Ruamāhanga Social Assessment

Final report to Greater Wellington Regional Council

from

Nick Taylor and Associates

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Table of Contents

Table of Contents ii
1 Introduction 1
1.1 Background 1
1.2 Objectives of the SIA 1
1.3 Water management issues 2
1.4 Organisation of the report 2
2 Approach to the social assessment 3
2.1 Phases of work 3
2.2 Methods 3
2.2 Social wellbeing, parameters and variables 4
2.3 The assessment area – spatial framework 7
2.4 Mahinga kai and Māori cultural values 7
2.5 Understanding the catchment as a multifunctional region 9
3 The scenarios assessed 11
3.1 Modelling of the scenarios 11
3.2 Modelling social futures 13
3.2 Freshwater management units (FMUs) 14
4 The social effects of potential changes to farm systems 14
4.1 Effects on farm revenue and employment 14
4.2 Effects on population and communities 17
4.3 Effects on the form of the countryside 18
5 Effects on recreation and tourism 19
5.1 The importance of water-based recreation 19
5.2 Recreational water quality monitoring 20
5.3 Effects on the social value of waterways and human health 22
5.4 Effects on the social value of waterways and ecosystem health 24
6 Effects on cost of living, social equity and cohesion 25
6.1 Effects on costs of living 25
6.2 Effects on social equity and community cohesion 26
7 Management of change 28
7.1 Adaption in farming systems 29
7.2 Assistance to households 29

7.3 Maximising employment opportunities 29
7.4 Catchment communities 30
8 Conclusions 30
Bibliography 33
Annex 1 List and rationale for the inclusion or exclusion of meshblocks 38
Annex 2 The population of the catchment 39
Annex 3 Households types with future projections 53
Annex 4 Farming, employment and livelihoods 58
Annex 5 Outdoor recreation 69
Annex 6 The visitor sector 74
Annex 7 Social services and social capital 83
Annex 8 Income flows, deprivation and equity 89
Annex 9 Social-economic status of the Māori population 90
Annex 10 Physical infrastructure and drinking water 95

List of tables

Table 1: Elements of social wellbeing by potential social indictors 6
Table 2: Summary of scenarios modelled for economic effects 12
Table 3: Total net agricultural revenue by farm type – baseline 16
Table 4: Percentage change in on-farm, net agricultural revenue 16
Table 5: Change in regional employment (FTEs) 17
Table 6: Catchment population and households, 2016 18
Table 7: Summary of the environmental response to the different scenarios 24
Table 8: Annualised wastewater treatment plant estimated costs ($,000) 25
Table 9: Summary of likely social wellbeing outcomes by scenario 32
Table 10: Catchment population and household growth, 2001–2016 39
Table 11: Age distribution – Towns vs rest of the catchment 41
Table 12: Catchment ethnicity profile, 2013 42
Table 13: Selected qualification groupings by district, 2013 43
Table 14: Catchment household profile by 47 household types, 2016–2033 55
Table 15: Wairarapa farms by type and district, 2012 58
Table 16: Wairarapa areas in main horticultural crops by district, 2012 58
Table 17: Number of livestock by type, 2012 59
Table 18: Number of farms by size, 2012 59
Table 19: Land use by farm type, 2012 60
Table 20: Area (Ha) utilised for supplementary feed production, 2012 60
Table 21: Grain and seed crops, Wairarapa 2012 61
Table 22: Catchment employment by industry category, 2000–2014 63
Table 23: MECs for selected industry sectors 64
Table 24: Chemicals used and areas of effluent sprayed by district, 2012 68

Table 25: Ruamāhanga angler days by water body, 1994/5 to 2014/15 72
Table 26: Fish licence sales (full licence equivalents), Wairarapa, 2006/7–15/16 73
Table 27: Tourism sector employment by selected industry sectors, 2004–14 79
Table 28: Wairarapa tourist spending market share 81
Table 29: Wairarapa tourist spending by source of visitor 82
Table 30: Volunteering activities for the catchment, 2013 85
Table 31: School rolls 1996–2016 87
Table 32: Selected sources of income (Benefits, Pensions, Superannuation, and Allowances), 2013. 89
Table 33: Benefit numbers by type and TAs, 2013–16 90
Table 34: Occupations for Māori, 2013 91
Table 35: Personal Income for Māori (per annum), 2013 92
Table 36: Highest qualification for Māori, 2013 92
Table 37: Share of benefits paid out to Māori 94
Table 38: Wastewater systems in South Wairarapa 99
Table 39: Water systems in South Wairarapa 99

List of figures

Figure 1: Mapping of RWC Catchment (shortened) values and elements of social wellbeing 5
Figure 2: Ruamāhanga catchment 7
Figure 3: Linkages to social wellbeing outcomes 11
Figure 4: Ruamāhanga FMUs 14
Figure 5: Modelling scenario results for *E. coli* (attribute bands) by location 23
Figure 6: Masterton socio-economic deprivation index, 2013 45
Figure 7: Carterton socio-economic deprivation index, 2013 46
Figure 8: Greytown socio-economic deprivation index, 2013 48
Figure 9: Featherston socio-economic deprivation index, 2013 49
Figure 10: Martinborough socio-economic deprivation index, 2013 51
Figure 11: Dairy cow numbers by district and cow/hectares for Wairarapa total, 1998/9–2015/16 .. 67
Figure 12: Number of Wairarapa accommodation establishments, 2001–2015 74
Figure 13: Wairarapa international and domestic guest nights, 2001–2015 75
Figure 14: Wairarapa tourism spending by product, 2009–2015 80
Figure 15: New Zealand tourism spending by product, 2009–2015 81
Figure 16: Wairarapa districts school rolls at 1 July 1996–2016 86
Figure 17: Carterton Wastewater Strategy 97

1 Introduction

1.1 Background

Greater Wellington Regional Council (GWRC) has initiated a community led collaborative planning process to address a number of land and water management issues and to carry out its obligations under the National Policy Statement for Freshwater Management (NPS-FM). This process is catchment based, with the region divided into five whaitua or catchments. Each whaitua has a committee, and these committees are a partnership between GWRC, iwi, territorial authorities and the community. They will make recommendations to the Council through a Whaitua Implementation Programme (WIP) towards developing catchment-specific chapters for the Regional Natural Resources Plan.

The first of these committees to develop a WIP is the Ruamāhanga Whaitua Committee (RWC), covering the catchment of the Ruamāhanga River in the Wairarapa subregion of GWRC. Their WIP will contain strategies and actions, forming a programme of work in the catchment area of the Whaitua Committee. These will include recommendations for both statutory and non-statutory actions and methods. Proposed regulatory provisions in the WIP will be incorporated into the Regional Plan through a plan change process.

Collaborative modelling is supporting the Whaitua Committees and their communities in setting freshwater objectives and limits and developing their WIP. A strategic Social impact assessment (SIA) is an integral part of the modelling and related policy development and assessment. The Ruamāhanga Whaitua Committee is the client for the SIA. It has identified values and attributes of the catchment and provided a number of issues and potential management scenarios that the modelling should address.

The SIA is one part of the collaborative modelling, alongside inputs from bio-physical and economic assessment and mātauranga Māori. Four interrelated projects have contributed to the SIA:

1. baseline information and assessment of scenarios – this project has several sub-components as outlined below
2. understanding the process of change to inform policy design and implementation
3. developing a vision for the Ruamāhanga
4. assessing change in people's connection to water.

A social science group guided the development and progress of these four projects. The group comprised Natasha Tomic (GWRC), Dr Jim Sinner (Cawthron Institute), Ra Smith (RWC/Ngāti Kahungungu ki Wairarapa), Dr Margaret Kilvington (Independent consultant), Dr Will Allen (Independent consultant) and Dr Nick Taylor (Taylor Baines[1]). Originally, project 1 was to develop a social baseline. However, the group subsequently identified the need to expand the proposed baseline study to become a full SIA in order to meet a tight timeline for the RWC to deliver a WIP early in the first quarter of 2017. In this way the social baseline became an important building block for the assessment work.

1.2 Objectives of the SIA

The revised objectives of the full SIA were therefore to:

1. describe the social baseline, conditions and trends for social parameters that can be affected by land and water use in the catchment

[1] Now trading as Nick Taylor and Associates

2. work from this baseline to inform and conduct the full SIA, including information from projects 2–4 above, scenario analysis and later policy evaluation.

1.3 Water management issues

The following is a summary of the issues identified by the Whaitua Committee as critical to management of the catchment. These issues provided the initial focus for assessment of policy and planning for the catchment.

General	The natural state of rivers, lakes and wetlands is modified, in some cases significantly, and there has already been loss of natural character and habitat. The management of land and water by regulatory agencies could be better co-ordinated and integrated. Climate change needs to be reflected in future resource management decisions. Iwi values and interests are not well recognised in the current water management system.
Water quality	Many rivers do not meet the National Objectives Framework standard for primary contact recreation (swimming) but the secondary contact level (wading) is met everywhere. Periphyton (algae) growth in rivers and streams in the Eastern Hills and the Parkvale Stream can be excessive (below national bottom lines). Nitrate toxicity in the Parkvale Stream exceeds the national bottom line. Sediment generation from soil and streambank erosion is affecting water bodies. Phosphorus levels in Lake Wairarapa exceeds the national bottom line. Lakes are seriously degraded. Lake Wairarapa is super-eutrophic (the worst level of quality) and Lake Onoke is eutrophic.
Water quantity	Current allocation, based on a 'first in first served' approach, is not always the most efficient system for allocating water, particularly in fully allocated catchments. The efficiency of water use is variable between users and there is room to improve. This includes efficient use by individuals taking water and the use of water taken in a community water supply. Reliability of supply differs across the Ruamāhanga catchment, leading to inequities between users. Groundwater takes directly affecting surface water bodies do not have to cease when rivers reach minimum flows. River low flows are getting lower over time and there are questions on whether current minimum flows and allocation are supporting ecosystem health. This includes the methods used for developing minimum flows and allocation limits, and the way water takes are managed as they approach minimum flows. Permitted activity water takes are not currently accounted for as part of limits on the amount of water taken in a catchment, and there is currently poor information on the amount of water taken.

