellington is the first of the three topics under which the research data were analysed. The data provide an understanding about what is meant in a New Zealand urban context by the term “community gardening”. They also illustrates the linkages between what is happening in community gardening activities and opportunities to improve the health of communities. The research highlights the complexity in the relationships between factors like nutrition and community gardening. It also shows that there are less obvious benefits like creating inclusive places.

The chapter begins with a description of the diversity of community gardening initiatives identified in the research and then looks some of the specific aspects of this: the role that community gardening plays in reconnecting people with food; the revival of Māori gardening; and the close relationship between community gardening and encouraging gardening at home. A case example of the Manukau Parks Teaching Gardens illustrates the link between home and community gardening. The next part of this chapter proposes two ways to classify community gardening initiatives: firstly the extent to which gardening is the purpose of the initiative and, secondly, the extent to which the community is involved in establishing the garden. Who is involved in community gardening in Auckland and Wellington is covered in the third section. This section particularly looks at the research findings about community gardens creating inclusive places and involving low-income and ethnically diverse communities.
5.1 Diversity of community gardening in Auckland and Wellington

“… what I think makes one (a community garden) is willingness to share and that there is a sense of the collective wellbeing being upheld when you contribute.” (Stakeholder, Wellington)

The most overwhelming impression from the interviews, observations and visits was the diversity of community gardening initiatives in Auckland and Wellington. Gardening initiatives mentioned or visited during the research differed in a variety of ways. The four main parameters to this diversity were the purpose of the garden, who set up the garden project, who owned the land and the type of gardening practiced. Table 7 below lists the examples of each of these four parameters. A similar kind of diversity was also evident in a study of sixteen community garden initiatives, of which all but one were in the South Island (Watson, 2006).

Table 7: Diversity of community gardening initiatives in Auckland and Wellington

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>health promotion, food security, space to garden, sustainability, waste management, community development, employment, education or training about gardening</td>
</tr>
<tr>
<td>Set up by</td>
<td>individuals, community organisations, churches, marae, local or central government agencies, employers</td>
</tr>
<tr>
<td>Land owned by</td>
<td>local authority, private, church, marae/iwi, central government, private individual, agency, university</td>
</tr>
<tr>
<td>Type of gardening</td>
<td>allotments, communal, shared gardening, initiatives to support people to garden at home, revegetation projects, work skills and horticultural training programmes, guerrilla gardening</td>
</tr>
</tbody>
</table>

The interviews and information gathered revealed that there is no one form of community gardening in Aotearoa New Zealand. As one interviewee commented, the diversity in community gardens reflects this country’s “give it a go” approach to doing practical things. Appendix C provides details of each of the community gardening projects mentioned in the findings of the current research.

The interviews identified a variety of types of gardening that could be labelled community gardening. The two most common ones were allotments and communal
gardening. There is also increasing emphasis in Auckland and Wellington on people sharing the gardening of their backyards (shared gardening) and on community projects to support people to develop vegetable gardens in their own backyards. In addition, revegetation projects on green spaces are usually a form of communal gardening, there are a variety of community-based work skill and horticultural programmes, and guerrilla gardening is occurring in both Auckland and Wellington. These types of community gardening activities are described in Table 8 below.

Table 8: Types of community gardening activities in Auckland and Wellington

<table>
<thead>
<tr>
<th>Type of gardening</th>
<th>Description and/or example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allotments</td>
<td>A garden in a public place where individuals or groups each garden their own plots</td>
</tr>
<tr>
<td>Communal gardening</td>
<td>A garden in a public place where the gardening is carried out communally</td>
</tr>
<tr>
<td>Shared gardening</td>
<td>Where a resident offers spare land for neighbours to garden or neighbours assist each other with their home gardens (often on a roster or working bee arrangement)</td>
</tr>
<tr>
<td>Initiatives to support people to garden at home</td>
<td>Initiatives that focus on enabling people to set up their own home gardens, eg Manukau Parks Teaching Gardens and Whare Taiki Hauora Gardening Project</td>
</tr>
<tr>
<td>Revegetation projects (a variation on communal gardening)</td>
<td>These projects usually focus on planting indigenous vegetation on public reserves. These sites sometimes also include community orchards and/or community gardens, eg Papawai Restoration Project in Mount Cook, Wellington</td>
</tr>
<tr>
<td>Work skills and horticulture training programmes</td>
<td>These include gardens in prisons, employment programmes and initiatives involving people with impairments or mental health conditions, eg Asert – Tātou Development Trust in Porirua and Kelmarna Organic City Farm in Herne Bay, Auckland</td>
</tr>
<tr>
<td>Guerrilla gardening</td>
<td>Planting on public or private land, such as road reserves, traffic islands, parks and empty sections, without permission</td>
</tr>
</tbody>
</table>

Most of the garden sites visited during the research were gardened communally but some interviewees had strong views about the importance of allotments. They felt this form best matched the needs of people who had limited personal outside space, such as those living in apartments, in flats or on small inner city sections. Interviewees also mentioned that allotments suited people who were not available to garden at the same time as others or who wished to garden individually rather
than sharing things like tools and seeds. One interviewee considered that allotments enabled people greater ownership of, and control over, the garden space. In general, allotments appeared to be favoured where gardeners had limited places to grow plants and wanted extra garden space.

Allotments were not viewed positively by all those interviewed. A few stakeholders questioned the appropriateness of allotments, particularly on public land. They were of the view that allotment gardening was private use of land and therefore not an appropriate use of public land.

In some gardens a mix of allotments and communal spaces had been established. One group reported that they found interest in allotments had dwindled over time and so were redeveloping some allotments into communal plots. On the other hand, some groups that started out gardening communally and had lots of space saw the development of allotments for individuals or groups as a potential expansion of the project.

The next three sections examine specific aspects of community gardening in Auckland and Wellington identified in the current research: the role that community gardening plays in reconnecting people with food; the revival of Māori gardening; and the role community gardening is playing in the revival of home gardening.

5.1.1 Reconnecting people with food
A common theme in the interviews was the degree to which people in urban areas, particularly children and young people, have become disconnected from how food is produced. Many of those interviewed suggested that community gardens can help reconnect people with food as illustrated in the quotes below.
“I think kids today live in a society where everything comes out of a packet, out of a jar or out of a tin. You take them into the garden and say, “pick those tomatoes” and they say “What? They’re not tomatoes. Tomatoes are what we get out of a tin”.” (Garden coordinator, Wellington)

“There is a whole generation who don’t have an understanding of where food is coming from, where it is grown. They understand that food comes from the supermarket or more precisely comes from a takeaway shop. And the concept of carrots growing in the ground is pretty foreign – they’ve never really seen it – and certainly never touched the soil and sowed a seed…” (Garden coordinator, Auckland)

The knowledge gap described by the interviewees related not only to growing food but also how to cook and preserve it.

Some interviewees talked about what they saw as the origins of this disconnect. They described how supermarkets, the wide availability of mass processed foods, the growth in takeaway outlets and globalisation had gradually changed consumers’ expectations and understandings about food. The literature on the history of New Zealand gardening suggests that over the same period of time changes were taking place in home gardening practices as well. One author notes that as early as the 1950s and 1960s the idea of low maintenance gardens began to be adopted and later as more women joined the workforce and supermarkets began to stock just about everything, fun and relaxation became the focus of New Zealand backyards (Dawson, 2010).

The disconnection from fresh food and food production is of concern to health agencies and to the environmental movement. Health agencies are worried about how much high-sugar, high-fat food is being eaten, particularly by young people, and are looking for ways to reconnect people with healthier food options. The current research suggests that this has led the health sector to fund and support gardening initiatives particularly in neighbourhoods where fresh fruit and vegetables are becoming unaffordable. A couple of interviewees mentioned that this interest in food and nutrition is also being stimulated by mass media through local and international television personalities, like Te Radar and Jamie Oliver, and
videos on Youtube. Likewise, environmental groups are concerned about the high proportion of food that is imported and the environmental effects of high food miles. They see community gardening as a way to reconnect the public with producing food locally and thereby reducing urban carbon footprints and preparing for the reality of a world with limited oil stocks.

5.1.2 Revival of Māori gardening
For Māori, community gardening provides an opportunity to reconnect not only with food production but also with their identity and culture. People who saw community gardening from a Māori worldview described a clear link between community gardening and the concepts of te ao Māori (the Māori world), in particular maintaining the connection with Papatuanuku (Mother Earth). They viewed community gardening as a holistic response that addressed many aspects of what it is like to be Māori in a twenty-first century urban setting.

In the course of the research it became clear that Māori were involved in gardens established in Māori settings, like marae and kōhanga reo, and in other community settings. One of the locations visited during the research was Papatuanuku Marae in Mangere. This marae is built on a city council reserve and is the site of two gardening projects. The Manukau City Council has established a teaching garden next to the marae and the Gardens4Health project has facilitated the establishment of a marae community garden site alongside the teaching gardens. The two mentors for the teaching gardens also coordinate the marae gardens. The marae gardens are divided into plots that are gardened communally either by an iwi group or an organisation like the Māori Wardens.

Some of the garden coordinators and mentors interviewed in the research had grown up in rural Māori communities and talked about how they were utilising the skills they had learnt in their younger years and promoting traditional values in a
multicultural urban setting. One garden mentor described herself as the “old kuia of the plot” and the garden as being “our marae, where you sit and talk and learn and respect it”.

A health sector staff member mentioned that in speaking with a local kaumātua about community gardens, the kaumātua had commented that “gardening for him wasn’t necessarily about the act of gardening – it was about sustainability of a food source in a traditional sense”. The kaumātua also saw opportunities for possible employment, industry or business for the Māori community as part of this sustainability focus.

A few interviewees talked about how traditional tikanga (cultural practices) associated with gardening were being adapted to current community gardening contexts. One interviewee described how tikanga and te ao Māori were being integrated in community gardening practices and development.

“They built particularly around kūmara because there’s a whole lot of history and stories around and practices just around planting kūmara and people base a lot on that and the Māori potatoes and the kamokamo and all those sorts of things and that was quite an easy fit and given that majority of people we worked with were Māori providers and they were working with Māori families, it worked quite well.” (Health sector employee)

In addition, a garden coordinator talked about the challenge of identifying appropriate tikanga in a garden setting that involved people from different iwi.

5.1.3 Revival in home gardening
The interviews also highlighted that community gardening was being used to assist a revival in home gardening. This was occurring in a variety of ways. For instance, the Manukau Parks Teaching Gardens were set up to teach local residents skills they could use to set up gardens at home. Some other initiatives were supporting people to set up gardens at home. These included Pacific church garden initiatives funded by Hutt Valley District Health Board and the Whare Tiaki Hauora Gardening
Project in South Auckland. Also, gardens on Wellington City Housing estates were in effect home gardens for the people living in these housing estates. In addition, many gardens held workshops on gardening skills and techniques, like composting and seed saving. These workshops were not focused just on building up the expertise for the community garden, but also on encouraging local residents to use these skills in their home garden.

Many interviewees mentioned the benefits of promoting home gardening and community gardens were seen as one way of achieving this.

“…we were hoping that actually if people gain the skills and experience in a community garden then they go and set up their own – they’re more likely to set up their own garden is our belief when they have the skills to be able to do it right. So I think, failing in a home garden, you’re more likely not to persevere, whereas if you’ve got some support from others in a community garden, people talk and come up with different ideas.” (Health sector employee)

As mentioned in the quote above, community gardening is often seen as an accessible and effective way to learn gardening skills. One stakeholder who fielded queries about community gardens mentioned that many of those who contacted her were young parents who had bought their first home and wanted to learn about how to garden. Likewise, a coordinator of a community gardening initiative in a low-income neighbourhood said that the biggest barrier to people growing vegetable gardens at home was that they didn’t know where to start, rather than lack of resources to do it. These findings are consistent with the suggestion in a recent New Zealand study about food security that community gardening can be a conduit to learning about and setting up gardens at home (Bowers et al., 2009).

Stakeholders had differing perspectives about whether it was better to put resources into community gardens or to directly encourage home gardening. Some city council staff thought that teaching people to garden on their own sections was the best approach. In these cities, most residents had reasonably sized sections and the council staff felt that using public land to teach gardening skills was a better use of
resources than setting up an ongoing community garden. This view was not necessarily supported by other stakeholders and garden coordinators in these areas who saw community gardening as offering a wider variety of benefits than just growing vegetables.

Both Gardens4Health in Auckland and the Manukau Parks Teaching Gardens actively encourage residents to set up home gardens and monitor how many do this. Gardens4Health estimated that by September 2010, 200 households had transferred from gardening in a community setting to gardening at home (Gardens4Health, 2010). Similarly, in the first course at the Manukau Parks Teaching Gardens, 47% of students set up a home garden and 63% did this after the third course (Perkins, 2010). This means that from these two courses at least a further 200 households in South Auckland have set up gardens through being involved in the teaching gardens programme.

The interviews also highlighted that there are groups for whom home gardening is either not practical or not the preferred option. These include people in apartments or flats who have limited outdoor space; tenants whose landlords will not allow them to have a garden; and people who are transient or don’t have time to tend a garden but want to be involved in gardening. As well, some interviewees suggested that communal gardening is preferable for some communities and ethnic groups.

The research identified three initiatives where agencies had provided “starter packs” to enable households with limited resources to set up their own home gardens. These included a mental health service provider which had given planter boxes, tools and seeds to clients in its residential complexes; an emergency housing agency that had provided families with a garden starter pack; and an initiative at the Mangere Refugee Resettlement Centre that was set up through Gardens4Health. All refugees who leave the centre and settle in Auckland are provided with a
resource kit that includes seeds, seed raising mix, and tools. The kits are part of a wider initiative that includes a demonstration garden and training facilitators to work with the refugees both while they are in the Centre and after they leave. This initiative is seen as part of the process of integrating refugees into New Zealand society.

In describing how the idea for the starter packs had developed, the emergency housing agency explained that families at the centre were dealing with many simultaneous things. Therefore the agency felt that providing starter packs was more appropriate than encouraging families to get involved in a community garden project.

“I think that’s why giving them a pack for their own home and then following them up is a better option for our families than saying, “hey, there’s a community garden in your area, go and use it” – I don’t think they would do that.” (Staff member at a emergency housing agency)

Several interviewees mentioned instances where community gardening initiatives have sparked local shared gardening activities:

“… a street over in [name of a suburb] and there has been a community leader there who has engaged the youth. And the youth are actually gardening in the back yards in that particular street – it’s been quite successful.” (Garden coordinator, Auckland)

“…they’re also interested in the concept of gardening in their own backyards, but doing it as part of a cluster. So there might be 15 [name of an ethnic group] families – I like that notion that concept a little better – I think it will work better for their community.” (Garden coordinator, Auckland)

This linkage between community gardening and gardening at home is likely to be a result of both the strong history of vegetable gardening in Aotearoa New Zealand and the size, layout and potential productivity of many urban sections. The history of gardening in Aotearoa New Zealand indicates that in the first half of the twentieth century there was an expectation that city households would establish a home garden and grow their own vegetables particularly when economic times
were tough. A moral expectation to grow your own vegetables surfaced during the
1930s depression when unemployed workers in Wellington were not eligible for
relief work because they refused to grow vegetables for their own use (Struck off
Lists: Will not dig gardens, 1932). Likewise, the Dig for Victory campaign during
the World War II “exhorted everyone to dig and sow with a vengeance” and the
expectation that each household would have a vegetable garden was evident in the
design of the first state housing properties (Dawson, 2010).

The current research suggests that in New Zealand cities there is a strong linkage
between community gardening and home vegetable gardens. This linkage needs to
be factored in when setting up, designing or evaluating a garden project. For
instance, if many of those who become involved in a community garden will
eventually garden at home then this will have a major impact on the design and
sustainability of the garden. While there are likely to be some people for whom a
community garden continues to be the best place to garden, there may not be
sufficient numbers to ensure the long-term viability of the garden. This means that
in Aotearoa New Zealand community gardens may be more of a short-term
intervention than in overseas cities where a similar level of home gardening is not
feasible. Also over time, it is likely that interest in the garden will probably wax and
wane and its purpose may evolve. Furthermore, given the high level of time and
enthusiasm needed to set up a community garden, it may be more appropriate in
some settings to encourage smaller scale community gardening – like shared
gardening or establishing a community orchard.

5.1.4 Case example: Manukau Parks Teaching Gardens
This initiative illustrates the linkage between community-based gardening projects
and promoting home gardening. In early 2009, Manukau City Council\(^6\) created

\(^6\) In November 2010 Manukau City Council became part of Auckland City, which was created from all constituent territorial local authorities in the Auckland region.
teaching plots on six parks and reserves sites, and it plans to establish three further sites. These sites are located in the four wards of Manukau City Council that have the highest deprivation – Mangere, Otara, Papatoetoe and Manurewa.

Residents in Manukau City enrol to garden a plot at one of these sites for a period of 22 weeks. During this time, mentors teach the students basic gardening skills. A council park ranger provides oversight on each site and supervises the two part-time mentors who run the teaching programme. Plots not occupied by students are often gardened communally and used to grow fresh produce for charities like food banks.

Some of the students are migrants and may have experience with gardening in their home country, but lack knowledge on how to grow things in the Auckland climate. The mentors have all gardened locally for many years so are able to build the students’ knowledge and confidence.

Fifteen hundred students had been through the programme by the end of the third course in mid-2010. The target groups for this programme are Māori, Pacific people and South Asians. There have been high levels of participation from all three of these ethnic groups. Participants have been from a wide range of ages, with the majority being under age 50. Many of those aged 19 and under participated with their parents (Perkins, 2010).

While the goal is for people to garden at home, the reality is that not all of those who go through the programme have somewhere to set up a garden. Therefore, the city council is looking at the possibility of creating production plots on a couple of the bigger sites. These will be allotments that students who have completed the programme can garden for a maximum of 12 months.
5.2 “Community” or “gardening”?

The literature reviewed in Chapter 2 highlighted that community gardening consists of two important components “gardening” and “community”. These components provide the basis for two ways of describing the range of community gardening initiatives. The first considers the extent to which gardening is the purpose of the initiative. The second classification focuses on the extent to which the community was involved in the establishment of the initiative.

5.2.1 How much is it about gardening?

The current research identified that for some community gardening initiatives it is the gardening of the plants that is the major focus, whereas for other initiatives there are wider objectives that the initiative is trying to achieve. For instance, several of the garden coordinators commented that community development and relationships between people were more important than the yield from the gardens.

“…if you look at it in terms of what’s the nature of the relationship that people have, it is growing and evolving, so that is that garden - that growth of relationships.” (Garden coordinator, Wellington)

The information gathered in the research suggests that community gardening in Auckland and Wellington could be divided into three broad categories: a place to garden; gardening as a means; and gardening as a component. These categories focus on the extent to which gardening is the purpose of the initiative and are outlined in Table 9.
Table 9: Extent to which an initiative focuses on gardening

<table>
<thead>
<tr>
<th>Type of community gardening initiative</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
</table>
| A place to garden                     | Includes allotments; communal gardens primarily focused on horticulture; roof top gardens; and initiatives in which gardening is the prime purpose such as revegetation, community orchards, shared gardening, and teaching gardens. | • Kilbirne Community Garden (established as part of Operation Green Thumb)  
• Manukau Parks Teaching Gardens |
| Gardening as a means                  | Where community gardening provides the means to achieve wider objectives such as increasing vegetable intake, assisting with waste management, teaching about the environment and community engagement. | • Gardens4Health project in Auckland  
• Te Maara @ Cornwall in Porirua |
| Gardening as a component              | Where community gardening is set up as part of a wider initiative. Sometimes the garden is a starting point; other times it is just one activity within a wider programme. | • Rata Vine estate, Manukau  
• Grab a Bite That’s Right, Whanganui  
• CCS Disability Action garden, Auckland |

A slightly different classification was developed by Stocker and Barnett, who based their categories around how the plots are gardened and who benefited from the work (Stocker & Barnett, 1998). This is a useful way of conceptualising community gardens when considering questions like private use of public resources and how the benefits are distributed.