Source: Ruamāhanga Whaitua Co.

1.4 Organisation of the report

This report combines the scoping and baseline reports with the scenario assessment narrative prepared for the RWC. The report outlines the approach, scenarios, effects of scenarios, and management of change. Baseline information is largely provided in the annexes.

2 Approach to the social assessment

2.1 Phases of work

The approach to the SIA was to undertake three, overlapping phases of work (scoping, baseline and assessment). The first phase, scoping, was documented in a scoping report. The second phase, baseline, was also reported in full. The third phase used the baseline to assess scenarios for policy proposals, and related actions, being considered by the RWC. All these phases have contributed to this final report. In addition, the RWC asked for additional guidance on the management of change, reflecting the need to consider social issues through the process of implementing the WIP. This discussion is also included as a section in this final report.

2.2 Methods

Methods and data sources used in this overall approach are outlined here for each phase of work.

Scoping

Key tasks in the scoping phase included:

- investigating and confirming the parameters of the social baseline,
- outlining the variables (indicators) to be used for each parameter,
- identifying the sources of data to be used and any limitations in obtaining suitable data,
- identifying the areas or map layers (includes any sub catchments) to be used.

Wherever possible secondary data were used and relevant data mapped at either the census area unit or meshblock[2] level. Aggregated meshblocks are necessary in order to define and understand the social profile of the catchment. The team assembled a spatial framework by coding each meshblock in the wider Ruamāhanga Catchment to define the study area and specific settlements, rural areas and sub-catchments as necessary. This framework is defined in more detail below and in Annex 1.

Combinations of quantitative and qualitative data were used in this SIA. Sources are indicated and discussed in the list of parameters in Table 1 below. Data are being presented in this report in temporal and spatial forms as tables or maps.

Baseline

The detailed social baseline used mainly secondary data plus some qualitative primary data obtained through key-informant interviews. The baseline included many of the parameters identified during the scoping phase, to reflect the full range of social values in the catchment. The full baseline report included trends and projections of key variables to give an understanding of how values and social conditions relating to land and water have changed over time, and might change in the future.

Population projections were based on those developed by Statistics New Zealand for the three local bodies in the catchment and calculated to the household level using a household framework developed by Market Economics (ME).

[2] Meshblocks are the smallest area (level) used by Statistics NZ for compiling and reporting census data. The boundaries of the next spatial level up (Census Area Units) do not necessarily fit catchments or sub catchments.

Scenario assessment

The third phase of the SIA involved assessment of the scenarios developed by the RWC and the policy evaluation work that builds on it towards a regional plan change. This phase drew on the full SIA work stream (Projects 1–4). The scenario work involved assisting the RWC to model and explore future conditions in the catchment depending on possible settings for policies and plans. Alongside the scenario work the RWC engaged with stakeholders and the wider community to consider possible futures for the catchment depending on different regimes for land and water management, and possible interventions through mitigation actions and new or improved infrastructure (e.g. water storage and irrigation, waste water management, flood protection).

The scenarios involved the modelling team assisting the RWC to explore future conditions in the catchment depending on possible settings for policies and plans. These are business as usual (the baseline continued into the future as an extension of current trends and the Natural Resources Plan) and an aspirational future, with silver and gold levels that recognised a final package of policies and other interventions will most likely fall somewhere in the levels assessed – i.e. what is assumed to be an "achievable future".[3]

Methods used for the scenario assessment included review of other assessments (bio-physical, economic and cultural), discussions with those members of the technical team, participation at RWC community workshops, review of comparison cases, and expert judgements by the SIA team. As the SIA scenario work proceeded some updating of the baseline was possible as new information came to hand.

This general approach recognised the importance of iterations between the four SIA projects, the economic assessment, the bio-physical assessments and the work of the committee.

2.2 Social wellbeing, parameters and variables

As a framework to guide the assessment, the SIA team used a standard list of social wellbeing elements[4] and matched these as best as possible with the values and attributes developed by the RWC[5] (Figure 1). The attributes that the RWC attached to the values they listed were considered in terms of how they could be assessed, measured or described and the likely ability of the team to obtain data on these for the purposes of the assessment, including developing the baseline. Sufficient or suitable data with spatial differentiation was not available for every element, but all elements were considered. The framework was discussed with the RWC and GWRC staff as it developed. These indicators are listed in Table 1 (below) alongside the elements of social wellbeing.

[3] A bronze level was discarded as it did not provide sufficient variation on the next two levels.
[4] Derived from a Taylor Baines list and also the Oxfam Humankind Index.
[5] Ruamāhanga Waitua Committee Values and Attributes for the Ruamāhanga Catchment.

Figure 1: Mapping of RWC Catchment (shortened) values and elements of social wellbeing

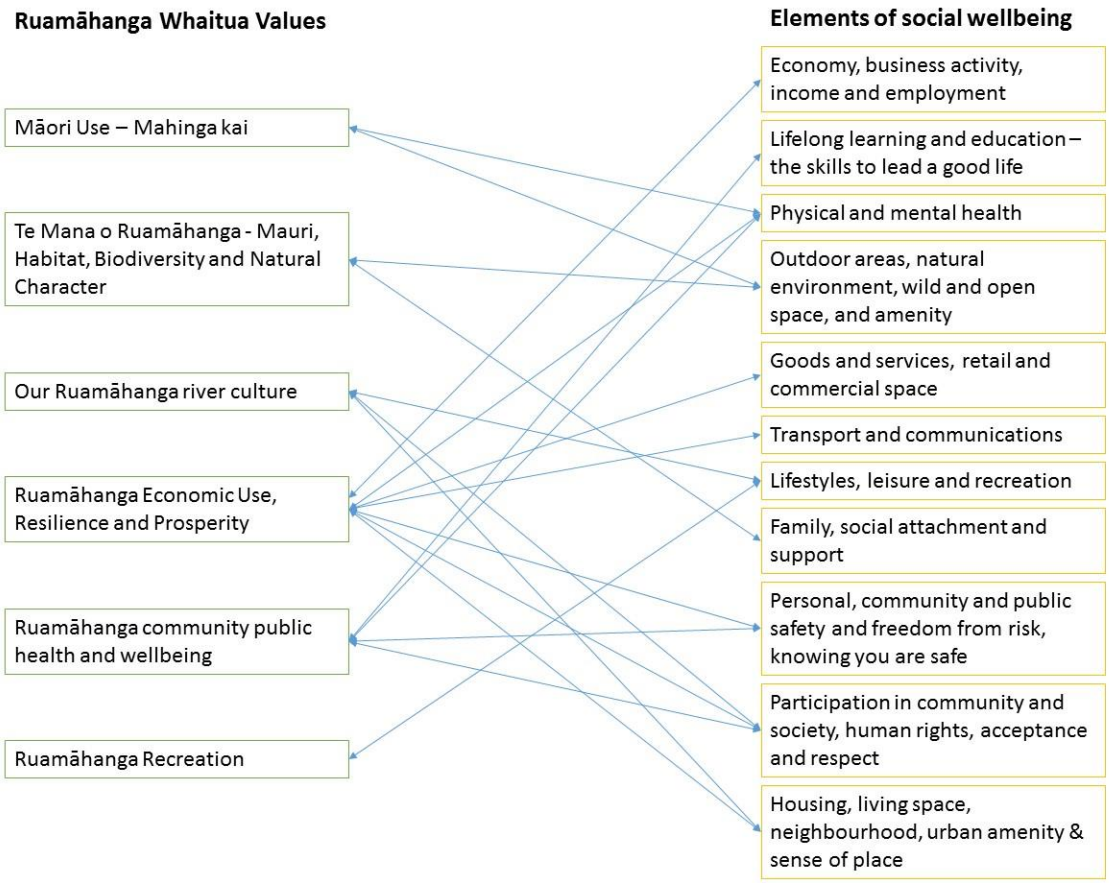


Table 1: Elements of social wellbeing by potential social indictors

Elements of Social Wellbeing	Social Indicators
Economy, business activity, income and employment (secure, suitable and satisfying work)	Expenditure by location
	Business size and types by location
	GDP by sector
	Employment by sector
	Employment status
	Sources of income by industry group and occupation
	Individual and household incomes
	Domestic and international visitor numbers (including seasonally and by area and type of activity)
	Tourism activity/links to water resources
	Bed nights
	Tourism products
	Tourism businesses
Physical and mental health	Place identity
	Health status of the population
	Incidences of water-borne diseases
	Incidences of health warnings relating to water
	Health status of the population
Outdoor areas, natural environment, green, wild and open space, and amenity	Amount and quality of aquatic life collected for food and cultural purposes
	Quality of water for consumption for Mahinga Kai
	Numbers of participants in sports fishing in lake and rivers
Lifestyles, leisure and recreation	Types of recreational activities
	Number of participants per activity
	Spatial location of activities and relationship to water
	Quality of recreation experience
	Social value of recreation locations (e.g. rivers, lakes, wetlands)
Lifelong learning and education – the skills to lead a good life	School rolls
	Tertiary education and skills availability by sector
	Educational status of the population
Personal, community and public safety and freedom from risk, knowing you are safe	Water quality ranking
	Standard of water supply infrastructure
	Wastewater disposal infrastructure
	Incidences of drinking water restrictions
	Warnings and public health events
	Flood management infrastructure quality / maintenance
	Levels of crime
Housing, living space, neighbourhood, urban amenity & sense of place	Instances of public debates or disputes over water, its use and rural land uses
	Population by settlement and area
	Housing by type
Goods and services, retail and commercial space	Level of commercial activity by type
	Social and community services
Transport and communications	Access to motor vehicles
	Access to and use of public transport
	Travel to work by area
Population, family, social attachment and support – relationships with family and friends	Social deprivation
	Total population and population change
	Age
	Ethnicity
	Born overseas and Length of residence
	Household size
Participation in community and society, human rights, acceptance and respect	Leadership
	Business networks
	Community organisations and volunteerism
	Assimilation of newcomers

2.3 The assessment area – spatial framework

The Ruamāhanga Catchment extends across a wide area (355,685 ha or 44% of the Greater Wellington Region) with the northern boundary aligned with the territorial authority ("TA") boundary between Masterton District and Tararua District, and the western boundary running from north to south along the TA boundaries of Masterton, Carterton and South Wairarapa Districts. The southern extent of the boundary hugs the coastline of the South Wairarapa District. The eastern extent of the catchment runs from north to south dividing the districts in two. The catchment crosses through meshblocks on this eastern boundary, and for the purpose of this assessment we categorised meshblocks in terms of whether they lie within or outside the catchment based on topography and the location of the majority of population and/or farmland (Figure 2). Annex 1 provides a list and rationale for the inclusion or exclusion of meshblocks that the eastern boundary intersects. The assessment used Statistics New Zealand's definitions of urban and rural areas to define the spatial communities in the catchment, which are aggregations of meshblocks. Particular focus was placed on the larger settlements of Masterton, Carterton, Greytown, Featherston and Martinborough. The rest of the catchment is treated as rural in the discussion below.

Wairarapa Moana is a significant water feature in the catchment. For the purposes of this assessment we followed the convention established in the book *Wairarapa Moana: the lake and Its People.* With its multiple, well-known local authors this book provides a strong social and cultural background. For the purposes of the book, Wairarapa Moana is defined as "Lakes Wairarapa and Onoke and the rivers, streams, wetlands, lagoons and adjacent land that are all part of the same interconnected ecosystem".[6]

2.4 Mahinga kai and Māori cultural values

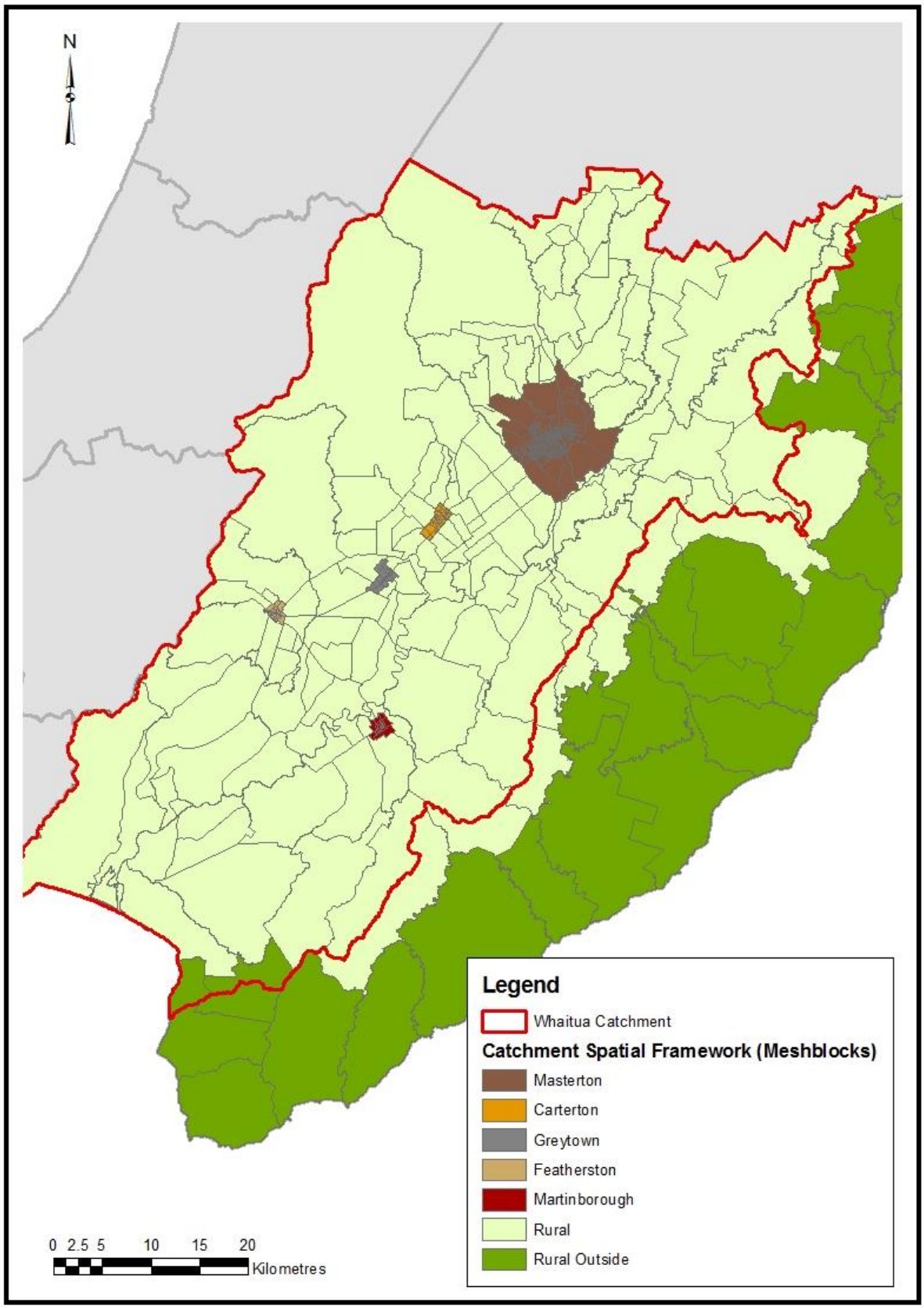
Some of the earliest archaeological evidence of Māori occupation in New Zealand is found in the Wairarapa[7] particularly in the coastal areas. There is also evidence that early occupation included Wairarapa Moana with a range of settlements cultivating crops such as kūmara in the flood plain, as well as hunting and gathering in the lakes and extensive wetlands of that time. Evidence includes garden remains, fortifications, artefacts and oral history.

As European settlement and farming practices took precedence around the Lake from 1844 until into the 1900s, there were increasing conflicts in values. Farmers sought to artificially open Lake Onoke to the sea and drain larger areas of the margins of Lake Wairarapa, creating conflicts with traditional practices such as gathering of eels.[8] Having gifted the lakes to the Crown in 1896, Māori found that regular opening to the sea, and draining of the lake margins, had a "drastic" effect on the eel population and catches. This followed a long period of disagreement and conflict over management of lake levels. Assured of reserve land around the lakes, Māori found that even these were eventually lost, with "compensation" in the form of a block of pumice land near Turangi, known as the Pouākani block.

Mahinga kai and cultural values were identified by the RWC as the basis for a number of key values in the above framework. Of particular note is the overlap between cultural values, natural values and social values of water ways, especially recreational uses, with all these demanding high quality of the freshwater environment.

[6] Grant (2012). Publishers Note, page v.
[7] Furey (2006), Barnett (2012).
[8] Winter (2012).

Figure 2: Ruamāhanga catchment



2.5 Understanding the catchment as a multifunctional region

It is useful to consider the dynamic nature of the Wairarapa region in which the catchment lies, in order to help frame the analysis and understand the interconnected nature of land and water, and processes of social, cultural, economic and environmental change. The region has an increasingly multifunctional character and it is useful to think of it as a globalising place, where rural and urban spaces and water resources are difficult to separate socially and economically.[9] It is home to networks of people who are connected to ideas, products, processes, and markets with a global reach. Locally, because the effects of these global connections and their interaction with local activities are uneven, regional differentiation and competition for investment are found *between* sub-regional areas (rural and urban) and local government jurisdictions. This in turn creates and sharpens divisions *between* regional communities – different parts of Greater Wellington and beyond. Divided by local government boundaries and with some distinct spatial social-economic differences (as discussed further below) the Wairarapa is a good example of how these processes work themselves out. It follows that the final outcomes of the plan change process will contribute to the ability of the Wairarapa to compete for future investment.

Apart from its global connections, the Wairarapa region is increasingly multifunctional. Once the site largely of primary production, relatively stable social and cultural relations, and small country towns, it is increasingly dynamic and diverse, and a place where there are contested modes of *production*, *consumption* and *protection*. *Production* in this case refers to the mix of primary, secondary and tertiary economic activities that use land, water, labour and capital to produce value. As in much of rural New Zealand, this production is in well-established agricultural and horticultural enterprises making and selling an array of familiar food and fibre staples. Some of these commodities are today also being produced in new, expanded ways and places, often influenced by new technologies, regulations, investment strategies and market opportunities. Irrigated dairying and wind farming are good examples.

There are also very clear signs in the Wairarapa of diversification of rural production into niche primary products catering particularly for diverse consumers. This underscores the role of the region as a site of *consumption*. These consumer products are also underpinned by technological innovation, and influenced more particularly by changes associated with consumer lifestyle, health and fashion. Included here are higher value niche foods and beverages.[10] The key to high returns for such products revolves around branding and advertising strategies, such as those referred to as "gate-to-plate" in Wairarapa promotions, that combine desirable images of the places where these goods can be produced and consumed, as in local wineries or restaurants. There is an emphasis on novelty, style, social status, natural environment, health and personal experience in this type of production. In some instances, however, there are conflicts between the processes and practices inherent in agro-industrial agriculture and those associated with the production and marketing of high-value, niche goods and services.