In comparison, the categories suggested in Table 9 are likely to be helpful when a community group or government agency is thinking about what type of garden initiative to establish. For instance, if the identified problem is lack of space for growing vegetables or fruit trees, this would suggest that the focus should be on finding a place to garden. This might involve setting up a community orchard, establishing roof-top gardens or creating allotments. Alternatively if a health agency identifies that a community has a low intake of fruit and vegetables then it
may be more appropriate to work with the community to set up a garden that is part of a wider nutrition initiative or set up a community market.

5.2.2 How much is the community involved?
Another way of categorising community gardening initiatives is to consider how much the community was involved in setting them up. The gardening initiatives identified in the research were set up by people in a community, by a central or local government agency, or by a combination of these two. In this context, community refers to a group of people who share common interests or characteristics. This includes groupings like neighbours, ethnic communities, churches, marae and community-based social action groups.

The extent of community involvement ranges from gardening initiatives completely initiated and developed by community members to allotments set up by a local authority and gardened by people in the community. Figure 2 presents this relationship diagrammatically. Gardens at the top of the diagram are those like Innermost Gardens in Wellington set up by a community, and where the only government agency involvement was through making land available or providing grants to the community group. Other examples of garden initiatives in Wellington that would fit this scenario are Kai o Te Aro, Owhiro Bay Community Garden, Common Ground and Brooklyn Community Orchard.

Other gardens were set up or funded by local or central government agencies for purposes like health promotion, community development, promoting Te Ao Māori or environmental sustainability. These agencies include local authorities and organisations supported by them such as Keep Porirua Beautiful and Operation Green Thumb; District Health Boards; and regional offices of Te Puni Kōkiri.
Figure 2: Relative involvement of community and government agencies in establishing community gardens

The extent of involvement of these central and local government agencies and the roles they played varied between gardens. The area at the bottom of Figure 2 represents gardens set up with limited community involvement in their design and establishment. For gardens at the bottom of the diagram, community involvement may consist of individuals renting an allotment and gardening it, or attending a course to learn about gardening.

The relative involvement of community and government agencies depicted in Figure 2 is consistent with the description of community gardens as being started using either a “bottom up” or a “top down” approach. “Bottom up” development starts with a group of interested people working together and building community ownership of it. Whereas a “top down” approach occurs when agencies see a garden as an opportunity for community development (Pirikahu, 2008).
While a government agency may set up the garden, this is often with the intention that the community will take over its running. For instance, creating community involvement has been a key objective since Te Maara @ Cornwall was established. Likewise, for community gardens set up by Wellington City Housing, the council’s role is to set up the gardens, which are then run to a large degree by housing estate residents. And the Kilbirnie community garden allotments are now mostly run by the community members who garden there.

For some garden initiatives, the opportunity or environment for establishing them was created by a central or local government agency, for instance by making funding available. However, the local community or a community-based agency like a church, marae or community group undertook the establishment of the garden. The area in the middle of Figure 4 represents these initiatives. One interviewee talked about the benefits of these agencies establishing an ongoing relationship with the groups they fund.

“The ones [gardens] I suppose that fell down was when they just went into a community, or an area or a marae – whatever the setting and they just came in and said “here’s some funding, here’s the garden, sweet as – see you later”. So that’s all they did and walked away and then it fell over. The ones that were more successful were the ones where they had a whole process beforehand where they went in and engaged with – whether they would be the leaders of the marae, the leaders of the setting or community.” (Health sector employee)

The current research suggests that the government agency may play a variety of roles as shown in Figure 3. It may initiate the establishment of a garden through making funding available as Te Puni Kōkiri does with its Maara Kai programme and the Hutt Valley District Health Board did as part of the HEHA programme. Or a health sector agency may be a facilitator and broker for resources, as Counties-Manukau DHB was in establishing the Gardens4Health project.
5.3 Who is involved in community gardening

The interviews highlighted the diversity of people interested in community gardening in Auckland and Wellington. The gardens involved people from many nationalities and cultures, young and old and both affluent and poor.

“…when people have called me it’s been people like mothers who have just become pregnant… to people who are interested in ecological architecture and design, and find, you know, green roofs fascinating and wanted to shift the whole nature of our urban design, … It’s such a range, it’s hard to say exactly who – because I’m constantly surprised.” (Sustainability organisation employee)

“A whole range of people who are interested for a whole range of motivations. There are people who are concerned about climate change; there are people who are concerned about additives in our food; there are people who can’t afford fresh produce; there are people who want to do community development work through community gardens.” (City councillor)

“I’ve come to this from a sort of values thing – part of my education – interested in the environment and doing the right thing. Whereas food security for a lot of people is the basics of being able to feed the family and do it on a low income and it needs to be made more relevant to those people.” (Council employee)
As suggested in the quotes above, the people who got involved in community gardening initiatives in Auckland and Wellington had a variety of motivations for looking for a place to garden or learn about gardening. Some people had become involved for value-based reasons. These reasons included concern about sustainability, peak oil and food miles as well as interest in organic gardening. Often these people got involved in garden initiatives in affluent suburbs where the motivation for the initiative had come from local residents who were able to access resources and set up the garden without the assistance of outside agencies.

People with limited disposable income, such as students, households in high deprivation neighbourhoods, migrants and refugees, were more likely to have become involved for economic reasons. Many of the initiatives in which these people were involved had been set up by external agencies, such as city councils, churches, marae, or health sector agencies. These agencies usually played an important role in accessing both land and resources.

In addition, for some communities there were also cultural and social reasons for taking part in community gardening. Section 5.1.2 above mentions the importance of communal gardening in Te Ao Māori. Another reason for getting involved in a gardening activity is the wish to be part of a community activity.

“It is usually locals, people around who have interest in the community and want to connect, have a genuine desire to connect with other people around them.” (Employee of a sustainability organisation)

For Pacific communities there may be a variety of motivations for getting involved in community gardening. Many of the Pacific community gardens were set up primarily as components of nutrition programmes. However, in a Pacific focus group for another research project, participants talked about how for people who have migrated from the Pacific, community gardening can provide a missing link with their food production. They described how in the Pacific, the way food was
produced is labour intensive and people know where food comes from and that this link has been lost in urban setting as most food comes from the supermarket.\textsuperscript{7}

On the other hand, it is also clear from the interviews that community gardening appeals to some people but not others. Not everyone wants to garden. Gardening is time consuming and can be hard work for little gain. Also most people today live very busy lives. Gardens require constant attention or involvement, so it is often not practical for people to make the commitment needed.

\subsection{Creating inclusive places}

The interviews illustrated the potential for community gardens to be inclusive of people who are often seen as being outside the community. Two examples of this were evident during the research. Firstly, some community gardens were involving people with intellectual disabilities or mental health consumers. This was usually in terms of community participation or skills development rather than just therapeutic horticulture. Along similar lines, CCS Disability Action in Auckland runs a garden, which used to be primarily for disabled people and has now been opened up to the wider community.

The second example is the involvement of periodic detention (PD) workers as active participants, not just invisible labour. Many of the gardens visited used PD workers to help with the heavy manual work of creating and maintaining a garden site. Three garden projects were working towards getting the PD workers more closely involved in the garden.

At Te Maara @ Cornwall in Porirua, periodic detention workers assist with the regular maintenance on the site.

\textsuperscript{7} Conversation with Carly Woodham about her focus group research.
“PD are working on a potato garden – that’s a work in progress – so they in turn have helped us with the drainage etc, cutting down weeds, cutting down bushes and all that sort of things, the pruning, the beautification and maintenance work within the space itself. (Coordinator, Te Maara @ Cornwall)

The garden coordinator is keen to include the PD supervisor in the garden steering group so that the PD workers can get involved in projects around the garden

In Owhiro Bay, Wellington, a community garden has recently been established by Mokai Kainga, a Māori service provider. The garden includes some reserve land that was previously overgrown and PD workers have helped to clear the land. The PD workers have been integral to the project and some are starting to cultivate their own allotments within the garden site. As described by one stakeholder, this experience has been transformational for some of the men.

“I went to the opening of that space and the guys were there and they were sharing their food that they’d had grown. And one guy he was just laughing, “I’d never seen myself doing this, but the fact I could get physical and actually do the work and then have something grow a bit, just does something else for me.” … The fact is that that is an alternative way of doing PD for him but it’s actually two fold, three fold, and the respect they gain for themselves is quite amazing …” (Stakeholder, Wellington)

The third example came from an interview with the mentors at one of the Manukau Parks Teaching Gardens. During the interview they mentioned that three of the PD workers who had helped with the site were keen to join the teaching garden programme. The mentors’ response was “bring your partners and your kids”.

Consistent with the inclusive nature of community gardens were comments by several interviewees that people contribute different things to a garden and not everyone will be able to contribute in the same way.

“it doesn’t matter if you are in a wheelchair or just want to sit on a chair and watch, you know – that’s fine as well.” (Stakeholder, Wellington)
“...[a community garden is] where children up to elderly people, you know anyone can come and be involved and is seen as having something to contribute – whether it’s just play or whether it’s some practical knowledge, whether is some brawn”. (Stakeholder, Wellington)

5.3.2 Involving low-income and ethnically diverse communities
Recent New Zealand research has suggested that low-income communities are interested in being part of community gardens. In focus group discussions about food security, participants proposed community, whānau and individual gardens as one solution to enable people to eat the food necessary for a healthy life (Lanumata et al., 2008). Likewise, in a study of the food environment in Porirua, participants suggested community gardens as a potential intervention to improve access to nutritious food (Woodham, 2009).

In the current research, some stakeholders and garden coordinators talked about the potential of working with Housing New Zealand Corporation (HNZC) to involve people on low incomes. This is beginning to happen. For instance, Te Maara @ Cornwall in Porirua meets at the local HNZC office and has a HNZC staff member on its steering group. Also, Gardens4Health in Auckland has established a working relationship with several HNZC offices. Ideas suggested in the interviews were to plant fruit trees and create vegetable gardens as part of building or refurbishment projects, and to include fruit trees on communal land on HNZC properties. In Wellington City, the city council is the biggest public housing landlord. The city council in conjunction with Operation Green Thumb has established 16 gardens on City Housing sites.

One garden coordinator commented that she had found that people on low incomes knew that fresh foods were healthy and were keen to garden, but the enormity of the issues they were dealing with in their everyday lives meant that they didn’t have time or energy to set up a garden and were not sure how to begin to do this.
Several interviewees mentioned the factor of time-poverty in low-income neighbourhoods.

“...even those who were unemployed or on benefits – supposedly people with time, actually don’t have a lot of time, they’re really busy – so trying to fit it all in often becomes quite difficult for them.” (Health sector employee)

“I know a lot of the old Pacific people still because they’re retired they have time to get out there and do their gardens, whereas the younger people ain’t got time.” (Health sector employee)

The current research has highlighted the time-intensive nature of community gardening, which suggests that it may not be an appropriate initiative for some communities. This is illustrated by the example of Innermost Gardens. The vision, and initial energy, for Innermost Gardens came from a Turkish Muslim woman who moved to Wellington and wanted to bring refugee and migrant women together in a setting that would promote healing and community. According to the people who knew her, she was an outgoing person who drew others into the things she was doing. Even though a lot of outreach was undertaken with refugee women, they never became strongly involved in the garden. Interviewees commented that this was in part because refugee women’s lives were busy and their priorities lay elsewhere.

“...they need to learn to speak English, they need to earn money, they want to spend time working with the [name of a nationality] community and then just kind of getting by, and all the family things that are required within the family unit take all their time.” (Innermost steering group member)

The cultural diversity of the people who have become involved in community gardens, particularly in South Auckland, was highlighted in the interviews. It appeared that coordinators and mentors have an important role in making people feel culturally safe.

“We are very fortunate in our staff, because of [names of staff members] – people feel at ease, they can speak the language and they can understand and they connect with people, so I think it’s different if perhaps I went out there. So I think that kind of eases
the path and the relationship’s already there – the trust.” (Garden coordinator, Auckland)

Coordinators also talked about the need for the garden format to be consistent with cultural values and food preferences. At one garden site, the coordinators talked about how they had changed what was grown in the garden to better reflect the plants that interested the gardeners.

“I think the garden was kind of an English base – I suppose it had rosemary and thyme and thing like that but that wasn’t what people eat – they wanted lemongrass and coriander and stuff like that, which is what people use normally in their cooking.” (Garden coordinator, Auckland)

Three garden coordinators talked about gardening projects involving Muslim groups and that they had found it was more culturally appropriate to either set up a women’s garden or have separate men’s and women’s gardens, than to have men and women gardening together. Interviewees also mentioned gender roles and expectations when discussing garden projects involving Pacific people:

“… in [name of a Pacific nation] it was about mana, a man who could provide from his own piece of dirt, for his family and feed them and feed them well and feed his neighbours was a man who had extremely high esteem and mana. … the women didn’t garden actually, he told me. Their job was to prepare and cook and use that food, but not actually to dig in the ground and do the planting…” (Health sector employee)

A garden coordinator mentioned that some communities prefer to garden only in the summer months. This may be because they don’t have knowledge about how to grow winter crops or what varieties grow best in the winter, or because they come from warmer climates they don’t feel comfortable gardening in the colder months. In the Pacific communities, many of the older gardeners travel back to their home countries over the winter months and so are not able to take part in the community garden during that season.
5.4 Summary

The current research has highlighted the diversity of community gardening initiatives in Auckland and Wellington. While community gardening is often perceived as either allotments or communal gardens, in reality it covers a broad range of community-based initiatives that involve gardening. The recent rise in interest about community gardening is strongly linked with a resurgence in home vegetable gardening.

The research suggests that the increase in interest in community gardening has many roots. Among them is urban communities’ disconnection from food production, which appears to be particularly evident among children and young people. This disconnection is of concern to both the health sector and environmental groups. Therefore these agencies have identified gardening as a way to help reconnect people with fresh food and local food production.

The two frameworks for categorising community gardening initiatives proposed in this chapter provide ways of determining what type of initiative would meet specific objectives and how agencies can best support and sustain a community gardening initiative. The gardens studied included those developed through both “bottom up” and “top down” approaches. The “bottom up” gardens tended to be in affluent suburbs and developed for value-based purposes such as environmental sustainability and community cohesion. In comparison, those set up using a more “top down” approach were mostly established in poorer neighbourhoods by health agencies or local authorities as a way of improving health and community wellbeing. The research suggests that both approaches are appropriate and “top down” approaches may be important in enabling low-income communities to engage in gardening. However, establishing effective community involvement is essential. The interview data also suggest that if an agency is supporting a
community group to set up a garden, then the agency should continue to work alongside the group rather than just funding the initiative and leaving them to it.

The research findings suggest that in many cases setting up a community garden in a New Zealand urban area is more of a means to achieving social objectives than an ultimate goal. The goal may be increasing people’s knowledge of gardening, improving environmental sustainability or engaging local residents with food and nutrition. The link with home gardening in particular indicates that a community garden site may be a short-term intervention and this needs to be recognised when designing initiatives and considering their sustainability.

![Image](image.png)

**Figure 4: Event sign outside Te Maara @ Cornwall, Porirua**
Chapter 6: What is needed to set up and sustain a community garden

The second topic under which the research data were analysed was what resources are needed to set up and sustain a community garden. If the health sector is supporting community gardening as a public health intervention then it is important that these resources are allocated to initiatives that are most likely to be successful.

The New Zealand community gardening literature identifies a few of the challenges to creating and maintaining a community garden and in this chapter the extent to which these were evident in the current research is discussed along with other challenges highlighted through the interviews.

Those involved with community gardens consistently identified four components to setting up a community garden: active community involvement; passionate, practical and hard working people; a suitable site; and time, knowledge and equipment. This chapter summarises what interviewees said about each of these. Two case examples are also presented that illustrate the challenges associated with accessing these resources. The first case example, Te Maara @ Cornwall, shows the difficulties associated with creating and retaining community involvement, particularly in a community that has limited resources and faces many challenges. The second case example, Innermost Gardens, illustrates the difficulties associated with obtaining a suitable site.

The final section in this chapter examines the costs associated with setting up and sustaining a community garden. These include the set-up and operational costs and the potential for community gardens to save money for those involved in them.
6.1 Challenges of setting up and sustaining a community garden

All of the garden coordinators interviewed talked about the challenges of setting up and sustaining a community garden. These include expectations from the public and stakeholders and experiences of theft and vandalism.

6.1.2 Public and stakeholder expectations

One of the hidden challenges that became evident during the interviews is public and stakeholder expectations about community gardens. The growing profile of community gardens in local body politics and through sustainability and health agencies means that there are high expectations about what can be achieved. But the reality is that establishing a garden is hard work and can take a long time. This means there is often a reality gap between the good idea and the task of setting up the garden. Some of this reality gap appeared to be because there is little documentation about what has happened with community gardens in Aotearoa New Zealand, which means that views on community gardening are based on expectations and anecdotal stories.

In addition, some gardens have experienced problems with stakeholders or members of the public who expect the garden to be created instantly or the site to be pristine. Several garden coordinators had received negative comments about the scruffy nature of organic gardens or materials like baths, car tyres and clotheshorses being used as garden structures.

The coordinator of an established community garden commented that whether people could appreciate what the garden had achieved depended on their expectations.

“….people who go down there and go “This is the community garden? What have you guys been doing down here? It looks like crap.” Because through a certain lens it does look like crap. But that is what you see if you are only looking at in terms of what a garden should look like … our concept of what a community garden is about a group of
empowered people who communicate well working on a space. It’s about that process by which people make decisions together and learn about things and improve the land. (Garden coordinator, Wellington)

In addition, several interviewees pointed out that not all community gardening initiatives are successful and some take considerable time to develop. One interviewee described how community gardens have periods when they flourish and also times when they are less successful and the land becomes overgrown.

“...I think maybe sometimes we set projects up and think that once they’ve reached this standard it has to build forward and better all the time. I think the gardens, like anything else, sometimes they might ebb and flow a bit because it will depend on that kind of succession thing and it doesn’t mean it has to be the end of it because over a couple of seasons or even a year nothing happens – it can come back again because you have new people with new energies and I think sometimes you just have to accept that on balance you probably get more success than failure.” (Garden coordinator, Auckland)

Another interviewee talked about his previous experience in the United Kingdom where he found that interest in community gardening was cyclic and a lot of resources could go into the infrastructure that would later be scrapped.

“...in my former life [in the UK] we had lots of schools we used to work with, and good science teachers always said “Let’s have a school garden”. So you’d build a school garden. They’d get promoted to deputy headship ... they’d move and a year later we’d be asked to come and demolish the garden. And then two years later a new person comes along and says, “Can we build a community garden or a school garden”. It goes through in cycles.” (Council employee)

Based on these experiences, this council employee was sceptical about the potential for community gardening in New Zealand cities.

The interviews also highlighted differing perceptions between people promoting organic gardening techniques and those, such as horticultural staff in local authorities, whose experience was in using inorganic methods like herbicides and pesticides. These differences of perspective were particularly acute in relation to
gardens on some city council parks or reserves. The origins of these often clashing worldviews seemed to be differences in values, training and experiences.

“It’s just the scale we do thing on. And it’s all very well going around the edge of your garden with a little weed eater but then you’ve got 10 kilometres you’ve got to use every trick in the book…” (Council employee)

“It’s a philosophical one, or deeply entrenched practices sort of moulded by what I term the old agriculture model – using sprays and artificial fertilisers – and they’re familiar with that system and they’re familiar with that practice and somewhat concerned about whether organic practices could operate in the community garden type setting,”

(Garden coordinator)

6.1.2 Vandalism and theft
Graffiti, vandalism and theft were also common problems for community gardens but generally only occurred on a limited scale. A coordinator for a garden on a public housing estate reported that theft was generally from other residents and was often because they didn’t realise that they could participate in the garden. However he thought there were probably some residents who “take free vegetables and don’t care”.

One coordinator suggested that vandalism is usually not about opposition to a community garden but about people being disconnected from their communities.