These niche products are linked closely to the processes of amenity migration, the movement of formerly urban residents into rural areas, to small rural settlements, small-holdings or stand-alone housing in peri-urban areas, within commuting distance of significant urban centres – another form of *consumption*. The Wairarapa is a destination for amenity migrants. Amenity migration includes the movement of urban residents to rural areas to retire from full-time employment or to take advantage of employment-related computer and telecommunications technology to make a living in

[9] Amin (2004).
[10] Perkins et al. (2015).

the countryside that relies on their former urban connections. These amenity migrants often also establish new rural enterprises not associated with agriculture or horticulture. Their arrival can have a gentrification impact on rural towns and significantly affect rural landscapes, long-established social patterns, employment opportunities and property markets. These affects are making themselves felt in and around particular settlements of the Wairarapa.

A common way that both long-established rural residents and amenity migrants can create new consumption-oriented livelihood opportunities in rural areas is by providing commercial recreation and tourism activities, ranging from small-scale, leisure-related activities for local and urban residents to the establishment of tourist accommodation and activities for international visitors. Associated with these activities are regionally focused brochures, guide books, and other, usually now electronic, media promoting the area. The development of recreational opportunities, hospitality and associated place-promotion is very evident for the Wairarapa and sits alongside longstanding local use of waterways and natural areas for recreational activities. Local environmental and cultural features are now used by residents to generate and diversify economic activity as well as meet local needs. This growth has occurred with the rise of post-mass tourism (in particular independent travellers looking for unique or "authentic" experiences) and the demand from urban visitors to consume the products of a multi-functional "countryside". These tourists like to recreate in high quality natural and cultural environments and take advantage of new land uses and landscapes such as vineyards and wineries, and perhaps view or experience aspects of traditional agro-industrial activity. A number of traditional farmers, in fact, have become part of this new activity, providing such services as hospitality and accommodation.

This proliferation of new recreational and tourism activities in the Wairarapa is linked to the ways protection of natural and heritage environments is now given high priority by many residents, supported by national agencies such as the Department of Conservation and the Historic Places Trust and local agencies such as local councils, the GWRC and Fish and Game Wellington. Their work is complemented actively by local and national NGOs, community groups, iwi/rūnanga, firms and individuals who in combination have greatly increased the range of protected natural and heritage sites and areas in the countryside. Apart from their contribution to environmental health and integrity, these conservation attempts provide opportunities for recreation, enjoyment of nature and heritage, and employment. Inevitably there are sometimes conflicts between those wishing to conserve nature and heritage and advocates of economic activity. For this reason, protection is the third major element of the multifunctional countryside, along with production and consumption.

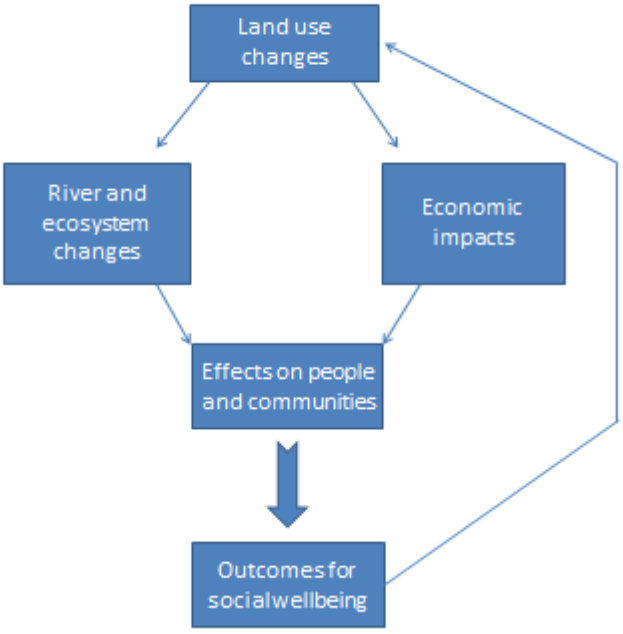
The SIA uses this model of multifunctional rural space as an important starting point in understanding the Ruamāhanga catchment and the ways that the WIP might change things.

3 The scenarios assessed

3.1 Modelling of the scenarios

The collaborative modelling project considered the social implications of outputs from the modelling of three main scenarios developed by the Committee for future land and water management options in the Ruamāhanga catchment. From a social perspective, the results of policy and planning options are seen as linked, as shown in Figure 3. Changes in land uses and management practices will drive economic impacts and result in changes to rivers and their ecosystems. Both sets of effects will in turn flow into effects on people and communities and potentially result in changes to outcomes for social wellbeing. Furthermore, acknowledging the complex nature of social-environmental systems, this narrative recognises that, as social wellbeing changes, there is a feedback loop to land uses as people and communities adapt and respond to the combined sets of effects (positive and negative).

Figure 3: Linkages to social wellbeing outcomes



The scenarios assessed by the team included a range of possible management options, where the results could inform the policy discussions of the Committee and their advice to the Regional Council in developing a catchment-specific chapter for the Regional Natural Resources Plan. Broadly, the scenarios comprised three, integrated packages of policy and planning along with a number of specific but separate management options that could be included alongside any scenario. Each scenario was tested to three points in the future: 2025, 2040 and 2080.[11]

1) Business as usual (BAU): The business as usual scenario runs existing policy, practice and investment into the future from the baseline. Key changes in resource management under this scenario include wastewater treatment plants progressively discharging to land, and stock exclusion from water bodies - in accordance with the Proposed Natural Resources Plan rules.

[11] Scenarios to be tested for the Ruamāhanga Whaitua, Greater Wellington Council, unpublished manuscript.

2) Silver: The management options in the Silver scenario are intended to correspond to a moderate effort to improve water quality across the whaitua. It envisages actions to manage sediment, wastewater, water allocation, wetlands and on-farm practices. In general, management actions occur in longer timeframes than with the Gold Scenario
3) Gold: The Gold scenario represents the highest and most aspirational effort for making water quality improvements across a broad range of activities and issues in the whaitua. It also envisages actions to manage sediment, wastewater, water allocation, wetlands and on-farm practices. Management options happen in shorter timeframes– for example, all wastewater treatment plants discharge only to land by 2025 versus 2040 for Silver.

The components of the scenarios are shown in Table 2, a summary from the economic analysis that allows quick comparison between scenario elements.

Table 2: Summary of scenarios modelled for economic effects

Mitigation Option	BAU	Silver 2025	Silver 2040	Silver 2080	Gold 2025	Gold 2040	Gold 2080
Retirement of steep slopes	Retire rate		+	+	+	+	+
Space planting on steep slopes	Planting rate	+	+	+	+	+	+
Additional riparian planting (+5m)					+	+	+
Stock exclusion	Staggered	60%	100%	100%	100%	100%	100%
WWTP discharge to land	+	+	+	+	+	+	+
Minimum flow and allocation set	+	+	+	+	+	+	+
On-farm mitigation options	Tier 1	Tier 1	Tier 2	Tier 3	Tier 2	Tier 3	Tier 3

+ = mitigation included

The farm mitigation options (in addition to retirement of very steep land, tree planting on steep slopes, additional riparian planting, and exclusion of stock from water ways) include effluent storage and disposal to land, water (irrigation) and nutrient management to reduce infiltration, soil management to reduce sedimentation of waterways, stock exclusion from waterways and enhanced biodiversity of riparian areas.

Although the scenarios are the main focus for the assessment, the modelling team also examined aspects of a number of other management options for the Committee to consider in developing the WIP. These possible additional actions included:

- Returning the Ruamāhanga River to Lake Wairarapa and closing the Lake Onoke outlet between January and March each year, and increasing the depth of both Lake Wairarapa and Lake Onoke by 1m.
- Managed aquifer recharge – a high level scenario to test the idea
- Reviewing water allocation rules including minimum flows
- Additional or enhanced areas of wetlands.

Where possible, comments are made below about social impacts of these additional options, noting that in some cases modelling has only considered limited aspects of a particular additional action and the three scenarios outlined were the principal focus of our work.

3.2 Modelling social futures

A major focus of the Committee and technical modelling team in preparing the scenarios is on the effects of possible policy options for animal-based agriculture and the Wairarapa's future as an agricultural region with a higher standard of farm environment planning and mitigation, increased pockets of wetlands, widely used riparian planting, a re-plumbed Lake, and perhaps the retiring of some steep slopes from production.

In these scenarios, the towns in the catchment and their surrounding lifestyle blocks are socially significant because they are home to water consumers who need potable water supplies and produce waste and stormwater without full processing and with continued disposal largely to the rivers. It is recognized that these residents also use the waterways for swimming, fishing and food gathering, picnicking, or baptizing (i.e. they are able to recreate and engage culturally in the rivers unless they are impeded by algae, poor water quality or too little water). As noted above (section 2.5), this SIA, recognises these places and waters as part of a multi-functional rural space, growing and processing an array of economic and cultural activities with global links, many dependent on amenity values for their development and futures. These activities consume varying amounts of water and produce varying effects on water quality, while also varying in the amount of employment and income that they generate.

The future combination of animal and non-animal primary production and the characteristics of the associated human population – residents and visitors/tourists – and their settlements are difficult to factor into the models, especially over longer time frames. Even so, it is possible to assess potential land and water futures in a general sense and assist the committee and community to deliberate possible futures and policy/planning options. By taking part in the scenario process and assisting through the additional perspectives they add into the collaborative modelling process, the SIA team add an understanding of the linkages between people and water and inform a long-term vision for the catchment.

Social futures are difficult to predict because the people at the centre of a scenario are also in a strong position to influence the direction that scenario takes – the very purpose of participatory processes. Some social trends such as an ageing population are "heavy" and difficult to change. But an intervening factor such as immigration can be highly variable depending on numerous political, economic and social influences.

In the medium and longer terms, significant new land uses, economic activities, or social and cultural developments could emerge, resulting from economic and cultural experimentation in and outside the catchment. These changes will almost certainly transform the catchment more than once in the planning horizon of over 50 years. They could have considerable effects on the environment and economy of the region in very positive ways, including improving water quality, its amenity and reputation, and changing the population mix, for instance. Consider, for example, the changes since grapes were first planted in the Martinborough wine region on a commercial basis in 1980 (only 36 years ago). Since then Greytown has now gentrified considerably and Featherston is on the same trajectory. These changes have attracted new people, new values and new sources of ideas and

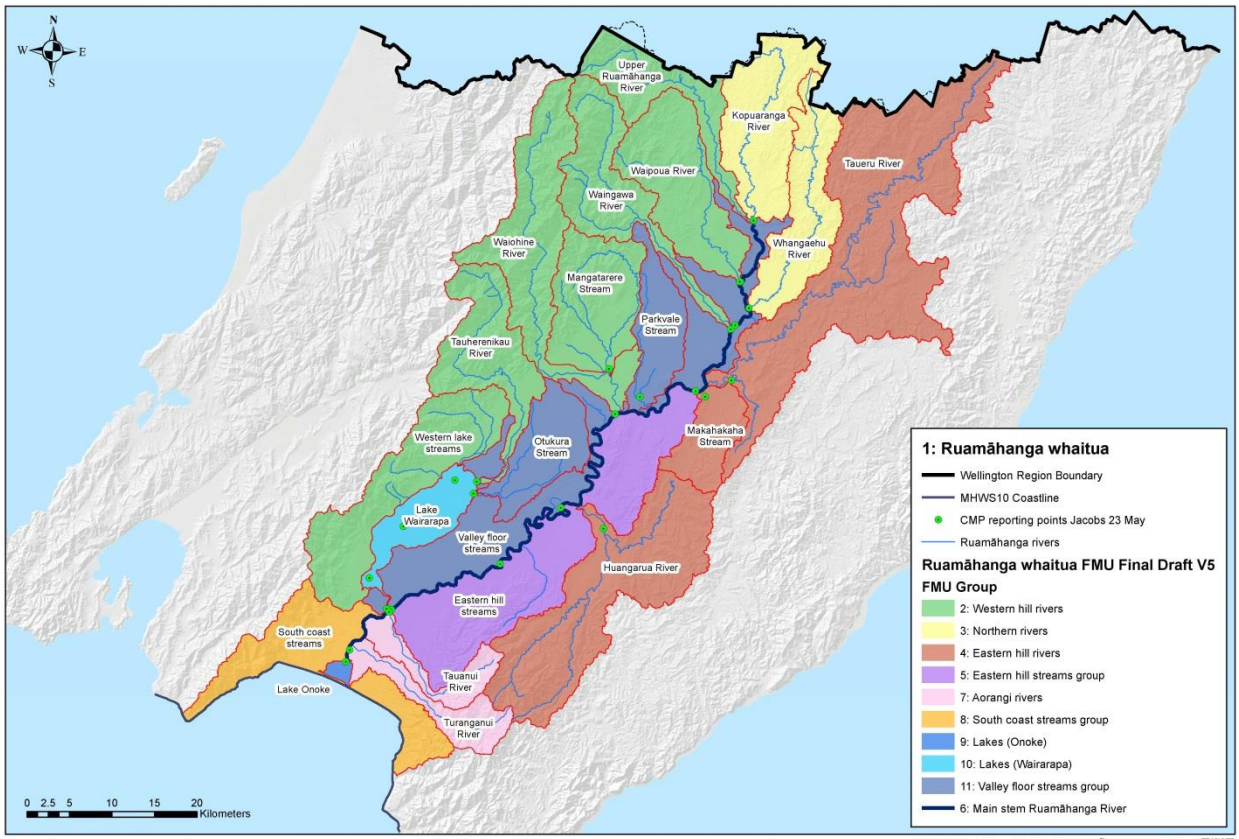
capital to the Wairarapa region and brought a process of gentrification to the settlements and surrounding areas.

Because socio-economic and environmental changes can occur in relatively short spaces of time, it is essential to develop a flexible policy/planning regime whereby the people of the catchment are able to adapt and achieve a range of desirable social, cultural, economic and environmental outcomes. Management of change is therefore an important aspect of any WIP, as it provides the basis for adaptive management by including ongoing monitoring and assessment of social effects.

3.2 Freshwater management units (FMUs)

Results from the modelling were provided at the level of FMUs for some outputs or for specific modelling points in the catchment. FMUs are mapped in Figure 4.

Figure 4: Ruamāhanga FMUs



4 The social effects of potential changes to farm systems

4.1 Effects on farm revenue and employment

In the Wairarapa, primary production is an important source of livelihoods for the people of the catchment, through direct employment and incomes that are generated in production and processing, or through employment and incomes generated indirectly by all the flow-on activities usually found in rural areas and the associated service centres and towns.

The social baseline report considered the agriculture and horticulture sectors in some detail as these are a major source of livelihoods both in rural areas and the towns of the catchment (Annex 4). These sectors are also directly and indirectly affected by policies and rules around the use of land

and water. Land use and subsequent employment translate directly into the number and characteristics of people who live in rural areas and in rural and provincial servicing centres. Analysis of the sector utilises the 2012 Agricultural Production Census, which applies to the June 2012 production year.[12] There is also analysis of employment by detailed sector classifications, focusing in particular on sectors that might be affected by different regulatory settings and other interventions, and on differences between urban settlements and rural areas of the catchment.

The 2012 Census of Agriculture shows that the most dominant forms of agricultural activity occurring in the three territorial authorities of the Wairarapa are sheep and beef cattle farming, with 340 sheep farms, 230 beef cattle farms and a further 220 sheep-beef cattle farms. Forestry (190 farms), Dairy cattle farming (170 farms), and grape growing (70 farms) are other important land use activities. Geographically, the majority of Masterton District has nearly three quarters of forestry farms (73%) in the Wairarapa, and just over one half of sheep farms (58%) and sheep-beef cattle farms (51%). Beef cattle farming is relatively evenly distributed throughout the three TAs. In contrast, nearly three quarters of grape growing enterprises and 60% of olive enterprises were located in the South Wairarapa District in 2012. Altogether, there were approximately 860 ha planted for wine grapes and a further 170 ha planted for olive growing (Annex 4).

Business and employment data (further details are in Annex 4) shows that since 2000, the agriculture, forestry and fishing sector has seen significant changes in the following ways:

- An increase in the number of businesses and employment classified as Sheep-Beef Cattle Farming due to the increasing number of lifestyle blocks.
- The number of Sheep Farming (Specialised) businesses has declined, however, and employment by 520 MECs. The number of businesses operating in Beef Cattle Farming (Specialised) also fell and employment by 170MECs.
- The number of Dairy Cattle Farming businesses has declined and employment by 220 MECs.
- An increase of 30 Olive Growing businesses, however only accompanied by a slight increase in employment
- An increase in the number of businesses involved in Other Crop Growing (30), with a small decline in employment.
- An increase in the number of Beekeeping businesses (plus 10) and a significant increase in the number of employees (+180 MECs)
- A decline in the number of businesses operating in Vegetable Growing (outdoors) (-25) and employment (-40 MECs)
- A decline in the number of businesses operating in Apple and Pear Growing (-20) but a small increase in employment
- A decline in the number of businesses (-25) and employment (-50 MECs) in the forestry sector.

The economic assessment has considered the employment impacts of policy and planning decisions on land use, farm systems and mitigation options (including extensive pole planting and retirement of some land). The social impacts of the effects of these decisions on farming systems relate to the farm sectors that are most affected, and the freshwater management units (FMUs) where these land uses are located. The economic effects that flow though to social impacts include changes for on and off farm income and expenditure, as indicated by the modelling of net farm revenue. The main land uses in terms of agricultural revenue are listed in Table 3.

[12] Enquiries with Statistics NZ found the next census agricultural census is this year (2016).

Table 3: Total net agricultural revenue by farm type – baseline

Land use type and key FMUs[13]	Total net revenue	Percent of total
Dairy	$59,452,530	30.9
Sheep and beef	$74,721,075	38.8
Other land use	$58,330,085	30.3
Total net agricultural revenue	**$192,503,691**	100
Eastern hill rivers FMU	$43,489,735	
Valley floor streams FMU	$44,296,246	
Western hill rivers FMU	$39,053,737	

Source: economic impact analysis

Effects of the three main scenarios on Farm Gate Revenue, Regional Economic Output and Regional Employment were explored in the economic modelling. These results show that net agricultural revenue will change as shown in Table 4, with the economic analysis finding that the on-farm effects are concentrated in sheep and beef farms that carry out the bulk of pole planting and retirement of land from grazing, and the Eastern Hills FMUs.