“… is like the faceless opposition to comes down and rips out our trees and spray paints on our compost bins, and stuff like that. I don’t really see that as opposition to the garden. I see that as the challenge of dealing with alienated people who have a lot of anger about a community that they don’t feel part of.” (Garden coordinator, Wellington)

Some gardens had developed strategies to deal with theft and vandalism. An approach developed by Ranui Community Garden in Waitakere is to have a public garden with free vegetables outside the garden fence. There were mixed views on the success of this approach.
At some other garden sites local residents had developed a sense of ownership and watched over the garden.

“…by engaging with the broader community they actually tapped into the right sort of people and were able to influence these youth gangs and indicate to them, “well this is an area you could protect – it is really part of your patch”. As a result there’s been minimal damage to that particular site.” (Garden coordinator, Auckland)

Instances of vandalism and theft have been mentioned in other New Zealand studies of community gardens and in the media (Gates, 2009; Jordan, 1995; Pirikahu, 2008; Watson, 2006). Six of fourteen South Island community gardens surveyed by Caroline Watson had experienced problems with vandalism and six had experienced problems with theft (Watson, 2006). A recent article in the Press noted that incidents of theft from community gardens were increasing as rising fruit and vegetable prices were rising (Gates, 2009). Vandalism and theft are also mentioned in overseas studies of community gardens (Armstrong, 2000; Kurtz, 2001).

6.2 **What is needed to set up and sustain a community garden**

There was a clear commonality among those interviewed about what is needed to set up and sustain a community garden in Auckland and Wellington. Four
components were identified: active community interest; passionate and hard-working people; a suitable site; and time, knowledge and equipment. Each of these four components is discussed below.

6.2.1 Active community involvement

“... I think you can essentially have a community garden anywhere as long as you have the people. If you don’t have the people you might have the greatest site in the world and all the money in the world but it won’t be a community garden. It might be a garden but it won’t be a community garden in the sense that it evolves with the group of people, in that they take ownership of it.” (Garden coordinator, Wellington)

Many of those interviewed stressed the importance of community involvement and how hard this is to achieve. Many community projects have difficulties attracting volunteers.

It was very clear from talking with garden coordinators that there is no “one model fits all” approach to engaging the community. One stakeholder was of the view that the dynamics of the community in which she works mean that there was not sufficient social capital to support a community garden. Her description was of a community comprising short-term residents waiting to move to somewhere better and insular church groupings that were not active in the wider community. She suggested this profile was not about the financial wealth or poverty of the community but its dynamics. She talked about successful community gardens in neighbouring suburbs that are “more outward facing”. This reflection about some neighbourhoods being more outward facing and thereby more likely to set up community gardens was also mentioned by a council staff member in an adjoining city. This suggests that the feasibility of establishing and sustaining community gardens may vary between communities.

The interviews included two council employees who had instigated community gardens that didn’t thrive. One of these gardens was set up by the city council in response to a suggestion in a local community consultation. The garden ran for two
years but the council employee responsible for the garden was not able to get sufficient involvement from the community to sustain the garden. Based on her experiences, she came to the view that it would have been more effective and appropriate for a garden to be set up by the community in partnership with, or with support from, the council rather than being set up by council staff. The second garden was set up at a community house and thrived for a while until most of the vegetables in it were stolen. In this instance, local residents who spent time at the community house did the work. On reflection, the council employee wondered if there are been sufficient local people involved in the garden for it to be sustainable.

Community involvement has a number of components. The most obvious one is the extent to which community members are visibly contributing to the gardening. But depending on the purpose of the garden it may be just as important that the community feels a sense of ownership and uses the vegetables, fruit and herbs grown in the garden. The interviews highlighted that it can be hard to gauge the extent to which the local community is making use of the garden.

“…there was a group of three sort of young adult guys … and we started talking and I told them we had been down to (name of community garden) and they said “Oh yeah, we always go down there and get vegetables for our boil up”, and I’d never seen them before but they were saying we are using it.” (Garden coordinator, Wellington)

Two recent New Zealand studies have highlighted the importance of involving the community in the design of community gardening initiatives (Bowers et al., 2009; Pirikahu, 2008). One of these concludes that acceptability and buy-in from individual communities should be determined before establishing community gardens (Bowers, et al., 2009). The evaluation of the “Grab a Bite That’s Right” initiative in Whanganui documents the process for trying to establish community involvement in a garden. It concludes that one of the reasons the community garden did not initially thrive was insufficient consultation with stakeholders and engagement with the local community (Pirikahu, 2008).
6.2.2 Passionate, practical and hard-working people

“Passion” was a word that was regularly mentioned in the interviews. It was used to describe the level of energy that is needed to set up and sustain a community garden and create community interest.

“It falls down to the same thing, people’s passion, somebody who is a real driver and interested in it, somebody who keeps going back to them and asking them how they going… if you don’t have some dedicated people who want to be on this thing all the way, it starts to lose its momentum. (Stakeholder, Wellington)

The importance of having a group or individuals who can “drive” a community garden was mentioned by most of those interviewed. Several interviewees also warned that initial passion is not necessarily a good measure of how much energy there is in the community to develop a garden and how successful it will be.

Several of those interviewed talked about the importance of getting the right people in leadership roles to drive a garden project.

“… you tend to get some personalities who like being in positions of authority and they include people they want to include and they exclude people they don’t want to include.” (Stakeholder, Wellington)

“… the mentors you choose have to be people who don’t feel the need to do everything – they have to be people who can bring other people along with them.” (Stakeholder, Auckland)

Some gardens had a core group or used mentors or guides to help with the technical side of planning, setting up and maintaining a garden. The interviews highlighted that these people play a critical role in determining the success of the gardening. The importance of leadership is highlighted in other New Zealand literature on community gardens (Fortune, 2010).

Many of the gardens visited had coordinators. These were either a paid staff member or someone who spent many volunteer hours involved with the project.
Coordinators were usually only paid for a few hours a week and often did many more hours they those for which they were paid.

Throughout the interviews, it became clear that setting up a community garden requires people with various skill sets and interests. Those who set up community gardens are often more interested in the organisational side and can find it hard to transition into the gardening.

“...we have always been so much involved in the maintenance and all the administration side that you’ll find it’s often not the core group that’s at the gardening bees, because their energy is so spent on that stuff.” (Garden coordinator, Wellington)

On the other hand, people who want to garden are often practical people who would prefer not to spend a lot of time of time talking and attending meetings.

“...gardeners they are a fairly self organizing breed and they don’t really want to be on a committee or anything – they just want to get out and do their thing and come and go as they please.” (Stakeholder, Wellington)

One participant who worked in a community garden talked about how she had been keen to set up a garden on a local reserve but she and her neighbours had decided to set up a community orchard instead because of the amount of work involved in establishing a garden.

“...we were originally thinking of setting up allotments in the garden and we decided that was going to be too much hard work and probably we would just end up with that small core group of people doing all the work.” (Garden Coordinator, Auckland)

At most of the communal gardens visited, the gardening took place through regular working bees. A lot can be achieved at these working bees. One coordinator commented that she had calculated that over 40 person hours had been spent on the garden site the previous Sunday (the equivalent of a week’s work). However, bad weather and poor turnouts at working bees mean that this is not always sufficient to keep up with maintenance on the garden, particularly in the summer months when gardens need constant tending. Several of the gardens visited were trying to find
ways to encourage local people to work in the garden outside working bee times and discussing ways of communicating with gardeners about what work was needed. The challenge of continuing to have sufficient people involved in the garden to maintain its productivity has also been identified in other New Zealand research (Watson, 2006).

6.2.3 A suitable site
The interviews highlighted the many aspects of selecting and obtaining a suitable site. Firstly, just because a piece of land is vacant or looks under-utilised does not necessarily mean it is appropriate for growing edible plants. And, as interviewees described, getting approval to garden an identified site can take significant time and resources. Factors such as soil condition, sunshine and protection from the wind were all identified as important when deciding where to locate a garden. Local environmental factors also need to be taken into account. For instance, many of the public parks in Auckland are situated on land that floods in the winter.

The accessibility of the site was also talked about in some interviews. One stakeholder described a rural community garden set up on a site that couldn’t be accessed by the people who it was expected would get involved. For people with disabilities and older people, access onto the site and the layout of gardens can present barriers or facilitate accessibility.

“…a lot of the people in council flats have health issues or have mobility issues or are a bit older and can’t dig a garden from scratch but would just love to just be able to plant some things … so that’s [raised beds are] kind of like instant garden.” (Stakeholder, Wellington)

Access was one consideration in creating a raised bed design for the Innermost Garden’s Mount Victoria site.

Successful gardens require healthy soil. Two aspects of soil were raised in the interviews. First was having sufficient nutrients and humus in the soil to grow
healthy vegetables. The second aspect related to past uses of the site and the potential presence of heavy metals or pesticides. For instance, in areas like South Auckland that have a past history of market gardening, it is possible that there will be heavy metals or pesticide residues in the soil. The other potential danger mentioned in the interviews was sites where there have been high-density sporting activities, like bowling clubs and grass tennis courts. This was seen as a problem by some interviewees because chemicals are likely to have been used to control weeds and there may be residues of these chemicals in the soil. Staff from Auckland City Council\textsuperscript{8} and Wellington City Council advised that soil testing of council sites is undertaken before community gardens are set up.

In addition to ensuring the suitability of the soil, often rubbish or scrub had to be cleared or infrastructure built before the garden could be created. This infrastructure may include installation of a water supply, building raised beds or terracing. Sometimes these requirements create obstacles that are insurmountable for the group setting up the garden. For instance, in the Hutt Valley, a Pacific church group abandoned one site after they discovered it was an unofficial rubbish dump. In her study of community gardens, Caroline Watson also found that “many of the gardens required substantial hard work to clear away rubbish and get them up and running” (Watson, 2006, pg 47).

The other challenge in accessing a suitable site is the process for getting approval to use land for a community garden. This is particularly an issue when setting up gardens on land administered by local authorities. One city council staff member expressed concern about the dissonance between the council’s policy and the reality of applying to use public land for a community garden.

\textsuperscript{8} This information was gathered from staff working for Auckland City Council. In November 2010, the Auckland City Council combined with other territorial local authorities in the Auckland region to form Auckland City.
“...the community gardens policy is really enabling, it sounds really welcoming, something that council wants to encourage and then you come up against the actual bureaucracy.” (City council employee)

Some, but not all, councils require a lease agreement with the group setting up the garden. While these processes have been put in place to balance competing demands for public space, the interviews highlighted how challenging and costly they can be for community garden groups. The process usually requires the group to be an incorporated society and pay public liability insurance and may include a community consultation phase. This consultation takes time and may result in another community group being identified as a more suitable user. Also, in Wellington the community group has to pay for an advertisement in the newspaper, which costs around $600. The Wellington City Council is reviewing its leases and licences policy, which may result in a more streamlined and less costly application process. Other challenges of gaining access to council-administered land may include appearing before a community board and paying public liability insurance. Also, in Wellington, a lot of the green space is part of the Town Belt and therefore it is harder to get approval to set up a garden on these sites than other public land in the city.

6.2.4 Time, knowledge and equipment

“There is never enough time” was a comment made by many of the garden coordinators. They identified that adequate time is critical to develop community involvement, build the garden structure, and then sustain the garden. A local authority staff member with responsibilities for a community garden site commented that the garden took up more than the time allocated:

“...we are meant to be doing four hours a week, but we are more than double that at least and when the season changes, 50% of the week is going there, so there is lots of demand for time.” (City council employee)
In addition, the establishment of a community garden may take longer than was anticipated. In the case of Innermost Gardens in Newtown, the initial intention was to set up a place for refugee and migrant women. However, it took a long time to set up the first garden site and interviewees suggested that this may have been one of the reasons why refugee women did not get actively involved.

“...there was a long period where we didn’t have a garden. So it was all talk and a lot of women didn’t stick around. And for refugee and migrant women that we wanted to bring on we couldn’t say, “OK, this weekend come to the garden and we’ll start’.” (Stakeholder, Wellington)

The time it took to get a garden established was also a challenge for a community garden set up with health sector funding in Whanganui (Pirikahu, 2008).

Knowledge is essential for establishing and maintaining a community garden. As noted in the previous section, knowledge about gardening techniques is often held by a different group of people than those who undertake the initial planning. Without sufficient knowledge, it is easy to make mistakes both in designing the garden and in growing plants. For instance, interviewees talked of situations where it was initially proposed to place a garden on the southern side of buildings where there wouldn’t be sufficient sun. The interviews highlighted that much of this knowledge is available within communities, both from experienced home gardeners and from those who have trained in horticultural skills.

Resources for the community gardens studied come from a variety of sources. Gardens received grants from the health sector, local authorities, Work and Income New Zealand (WINZ), Te Puni Kōkiri and charitable trusts. Local authorities also provided mulch or seedlings. Most gardens had received donations from the local community and from private sector businesses, such as hardware and gardening stores. Participants mentioned that local businesses saw donating to the community garden as something that would gain them positive publicity.
“I know that lots of businesses like [name of business] are putting it out there because it helps them look good. I think it’s really good marketing for them to tell the story of all the community gardens that they have supported…” (Stakeholder, Wellington)

Figure 6: Sponsors notices at Millbrook Edible Garden, Henderson

The research data also suggest that affluent communities are more likely to be able to establish community gardens without the assistance of a central or local government agency. This is because these communities tend to have access to more resources, and may have the time and knowledge to be able to obtain resources from funders and the private sector. One coordinator pointed out that people in poorer neighbourhoods often did not have access to transport, such as trucks and trailers, to collect resources like seaweed, horse manure and building materials for their gardens.

While the community gardens studied had accessed adequate resources, this was often because funding agencies had provided more support to those community groups that had the least resources. A city council employee talked about providing assistance to groups who are not familiar with local authority processes, and gave
the example of a group of migrant women who were trying to find a suitable site for a community garden.

“… and also (they worked) closely with the community advisor to help them put their application together, appearing at the community board, all those kinds of steps. They need a high level of guidance with their unfamiliarity with the way the council works…” (City council employee)

She compared the support provided to this garden with an initiative in a more affluent area that didn’t require the assistance of a community advisor.

Recycling and reuse are core values to many gardeners, particularly those who use organic gardening methods or have limited access to new resources. For instance, in Porirua, the local litter abatement officer donated an old dinghy to Te Maara @ Cornwall and this has been planted out to create a garden.

![Image of people working in a garden]

**Figure 7:** Garden made from old dinghy, Te Maara @ Cornwall, Porirua

Gardens gather and use a variety of materials including old baths, tyres, clothes racks, pallets, and containers of all sorts. As one garden coordinator said, “We are making gardens with whatever we can get our hands on”. The following quotes are typical of the community gardens studied.
“I was driving past and it was on the side of the street – someone was having their bathroom redone and I ran around the back and say “Can I have the bath?” and “Yeah, take it away” – and that will be a worm farm. There’s really good bits of wood there for edging, bed edgings. The shed came from one of [name of group member] client’s that he gardens for. They didn’t want them anymore – that came along. We’re going to use the food waste to make the raised garden beds…” (Member of a garden trust, Auckland)

“Well, it’s amazing once you put the call out. There was a man who trims trees and has access to a lot of mulch. He came to a community gardens hui and just said, “Hey, I’ve got lots of mulch I have to put somewhere. If you guys want it, give me a call and I’ll drop it around or whatever.” … we donated an old bath that we were going to use in our backyard…” (Stakeholder, Wellington)

Accessing resources through reuse, recycling and using low cost propagation techniques, like seed saving, was particularly evident in low-income communities. One coordinator pointed out that using recycled materials in community gardens modelled how low-income households could set up low-cost gardens at home.

“… we are making gardens about whatever we can get our hands on and I think that is a very practical model. If we were going in and spending all this money and making this thing that was totally unachievable for the average low-income household that would be self-defeating. But we are making gardens out of rubble, and bathtubs and tyres…that is all stuff that people can do at home.” (Garden coordinator, Wellington)

Difficulty accessing sufficient resources was identified as a challenge in a study of community gardens in low-income and ethnically diverse communities in Toronto, Canada. The authors noted that low-income gardeners found “it very difficult to commit any of their own financial resources to the garden or even to their own gardening activities” (Wakefield et al, 2007, pg 100).
6.2.4 Case example: Te Maara @ Cornwall, Porirua

Establishing and retaining community involvement has been a constant challenge for Te Maara @ Cornwall and is seen by the coordinator as the first stage of establishing the garden.

“I would say that if you were to break community gardens into two main aspects of “building the community” and then “building the garden”, I’d say were are very, very much in that first part. And the way we build the community is through the garden, but in terms of its destiny as a real productive garden, I think that can only come when our community group is stronger.” (Coordinator, Te Maara @ Cornwall)

The idea for a community garden in Eastern Porirua came from Keep Porirua Beautiful. While community involvement has been a central aim of the garden it has been an ongoing challenge to develop and sustain this. The garden is located at Cornwall Park, a local reserve that was used as an unofficial dumpsite.

The first strategy for creating community involvement was to have a local champion to promote the garden. And when funding became available, a part-time community gardener was employed. However, for a variety of reasons, these strategies were not sufficient to establish large-scale community involvement.

In September 2008, a garden coordinator was employed to “try and find a way to get continuous community involvement”. He began by calling together all those who had an interest in the garden to establish a steering group. Initially the members of this steering group were all professionals and so the first focus was to get people from the local community involved in the garden.

“... right early on the Waitangirua Action Committee, they said to me “[name of coordinator] you’re going to have a hard time being a clean-faced Pakeha boy trying like to talk to these people, so we’ll take you to meet everybody”... we knocked on every single house door in Cornwall Crescent and they introduced me to people... And we invited them all to our initial big bash – which was we had a hangi day where we cooked a hangi on site.” (Coordinator, Te Maara @ Cornwall)
This hangi was the first in a series of regular events and working bees down at the garden site.

![Image](image_url)

**Figure 8: Preparing hangi for Te Maara @ Cornwall working bee**

Other events have included activities with local schools and compost-building workshops, for instance with the Burmese community. In this way the intention is to create Te Maara @ Cornwall as a hub for waste reduction and sustainability activities in the local area.

“Groups or schools may contact me through Zero Waste to say “We’ve got all this compost. What can we do with it?” and then we try and find a way to get them down to Te Maara @ Cornwall. A teacher at [name of school], they were composting there and she was bringing the buckets of stuff and dumping it in there. We take the compost from Porirua City Council and take it down there and dig holes and bury it in there to plant fruits trees in it.” (Coordinator, Te Maara @ Cornwall)

One way the relationship between Te Maara @ Cornwall and the local community is continuing to develop is through the local champion. The current champion is a local resident who spends time nurturing the garden between working bees. This includes looking after the garden and composting, weeding and watering the garden. In terms of whether Te Maara @ Cornwall has been successful, those working directly with the garden considered that the project was making progress.
But not all stakeholders in Porirua City supported this view. One felt that the site was not particularly suitable. It was also suggested that if training was occurring on site then this would increase its visibility. A local resident suggested that the site would be improved if a children’s playground was built there, as there is no playground in easy walking distance and this would bring young parents down to the garden and there would be something for young children to do while their parents weeded or watered the garden.

6.2.6 Case example: Innermost Gardens, Wellington
The experiences of Innermost Gardens in Wellington illustrate many of the challenges of setting up an urban community garden on public land. As noted earlier, the original intention of this community-initiated project was to set up a garden for refugee and migrant women but this has been hard to achieve. The focus has gradually shifted to creating a multicultural garden.

The collective operates two community gardens in central Wellington – one in Newtown and a more recent one on the edge of the Town Belt in Mount Victoria. The story of these sites outlines how difficult it can be to establish a community garden even with a lot of support from stakeholders and the local community.

Around January 2007, Innermost unsuccessfully applied for a lease to establish a garden on a disused bowling green in Mount Victoria on the edge of the Town Belt. When the process around the lease of this land became contentious, Innermost began looking for other sites.

An alternative but challenging site was found behind a church in Newtown. The church site was steep and overgrown. Innermost paid a large amount of money to have the area cleared of weeds. The next step was to build a retaining wall and create a terraced garden.
This was not an easy task and required the collective to utilise its diverse skills and networks to complete it within the finite resources that remained.

“We had to dig all these big holes and put in cement and create these terraced beds, cause it’s on a slope, so that’s a lot of construction budget. We were lucky because one of our members is a builder, so she just put in heaps of work.” (Previous Innermost member)

**Figure 9: Working in the terraced garden at Innermost’s Newtown site**

Then in 2009, the Wellington City Council approached Innermost and asked if they were still interested in the bowling green site. By then it had been decided that the other group interested in the site, a community crèche, did not meet the criteria for leasing Town Belt land.

The Innermost core group said that getting the licence application sorted out was a long process. It involved getting letters showing community support, drafting the application to the required format, waiting on council decision-making processes and negotiating over the final wording of the lease. The delay was in part because
of the complexity and length of the council processes but also because of the limits on the time that the core group could put in

“... you know it’s volunteer groups, like it’s people’s own time. I mean it would have been better if the whole process was quicker, but you know people can’t put in that much time or you know other things come up.” (Innermost collective member)

Soil testing of the Mount Victoria site revealed that it contained a low level of DDT. The collective knew this before it took over the lease. Once Innermost had secured the site the challenge was to work out how to remove the DDT. It was decided to try organic bioremediation (Jenkins, 2011) on one of the two greens and build raised beds on the other. The funding for the bioremediation came from a local environmental trust. In the interviews, collective members commented that a lot of time has gone into applying for grants to fund the various projects that have been required to develop the gardens on both sites.

When reflecting on the processes and time involved in getting the garden site set up, the coordinator was also aware of how this had helped grow the group.

“Even though the process has been quite hard, I think it has been one of the things that has built us, to be where we are and how we are now.” (Innermost coordinator)

Even though the collective has now established two garden sites, many challenges still remain for both sites. These centre around moving into the gardening phase of the project, for instance how to get local people involved in the gardens outside the working bees and how to keep the gardens thriving during the summer holidays when the gardens need constant attention but many people are out of town.

6.3 The costs of setting up and sustaining a community garden

The current research has shown that the level of resources needed to set up a community garden in Auckland and Wellington varies considerably. There is a strong focus on reuse and recycling in most gardens, and some have been set up as
part of city waste management initiatives. However, for some gardens, the
infrastructure costs and the time involved to establish the garden were considerable.
Those interviewed talked about using grants they received to clear rubbish and
noxious weeds off the site, build rain water tanks, terrace the site, buy soil or build
raised garden beds.

The initial set-up costs for a community garden can be a barrier to groups with
limited resources. During the interviews it became evident that established
community organisations, council staff or people with wide networks were often in
the best position to know where to go for resources and had the skills to make
successful applications or convince local businesses to donate resources.

The other significant cost is employing garden coordinators or mentors. A number
of those interviewed stressed the importance of having a coordinator. This appears
to be particularly important for gardens that are on big sites, in communities with
limited time and resources, and for initiatives like teaching gardens or those that
involve horticultural training. Paying a coordinator is an ongoing expense. On the
other hand, the current research indicates that a lot more can be achieved when
there is a coordinator, particularly in initiatives that are trying to achieve more than
just providing a space to garden.

A few of those interviewed expressed concern that resources provided to
community gardening initiatives were sometimes being wasted. Some of these
concerns centred on what was seen as inappropriate development of infrastructure
(for instance building raised beds unnecessarily). Also there was concern that
people setting up garden initiatives did not have sufficient knowledge and expertise
or that projects did not have enough funding and so gardens were being set up to
fail. It was not within the scope of this research to determine the validity of these
claims or to assess the costs incurred in developing specific gardens. However, the
information gathered suggests there may need to be more scrutiny of the benefits and risks before investing in expensive infrastructure.

On the other hand, concerns were also raised about the transaction costs associated with applying for funding. These transactions costs included the time needed to put a funding application together and complete monitoring reports; and time taken up in approaching businesses for donations or funding. A few people commented that these inputs can outweigh the value of the funding provided. In one interview it was suggested that funders may not realise how long it takes community organisations to complete the paperwork required.

“I went to something that the COGS [Community Organisations Grants Scheme] people ran and they were tell us about being careful with the application and you know it only takes you guys like an hour to write it up and I’m thinking “its taken us like a day or two or more”. And our first one would have taken us a good few days to work on them.” (Member of garden steering group, Wellington)

The information gathered from the interviews also indicates that there can be significant transaction costs associated with getting approval to set up a community garden on local authority land.

In terms of the net costs associated with growing food in community gardens, some overseas studies have compared cost of producing the fruit and vegetables with the value of the produce grown. All of these studies showed net savings (Armstrong, 2000; Blair et al., 1991; National Gardening Association, 2009; Patel, 1991). One New Zealand study of community garden participants found that all but one estimated that being involved in the community garden saved them money (Watson, 2006).

Financial sustainability is an area of concern for some community gardens. A couple of the garden coordinators were concerned about what would happen when the project used up its current funding. The coordinator for Innermost Gardens has been asked to specifically look at how to make the initiative financially sustainable.
This finding is consistent with other New Zealand research. In her research to determine whether community gardens are a good use of urban land, Caroline Watson noted some gardens had difficulty with financial viability and were unable to rely on funding to cover all their costs so had tried a variety of ways to become more self-sufficient, like selling surplus vegetables and running educational workshops (Watson, 2006). In the current research, many of the garden initiatives were relatively new and so may have not reached the point at which financial sustainability had become a critical issue.

### 6.4 Summary

This chapter has highlighted the many challenges associated with setting up and maintaining a community garden site. These challenges include both the practical aspects of obtaining a suitable site and the necessary resources, and the challenge of getting people involved and retaining them. In addition, there are external challenges like theft and vandalism and unrealistic expectations from stakeholders and the public. The issues are consistent with those raised in other New Zealand literature on community gardening. Two recent, but yet unpublished, studies of edible school gardens identified similar challenges (Cheung, 2011; Moss, 2011).

The findings described in this chapter identify aspects of establishing and maintaining community gardens that are pertinent to decisions about when and how to support these initiatives. Firstly, it needs to be recognised that garden projects are not always successful and even those that work well initially may have times when interest and energy declines. Secondly, communities have different needs and access to resources. Communities in poorer neighbourhoods may need more assistance and funding to establish a garden. For instance, while recycling and reuse are part of the ethos of many community gardens, for gardens in communities with limited resources it may be the only way to access the equipment needed for a garden. They may also face additional barriers, such as difficulty accessing suitable
vehicles to pick up free or low-cost materials. A third factor is that for some garden sites there will be substantial infrastructure costs. Whether it is appropriate to invest in this infrastructure will depend on the particular situation.

Figure 10: Composting instructions at Te Maara @ Cornwall, Porirua
Chapter 7: Health and community gardening

This chapter summarises the findings for the third topic covered in the analysis of the current research, which is the relationship between health and community gardening. The findings described in this chapter assist in building a picture about how community gardens in Auckland and Wellington are contributing to the health of their communities. These findings are considered using four different lenses on health.

The first part of the chapter summarises the health benefits of community gardening mentioned by the interviewees. The identified health benefits have been analysed using the four domains of Te Whare Tapa Whā model of health. These results are compared with previously published studies on community gardening.

The next section considers what the current research says about community gardening as a health intervention. It begins with a summary of the ways in which community gardening initiatives in Auckland and Wellington are becoming sites for health promotion, followed by a description of what the interviews revealed about health sector involvement in community gardens. Many of the points made in these two descriptions are highlighted by the case example of the Gardens4Health project in Auckland.

The interrelationship between community gardening and Māori health is the topic of the third section. This section summarises what the interviewees said about how community gardening influences Māori health. As noted in earlier chapters, it is essential that public health interventions have the capacity to promote and protect Māori health.
In the last section, the potential of community gardening to reduce health inequalities is considered. This potential is necessary if an intervention is to positively impact on health outcomes in Aotearoa New Zealand. It is considered by analysing the results of the current research using three tools designed to assist the health sector to assess interventions for their impact on health inequalities.

7.1 Participants’ perceptions of the health benefits of community gardening

“I sense that a lot about what we are doing with community gardening is a very holistic approach to community wellness, wellbeing in a very broadest sense.” (Garden coordinator, Wellington)

“So physical, emotional, spiritual and recreation – all the outcomes. Everything is interacting or linked together, so you can’t just say this is separate from there and education is the ultimate goal – so these are all interlinked with each other, like a person.” (Garden coordinator, Auckland)

“. . . you can get the kids involved, it can be about providing food, it can be about nutrition, it can be about economics, it can be about meeting your neighbour – gardening is something that has so many benefits.” (Council employee, Wellington)

As described in Chapter 4, a thematic analysis was undertaken of what interviewees said about the health benefits of community gardening. This analysis was based around the four dimensions of Te Whare Tapa Whā. As illustrated in Figure 13, in this model health is conceptualised as a four-sided house. The four sides, or domains, are: taha tinana (physical health); taha wairua (spiritual health); taha whānau (family health); and taha hinengaro (mental health). The results of this analysis are described below and compared with findings of other research studies on community gardening.
7.1.1 Taha tinana

“...everybody who was involved with the gardening project and had the opportunity to eat from that gardening project, would tell you instantly that that is the preferred way that they would like to source the vegetables.” (Health sector employee)

The first of the four domains of Te Whare Tapa Whā is taha tinana (physical health). Under this domain five main themes were identified, four of which related to nutrition. Each of these themes is discussed below and a detailed outline of the themes together with relevant quotes from interviewees is provided in Appendix D.

**Improving health through good nutrition**

The theme of improving health through good nutrition was mentioned in a few interviews. These interviewees saw the community garden as providing healthy food that would have positive health benefits for those eating it. This benefit was described both in terms of personal health benefits and also in
regard to health benefits for a population group, as illustrated in the quote below.

“We’re growing food and kids are eating fresh produce – healthy food.” (Garden coordinator, Wellington)

As noted in Chapter 3, even small improvements in risk factor exposure levels, such as a small increase in fruit and vegetable intake, can have noticeable effects in terms of population health (Ministry of Health, 2003a).

Greater access to fresh and nutritious foods
The second theme, of greater access to fresh and nutritious foods, was mentioned more frequently. An aspect of this theme was the opportunity to engage with fresh food. Interviewees highlighted that community gardeners had the advantage of eating vegetables that had just been picked. Interviewees also talked about how the food grown in the community garden had more nutritional value and also tasted better than store-bought fruit and vegetables. One interviewee explained how commercially processed fruit and vegetables are selected for their appearance and how long they would keep, rather than the nutritional value or taste.

As outlined in Chapter 3, overseas studies suggest that those involved in a community garden have a higher intake of fruit and vegetables (Alaimo et al., 2008; Blair et al., 1991; Twiss et al., 2003). In addition, studies of community gardeners have identified improved access to a wider variety of food as one of the self-reported benefits of being involved in the garden, including access to organic or more nutritious foods (Armstrong, 2000; Blair, et al., 1991; Kingsley et al., 2009).

In respect to engaging with fresh food, garden coordinators in the current research reported that involvement in garden activities increased people’s
interest in the foods being grown and how to use them. Overseas studies have found that involvement in a garden project increases children’s and young people’s interest in fruit and vegetables, encouraging them to try healthy foods and eat less “junk” foods (Ober Allen et al., 2008; Viola, 2006). An Australian study found that gardeners shared recipes, tips for growing vegetables and exchanged healthy foods (Kingsley, et al., 2009).

**Food security**

Food security was the third theme. Several of the interviewees talked about people on low incomes having difficulty accessing fruit and vegetables. The interviews highlighted that fresh vegetables and other healthy options are often too expensive for people on low incomes to purchase. For instance, one city councillor said that food banks were finding that people were suffering from illnesses caused by lack of fresh produce. Several interviewees suggested that community gardening could enable people on low incomes to have greater access to fresh food.

Other aspects of food security were growing food locally and having greater control over food production. For low-income communities, food security included reducing reliance on food banks. There was also some mention in the interviews about community gardens enabling communities to grow and access culturally appropriate foods. This is also a finding in overseas studies (Blair, et al., 1991; Wakefield et al., 2007)

The final concept under this theme was knowing where your food comes from. This was particularly seen as a benefit by those concerned about the presence of herbicides and pesticides in commercial fruit and vegetables.
Learning about food

The final nutrition theme was learning about food. Many interviewees identified that people lack knowledge about how to use the food grown in the garden and this was a barrier to good nutrition.

“...sometimes people don’t have a good diet, they might only be eating mainly meat or other things, so with the silverbeet and things, people often they don’t know what the heck to do with it, …” (Garden coordinator, Auckland)

Interviewees identified a variety of types of learning about food that can occur in a community garden, from knowing more about sources of food, to learning about how to grow food and teaching about healthy eating. One coordinator commented that given the opportunity to get involved in gardening, older family members were keen to show their children what they did in the garden when they were kids. They also wanted to teach their children to garden and grow food and learn more about the importance of the land.

The current research has found that the roles of many community gardens in Auckland and Wellington have created an environment where people are interested in learning more about how to grow and prepare food and to try new foods. In this way community gardening initiatives have created a place where food and nutrition are being discussed and people are starting to think about the food environments in which they live. This extension of community gardening is also mentioned in a recent study in Denver, USA. The researchers suggest that community gardens “may act as important change agents in the community by supporting the spread of healthy food and food related practices … which can lead to healthier communities” (Teig et al., 2009).
Increased opportunities for physical activity
The last theme under taha tinana was increased opportunities for physical activity. Those interviewees who mentioned this theme highlighted that gardening can provide a physically active alternative to more sedentary activities such as watching television, and also talked about some of the more physically demanding tasks like digging and turning compost.

Aotearoa New Zealand has a strong gardening history and gardening is still a common form of recreation and physical activity (SPARC, 2009). This suggests that there is a potential for community gardening to be part of wider initiatives encouraging people to be more physically active. Also, as noted in Chapter 3, the most significant public health benefits of increased physical activity occur when the sedentary individuals become moderately active (Nieman, 2007). Therefore, gardening could have positive benefits for public health by encouraging sedentary people to become involved in an activity that has a variety of health benefits.

7.1.2 Taha wairua

Taha wairua (spiritual health) is the second domain of Te Whare Tapa Whā model. The benefits listed under taha wairua cover two broad themes: connecting with nature; and revitalisation and healing. These two themes are detailed in Appendix D together with quotes that illustrate each of them.

Connecting with nature
A few interviewees used the term “spiritual” when discussing health benefits, whereas others mentioned the energies or life forces associated with nature.
This connection was described both in terms of all-encompassing concepts such as Papatuanuku and the elements of nature, as well in relation to very specific associations such as the positive benefits of having your hands in the soil. Some of the aspects that were listed under the taha hinengaro domain were also mentioned in relation to taha wairua. For instance, participants talked both about how connecting with nature was positive for mental health and how being involved in a community garden enabled them to reconnect with the forces of nature. Also, the positive benefits of having your hands in the soil were mentioned in terms of both spiritual and mental health.

**Healing and revitalisation**

The second theme under taha wairua was that community gardens provided in a place that was quiet and tranquil and where plants were growing, which created opportunities for healing and revitalisation. Included in this theme were the suggestions that these sites allowed people to slow down, offered a place of sanctuary and created opportunities for development. Community gardens were seen as a place of healing, not just for the people involved but also for the wider community.

As illustrated by these two themes, some interviewees saw community gardening as creating a connection with the environment and the forces of nature, which lead to positive effects such as a sense of tranquillity, slowing down, fulfilment and healing. For Māori, the connection with Papatuanuku (the earth mother) and other life forces is an essential part of the gardening process and the source of many tikanga (customary practices) associated with gardening.
Spiritual benefits are also mentioned in other studies in Australia and New Zealand, including gardens being a place of spirituality (Kingsley, et al., 2009); the sense of participating in the creation of living things (Bartolomei et al., 2003); and creating a spiritual relationship with nature, the earth and God (Kidd et al., 2000). These findings in conjunction with the current research highlight that taha wairua needs to have greater acknowledgement when discussing the health benefits of community gardening.

### 7.1.3 Taha whānau

Taha whānau (family or social health) is the third domain of Te Whare Tapa Whā and the one that was mentioned the most often. Several interviewees said that the social aspects of community gardening were the most important health benefits.

“At the end of the day, the biggest plus with community gardens I think is the health benefits of its people, the ability to interact with one another, with people, and I think the food you get from that is secondary.” (Garden coordinator, Wellington)

“One of the great benefits of the whole community garden thing is that bringing the community together, because the community is only as good as the people that are in it that are doing things together.” (Garden coordinator, Wellington)

Three broad themes were identified under taha whānau: facilitating social interactions and breaking down barriers; learning together; and strengthening communities. A detailed outline of these themes together with relevant quotes from interviewees is provided in Appendix D.
Facilitating social interactions and breaking down barriers

“...you have South Africans working alongside Somalis, you have Afghans working alongside Taiwanese, so the opportunities for people to engage as New Zealanders around food is very powerful and to share their cultural experiences and some of those cultural experiences about how they grow food differently and how they cook food differently ...It’s about sharing languages as well and sharing that cultural heritage that people bring.” (Garden coordinator, Auckland)

Interviewees talked about how a garden provides both a place and an activity that brings people together and creates opportunities for socialising. They said that providing a practical activity for people to do together in a community space creates conversations and interactions that may not occur elsewhere in the community. They also commented that working in a garden provides people with something to talk about and helps them to share aspects of their lives and cultures. Some coordinators, however, did express concern that this needed to be done carefully as it was also possible for stereotypes to be perpetuated and reinforced.

Two aspects of breaking down barriers were particularly highlighted during the interviews. The first was bringing people of different age groups together. A number of interviewees talked about how community gardening spanned the generations because it was generally older people in the community who had the gardening knowledge and younger people who were there to learn. The second aspect was creating opportunities for people from different ethnic groups and cultures to mix. This second aspect was more evident during interviews in Auckland than in Wellington.

A variety of overseas studies have also identified that community gardening creates opportunities for people of different ages, ethnic groups and life experiences to work together and learn more about each other (Bartolomei, et

Another aspect of breaking down barriers mentioned in the interviews was encouraging community participation for people with mental health conditions or other disabilities, and building greater acceptance of these people in community activities. In addition, as mentioned in Chapter 5, some interviewees talked about how community gardens offer a site where periodic detention workers can become part of a community activity, rather than just invisible labour. Not all community gardens studied included these groups and some were uncertain about how to do so. How people are included will determine whether this results in community inclusion or reinforces stereotypes and segregation. One Australian study identified that deeper social interaction was sometimes prevented by instances of cultural conflict and misunderstanding (Bartolomei, et al., 2003).

Learning together
Another aspect of taha whānau mentioned in the interviews was that community gardens provide a place to learn from and with others. This included learning about the foods eaten by people from other cultures through taking part in activities such as gardening together and sharing seeds. One stakeholder who had previously been part of a community garden valued the opportunity to learn about gardening in a public setting and then take these new skills back to her garden at home. Another Wellington stakeholder commented that he really enjoyed seeing experienced gardeners teaching others in a community garden setting. An Auckland stakeholder identified that community gardens provide a venue for families to learn together.
**Strengthening communities**

The interviews also highlighted the potential of community gardening to strengthen communities in a variety of ways. Council employees and councillors made many of these comments, which suggests that community building is a key objective for city councils in their support of community gardens. During the interviews, community gardening was seen as a vehicle for community development and community cohesion, as well as a way of fostering pride in the local community. Two interviewees mentioned the potential role that community gardens could play in a civil emergency. These interviews took place before the first of the large earthquakes in Christchurch. A garden coordinator commented that the health and other personal benefits of being involved in a community garden placed people in a better position to contribute to their local community.

These findings are consistent with international studies that have looked at the potential of community gardens to create community cohesion, build community capital and create a sense of place and attachment in the community. For instance, a New York study of garden coordinators indicated that the presence of the community garden had fostered residents’ pride in the community and provided the catalyst for other forms of community action (Armstrong, 2000).