Table 4: Percentage change in on-farm, net agricultural revenue

Parameter	BAU	Silver 2025	Silver 2040	Silver 2080	Gold 2025	Gold 2040	Gold 2080
Total net agricultural revenue	-0.6%	-11%	-21%	-22%	-19%	-24%	-24%
Total dairy net revenue	-1.3%	-13%	-15%	-16%	-16%	-18%	-18%
Total S&B net revenue	-0.4%	-16%	-39%	-43%	-34%	-46%	-46%
Other land use net revenue	0.0%	-2%	-3%	-3%	-2%	-3%	-3%
Eastern hill rivers FMU	-1.3%	-11%	-29%	-33%	-25%	-35%	-35%
Valley floor streams FMU	-0.7%	-11%	-13%	-13%	-13%	-14%	-14%
Western hill rivers FMU	-0.8%	-12%	-21%	-23%	-20%	-25%	-25%

Source: economic impact analysis

The negative effect of on farm revenue identified by the economic analysis has a flow-on effect for regional economic activity because on-farm activity flows into employment and expenditure throughout the region. Results from regional economic analysis give an indication of the scale of these on-farm changes from a regional perspective, as an employment effect (Table 5). The negative employment effect of BAU is negligible but the effect increases with the Silver and Gold scenarios over time, reaching its greatest effect in the Gold 2080 scenario of just over 200 FTEs.

It should be noted that because of the restrictions on available data for regional economic analysis, and the nature of flow-on effects, these results are spread over all sectors for the whole Wellington region, not the catchment or the Wairarapa area, although they will most likely fall primarily in the Wairarapa, which is relatively confined geographically.

[13] These sectors generate Catchment employment of 1,148 MECs (modified employment count) engaged in the combined categories of Sheep and Beef/Cattle farming, and the Dairy Cattle farming sector is responsible for 639 MECs (see Annex 4).

Table 5: Change in regional employment (FTEs[14])

Land use	BAU	Silver 2025	Silver 2040	Silver 2080	Gold 2025	Gold 2040	Gold 2080
Dairy	0.0	-33.0	-51.6	-56.9	-58.4	-74.0	-74.0
Sheep, Beef & Dairy Support	-5.9	-54.8	-111.9	-117.5	-118.1	-132.0	-132.0
Total	-5.9	-87.8	-163.5	-174.4	-176.5	-206.0	-206.0

Source: economic impact analysis

In addition to the effects of the farm mitigation actions on farm revenue, the WIP is likely to include recommendations that limit the reliability of water taken for irrigation, due to higher minimum flow requirements on some rivers. Modelling of the effects of flow options on the reliability of irrigation water supplies by the economic analysis produced outcomes for farm revenue by types of farming for the Waipoua and Upper Ruamāhanga but at a regional level again. At this high level the effects on employment are small. But the economic analysis makes the point that these effects will alter the reliability of irrigation and farm output on areas of intensively farmed land in particular, most noticeably in the Upper Ruamāhanga, where most of the 3080, Ha of land affected is in dairy production or dairy support.[15] These intensive farming units may face considerable adjustments to farm systems, with limited options for further efficiency gains, or to undertake capital-expensive, on-farm, water storage. With a fall in farm revenue, any future expansion of dairy farming is unlikely and limited water supplies are more likely to trend towards uses in higher value crops such as horticulture.

Past experience of structural adjustments in rural New Zealand, as well as short-term adjustments, suggest that rural areas have adapted to change in a largely positive way when viewed in the longer term. It is important to consider that the effects of management options modelled are spread over an extended period of time (60 years). Nonetheless, the costs of mitigation and other adjustments to farm systems are likely to cause stress to farm budgets and to farm households, at least in the shorter term. For sheep and beef households, the effect of a reduction in farm revenue will be mitigated to some extent because of the high number of working proprietors (often couples) and their ability to reduce farm expenditure and drawings in the shorter term and to find alternative sources of income in the longer term, as seen in previous periods of change. However, the economic impacts on farmers will be stressful in the shorter term for all types of farmers and some assistance with adjustment is strongly recommended as discussed in more detail below (section 7).

4.2 Effects on population and communities

In 2016, there were approximately 42,490 people living in 17,960 households in the catchment (Table 6). Just over three quarters of the population resides in the five main urban areas, with Masterton (21,040 people in 8,950 households) and Carterton (5,040 people in 2,210 households) having the greatest concentrations of population. The remaining 10,180 people (4,030 households) living in the rural areas are distributed relatively evenly, with slightly higher concentrations in the rural parts of the southern Districts of Carterton and South Wairarapa than in rural Masterton (Table 6).

[14] FTE = full-time equivalent. One FTE can be assumed to equate to 1.5 people employed, to allow for part-time and casual employment.
[15] Narrative on economic impacts, Table 5.

Table 6: Catchment population and households, 2016

Location	Population	Pop Share	Households	Hhlds Share	Ave Hhld Size
Masterton	21,040	49.5%	8,950	49.8%	2.35
Carterton	5,040	11.9%	2,210	12.3%	2.28
Greytown	2,330	5.5%	1,010	5.6%	2.31
Featherston	2,340	5.5%	1,070	6.0%	2.19
Martinborough	1,560	3.7%	690	3.8%	2.26
Urban Areas	**32,310**	**76.0%**	**13,930**	**77.6%**	**2.32**
Rural Masterton	2,700	6.4%	1,080	6.0%	2.50
Rural Carterton	3,850	9.1%	1,490	8.3%	2.58
Rural South Wairarapa	3,630	8.5%	1,460	8.1%	2.49
Rural Total	**10,180**	**24.0%**	**4,030**	**22.4%**	**2.53**
Catchment Total	**42,490**	**100.0%**	**17,960**	**100.0%**	**2.37**
Wellington Region	**498,180**	**n/a**	**191,710**	**n/a**	**2.60**

Source: Market Economics adjusted Statistics NZ CAU estimates

The number of people and households living in the catchment was relatively stable in the period between 2001 and 2006 as described in Annex 2. But over the last ten years there has been growth of approximately 4,060 people and 2,780 households, an annual average increase of 278 households. Of particular importance to this analysis is the significant growth in the southern half of the catchment, in both the towns and the rural areas around the towns.

These background features are important in considering how any potential reduction in employment in the catchment as a result of mitigation actions could flow into an effect on the population of the area. Population loss can be estimated using the projected FTE losses as a base, but any such projected losses are made without allowing for compensatory factors discussed below. Using a population multiplier of 2.2[16] the effect of the Silver scenario could represent a loss of between 190 people in 2025 and 390 by 2080. The Gold scenario could represent a loss of up to 450 by 2080.

Direct losses of this nature could have effects on rural areas and communities, especially allowing for the fact that much of the effect is concentrated in the Eastern hill country areas, outside the areas where the recent population growth of the catchment is concentrated. Population losses could transfer into effects on rural schools and local organisations that are sensitive to any loss of students or members. This means there could be a negative effect, at least in the short term, for small rural communities and the five larger towns of the sub region that service the potentially affected rural areas. In the longer term, any effect on population is most likely to be subsumed by other social-economic factors and the net result over time will depend on how the process of change is planned and managed, a matter of some concern to the RWC in ensuring rural communities remain viable and resilient into the future.

4.3 Effects on the form of the countryside

A reduction in farm revenue will push farmers to look for economies of scale and therefore could lead to some amalgamation of farm holdings in all land use types: further impetus to a longer-term process that is already evident. Furthermore, a reduction in farm revenue is by implication a potential reduction in farm household drawings, which is likely to push the members of affected households to look for alternative sources of income, which in the past have included innovative

[16] The population multiplier for the catchment is estimated as 2.2 (based on the total population for the catchment in 2013 and total MECs for the catchment in 2013).

crops and land uses, multiple job holding (off-farm employment) and alternative enterprises on and off farms. This pressure to innovate and seek additional sources of household income is likely to be greatest for the Eastern hill country sheep and beef farms that are indicated as most affected. One option facing some of the dry-land farmers will be to subdivide their land into lifestyle blocks and rural residential subdivisions – an effect that is moderated by existing land uses, age of a farmer/ farm couple and farm succession planning, proximity to population centres, and proximity to work opportunities in the Wairarapa, or the major commuting route by rail or road into Wellington City. This subdivision effect is much less likely on properties that are already farmed intensively, as in dairy farming or horticulture such as grapes, and in the Eastern hill country areas distant from major population centres. Overall, the greatest social challenges are likely to be found in the Eastern hill areas and communities, presenting a challenge to identify ways to assist these areas to adjust when implementing the WIP.

5 Effects on recreation and tourism

5.1 The importance of water-based recreation

As outlined in Section 2.4, the Wairarapa is a region where land and water have multiple functions of production, consumption and protection, which come together when considering effects on recreation and tourism. The Wairarapa region is the setting for a wide variety of outdoor recreation activities. Participants in a recent social mapping study viewed rivers and lakes in the Wairarapa region as "extremely important for recreation" for both locals and tourists. Two key settings for water based recreation in the Wairarapa region are: (1) the Ruamāhanga River and its tributaries, and (2) Lakes Wairarapa and Onoke and their wetland areas, collectively Wairarapa Moana. Furthermore, the region has a number of places and events where speciality goods or niche products are produced and consumed, as in local wineries, cafes and restaurants. So visitor activities, including those found around the rivers, streams and Wairarapa Moana, are attractive to both domestic and international visitors, and heavily dependent on the quality of the outdoor environment.

There are important links between outdoor recreation activity and other social wellbeing elements such as employment, physical and mental health, sense of place, and social support and cohesion. Physical activity is widely acknowledged for its health benefits.

The Ruamāhanga River is the most popular site in the Wairarapa for river recreation, with fishing and swimming among the most predominant uses. It is the Wairarapa area's principal trout fishery (brown and rainbow) offering a variety of fishing experiences from classic backcountry fishing in its upper reaches in the Tararua Conservation Park, to trolling for sea run browns in the tidal zone near its outlet to Lake Onoke. The river's close proximity to roads provides relatively 'easy access.'