The current research suggests that community gardens may provide a venue for addressing factors influencing the local food environment. Overseas studies have shown that community gardens can create collective efficacy and lead to community action outside the garden site (Armstrong, 2000; Blair, et al., 1991; Wakefield, et al., 2007). When this is considered in conjunction with
the current finding that community gardens have become a venue for food-related activities, this suggests the possibility that gardens could provide a location for communities to take action on changing their food environment. For instance, working with advocacy groups and local agencies to reduce the number of alcohol or fast food outlets in the local vicinity or establishing a market at which local people can sell their excess fruit, vegetables and herbs.

7.1.4 Taha hinengaro

The fourth domain is taha hinengaro (mental health). Frequent mentions were made during the interviews of the mental health benefits of community gardening. The taha hinengaro themes are detailed in Appendix D together with quotes from the interviews that illustrate the link between this theme and involvement in community gardening.

The mental health benefits mentioned in the interviews were diverse. Participants mentioned taha hinengaro benefits associated both with gardening and with being part of a community activity. They talked about therapeutic benefits, such as the positive effects that being active, handling soil and being outside can have on depression and how these opportunities can be of benefit to people with long-term mental health conditions. Participants also talked about the mental health benefits of connecting with nature, particularly when living in an urban environment, and how working in the garden made people calm and relaxed. The opportunity to develop your nurturing side through gardening, the mental health benefits of interacting with other people and the way taking part in stimulating activities helps reduce the effects of mental health problems were also mentioned. As
well, one respondent talked about how gardening had assisted periodic detention workers to develop respect for themselves.

Oversea studies identify a range of self-reported mental health benefits similar to those mentioned by participants in the current research. For instance, the positive benefits of interacting with nature are frequently mentioned in the overseas literature on gardening and community gardening (Kaplan, 1973; Kidd, et al., 2000; Wakefield, et al., 2007).

The results of the current and previous research suggest that more focus should be given to the mental health benefits (taha hinengaro) of community gardening. In gardens funded by the health sector the focus has tended to be on physical health benefits, particularly nutrition. Households in high deprivation neighbourhoods also tend to experience higher levels of poor mental health. For instance, the 2006/7 New Zealand Health Survey found that the prevalence of mood and anxiety disorders was higher for women living in high-deprivation neighbourhoods than those in lower-deprivation neighbourhoods (Ministry of Health, 2008).

7.2 Community gardening as a health intervention

Figures 12 and 13 summarise the variety of health benefits of community gardening mentioned by interviewees in the current research. These include benefits at both the individual and community or group level.

Figure 12 shows how an individual, household or whānau may benefit from being involved in a community garden. The diagram illustrates the variety of potential health benefits suggested in the current research and overseas
Figure 12: Health benefits from involvement in a community garden

- Increased access to fresh fruit and vegetables
- Access to culturally appropriate foods
- Increased interest in fruit and vegetables
- Increased knowledge about gardening
- Doing additional physical activity
- Working alongside others in the garden
- Connecting with soil and nature
- Mental stimulation from learning new things
- Interest in knowing more about food and nutrition
- Learning food preparation skills at the garden or elsewhere
- Setting up a garden at home
- Increased intake of fruit and vegetables
- Increased level of physical activity
- Improved mental and spiritual health
- Greater sense of well-being
Figure 13: Community health benefits from community gardening

- Establishment or presence of a community garden
  - Increased local supply of fresh fruit and vegetables
  - Increased knowledge in community about gardening
  - Community location for physical activity
  - Community location for social interaction
  - Involvement of a variety of groups in the garden
  - Pleasant and welcoming space in the community

- Interest in learning how to prepare fresh food
- Community interest in nutrition and engaging with fresh food
- More home gardens set up in community
- Increased social networks
- Breaking down of barriers between age groups and ethnic groups
- Increased pride in community

- Community garden becomes a venue for food-related activities, e.g. cooking classes
- More home gardening and shared gardening arrangements
- Increased physical activity by community members
- Possibility of community action about local food environment
studies. The diagram also shows that increased access to fruit and vegetables may not directly increase a household’s intake of these foods, but may require additional skills or knowledge such as learning how to harvest and process the foods grown in the garden. The interviews also confirmed that there are potential health benefits for the community of having a community garden. As Figure 13 shows, many community-level benefits parallel the individual/whānau benefits depicted in Figure 12.

7.2.1 Community gardens as sites for health promotion activities

“Community gardens are viewed as a potentially useful environmental change strategy to promote active and healthy lifestyles but the scientific evidence base for gardens is limited.” (Teig, et al., 2009)

The above quote from Teig and colleagues resonates strongly with the results of the current research. Most of the community garden initiatives visited during the research (including some of the allotment-style ones) had expanded their activities beyond the physical task of gardening. In many cases the garden was seen as part of wider aspirations like modelling environmental sustainability, promoting healthy lifestyles, and improving food security. The focus on promoting health was present not just in community gardens established or funded by the health sector.

Gardening was viewed by many of those interviewed as a health promotion approach that was both positive and practical. Many of the gardens visited had set up, or were intending to set up, cooking programmes as well. For instance, one of the Manukau Parks Teaching Gardens had widened the focus on nutrition to include laughter, yoga and preserving foods.

“…so there is laughter going on, yoga session is going on, so it’s not only one aspect of gardening, so when you help people, yoga is a physical, mental aspect and everything is there, then laughter is another thing we are doing. If you have more amount of food, what do you do... So we are starting marmalade, how to make jams, jellies, freeze extra food, so that’s there then. The other extension is I’ll be teaching how to cook healthy meals.” (Council employee, Manukau City)
Another way in which community garden were promoting healthy lifestyles was by using the site as a community space for physical activity. One coordinator talked about the walking group that had developed from the garden site and her idea of having tai chi classes on the land beside the community garden. She saw this as beneficial for those involved but also, because of the public location of the site, as an effective way of modelling easy ways to become more physically active.

The garden was also seen as a valuable way of working with low-income households to talk about the wider challenges they face – like how to budget their limited incomes.

“… Obviously the challenges for families here is around budget – making do with less and those things. I guess that is another aspect – so part of what we might be working with when they’re here there’s all those needs and levels and this is a quite a nice gentle way of talking about that.” (Garden coordinator, Auckland)

One coordinator mentioned that she was considering linking the local budget advisory service into the initiatives associated with the garden.

7.2.2 Health sector involvement in community gardening
The data from the interviews suggest that the health sector in Auckland and Wellington has become involved in community gardening mostly through funding HEWA initiatives. In these funding rounds, community groups identified community gardening as a suitable intervention for improving nutrition and making fruit and vegetables more affordable for low-income neighbourhoods.

“So with the HEWA streams of funding that came in … we did a bit of a consultative process of going out there, and seeing what people wanted to do. Nutrition was the high end position point at the start … we talked to communities about how would you increase people’s understanding, awareness and the choices and food, and making some behavioural changes, and what would you look at? Gardening naturally fell out of those discussions. One, because the communities we were engaging were largely had issues of affordability around vegetables and fruit particularly.” (Health sector employee)
In both Counties-Manukau and Hutt Valley District Health Boards, interest in promoting community gardening also developed as a result of the DHBs’ support for school gardens. These school gardens were funded by the Nutrition Fund, a specific HEHA fund to promote healthy eating in schools and early childhood centres. The interviews highlighted that the success of the school gardens seeded the idea that gains in health could be made from promoting gardening, particularly in communities with high health needs.

In Counties-Manukau DHB, the idea of supporting community gardening developed into the Gardens4Health project described in section 7.2.4. In the Hutt Valley there was a strong focus on promoting gardening in Māori and Pacific communities. This focus was driven by communities expressing an interest in setting up gardens, and also because of the place that food plays in the social and cultural fabrics of these communities.

“… I think largely because socially and culturally the sharing of food for any occasion is an important one and recognisably how to turn that into an opportunity to raise awareness, promote and foster that whole healthier food choices and nutrition thing a lot better.” (Health sector employee)

In Porirua, Regional Public Health (the local public health unit) began promoting the idea of community gardens as part of its Healthy Porirua programme. Health staff saw community gardens as a nutrition intervention that would have immediate benefits for the health of the local community. This was in contrast with other nutrition interventions, such as advocating a reduction in fast food outlets, that it was felt would take much longer to implement. Community interest in gardening had been identified through research of the food environment in Porirua East (Woodham, 2009). Regional Public Health is looking to establish a community garden in Waitangirua to complement the existing Te Maara @ Cornwall garden in the Cannon’s Creek area. It has also provided resources to local Pacific Island language nests and local schools to establish and maintain gardens on their sites and
is planning to work with local marae to help them establish gardens. In addition, Regional Public Health has also approached Housing New Zealand Corporation (HNZC) about educating tenants about gardening and providing spaces for gardens on HNZC properties.

The health sector funding provided for gardens was used for a variety of purposes, including clearing land, buying tools and equipment, purchasing boxing to create raised beds, developing food forests and building rainwater tanks. DHBs also provided support such as linking the garden groups with local businesses.

When asked who they gave priority to when funding community gardening initiatives, one DHB staff member replied that this was determined by the funding streams available and these were targeted at Māori and Pacific groups. Also, to receive funding the garden project needed to be identified and driven by the community. The coordinator for another DHB-funded project commented that the level of support provided to a community group setting up a garden was “measured again the health needs of that particular community”. In other words, more assistance was given to communities with high health needs.

“… we just need to be conscious that priorities over there – working in [name of low-income suburb] with Māori and Pacific Island groups as opposed to working in [names of two affluent suburbs]. It’s just about putting the bulk of your time with those particular groups as opposed to those well-heeled groups.” (Garden coordinator)

In respect to the barriers and challenges for DHBs funding community gardens, several interviewees commented that health sector funding and planning arrangements had created some restrictions on how garden projects had been developed. For instance, it was suggested that the funding arrangements for public health (which tend to be disease or topic based) can make it difficult to support initiatives like community gardens that have diverse outcomes. Also, the DHB practice of annual funding rounds means that garden projects tended to be planned
on a year-by-year basis. As a result, longer-term projects, like planting fruit trees, were less likely to be established and funding was focused more on tool replacement rather than expansion of the programme. Another challenge mentioned by garden coordinators was the time it can take between applying for funding and getting approval, which may not link well with the annual gardening calendar.

The interviews suggest that the change in policy direction that occurred after the National-led Government was elected in 2008 has impacted on the health sector’s involvement in community gardening. The new Government reduced funding for HEHA activities, particularly those focused on improving nutrition. Health sector interviewees commented that this has affected to some degree what programmes DHBs and public health units can fund. However, existing and well-established programmes, like Gardens4Health in Auckland, have continued to thrive and have sought funding from other sources.

It was clear in the interviews that some health sector employees saw the multiple benefits of community gardening as an opportunity to use gardening as a lever to address a variety of inter-connected health areas.

“I suppose it was like a starting point to get people together and say, look this is what we’re addressing. And food security’s an issue, got some fruit and vegetables here—how about budgeting—how about smoking—how about alcohol—how about some of these other things in health. We do seem to be quite good at talking about an holistic approach.” (Health sector employee)

The information provided in the interviews suggests that DHBs and other health agencies have learnt from their initial involvement in gardening projects and are using this learning to re-focus how they promote gardening. Several health sector employees identified that the direction for future support of community gardening lay with greater collaboration between agencies.
“If I think about where we should be going in the future, and not just from a health aspect, but from a wellbeing aspect – we, the council, Te Puni Kōkiri, the whole lot of us have these little pockets of funding that we could – we should sit around the table and say, what would be the damned best thing to do here.” (Health sector employee)

The DHB staff member quoted above indicated that during 2011, her DHB would be co-funding marae gardens in conjunction with Te Puni Kōkiri.

During the interviews, five non-health sector stakeholders were asked whether they would be interested in developing partnerships with the health sector on a community garden initiative. The stakeholders were four city council employees and an employee from a sustainability non-governmental organisation. They all replied positively and were keen to at least to have a conversation with a health sector agency about this possibility. One of these stakeholders was already involved in a health promotion initiative, but had not yet talked to the health sector about establishing a more formal relationship in regard to community gardening. Another, who was a council employee, was keen to work with the health sector to establish an initiative based on council land that would promote home gardening.

Partnerships were seen as positive by this group of interviewees. The main barrier identified was finding time and resources in already busy agencies to respond to an approach. The potential benefits suggested in these interviews were: the additional knowledge and experience that would accrue from working together on a gardening project; the strategic value of such a partnership; and creating an initiative that has multiple benefits for the community participants.

In these partnerships, health sector agencies can play an important role in assisting communities with limited resources and thereby reducing health inequalities. This includes using their networks, power and credibility to assist groups or communities with poor health to access the resources they need to set up a garden. For instance, supporting the group when they are approaching the city council to
access land or resources. Another way is by funding the infrastructure for gardens in neighbourhoods where there are high rates of chronic conditions, like obesity and diabetes. This may involve funding clearing of land, establishing water supplies and building raised beds.

7.2.3 Case example: Gardens4Health, Auckland
Gardens4Health was established by Counties-Manukau DHB in 2008 and has now been expanded to cover the three DHB regions in Auckland. The idea for the project was suggested to the Let’s Beat Diabetes team at Counties-Manukau District Health Board in mid-2008 as a way to both help prevent diabetes and support those with diabetes.

“...this could be a proactive means by which we could support people with diabetes Type 2. To get them out there being more physically active, growing healthy food and it’s also an opportunity to get people into healthy food habits and growing healthy food to avoid diabetes.” (Gardens4Health project manager)

Changing people’s eating habits and promoting physical activity was seen not only as a way of improving the wellbeing of people but also as a way of reducing future clinical costs associated with Type 2 diabetes. With the high prevalence of diabetes among Māori, Pacific, South Asian and low-income communities in South Auckland, these communities were the initial focus of the project.

The first garden opened at the Mangere Community Health Trust in November 2008. It soon became clear that the project required a full-time project manager and this position was filled in February 2009. This was at a time when government decisions to reduce funding for nutrition programmes were starting to impact on DHBs, and so some of the funding avenues that might have been available to the project were reduced or had disappeared. However, twelve new community gardens were established during the first nine months of 2009 using community action funding from Counties-Manukau DHB. Some of the community groups had sufficient skills and expertise to set up the gardens but others required assistance to get their gardens up and running.
From the beginning, the DHB was keen to house the project in a community agency. This was seen as the best location for the project for a number of reasons including that it would enable the project to apply for external funding and sponsorship. Also, the regional office of the Ministry of Health was keen to expand the project to cover communities in the other two DHBs in the Auckland regions. So 12 months after it began, the project moved into the Diabetes Project Trust. Around that time, two part-time garden facilitators were appointed to support the expansion of the project. By September 2010, the project had 32 community gardens up and running with an estimated 1600 people involved (Main, 2010b). The role of the three staff members is to support the gardens and this support includes developing and maintaining a website, providing technical advice, advising on how to access resources and providing practical assistance, like designing site plans, establishing a seed bank and helping with physical tasks. However, the drive and the skill to set up and sustain each of the gardens come from the local community or group.

Figure 14: Whare Tiaki Hauora demonstration garden, Otara
Figure 15: Community garden at the Spinal Rehabilitation Unit in Otara

Figure 16: Gardens4Health stakeholder meeting at Howick Historical Village
Gardens4Health works with a wide variety of agencies and community groups – including mental health consumers, churches, marae, emergency housing agencies and refugee organisations. In addition, the project had supported the establishment of edible gardens in 11 primary and secondary schools, two kōhanga reo and seven early childhood centres by September 2010 (Main, 2010b). The focus has been on supporting low decile schools.

The main challenge the project now faces is accessing funding, as in the current political and economic climate there are now fewer sources of health sector funding for initiatives focused on improving nutrition. This has meant encouraging gardens to look for second-hand or free resources and getting sponsorship, donations or discounts from the private sector.

7.3 Community gardening and Māori health

Several interviewees talked about Māori involvement in community gardening and the potential benefits for Māori health. The benefits mentioned generally paralleled those described for other population groups but also touched on the deeper meanings of Māori models of health such as Te Whare Tapa Whā (Ministry of Health, n.d.) and Te Pae Māhutonga (Durie, 1999).

The interviews highlighted that community gardens provide a place for older Māori to share their wisdom and gardening skills they learnt when they were young. This was seen as beneficial for both the kaumātua and the young people they were teaching.

“And the kaumātua of course have some considerable experience in gardening because they gardened as part of their childhood, you know, or their early adult life. And it was an opportunity for those two groups to come together, to work together and learn from each other. So the kaumātua were learning from the youth about modern ways. And the youth were also learning from the wisdom and the practice, the best practice of the older people.” (Garden coordinator, Auckland)
Community gardening was also seen as a way of reinforcing cultural identity, providing a link to the past and developing te reo Māori (Māori language) skills.

“…it’s helping to reinforce their culture, where they come from and help develop language skills. Some of these other things are important to health – identity and knowing where you come from and all those sorts of things which the gardens are a mechanism to do that.” (Health sector employee)

This connection is consistent with the domains of Te Whare Tapa Whā, in which taha whānau highlights the importance of being part of whānau and wider social systems and that this provides the strength to know who you are and establish linkages with ancestors, the past, the present and the future (Ministry of Health, n.d.). Identity, including access to Te Reo Māori is seen as a necessary pre-requisite for Māori mental health (Durie, 2001).

Another comment highlighted how for Māori, involvement in community gardening was also a way to think about the health of the land.

“…you know we put a garden in and a whole lot of pesticides and things over there – how is that affecting our environment and like I say, the land. It was more about not just looking at the garden itself but how the garden was a mechanism to look at the wider aspects of health.” (Health sector employee)

Many of the Māori gardens set up recently have been established on marae. One research participant noted that the growing number of health services located on marae is likely to provide an impetus for marae to grow fresh vegetables and spark interest in establishing a garden. Community gardens also link well with health promotion programmes on marae, such as healthy kai initiatives. In terms of health benefits, an important link between gardening and Te Ao Māori is the opportunity to cultivate plants that are used for Rongoa Māori (traditional Māori medicine) and other important indigenous plants such as harakeke (flax) for weaving.
The current research did not look in detail at the relationship between community gardening and Te Ao Māori or explore the benefits from a Māori perspective. However, the information gathered in this research suggests strong commonalities between community gardening and current approaches to enhancing Māori health and wellbeing.

He Korowai Oranga (the Māori Health Strategy) sets the current framework for improving Māori health. It describes four pathways for achieving the goal of *whānau ora* – “Māori families supported to achieve their maximum health and wellbeing” (Ministry of Health, 2002a). Community gardening fits well with the first pathway, which focuses on the development of whānau, hapu, iwi and Māori communities. Included in this pathway is “supporting whānau development and participation in both te ao Māori and wider New Zealand society, to improve health and wellbeing” (Ministry of Health, 2002a). As the interviews and literature have shown, community gardening is part of te ao Māori and creates many opportunities for improving Māori health and wellbeing. This link has also been recognised in the establishment of the Maara Kai funding programme, under Te Puni Kōkiri’s Te Ao Māori outcome. The goal of this outcome is “Māori succeeding as Māori, more secure, confident and expert in their own culture (Te Puni Kōkiri, 2010).

In terms of community gardening as a public health intervention, the current research suggests that promoting Māori gardening is consistent with Te Pae Māhutonga, a Māori model of health promotion developed by Professor Mason Durie. This model is based around the constellation of the Southern Cross. The six stars of the constellation are depicted as representing access to te ao Māori, environmental protection, healthy lifestyles, participation, leadership and autonomy (Durie, 1999). All six of these aspects have been identified to some degree in the current research.
7.4 Community gardening and health inequalities

The factors influencing and reinforcing health inequalities are complex and strongly rooted in how social and health systems are constructed. This means that when considering public health interventions, a clear understanding of the nature of health inequalities and how they are created is needed. To identify the ways in which community gardening has the potential to reduce health inequalities, three tools have been applied to the information that was gathered about community gardening in Auckland and Wellington. These are the Health Equity Assessment Tool (HEAT) (Signal et al., 2008), the Reducing Inequalities in Health intervention framework (Ministry of Health, 2002b) and the Priority Public Health Conditions Analytical Framework (Blas & Kurup, 2010).