Lakes Wairarapa and Onoke and surrounding wetlands are key recreational sites and an important feature of Wairarapa Moana – the largest wetland in the southern North Island (9000 hectares). These areas provide opportunities for walking and wildlife viewing, recreational fishing (brown trout, kahawai, perch, flounder, eels and inanga – whitebait) and duck shooting. The Wairarapa Lake Shore Scenic Reserve, provides opportunities for picnicking and nature viewing, and used to be popular for yachting and power boating, which has shifted to the diversion in recent years. The Lake is also used for windsurfing. There are a number of conservation activities in these areas as well. Further information on recreational uses is available in Annex 5.

5.2 Recreational water quality monitoring

The Regional Council conducts weekly recreational water quality monitoring to identify risks to public health from disease-causing organisms and toxic cyanobacteria.[17] Over the 2015/16 bathing season, recreational water quality in the Wellington Region was monitored at 24 river sites, one estuarine site and 63 coastal sites.[18] In 2017, there were 13 monitoring sites in the Wairarapa area, giving a picture of key recreation sites associated with fresh water in terms of ecosystem health and water quality data, matched to the NPS (2017) attribute states (Table 7).[19]

Table 7 Benchmarking of *E.coli* for Wairarapa rivers

River and site name	Benchmarking of monitoring data for *E. coli* using NPS-FM 2017 NOF attribute states (to July 2017)
Makahakaha Stream	
Waingawa River at South Road	A
Tauherenikau River at Websters	A
Ruamāhanga at Waihenga	A
Waiohine River at Bicknells	A
Turanganui River	
Ruamāhanga at US of Lake Wai outlet	
Waipoua River at Colombo Rd Bridge	B
Ruamāhanga at Pukio	B
Huangarua River at Ponatahi Bridge	B
Ruamāhanga at Wardells	
Taueru River at Gladstone	C
Ruamāhanga at Gladstone Bridge	D
Mangatarere Stream at SH2	D
Upper Ruamāhanga River at Te Ore Ore	D
Whangaehu River at 250m from confluence	D
Tauanui River	
Otukura Stream	
Kopuaranga River at Stuarts	D
Parkvale Stream at Renalls Weir	E

Cross hatching means there are no results for that site as the river or stream was not included.

[17] Morar & Greenfield (2016).

[18] These monitoring sites have attained the status of "key recreation sites" because as reported by Morar and Greenfield (2016, p. 5) they reflect their use by the public for contact recreation; in particular swimming and boating. Note: monitoring does not occur on artificial water bodies like Henley Lake in Masterton or water bodies on private land.

[19] Monitoring by Greater Wellington Regional Council.

The benchmarking of the state of the Ruamāhanga rivers for *E. coli* has been undertaken against the NOF attribute states in the national objectives framework (NOF) of the NPS-FM 2017. For a river to be considered suitable for swimming under the NPS-FM 2017, the river must be category C or above (i.e. categories D and E are not considered suitable for swimming).

The meaning of these categories in social terms (for outdoor recreation uses and human health) is as follows:

- Blue (A = excellent) means that ecosystems are healthy and resilient and there is very low risk to human health as indicated by the measure of *E. coli*. The category allows a full range of recreational activities in a range of flows, including primary contact recreation. Primary contact recreation includes those activities where there is occasional immersion or the potential to ingest water, such as water skiing.
- Green (B = good) means there is some (low numerical) risk to human health from primary contact recreation.
- Yellow (C = fair) means the water is below an acceptable standard for primary contact but still suitable for activities such as boating or wading - limbs are in contact with the water but not the head.
- Orange (D = intermittent) means high risk to to human health
- Red (E = poor) presents very high risk to human health.

Under the 2017 amendments to the NPS for freshwater management,[20] the current national objective is to maintain or improve water quality in all Freshwater Management Units and at least provide human health for recreation (i.e. the bottom line lies between the yellow (C) and orange (D) bands. Water bodies must achieve improvements overall in water quality and meet at least the two compulsory national values set for ecosystem health, and human health. In addition, the Whaitua Committee has determined through its engagement processes that significant improvements should be achieved on the catchment waterways, moving them between one of more bands, at least in the longer term (through to 2080).

The GWRC monitoring indicates that parts of the Ruamāhanga River are sometimes unsuitable for swimming as they fall below the minimum standard for primary contact. Interviews and a number of other sources for the social assessment have identified declining use of some sites for swimming and contact recreation due to water quality issues, and there is some displacement of recreational activity to other sites. These sites include swimming at Wardles Bridge, the Cliffs and Carters Reserve – below the Masterton wastewater outfall, the Waipoua River and Lake Henley in Masterton, and the lower reaches of the river in general. Henley Lake in Masterton has been closed to boating in summer due to the presence of toxic algae.[21] Boating activity at Lake Domain (north end of Lake Wairarapa) has largely shifted to the Ruamāhanga Diversion (up to Tuhitarata Bridge) due to water depth and quality (clarity) arising from the high sediment and periphyton loads in this shallow water body, rather than any particular perceived risk to human health.

[20] https://www.mfe.govt.nz/fresh-water/what-government-doing/national-direction/national-policy-statement-freshwater-0

[21] www.stuff.co.nz/dominion-post/news/local-papers/wairarapa-news/77653347/Masterton-District-Council-says-Henley-Lake-toxic-algae-problem-unsolvable

5.3 Effects on the social value of waterways and human health

The baseline assessment confirms that fresh water in the Wairarapa region is the setting for a wide variety of outdoor recreation activities that are important to both locals and tourists. This finding is consistent with wide ranging engagement undertaken by the Ruamāhanga Whaitua Committee and reinforces values established in the Proposed Natural Resources Plan.[22] The waters of the catchment therefore have multiple social values for the people and communities of the Wairarapa,[23] In addition to the considerable benefits of fresh water to farming from stockwater supplies and irrigation, social benefits include urban and rural drinking water supplies, wastewater disposal, outdoor recreation, amenity values and lifestyles, and cultural activities including mahinga kai.

The social benefits of fresh water, which include employment and outdoor activity, are determinates of human health. But human health is also potentially affected through pathogens and nitrogen in drinking water and through pathogens and cyanobacteria affecting contact recreation. Pathogens in fresh water are therefore a principal concern in relation to social values, including the specific attributes considered in the NPS for human health of *E. coli* in lakes and rivers and phytoplankton (cyanobacteria) for lakes and lake-fed rivers.

Results modelled for *E. coli* in the Ruamāhanga waterways for each scenario are summarised by Jacobs in a map of results for modelling points on the river system and lakes (Figure 5). These results are in turn assessed against the NPS amended standards. The results reflect the combination of mitigation and management tools for each scenario.

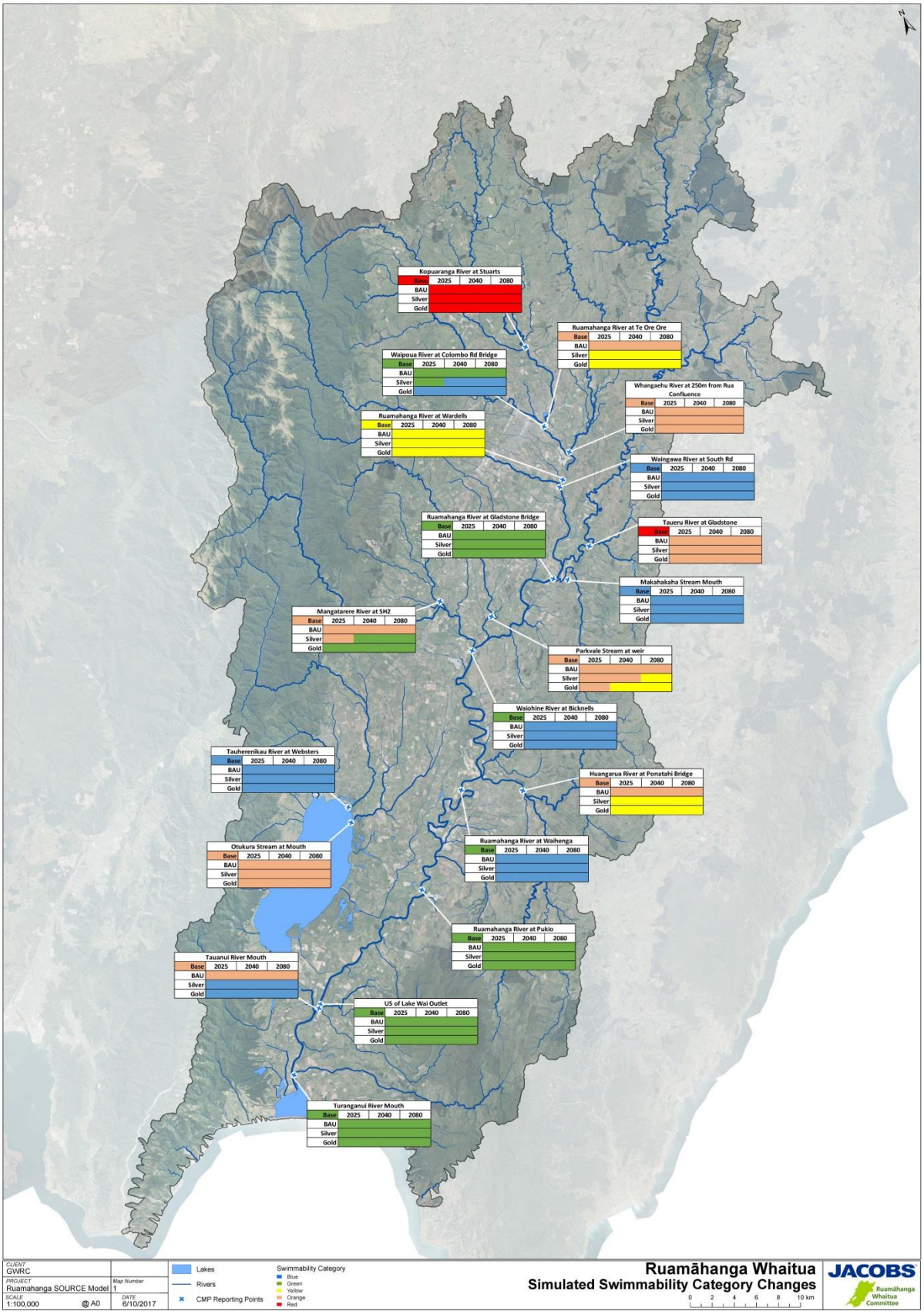
The modelling of *E. coli* found that stock exclusion and dairy effluent management is effective on the base load of *E. coli*, but what drives the swimming (contact recreation) categories the most is the 'event loads' which cause high results. With the Silver scenario, eight sites show an improvement from the baseline. The same eight sites improve as well with the Gold scenario but earlier, by 2025 or 2040 rather than 2080. The sites and their changes from the baseline (Gold scenario) are as follows:[24]