7.4.1 Understanding existing health inequalities

The first part of Health Equity Assessment Tool focuses on understanding the health inequalities relating to the health issue and/or intervention under consideration. The literature reviewed in Chapter 3 and the research on community gardens in Wellington and Auckland highlights that for people living in high-deprivation neighbourhoods, the combination of low incomes and the high cost of healthy food options makes it difficult for them to access fresh, affordable fruit and vegetables. Also, for migrant communities, it can be hard to access the fresh vegetables that form the basis of their cuisine. At the same time, there is an overabundance in these areas of cheap, fast food outlets selling energy-dense foods (Woodham, 2009). The current research found that a growing disconnection from food production in urban areas compounds these challenges. Furthermore, these same communities have a higher prevalence of some mental health conditions, particularly for women.

The second part of HEAT focuses on the intervention and how it will improve Māori health outcomes and address inequalities. The results from the current research indicate that community gardening has a strong basis in the Ao Māori (the
Māori world) and there is significant interest in, and action to, establish Māori gardening in urban and rural areas.

The Ministry of Health’s Reducing Inequalities in Health intervention framework identifies four intervention points: structural; intermediary pathways; health and disability services; and impact. The information gathered on community gardening initiatives in Wellington and Auckland suggests that community gardening fits within the intermediary pathways intervention point. These are interventions that help reduce the exposure to unfavourable living and working conditions and empower people and increase their feelings of control (Ministry of Health, 2002b). As the current research has found, community gardening has the potential to increase access to fresh fruit and vegetables, improve spiritual and mental health, enhance social cohesion and provide a venue and activity through which interest in food and nutrition can be stimulated and potentially be a base for social action to improve the local food environment.

Overseas research on community gardens has identified positive benefits for gardeners from low-income, ethnically diverse neighbourhoods (Armstrong, 2000; Blair, et al., 1991; Glover, 2004; Wakefield, et al., 2007). This research also highlights the potential for community gardens to establish collective efficacy. For instance, a New York study found that community gardens located in low-income neighbourhoods were four times as likely as gardens in other areas to lead to other neighbourhood issues being addressed (Armstrong, 2000).

7.4.2 Identifying points of intervention

The specific ways in which an intervention can reduce health inequalities are highlighted when the WHO’s Priority Public Health Conditions Analytical Framework is applied (Blas & Kurup, 2010). This framework consists of five levels: socio-economic context and position; differential exposure; differential
vulnerability; differential health outcomes; and differential consequences. Community gardening has the potential to influence health inequalities through two of these levels: differential exposure and differential vulnerability.

*Differential exposure* describes the situation where people in disadvantaged positions have higher levels of exposure to risk factors that contribute to poor health and less access to beneficial factors than the rest of the population. For example, high-deprivation neighbourhoods have more fast food outlets and fewer outlets selling nutritious food such as fruit and vegetables. The current research suggests that community gardening has the potential to address to some degree the limited availability of healthy foods and some barriers to adopting healthy behaviours.

Community gardening also has the potential to influence factors affecting *differential vulnerability*, which is the clustering of risk factors in some population groups. Such clustering is evident in the description of health outcomes and risk factors described in Chapter 3. The current research suggests that community gardening can play a role in reducing risk factors for poor nutrition by re-establishing links with food and food production. For Māori, community gardening has the additional benefit of providing a setting and activity to facilitate (re)establishing links with Te Ao Māori.

The ways in which community gardening can address inequalities at these two levels are summarised in Table 10.
Table 10: Applying the Priority Public Health Conditions Analytical Framework

<table>
<thead>
<tr>
<th>Level of intervention</th>
<th>Attention needs to be paid to</th>
<th>Examples of relevance to community gardening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differential exposure (relates to environment)</td>
<td>There is increasing evidence that people in disadvantaged positions are subject to differential exposure to a number of risk factors, including natural or anthropogenic crises, unhealthy housing, dangerous working conditions, low food availability and quality, social exclusion and barriers to adopting healthy behaviours.*</td>
<td>Community gardening has the potential to: - address low food availability – eg increase access to fresh fruit and vegetables - reduce barriers to adopting healthy behaviours – eg create a place and activity focused on nutritious foods</td>
</tr>
<tr>
<td>Differential vulnerability (relates to population groups)</td>
<td>Potential clustering and amplification of risk factors. Attempts to reduce or eliminate risk factors need to identify appropriate entry points for breaking the vicious cycles in which vulnerable populations find themselves trapped.* *Adapted from text in Blas &amp; Kurup (2010)</td>
<td>Community gardening can assist in reducing risk factors and breaking cycles by: - re-establishing links with food and food production - for Māori, providing a setting to establish links with Te Ao Māori</td>
</tr>
</tbody>
</table>

7.4.3 Understanding how the intervention can have the most effect
The Reducing Inequalities in Health intervention framework includes a set of nine best practice characteristics for interventions to reduce health inequalities (Ministry of Health, 2002b). Table 11 assesses community gardening in terms of each of these characteristics using the information gathered from the current research. This analysis identifies a mix of potential benefits of setting up a community gardening initiative and aspects of their design.
Table 11: Applying the best practice characteristics from the Reducing Inequalities in Health intervention framework

<table>
<thead>
<tr>
<th>Intervention Characteristic</th>
<th>Relevance to community gardening</th>
<th>Benefit or design factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not make inequalities worse</td>
<td>• Give careful consideration to which groups and communities will benefit most from resources allocated to community gardening initiatives. Are most of the resources going to groups with good health or are resources prioritised for groups with poor health outcomes? Are the resources going to communities that already have good access to resources or those with limited resources?</td>
<td>Design</td>
</tr>
<tr>
<td>2. Increase people’s control over their own lives</td>
<td>• Community gardening initiatives have potential to increase people’s understanding about food and nutrition, growing edible plants, and preparing, cooking and preserving foods. These skills can be applied at home as well as in communal settings. • Community gardening has the potential to strengthen community cohesion and networks and encourage communities to take local action.</td>
<td>Benefit</td>
</tr>
<tr>
<td>3. Actively involve communities</td>
<td>• Agencies supporting a community garden need to work with the community to design an initiative that is responsive to the interests and needs of the community. • Cultural diversity among gardeners means that those leading the establishment and maintenance of garden projects need sufficient cultural competence to work effectively with those involved. • Establishing a community garden is hard work and many people in high-deprivation neighbourhoods or groups with limited resources are time-poor. This means that community gardening may not be the best intervention for some neighbourhoods and some gardens may need more organisational support than others.</td>
<td>Design</td>
</tr>
<tr>
<td>4. Favour the least advantaged</td>
<td>• See comments to 1 and 3 above</td>
<td></td>
</tr>
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<tr>
<td>5. <strong>Take a comprehensive approach, targeting individuals, whānau, population groups and the environment</strong></td>
<td>• Community gardening can provide individual level benefits and benefits to families/whānau and communities (see Figure 12 and Figure 13). It also has the potential to create a platform for local action on environmental and nutrition issues.</td>
<td>Benefits</td>
</tr>
</tbody>
</table>
| 6. **Foster social inclusion and minimise stigmatisation** | • The overseas literature and findings from the current research suggest that, depending on how they are set up, community gardening initiatives have the potential to:  
  - reduce barriers between community groups and thereby foster social inclusion and minimise stigmatisation; or  
  - reinforce existing stereotypes | Benefits |
| 7. **Be effective both in the long- and short-term** | • Community gardening has both short- and long-term benefits.  
• It can be challenging to continue to sustain a community garden over a long period of time, but some of the interviews suggested that this is not essential and the ebbing and flowing of interest in a garden does not necessarily mean that the initiative has failed or ended. | Benefits |
| 8. **Adapt to changing circumstances** | • The interviews showed that the design of community garden initiatives is flexible. A wide variety of approaches has been developed in Wellington and Auckland. | Design |
| 9. **Work with and build the capacity of local organisations and community networks** | • One of the strengths of community gardening that is documented in the overseas literature is its potential to increase social cohesion and in some cases lead to social action. The interviews highlighted a number of examples of gardens being the starting point for wider activities and interventions. | Benefits |

Six aspects of the design of community gardening initiatives that can determine the extent to which an initiative has the potential to reduce health inequalities are identified in Table 11 are: the allocation of resources; community involvement; cultural competency; time poverty in low-income communities; sustainability; and flexibility.
In respect to how resources are allocated, nearly all community garden initiatives will require some form of external resourcing. However, as mentioned previously, some communities can access resources more easily than others. This means that if each project is provided with the same resources irrespective of need then this could increase health inequalities. Rather, to reduce health inequalities requires proportionate universalism (Marmot, 2010), where more support and funding is available for gardens in low-income neighbourhoods, Māori gardening, and garden projects in communities with high health needs like refugees and migrant communities with poor health outcomes. The interviews indicated that health sector staff were prioritising these groups when allocating resources. Some of the stakeholders in city councils and environmental organisations also mentioned that priority should be given to low-income communities. The interviews also highlight that low-income communities may be both time poor and resource poor and community gardening tends to be time intensive. This suggests that additional resources for coordination and for sustaining the garden may be required in these communities.

### 7.5 Summary of health and community gardening

This chapter describes what the research for this thesis discovered about the linkages between community gardening and health. The health benefits identified by interviewees were diverse and paralleled those described in the overseas literature. Te Whare Tapa Whā provided a useful way of categorising these benefits and illustrated that while most of the health sector interest in community gardening has focused on nutritional outcomes, other potential benefits includes improved mental and spiritual health and strengthening communities. The research data show that there are potential health benefits for individuals, households and whānau and also at a community level.
The current research highlights that community gardens in Auckland and Wellington are becoming sites where people are engaging with food and nutrition. This finding together with the overseas literature on collective efficacy, suggests the possibility that gardening initiatives could create an opportunity for communities to work together to begin to address some aspects of local food environments such as the limited availability of healthy food options.

While the research did not look in detail at the relationship between community gardening and Te Ao Māori, it has highlighted that a strong connection exists with promoting Māori health. Community gardening offers potential benefits in all aspects of Māori health and is an approach that is supported by Māori communities and agencies concerned with cultural revitalisation.

The analysis in this chapter suggests that community gardening initiatives do have potential to reduce health inequalities. Whether this occurs will depend on how initiatives are designed and resourced and the ways in which communities are involved in their development. Communities with poor health tend to have fewer resources and so are likely to require more support to set up garden projects. As the Gardens4Health project in Auckland has shown, this support can take many forms and be tailored to the requirements of a particular neighbourhood or community group.
Chapter 8: Opportunities for community gardening as a public health intervention

This final chapter reflects on community gardening as a public health intervention in Aotearoa New Zealand. It begins with a brief summary of what the research findings reveal about community gardening in Auckland and Wellington, in particular the diversity of arrangements, purposes and participants, as well as the strong link with the revival of home gardening. The next section uses the information gathered in this thesis to assess the potential of community gardening as a public health intervention. This is done by assessing the research data against the five health sector prioritisation principles. This assessment is followed by some suggestions about what the next steps might be in terms of further research and changes to practices and policies in Aotearoa New Zealand and then reflections on how the current research adds to the local and international findings about community gardening.

8.1 Community gardening in Auckland and Wellington
The current research provides a starting point to gain a better understanding of the variety of community gardening initiatives that have been established in Aotearoa New Zealand and their potential to improve the health of communities and population groups. While the current research focuses on the Auckland and Wellington regions, many of the findings are likely to be applicable to other urban centres and to rural areas.

As outlined in Chapter 5, the term community gardening can be used to describe a wide variety of gardening activities. In the current research this diversity was evident in a number of ways, including the purpose of the garden, who initiates the project and what occurs in the garden space. The research highlighted that there is
no “one size fits all” template for either how to set up a community gardening initiative or what takes place there. Gardening may be the main purpose of the initiative or just a small component of a larger project. The purpose and structure of the initiative may evolve or change over time.

Improving health outcomes for the individuals involved and for the local community is just one expectation placed on community gardens. Individuals, communities and local and central government agencies support community gardening for many different reasons and have a variety of expectations about the benefits that will accrue. This diversity of purposes and potential benefits makes the community gardening scene complex, but is also a strength and opportunity. As community gardening has many potential co-benefits, it is a location and activity in which the health, local authority and environmental sectors can collaborate to achieve inter-connected outcomes associated with the wellbeing of people, communities and the environment. These co-benefits were evident in the variety of agencies that saw the value of community gardening as a mechanism to address food security and reconnect people with food; and in the potential of Māori gardening to create cultural reconnections as well as generate interest in food cultivation and preparation.

During recent decades, central city apartments have been built in Auckland and Wellington and infill housing has become popular in some suburban areas (Carroll, Witten, & Kearns, 2011). As a result, many urban dwellers now live in locations where it is not feasible to have a traditional family vegetable garden (Barnett, 1995). The current research suggests that the development of community gardens by residents looking for a space to garden is more evident in Wellington than in Auckland. This is consistent with the topography of Wellington, where many sections are steep and have little or no suitable space for gardening. Creating new
places to garden goes beyond community-located gardens to approaches like shared gardening and rooftop gardens.

A second factor that appears to be encouraging the re-emergence of community gardening in New Zealand urban areas is a reaction against the current disconnection from food production as well as a heightened interest in healthier foods and a desire to know more about the origins of our food. The high rates of obesity and the growth in the prevalence of chronic conditions have prompted the health sector to place more focus on lifestyle risk factors like nutrition and physical activity. At the same time, concerns internationally about the future of the environment have led to interest in reducing food miles and carbon footprints. Alongside this has been an increase in public interest in growing organic foods, heritage fruit and vegetables, and culturally diverse edible plants. The health sector, environmental groups and communities have identified community gardening as a practical way of creating greater interest in food and nutrition and improving access to nutritious food. The current economic recession has heightened interest in learning to grow food and improving access to low-cost fruit and vegetables, particularly in low-income neighbourhoods.

Thirdly, growing emphasis internationally on environmental sustainability has created local interest in establishing initiatives like shared gardening, community orchards and community gardens that enable residents to become more connected with food production and source food locally. In addition, some local authorities are supporting community gardens in order to reduce organic waste.

One of the unexpected findings of the current research was the close relationship between community gardening and encouraging people to garden at home. This is not an aspect discussed to any great extent in the overseas literature. It appears that the growth of community gardening in Aotearoa New Zealand has paralleled a
renewed focus on growing vegetables at home. Many of the same factors that have encouraged interest in community gardening have made productive home gardening “all the rage” (Dawson, 2010, page 283). The current research shows that community gardening is one of the avenues through which people are learning home gardening skills.

The findings have highlighted the diversity of people involved in community gardening initiatives in Auckland and Wellington. This diversity highlights that community gardening is a flexible intervention relevant to a diverse range of communities. Central to the research findings was that community gardens can create inclusive places for people who are often not considered to be part of communities. Similarly, the analysis of health benefits mentioned by interviewees suggested that community gardening can break down barriers, particularly between age groups and ethnic communities. However, there was also a word of caution that it is possible for community gardens to reinforce stereotypes as well as break them down. Therefore it appears to be important how the engagement between groups is set up in a community garden.

8.2 The potential of community gardening as a public health intervention

The research question for this thesis asks about the ways in which community gardening initiatives have the potential to improve health outcomes and reduce health inequalities. There are two aspects to considering this question. The first aspect is to explore the linkages between health and community gardening, the results of which are described in the previous chapter. Secondly is an assessment of how the information that has been gathered fits with the understanding of public health interventions and a determination of the situations in which community gardening is most likely to improve health outcomes and reduce health inequalities. The health sector prioritisation principles provide a framework to review this second aspect. These principles are effectiveness, equity, Māori health, acceptability
and efficiency (National Advisory Committee on Health and Disability, 2004). How the findings of the current research inform each of these principles is summarized in Table 12. It also identifies areas of further action in respect to each of the principles.

**Table 12: Summary of the extent to which community gardening meets the health sector prioritisation principles**

<table>
<thead>
<tr>
<th>Prioritisation principle</th>
<th>Relevant findings</th>
<th>Areas for action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness</td>
<td>The current research and overseas studies show a range of potential health benefits across the four domains of Te Whare Tapa Whā. Current research suggests both individual/household/whānau benefits and community-level benefits.</td>
<td>Undertake qualitative and quantitative studies and evaluations of existing health-funded initiatives, including projects that are seen as failing. (Researchers)</td>
</tr>
<tr>
<td>• Taha Tinana</td>
<td>Re-engage people with food production. Increases access to low cost, accessible fruit and vegetables. Creates a location for physical activity. Creates community interest in nutrition and a location for engaging with fresh food.</td>
<td>Expand activities at community garden sites to include activities related to healthy food and nutrition. This is already happening in some community gardens. (Garden funders and coordinators)</td>
</tr>
<tr>
<td>• Taha wairua</td>
<td>The current research and overseas studies show that connection with the forces of nature and the environment are seen as important benefits of community gardening.</td>
<td>Give more focus to the spiritual health benefits of gardening and of involvement in community gardening. (Garden coordinators, funders and health sector)</td>
</tr>
<tr>
<td>• Taha whānau</td>
<td>Creates potential to break down barriers between age, ethnic and impairment groups but also has potential to confirm stereotypes. Increases social networks. Increases pride in local community.</td>
<td>Explore possibility of community gardens as a site for community action about the local food environment. (Health sector)</td>
</tr>
<tr>
<td>• Taha hinengaro</td>
<td>The current research and overseas studies suggest a variety of mental health and therapeutic benefits from involvement in community gardening.</td>
<td>Give more focus to the mental health benefits of gardening and of involvement in community gardening. (Garden coordinators, funders and health sector)</td>
</tr>
<tr>
<td>Equity</td>
<td>Potential for reducing health inequalities through reducing barriers and breaking cycles. Factors to consider when designing initiatives include consideration of how resources are allocated, awareness of time poverty, being inclusive, avoiding reinforcing stereotypes and ensuring cultural competence.</td>
<td>Health agencies that are funding or supporting community gardening initiatives use health inequalities tools and frameworks. (Garden coordinators, funders and health sector)</td>
</tr>
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</tr>
<tr>
<td>Māori health</td>
<td>Strong interest among urban marae and Māori communities. Fits well with concepts of te ao Māori.</td>
<td>Opportunities for kaupapa Māori research and extension of initiatives involving Māori gardening. (Researchers and community agencies)</td>
</tr>
<tr>
<td>Acceptability</td>
<td>High level of public and, in some areas, local authority interest. Wide variety of people involved.</td>
<td>Assess the acceptability of a proposal before implementing it. (Garden funders, initiators and coordinators)</td>
</tr>
<tr>
<td>Efficiency</td>
<td>Overseas costings show cost savings. Some expectations of the potential of community gardening may be unrealistic.</td>
<td>Undertake a cost-effectiveness analysis. (Researchers) Assess all the options and the practicability of a proposal before implementing it. (Garden funders, initiators and coordinators)</td>
</tr>
</tbody>
</table>

The prioritisation principles define **effectiveness** as “the ability of an intervention to provide benefit” (National Advisory Committee on Health and Disability, 2004). Overseas studies and the current research indicate possible benefits in terms of improving nutrition and physical activity, mental and spiritual health and social cohesion. More research is needed to confirm and determine the size of the benefits. The current research suggests that in some locations community gardens are providing an activity and place that is engaging people in food and nutrition. As suggested in Chapter 7, this raises the possibility that community gardens could become a base for community-based action to change the local food environment.
Community gardens also provide a location where concerns about food security, nutrition and environmental sustainability come together. This is consistent with the proposals in Marmot (2010) that actions to improve health and reduce health inequalities should also focus on reducing the impact of climate change. One of the examples of the synergy between health and environmental objectives used in the Marmot Review is sustainable agriculture. Community gardens provide an opportunity to establish sustainable urban agriculture initiatives.

To gather more evidence that can be used to determine the effectiveness of community gardening, it is important that garden initiatives receiving health sector funding are evaluated. It will not be feasible or appropriate to evaluate all gardens, but it is essential that evaluations of large-scale initiatives be undertaken.

The second prioritisation principle is equity. The analysis undertaken in Chapter 7 of the potential for community gardening to reduce health inequalities suggests that community gardening can partially increase access to fruit and vegetables and healthy foods and assist in reducing barriers to adopting healthy behaviours. Community gardening can also help to break the cycles in which vulnerable populations find themselves trapped, by re-establishing links with food and food production and, for Māori, by providing a setting in which links with te ao Māori can be established. The analysis in Chapter 7 also highlighted factors to consider when funding and establishing community gardening initiatives, such as where resources are allocated, avoiding reinforcing stereotypes and being culturally competent. These factors indicate ways in which proportionate universalism proposed in Marmot (2010) can be implemented with regard to community gardening.

The potential to improve Māori health is the third prioritisation principle. The strong link between community gardening and Māori health has been evident
throughout the current research. This synergy is recognised by funding agencies and Māori communities. Community gardening fits well with both Te Puni Kōkiri’s key outcome of te ao Māori (Te Puni Kōkiri, 2010) and He Korowai Oranga, the Māori Health Strategy (Ministry of Health, 2002a). Pathway Four of He Korowai Oranga encourages working across sectors and for the health and disability sector to take a leadership role in achieving whānau ora by addressing the determinants of health. This indicates that there is an ongoing role for the health sector to work collaboratively to promote community gardening as part of te ao Māori and health promotion initiatives.

The thesis findings suggest that there is acceptability of community gardening as both a health and a sustainability intervention. The current interest in community gardening is being enhanced by international movements like Transition Towns, public concern about sustainability and, increasingly, by the high cost of fresh fruit and vegetables. A wide variety of people are involved in community gardening in Auckland and Wellington. This, together with the variety of types of community gardening initiatives identified during the research, suggests that the concept of community gardening is very adaptable to local situations and preferences. But it also means that community gardening is not a “one size fits all” approach and therefore it is important to assess the acceptability and practicability of a proposal before implementing it.

The final prioritisation principle is efficiency or “value for money” (National Advisory Committee on Health and Disability, 2004). While there is a need for further information about the efficiency of community gardening, overseas costing studies suggest that growing fruit and vegetables in a community garden can be cost effective. On the other hand, the current research has shown that the production of fruit and vegetables is just one of the benefits of community gardening. Undertaking a broad-based cost-effectiveness analysis would develop a
more comprehensive picture of the efficiency of community gardening. However, it is likely to be difficult to quantify the many health and other benefits and the complexity of factors influencing lifestyle risk factors like nutrition and physical activity will make it hard to determine the extent to which community gardening has a direct influence on these. Even so, more exploration of the linkages between community gardening and health outcomes would help in building the evidence base and developing a greater understanding of the potential of community gardening to improve health outcomes and reduce health inequalities.

A warning that arose in the fieldwork is that public or agency expectations about the potential of community gardening may be unrealistic. Gardens require large quantities of time and passion, as well as sufficient knowledge and resources. In addition, not all garden projects will be successful and most gardens will have periods when they flourish and times when they look unkempt and struggle to get community involvement. The lack of documentation about the challenges faced by past community gardens and the very few evaluations undertaken may have created unrealistic expectations about how easy it is for community gardening to achieve multiple benefits. Early careful consideration of the purpose(s) of a garden initiative and the likely challenges it will face will help to make the best use of resources.

In summary, the information gathered for this thesis suggests that community gardening meets to some degree each of these principles and that it does have potential as a public health intervention. More information and research is needed about the benefits and opportunities created by community gardening.
8.3 Linkages, policies, documentation and research

During the development of this thesis a variety of suggestions for linkages, policy changes, documentation and research have been identified. These are described below.

8.3.1 Greater linkages between agencies and programmes
The current research highlighted that there is a range of local and central government agencies as well community groups that have an interest in promoting community gardens and in some cases agencies are beginning to work together. Stakeholders indicated in the interviews that they were interested in working with the health sector to coordinate support for community gardens. Some possibilities include joint funding of projects and sharing resources to promote co-benefits.

Opportunities also exist for further promotion of gardening by the health sector. For instance, Green Prescriptions (GRx) Active Families programmes are community-based initiatives designed to increase physical activity in at-risk children and young people aged 5-18 years and their whānau/families to create an active lifestyle (Ministry of Health, 2010a). Community gardens could provide a supportive environment that would encourage these children and their families to become more physically active and learn more about food and nutrition.

Analysis of the research findings suggests the possibility that community gardens could provide a location for community action on the local food environment. Such an initiative could be established as a partnership between community groups or with agencies such as public health units or nutrition organisations.

One location for community gardens that was mentioned, but not explored in any detail, in the current research is public housing. There appears to be untapped potential for Housing New Zealand Corporation to support and encourage both
home gardening and communal arrangements. During the current research there was some evidence of this starting to occur, but it did not appear to be happening in a coordinated way. Such an approach would be consistent with the origins of state housing in Aotearoa New Zealand where “each householder was issued with hedge plants and assorted fruit trees to plant” (Dawson, 2010, pg 230).

### 8.3.2 Conducive policies

For some of the community gardens studied, the greatest barrier they had faced was accessing public land, particularly due to the complexity of the processes and the time needed to get approval to use the land. The barriers to accessing public land can be significant, particularly for communities with limited expertise in complying with complex and time-consuming policies. These processes also distract the group’s energy away from establishing a garden. It is therefore suggested that local authorities which already have community garden guidelines or policies review these to identify how they can be more streamlined while still meeting the council’s legislative and public obligations. In addition, when local authorities establish community garden policies it is suggested that attention is paid to the practicality of the policy for groups wishing to set up a community gardening initiative.

A further set of potential barriers identified in the research related to applying to government agencies for funding to set up or sustain community gardens. The barrier that was mentioned most often was the onerous nature of the application and monitoring requirements when applying for small grants for a community garden. In addition, the current research also highlighted that often the way in which health sector funding has been provided has placed unintended limitations on how the garden projects have developed. On the other hand, a few interviewees considered that funding had been wasted in some garden initiatives. These findings suggest that when central and local government agencies are funding community garden initiatives they need to ensure the requirements for grants are consistent.
with the size of the grant and with the realities of setting up these types of gardening initiatives.

8.3.3 Documentation, guidance and evaluation
From the beginning of the current research it was evident that there was a lack of documentation about community gardens in Auckland and Wellington. This included lack of information about existing and past garden initiatives, lack of guidance on setting up gardens and a lack of published evaluations.

While several Internet sites have started to compile a directory or map of community gardens in Aotearoa New Zealand, these are incomplete and often outdated or only focused on one group of initiatives. Some overseas agencies have comprehensive Internet sites detailing the many aspects of setting up a community garden and providing gardening advice. While this advice is helpful for community gardens in this country, it does not reflect the local context and characteristics such as those that have been identified in the current research.

As highlighted in this research, setting up a gardening initiative is often not easy. This means much can be learnt from the successes and failures of existing or previous projects. This information can be made available in two broad ways. Firstly, the experiences of community and other garden projects could be documented and made publicly available, for instance through a website. Secondly, as mentioned previously in this chapter, existing initiatives should be evaluated. This is particularly important for widespread initiatives, like Te Puni Kōkiri’s Maara Kai funding, and those into which substantial resources have been invested, such as the Gardens4Health project in Auckland. The initial intention was to evaluate Gardens4Health throughout its development. A process evaluation was undertaken at the end of the first three months (Clinton et al., 2009). However, after this no further evaluations of the project have been undertaken. It would also be helpful for
existing evaluations or their findings to be made publicly available. For instance, an evaluation has just been completed of the school gardens set up in the South Island using HEHA funding (Moss, 2011).

8.3.4 Opportunities for further research
The paucity of research on community gardening in Aotearoa New Zealand means that there are many possibilities for undertaking research that will inform understanding about the realities and opportunities presented by community gardening.

Qualitative and quantitative research on the experiences of gardeners would provide a greater understanding of the potential health benefits of community gardening. This could cover such aspects as: their perceptions of the health benefits; what changes they have made as a result of being involved in community gardening; what encourages their involvement; and the barriers to becoming or staying involved.⁹

Another gap is research on the impact of community gardening on food and nutrition and physical activity. Also, there are no local costing studies of community gardens and internationally there are no cost effectiveness studies of community gardening as an intervention. The diversity of community gardening in Aotearoa New Zealand may make the design of these types of studies difficult.

The current research has highlighted the importance of Māori gardening in terms of both cultural and health benefits. During the course of the thesis it became apparent that there is some research interest in this area but at this stage there is very little

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⁹ It had initially been intended to include these perspectives in the current research but it was not practical within the time and resources available.
written or published about Māori gardening. This research should be undertaken using Kaupapa Māori research processes.

A further area for research is the interface between community gardening and edible gardens on school and early children education sites. Interviewees in the current research identified some barriers to community involvement in gardens on school sites\(^\text{10}\), but these did not appear to be evident in recent evaluations of school gardens (Cheung, 2011; Moss, 2011).

### 8.4 What this thesis highlights

The findings of this thesis provide an overview of community gardening in Auckland and Wellington in 2010. They also add to the body of knowledge about community gardening in Aotearoa New Zealand by pulling together the dispersed information about the history of community gardening in this country. In this way, the current research provides a starting point for a more detailed history of urban allotments and other forms of community gardening and highlights the critical role that communal gardening has played in Māori society. It also begins to document the role the health sector has begun to play recently in supporting community garden initiatives.

The current research also adds to the international body of research by describing community gardening in a country with a strong tradition of home vegetable gardening and where there has been a recent surge of interest in community gardening. It shows how in this setting community gardening has developed in a variety of formats for a diversity of purposes and is closely linked with re-establishing skills and interest in home gardening. It is also the first study to look at community gardening in two different urban centres, documenting the diversity of initiatives that have developed.

\(^{10}\) Due to lack of space, the results have not been included.
Several overseas studies have begun to explore the potential of community gardening as a public health intervention (Armstrong, 2000; Kingsley et al., 2009; Teig et al., 2009). The current research adds to this understanding. It has found similar potential health benefits to overseas studies but has presented these using an indigenous model of health.

The data gathered for this thesis suggest that community gardening does have potential as a public health intervention. Both community and home gardening are being promoted in Wellington and Auckland as an intervention to assist in reducing the impact of chronic conditions like diabetes and to improve nutrition outcomes for high-deprivation neighbourhoods. Consideration of the five health sector prioritisation principles suggests that community gardening has the potential to both improve health outcomes and reduce health inequalities. Promotion of community gardening also aligns closely with the collaborative focus of He Korowai Oranga, the Māori Health Strategy. However, community gardening is not a panacea for all of today’s health, social and environmental challenges and setting up a garden does require significant time, passion and resources. One of the strengths of community gardening is that it has a variety of purposes and many potential co-benefits. Home and community gardening initiatives offer an opportunity for health and sustainability agencies to work together to improve the health of individuals, communities and the environment.
References


Appendix A: Participant information sheet and consent form

COMMUNITY GARDENING AND HEALTH RESEARCH PROJECT

Information Sheet for Participants

Thank you for showing interest in this research project. Please read this information sheet carefully before deciding whether or not to take part. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you of any kind and we thank you for considering our request.

Purpose of this research project
This research is looking at the potential health benefits of community gardening, what helps to make community gardening initiatives successful, and who benefits from their development.

This is a qualitative research project for which I am interviewing people about community gardening. The information from these interviews will help tell the story of community gardening and health in New Zealand. We would value hearing about your ideas and experiences.

This research is part for my Masters in Public Health thesis. It is supported by the Centre for Sustainable Cities. The research proposal has been reviewed and approved by the Department of Public Health, University of Otago.

Who is being interviewed?
Interviews are being held with people involved in community garden projects in Auckland, Manukau, Porirua and Wellington, and with decision-makers and key stakeholders in these cities. You can withdraw from the research project at any time.

What will happen at the interview?
If you agree to take part in this research project you will be asked to take part in a face-to-face interview. I will contact you about a suitable time and place for the interview. Before the interview takes place you will need to sign the attached consent form.
The interview will be more like a conversation than a set list of questions. The exact questions will depend on the way the interview develops. If you feel uncomfortable at any time during the interview you can choose not to answer a question or you can ask for the interview to stop. I expect the interview to take no more than one hour.

**What will happen to the information from the interview?**

I would like to record the interview so that I can listen to it again and make sure I get your responses, ideas and suggestions correct. Nobody else will listen to the recording of the interview.

After the interview I will type up a transcript of the interview. The transcript will only be read by me, and possibly by the two supervisors for this research project. Parts of the interview may appear in the final report. There will be no mention of your name. Every effort will be made to ensure that no one can identify you from the data.

At the end of the project any personal information will be destroyed. As required by the University’s research policy, any raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed. If after the interview you have any concerns about what was discussed, feel free to contact me.

I will send a summary of the results of the research to you and the other participants once the interviews are completed. Information about the research project will be published and the completed thesis will be available through the University of Otago library and on the Centre for Sustainable Cities website. The project supervisors and I also plan to publish at least one article from the findings of the project.

**For further information about the research project**

If you would like to discuss any parts of this research or your participation in it, please feel free to speak to me, or to one of the research supervisors.

_Supervisors:_

Geoff Fougere  
Department of Public Health  
University of Otago  
Phone (04) 918-6046

Robin Kearns  
School of Environment  
University of Auckland  
Phone (09) 373-7599

Thank you again for your interest in this research project.

Margaret Earle  
_Student researcher_  
Phone (027) 4164-023 or Email: earma224@student.otago.ac.nz
COMMUNITY GARDENING AND HEALTH
RESEARCH PROJECT

Participant Consent Form

I have read the participant information sheet and understand the process for the interviews.

All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

• my participation in this project is entirely voluntary

• I am free to withdraw from the project at any time

• the exact interview questions will depend on the way the interview develops. If I am uncomfortable with any of the questions I can chose not to answer that question or ask for the interview to stop

• the audio tape of the interview will be destroyed at the conclusion of the project. But any raw data on which the results of the project depend will be retained in secure storage for five years, after which they will be destroyed

• the results of the project are likely to be published and will be available in the University library and on the Centre for Sustainable Cities website, but every attempt will be made to preserve my anonymity.

I agree to take part in this project

_________________________   _____________________
(signature of participant)     (date)
Appendix B: Interview questions

The following lists were developed as generic questions, which were adapted for each interview and used as a guide and prompt during the interview process.

A: Questions for garden coordinators

- First, tell me a little about the garden.
- How did you get involved in the garden?
- Why was it set up? Where did the initial idea for the garden come from?
- Tell me about the process of establishing the garden.
- What was easy to achieve? Why?
- What was hard to achieve? Why?
- What resources were needed to set up the garden? How easy were these to find? And where did they come from?
- What agencies, organizations and businesses have supported setting up and maintaining the garden?
- How is the gardening organised (allotments, communal plots, working bees)?
- Was any soil testing done when the garden was set up? If so, what were the results?
- What are the challenges for the ongoing maintenance and development of the project?
- Was the garden set up with a particular group of people in mind? If so, has this group got involved?
- Who has got involved in the initiative? And how?
- Do you think involvement in gardening has affected participants’ health? If so, in what ways and why?
- Does the initiative include aspects other than gardening (eg social events, training or learning)?
- Has the community gardening initiative led to the development of any other activities or projects? If so, describe these
- Have there been any benefits to the neighbourhood of having the garden?
- Have there been any problems with the neighbourhood about having the garden located here?
• What do you think the garden has achieved?
• Is there anything else you think it would be helpful for me to know about the garden?

**B: Questions for stakeholders**

• First, tell me about your role in … (Most interviews with stakeholders began with several questions specific to the organisation and its relationship with community gardening)
• What do you see at the successes of local community gardening initiatives?
• What do you think have been the challenges they have faced?
• What do you think are the benefits of community gardening? Why?
• Are you aware of any disadvantages of community gardening?
• Have you found that there has been any opposition to the establishment of community gardens in (name of city)?
• Do you think there much interest in (name of city) in the establishment of community gardens? If so, from whom? Why are the interested?
• What policies are in place in your city that would support community gardening initiatives?
• Are you aware of any policies that could make it difficult to set up community gardens here?
• What resources are you aware of in (name of city) that could be available to support community gardening initiatives?
• (For non-health sector stakeholders not already working with health agencies) What would be your response if a health agency approached you about working together to set up a community gardening projects?
• Do you think there are any health benefits of community gardening? If so, what are they?
• From your experience what are the things that would help the establishment of a community gardening initiative? What are likely to be the barriers?
• Which groups in the community do you think would benefit most from being involved in a community gardening initiative? Why?
• If you were making recommendations about community gardening initiatives, what groups would you give priority to and why?
• What do you think are the future opportunities for community gardening in (name of city)?
• Is there anything else you think it would be helpful for me to know about (name of agency) or community gardening in (name of city)?

C: Questions for gardeners
This list of questions was developed but not used as it was decided early on in the research not to include specific interviews with gardeners in order to keep the size of the study manageable.

• How did you get involved in this garden? Why were you interested in the garden?
• Have you gardened before?
• What plants are you growing in the garden? Why did you decide to grow them in particular?
• What does working in the garden mean to you?
• What do you think are the good things about community gardening?
• What do you think are the bad or difficult things about community gardening?
• What have been the benefits for you of being involved in the garden?
• Do you think your involvement in the garden has benefited your health? If so, in what ways?
• What worries you about the garden?
• Do you think being involved in the garden has had any negative effects on your health?
• Have you made any changes in your life or the way you do things as a result of being involved in the garden?
• Have you got to know new people as a result of working in the garden? Who?
• Have you learnt new things from working in the garden? If so, what?
• Have any conflicts occurred within the garden? If so, what were they about? How were they resolved?
• How much time do you spend working in the garden?
• What would they be doing with this time if you weren’t gardening
• Have you got involved in other activities as a result of being involved in the garden?
Appendix C: Community gardening initiatives

The table below lists the community gardening initiatives mentioned in the thesis and provides a description of each of them.

<table>
<thead>
<tr>
<th>Name of initiative</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asert-Tātou Trust garden</td>
<td>Kenepuru, Porirua</td>
<td>The Asert-Tātou Development Trust recently established a garden in the grounds of Kenepuru Hospital to “create a training and work environment for disadvantaged people to learn life skills of growing food and acquiring an income in a sustainable way”.</td>
</tr>
<tr>
<td>St Benedicts Community Garden</td>
<td>Basque Park, Newton, Auckland</td>
<td>Basque Park in Newton was the site of an organic community garden in the 1990s. Local controversy about the use of the land for a community garden and concerns about the “unsightly” view created by the garden led to its closure in 2000 (Little, 2010; Murname, 2000).</td>
</tr>
<tr>
<td>Brooklyn Community Orchard</td>
<td>Brooklyn, Wellington</td>
<td>This small organic community orchard was established in 2010 by Transition Towns Brooklyn on land leased from the Wellington City Council (Armstrong, 2011).</td>
</tr>
<tr>
<td>CCS Community Action garden</td>
<td>Royal Oak, Auckland</td>
<td>Auckland CCS Disability Action has an established organic garden on its premises in Royal Oak which used to be solely used by disabled people but is now being made available for the wider community to use.</td>
</tr>
<tr>
<td>Common Ground</td>
<td>Island Bay, Wellington</td>
<td>Common Ground is a community permaculture garden set up in 2005 on the grounds of the Home of Compassion in Island Bay by a group of individuals interested in sustainability and organic gardening principles (Nolly, 2007).</td>
</tr>
<tr>
<td>Gardens4Health</td>
<td>Auckland region</td>
<td>Gardens4Health was established by Counties-Manukau DHB in 2008 as a way to prevent diabetes and support those with diabetes. The project has now been expanded to include all three DHB areas in the Auckland region (Clinton et al., 2009; Main, 2010a, 2010b). More detail is provided in section 7.2.3.</td>
</tr>
<tr>
<td>Name</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Innermost Gardens</td>
<td>Newtown and Mount Victoria, Wellington</td>
<td>Innermost Gardens is a community group set up in 2006. It has gardens in Mount Victoria (on a previous bowling green site) and in Newtown (on church land) and is a multicultural community garden group with a strong interest in permaculture (Wellington City Council, 2009; Zwartz, 2010). More detail is provided in section 6.2.6.</td>
</tr>
<tr>
<td>Kai o Te Aro</td>
<td>Aro Valley, Wellington</td>
<td>Kai o Te Aro is a group of Aro Valley residents who cultivate four sites in the neighbourhood: raised beds at the local community centre; a “secret garden” on a private section that was previously overgrown; and two small pieces of land owned by Victoria University. One of the university sites is being planted as a community orchard (Zwartz, 2010).</td>
</tr>
<tr>
<td>Kelmarna Organic City Farm</td>
<td>Herne Bay, Auckland</td>
<td>Kelmarna was set up in 1981 as a working model of localised urban organic vegetable and fruit production. It now provides educational gardening opportunities for mental health clients. Kelmarna also works closely with the neighbourhood community gardens in Grey Lynn (Hill, 2010; Johnstone, 2004; Little, 2010).</td>
</tr>
<tr>
<td>Kilbirnie Community Garden</td>
<td>Kilbirnie, Wellington</td>
<td>A public community garden established on a site in Kilbirnie owned by the Wellington City Council. This garden was set up and is run under the auspices of Operation Green Thumb.</td>
</tr>
<tr>
<td>Manukau Parks Teaching Gardens</td>
<td>South Auckland</td>
<td>Established by Manukau City on council parks, the teaching gardens offer local residents free courses where they learn basic gardening skills by tending a garden plot for a season (Perkins, 2010). Described in more detail in section 5.1.5.</td>
</tr>
<tr>
<td>Maara Kai Funding programme</td>
<td>Nationwide</td>
<td>A funding programme established by Te Puni Kōkiri in 2009 to encourage marae, communities and the education sector to establish maara kai (edible gardens). Garden projects receive a grant of $2,000.</td>
</tr>
<tr>
<td>Millbrook Edible Garden</td>
<td>Henderson, Waitakere</td>
<td>A community garden set up in 2008 by local residents on city council land alongside the Oratia Stream. Includes both allotments and communal plots.</td>
</tr>
<tr>
<td>Garden Name</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Moera Community Garden</td>
<td>Moera, Hutt Valley</td>
<td>Local residents set up this garden in 2008. It is located on city council land behind the community hall in Moera. This is one of 30 gardens that have been established in the Hutt Valley by the local Transition Towns group (Catherall, 2010).</td>
</tr>
<tr>
<td>Operation Green Thumb</td>
<td>Wellington City</td>
<td>Operation Green Thumb was established in 1994 and assists people in Wellington who are without land, such as Wellington City Housing tenants, to set up community gardens. The trust operates gardens in most of the City Housing complexes as well as two public gardens (Jordan, 1995; Watson, 2006).</td>
</tr>
<tr>
<td>Owhiro Bay Community Garden</td>
<td>Owhiro Bay, Wellington</td>
<td>Mokai Kainga, a Māori service provider, set up this community garden in 2009 on the land behind its properties in Owhiro Bay. It has extended the garden to include reserve land, which has been leased from the Wellington City Council (Wellington City Council, 2010).</td>
</tr>
<tr>
<td>Pacific church garden projects</td>
<td>Hutt Valley</td>
<td>As part of its Healthy Eating Healthy Action initiatives, the Hutt Valley District Health Board funded a variety of garden projects through Pacific churches. These include home gardening programmes and garden initiatives on church properties.</td>
</tr>
<tr>
<td>Papatuanuku Marae gardens</td>
<td>Mangere, South Auckland</td>
<td>Papatuanuku Marae is located on reserve land in Mangere. It is the site both of a Manukau Parks Teaching Garden and a Gardens4Health initiative (Nga Maara Kai o Papatuanuku).</td>
</tr>
<tr>
<td>Papawai Restoration Project</td>
<td>Mount Cook, Wellington</td>
<td>A vegetation restoration project located at Papawai Reserve. Initial focus is on revegetation with native flora. A community garden and community orchard are also planned (Young, 2010).</td>
</tr>
<tr>
<td>Ranui Community Garden</td>
<td>Ranui, Waitakere</td>
<td>The Ranui Action Group set up this community garden on council reserve land in 2007. It contains allotments and communal plots.</td>
</tr>
<tr>
<td>Rata Vine Community Garden</td>
<td>Rata Vine, Manukau</td>
<td>On the Rata Vine housing estate, a community garden has been set up beside the Housing New Zealand Corporation community house. The garden is one of many initiatives set up by the local residents as part of “turning the community around” (Collins, 2009).</td>
</tr>
<tr>
<td>Spinal Rehabilitation Unit Garden</td>
<td>Otara, Auckland</td>
<td>A garden set up behind the Auckland Spinal Rehabilitation Unit for use of patients and staff. Established under the auspices of Gardens4Health.</td>
</tr>
<tr>
<td>-----------------------------------</td>
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</tr>
<tr>
<td>Te Maara @ Cornwall</td>
<td>Porirua East, Porirua</td>
<td>Keep Porirua Beautiful and Porirua City Council set up this community garden in Cornwall Crescent in Cannons Creek in 2006. The garden has links with local schools and zero waste initiatives in Porirua. (Described in more detail in section 6.2.4.)</td>
</tr>
<tr>
<td>Tenara Park Gardens</td>
<td>Brooklyn, Wellington</td>
<td>Nga Taurahere ki Poneke set up these allotments in 1989 for low-income households, particularly tenants in Wellington City Housing flats. The site is on the Town Belt above Aro Valley. The gardens are now overseen by Mokai Kainga (Jordan, 1995).</td>
</tr>
<tr>
<td>Wellington City Housing gardens</td>
<td>Wellington City Housing estates</td>
<td>Under the auspices of Operation Green Thumb, community gardens have been set up in most of the large Wellington City Housing estates. Some of these gardens are allotments and others are communal gardens (Jordan, 1995).</td>
</tr>
<tr>
<td>Whanganui “Grab a Bite That’s Right” project</td>
<td>Whanganui</td>
<td>A community garden was set up as part of the “Grab a Bit That’s Right” project, a partnership between the Whanganui District Health Board and the Whanganui Regional Primary Health Organisation. The project received HEHA funding (Batten, 2008; Pirikahu, 2008).</td>
</tr>
<tr>
<td>Whare Tiaki Hauora Gardening project</td>
<td>Otara, South Auckland</td>
<td>Whare Tiaki Hauora is a kaupapa Māori trust that supports people who experience mental ill-health. The trust has set up a community garden and offers a gardening programme to clients and local Otara residents. The gardening programme is tailored to each person’s or household’s needs through an individualised gardening programme plan. This project is supported by Gardens4Health.</td>
</tr>
</tbody>
</table>
Appendix D: Te Whare Tapa Whā analysis

The following four tables detail the themes for the four domains of Te Whare Tapa Whā. Relevant quotes are provided for each theme and subtheme.

Table 13: Taha tinana components of community gardening

<table>
<thead>
<tr>
<th>Taha Tinana: “The capacity for physical growth and development. Good physical health is required for optimal development. Our physical “being” supports our essence and shelters us from the external environment. For Māori, the physical dimension is just one aspect of health and well-being and cannot be separated from the aspect of mind, spirit and family.” (Ministry of Health, n.d.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPROVING HEALTH THROUGH GOOD NUTRITION</td>
</tr>
<tr>
<td>❖ Improving physical health through good nutrition</td>
</tr>
<tr>
<td>“I originally got into gardening I think probably for health reasons, cause I’ve got some eye trouble – an inflammatory condition and I was to eat organic food or better food and of course it all costs.” (member of a garden steering group, Wellington)</td>
</tr>
<tr>
<td>❖ Improving children’s health</td>
</tr>
<tr>
<td>“We’re growing food and kids are eating fresh produce – healthy food.” (Garden coordinator, Wellington)</td>
</tr>
<tr>
<td>ACCESS TO FRESH AND NUTRITIOUS FOOD</td>
</tr>
<tr>
<td>❖ Greater access to fresh food</td>
</tr>
<tr>
<td>“…eating fresh fruit and vegetables that you have grown yourself.” (Council employee, Auckland)</td>
</tr>
<tr>
<td>❖ Engaging with fresh food</td>
</tr>
<tr>
<td>“Fresh is best and I think people, once they – even if they grow something like a radish which is quite a rapid turn about cycle in production and they eat that radish and they compare that with what they have eaten from a supermarket, or they’ve never eaten it before and they think ‘wow this is refreshing, this is interesting, I’m going to explore this further’.” (Garden coordinator, Auckland)</td>
</tr>
<tr>
<td>“…and just the mere fact of being able to go out to the garden and pick a few lettuce leaves and a spring onion and some tomatoes and come in and throw them on a plate for your tea.” (Garden coordinator, Wellington)</td>
</tr>
</tbody>
</table>
改善食品的营养价值

“新鲜农产品源于超级市场，但不会是有机的，通常可能会被喷洒，或者只是被放置数日，并且营养价值的损失是不言而喻的。”（意见领袖，惠灵顿）

改善食品的风味

“……你可以实际品尝番茄，你可以实际品尝生菜，你可以实际品尝小葱，”（花园协调员，惠灵顿）

食品安全

改善了将新鲜和健康的食品提供给低收入人群

“……这是低收入人群能够获得营养丰富食物的一个基本需求。”（惠灵顿市议会职员）

“……即使在这些困难时期，食品价格上涨，人们也都在寻找解决方案，其中一部分解决方案是种植自己的食物。”（花园协调员，奥克兰）

在当地种植食物

“吃在季节和当地种植的食物。”（惠灵顿市议会职员）

“……履行能够自己种植并自己吃掉它。”（意见领袖，惠灵顿）

对食物生产的更多控制

“……摆脱对食物银行的依赖。”（惠灵顿市议会职员）

“人们能够为自己的食物生产负责。”（惠灵顿市议会职员，奥克兰）

了解你的食物历史

“……我们知道它的历史……那菠菜，西兰花，西葫芦，或者别的什么，我都从我的花园里采摘，我知道它从我种植它，它被处理，直到实际上将它拔出来的时间。”（花园协调员，惠灵顿）

关于食物的学习

了解食物的来源

“……并且了解它来自哪里，如果你生活在城市环境中，你可能不会知道你的食物来自哪里。”（惠灵顿市议会职员）

了解健康饮食

“我们通过烹饪课程以及我们的社区午餐会教授所有关于健康营养的知识。”（花园协调员，奥克兰）
Learning to grow food

“Teach people, particularly young people around the idea growing your own food.” (Council employee, Auckland)

CREATING OPPORTUNITIES FOR PHYSICAL ACTIVITY

“… I do still spend a lot of time watching TV or on the computer – but at least now I have an activity that gets me outside.” (Member of garden steering group, Wellington)

“You know you can’t beat being out in the garden in terms of recreation, you know and working yourself physically.” (Council employee, Wellington)

“Slightly toughening up your physicalness, getting fit, digging, wheelbarrowing, mulching, turning compost – it all helps with physical fitness.” (Garden coordinator, Auckland)

Table 14: Taha wairua components of community gardening

<table>
<thead>
<tr>
<th>Taha Wairua: “the capacity for faith and wider communication. Health is related to unseen and unspoken energies. The spiritual essence of a person is their life force. This determines us as individuals as well as a collective, who and what we are, where we come from and where we are going. A traditional Māori analysis of physical manifestations of illness will focus on the wairua or spirit to determine whether damage here could be a contributing factor.” (Ministry of Health, n.d.)</th>
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CONNECTING WITH NATURE

- **Connecting with the environment and forces of nature**

  “I think it’s a way for people to reconnect with the forces of nature, with Papatuanuku which is the land and I think there is a yearning for people deep down at a subconscious level to grow their own food. It is part of something that deep within most of us…” (Garden coordinator, Auckland)

  “You’re connecting with the seasons and the elements around you and that’s something that a lot of people are quite removed from.” (Stakeholder, Wellington)

- **Learning about the cycle of life**

  “So it’s teaching people about the cycle of life and of growing which is a very cool thing to learn.” (Garden coordinator, Auckland)

- **Being outside**

  “… being out of an air-conditioned room, in the sun and breathing fresh air.” (Stakeholder, Wellington)

- **Hands in the soil**

  “Having hands in soil releases all kinds of good chemistry.” (Stakeholder, Wellington)
REVITALISATION AND HEALING

- **Slowing down**
  “There’s a slowing down that happens, I think that a lot of people love because it’s simple, as well.” (Stakeholder, Wellington)

- **Tranquil setting**
  “…the spiritual side of it, that it’s quite a tranquil place to be.” (Stakeholder, Wellington)

- **Process for development**
  “…that’s quite a powerful process in terms of developing yourself but also the ability to share that with other people equals community.” (Stakeholder, Wellington)

- **A place of sanctuary**
  “This is sanctuary for people … when people walk in here – adults – you always see their faces light up like children.” (Garden coordinator, Auckland)

- **Enabling healing**
  “It’s very healing in that it takes you out of your normal routines and get you into … a different place, which in itself is a good thing.” (Garden coordinator, Auckland)
  “So bringing people here\(^1\) from the community is important to assist in the healing processes that go on from here. And also for the healing process that probably go into the community. What they take from us, they take back into their own lives as well.”
  (Garden coordinator, Auckland)

\(^1\) A community garden that provides an employment programme for people with long-term mental health conditions.
Table 15: Taha whānau components of community gardening

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<th>Taha whānau: “the capacity to belong, to care and to share where individuals are part of wider social systems. Whānau provides us with the strength to be who we are. This is the link to our ancestors, our ties with the past, the present and the future.” (Ministry of Health, n.d.)</th>
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**FACILITATING SOCIAL INTERACTIONS AND BREAKING DOWN BARRIERS**

- **Social interaction**
  “I think that the social interaction that we provide through having that little patch of dirt is great.” (Garden coordinator, Wellington)
  “…we’ve had some great afternoons – the place has just been alive with laughter and jokes.” (Garden coordinator, Wellington)

- **Getting out of the house**
  “The way that it actually brought them out of their houses, their flats – because that’s been a big issue, people are becoming quite reclusive in the complexes.” (Stakeholder, Wellington)

- **Shared activity**
  “… you go down to the garden at sunset …and you just don’t water your patch, you end up going through the whole (number) gardens watering everybody else’s gardens. And that’s great.” (Garden coordinator, Wellington)

- **Shared outdoor space**
  “…you’ve got no outdoor space off your apartment, so having that community space to garden in is a godsend.” (Garden coordinator, Wellington)
  “… (creating a beautiful space) brings people together. And I think it enables people to then feel friendly towards each other and grow out from there.” (Garden coordinator, Wellington)

- **Bringing people together in the community**
  “It brings our communities together and I think for new people – such as migrants — is a fantastic idea; it’s a great way of getting to know everyone that’s in your community.” (Stakeholder, Auckland)
  “… new migrants, people arriving here and being able to plug into something practical.” (Stakeholder, Wellington)
  “And that (heritage plants) also brings your gardeners together. You know you dig up black potatoes, well I mean, most people haven’t seen a black potato…” (Garden coordinator, Wellington)
  “And this is what I will say about the gardening stuff, which is not about the actual physical harvesting of the vegetables and the fruits of the labour was about the ways it connected people together, brought people together.” (Stakeholder, Wellington)
“…It’s been a catalyst for bringing people together – there is more camaraderie, there is more support mechanisms that have come into play because people have come together around the power of growing food” (Garden coordinator, Auckland)

“…it’s actually quite a welcoming space for people that haven’t always had an opportunity to get engaged in things in the community.” (Stakeholder, Wellington)

“…we have lots of people coming from, you know, old age homes – other people who are disabled – physically and mentally, so by involving them in the community you can achieve lots of other benefits also.” (Stakeholder, Auckland)

“We’re are catering for people with disabilities who are benefiting from the socialisation.” (Garden coordinator, Auckland)

♣ Breaking down barriers
“Learning to get on with a diverse group of people, all thrown in together, all strangers when we first meet and then getting to know each other.” (Garden coordinator, Auckland)

“… because all the cultures and ethnicities are coming together, it’s breaking the barriers…” (Stakeholder, Auckland)

♣ Bringing young and old together
“Younger gardens interacting with the older gardeners and sharing ideas. Because the older gardeners – you know those gardeners who have gardened for years and they have a wealth of knowledge and you know they are only too keen to pass it on and if there’s someone willing to listen, then that knowledge is passed on…” (Garden coordinator, Wellington)

“…one of the key things we see is that the old and the young and coming together around growing food and that doesn’t often happen in many other parts of our daily lives.” (Garden coordinator, Auckland)

LEARNING TOGETHER

♣ Cross-cultural learning
“…learning about other people’s food – other ethnic groups.” (Stakeholder, Auckland)

“Also the sharing of seeds, and so finding out from other people and different cultures what they are actually eating.” (Garden coordinator, Auckland)

♣ Reconnecting with the past
“… a reconnection back into the past but also being able to transfer knowledge through to younger people.” (Stakeholder, Auckland)

♣ Learning in a public setting
“Learning in a public setting and taking it back to your own garden.” (Stakeholder, Wellington)

“… seeing gardeners who have more experience being able to transmit that onto other people is really, really cool.” (Stakeholder, Wellington)
● Learning together as a family
“That’s a huge benefit around family dynamics and learning – shared resources and things.” (Stakeholder, Auckland)

STRENGTHENING COMMUNITIES
“…it’s a really awesome vehicle for community development.” (City council employee, Wellington)
“Bringing people together for that community cohesion.” (City council employee, Auckland)

● Fostering pride in where you live
“I hope that what we are doing increases people’s sense of belonging and the pride they have in where they live – that they feel they have got something that’s theirs, that they put some energy in and that gives them a sense of pride and they get something back from participating in it.” (City council employee, Wellington)

● Resilience and emergency preparedness
“… growing vegetables is great for a situation where you might have a natural disaster.” (City council employee, Wellington)
“Also a small connection with being resilient as a city as well – both in terms of some of the big issues of long-term increases in oil prices and also if there was an emergency it would be quite good to have something to eat…” (City councillor)

● Community capital
“A community is only as good as the people in it that are doing things together in it” (Garden coordinator, Wellington)
“… because of feeling good about yourself, eating well and healthy, learning some social interaction skills or interacting with people, puts people in a better position beyond their front door.” (Garden coordinator, Wellington)
Table 16: Taha hinengaro components of community gardening

Taha hinengaro: “The capacity to communicate, to think and to feel mind and body are inseparable. Thoughts, feelings and emotions are integral components of the body and soul. This is about how we see ourselves in this universe, our interactions with that which is uniquely Māori and the perception that others have of us.” (Ministry of Health, n.d.)

- **Therapeutic value**
  “…one (gardener) in particular with severe mental health issues – it’s been good seeing them develop and change, and feel a lot happier, because you know they feel they are out doing something. Not only for themselves but also for the betterment of the community as well.” (Garden coordinator, Wellington)
  “I have had massive depressive spells, but I think that actually handling soil is anti-depressive … I find that it really does help when you’re not feeling that great.” (Garden member, Wellington)
  “Just being in the garden is therapy in itself. Being in touch with your fingers in the soil, and learning to garden in all weathers.” (Garden coordinator)

- **Developing nurturing side**
  “I think that it’s through gardening that my nurturing, softer qualities have actually come out more, by doing it more and more” (Garden member, Wellington)

- **Connection with nature**
  “I think having a connection with nature is psychologically really important. And I think it’s a way of people developing when they are in an urban environment. I know it’s really helped me in that” (Garden member, Wellington)
  “They’re out there, they just enjoy being amongst the garden – they’re really relaxed, calm and peaceful. And these are from really hard people that you wouldn’t really expect that from, so that’s quite encouraging and that’s quite positive – it changes people’s attitude, which can make huge benefits in other areas.” (Stakeholder, Auckland)

- **Interacting with people**
  “Because you are interacting with people – and so in terms of your mental health that’s really beneficial.” (Stakeholder, Wellington)

- **Stimulation**
  “…without that stimulation you get more mental health problems if people stay in bed and all those sort of things” (Garden coordinator, Wellington)

- **Respect for self**
  “…the respect they (periodic detention workers) gain for themselves is quite amazing.” (Stakeholder, Wellington)