- Huangarua Ponoatahi Bridge from orange baseline to yellow from 2025
- Mangateretere at SH2 from orange baseline to green from 2025
- Parkvale Weir from orange baseline to yellow from 2040
- Ruamāhanga at Te Ore Ore from orange baseline to yellow in 2025
- Tauanui River Mouth from orange baseline to yellow in 2025
- Taueru Gladstone Te Whiti from red baseline to orange from 2025
- Waiohine at Bicknells from green baseline to blue from 2025
- Waiapoua at Colombo from green baseline to blue from 2025.

As noted above, the monitoring data indicates that parts of the Ruamāhanga River are sometimes unsuitable for swimming and there is evidence that as a result recreational activities are reduced or displaced to other sites. The modelling results for *E. coli* suggest that under BAU this situation will continue to decline but improvements are achievable at key points through the types of tools envisioned in the scenario analysis, maximised at Gold 2080.

[22] E.g., Schedule F: Ecosystems and habitats with significant indigenous biodiversity values; Schedules I: Important trout fishery rivers and spawning waters.
[23] The concept of social value of water builds on the economic concept of Total Economic Value.
[24] After Jacobs (2017).

Figure 5: Modelling scenario results for *E. coli* (attribute bands) by location



In addition, modelling of the *E. coli* results for Lakes Wairarapa and Onoke found that Lake Wairarapa has a small reduction in *E. coli* loads but no shift in the NOF bands for the Lake, which is in the blue band already. Return of the Ruamāhanga into Lake Wairarapa increases the *E. coli* load of the lake as the river water is a lower quality than the lake. However, the modelling shows these bacteria quickly die off in the lake, which remains largely of high standard for *E. coli*, and the water flowing into Lake Onoke improves (versus having it flow into that lake directly as at present). Lake Onoke already has issues with water quality and is highly valued for recreation purposes, food gathering and mahinga kai[25] so the return of the river to Lake Wairarapa may bring net social benefits through the dilution effect achieved.[26] An increase in water level may affect adjoining farmland and wetland areas (biodiversity) but this lake-level effect is not assessed.

Overall, there are potential improvements identified in the scenario assessment for social values of water ways and human health, especially for levels of *E. coli* and suitability for contact recreation, and these should lead to improved social outcomes. In addition to benefits for outdoor recreation, it is useful to consider there is a potential feedback loop to an increasingly multifunctional countryside and the ability of the sub region to attract additional businesses, small farmers and amenity migrants, innovative land uses and off-farm economic activities.

5.4 Effects on the social value of waterways and ecosystem health

The scenario analysis shows that the tools envisioned under Silver and Gold scenarios will result in some improvements for the amount of sediment and nutrients entering waterways of the catchment (Table 7). The analysis also indicates improvements from the levels of Nitrates (NO_3) and ammonia (NH_4), the latter gain being mainly from improvements in wastewater treatment for the catchment towns (to land), with gains also evident for dairy farming. These improvements will lead to better ecological health, with benefits to social and cultural values of water ways, particularly downstream from discharge points.[27]

Table 7: Summary of the environmental response to the different scenarios

	BAU 2040	BAU 2080	Silver 2025	Silver 2040	Silver 2080	Gold 2025	Gold 2040	Gold 2080
Environmental parameters (% change)								
Sediment loss[28]	-9.3%	-15.3%	N/A	-26.9%	-36.8%	N/A	-30.1%	-32.9%
N losses	0%	0%	-8.1%	-8.7%	-8.7%	-9.0%	-9.1%	-9.1%
P losses	0%	0%	-18.1%	-43.4%	-52.1%	-32.4%	-52.6%	-52.6%

Source: economic impact analysis

The benefits from potential reduction of N and P into waterways, combined with reduced sedimentation and shading from riparian planting, will result in ecological benefits for the rivers, streams and lakes, measured in terms of indicators such as periphyton (especially cyanobacteria), macroinvertebrates, and trout size and abundance. It is inherently difficult to model the ecological effects of such complex interrelationships. The ecological analysis to date indicates that in the longer term (Gold 2080) there should be improvements to the recreational and aesthetic attributes

[25] Community and iwi feedback supports improvements to Lake Onoke in particular.
[26] Allen, Mathew (2017). Memo to the Greater Wellington Council: Lakes Wairarapa and Onoke scenarios, in comparison to baseline. Environmental research Institute, University of Waikato.
[27] Jacobs Ltd, summaries of results for all reporting sites, November, 2017.
[28] There was no information on sediment loss provided for 2025.

of the catchment over BAU. Rivers that show the most gains are the Huaranga, Taueru,Waipoua, Waingawa and Tauherenikau.[29]

Trout size and abundance are crucial to angling activity, which is already reported as poor to medium for the reaches investigated. The analysis showed it is difficult to obtain gains in factors such as habitat area and water clarity for trout and other fish species such as eels and inanga. Improved stream-bed management (reduced bulldozer activity for flood management and allowing an improved pattern of pools and riffles to form) and better stream bank cover could well provide better results for fish populations, and the Committee is investigating these options further. Overall, the improvements to the social value of water ways from improved ecosystem health should lead to gains for outdoor recreation, aesthetics and amenity values. Additional, targeted actions along the main bed of the river and in specific waterways and wetlands, including restoration efforts and better stream-bed management should add to these gains. The full package of actions will require a coordinated, strategic approach from the Council as well as community groups and individual landowners.

Improvements in levels of ammonia in waterways will bring benefits to swimability but the current NOF bands for NH_4 are too broad to indicate clear results for most bodies of water in the catchment. The improvements are also mediated to some extent over the longer term by increases modelled in population and household numbers.

6 Effects on cost of living, social equity and cohesion

6.1 Effects on costs of living

Upgrades of waste and stormwater systems required to reduced ammoniac nitrogen (NH4) in waterways and minimise cultural impacts of such disposal, led to analysis of the disposal of waste water to land in the scenarios. Costs of wastewater treatment plant upgrades were estimated by the economic analysis on an annualised basis per major settlement. The economic analysis found that over half the wastewater treatment plant upgrade costs will fall on the town of Masterton, which has the highest population and number of households. Carterton has the next highest proportion (9). The modelled costs per household are also uneven, with annual Silver 2040 costs per household (2016 estimated) ranging from a high of $1,742 for Martinborough (690 households) to a low of $920 for the much larger Masterton (8,950 households).

Table 8: Annualised wastewater treatment plant estimated costs ($,000)

District	BAU 2080	Silver 2025	Silver 2040	Silver 2080	Gold 2025	Gold 2040	Gold 2080
Masterton	8,178	5,873	8,241	8,178	8,146	8,241	8,178
Carterton	2,243	2,149	3,105	3,111	2,980	3,105	3,111
Martinborough	1,202	839	1,202	1,202	1,164	1,202	1,202
Greytown	1,181	824	1,181	1,181	1,143	1,181	1,181
Featherston	0	758	1,086	1,086	1,051	1,086	1,086
Total	**12,805**	**10,443**	**14,816**	**14,758**	**14,483**	**14,816**	**14,758**

Source: Economic assessment

These projected upgrade costs will have an effect on the cost of doing business and the cost of living for households because they are likely to be allocated through rate and capital charges, or direct requirements for expenditure by property owners. There are potential distribution issues (equity issues) arising from allocating costs via a property rating system, depending on the method that the territorial authorities use to fund the proposed mitigation options. At this point no funding approach is confirmed**.** Spending power (ability to pay) will vary across household demographic groups and business types and size. In simplest terms, the lowest income quintile households (see Annex 8) and high social deprivation areas will have the least spending power and are likely to be the most affected in percentage income terms, while people and businesses with high capital values are likely to carry the most rates per person or household despite their income level. This effect is of concern because of the high level of social deprivation identified for areas of the main towns of the catchment (Annex 2 and Annex 8) and it may require an assistance programme for vulnerable households (discussed in section 7 below).

6.2 Effects on social equity and community cohesion

Social equity is a central concern in water management, and one that is recognised by the RWC. There are two aspects of equity for the social assessment to consider at this point and both these aspects can affect community cohesion. First is a general issue of social equity as a social outcome. This means that the uses of water, and the way these translate into social outcomes such as employment, incomes and recreational uses should be fair and allow for the potential to raise or lower social wellbeing in general. In this respect, policy making is concerned about the overall social and economic status of the population and how the plan might raise or lower this status through economic and other activity.[30] Second, the RWC has recognised there are likely to be a number of more specific equity issues that need to be considered in developing policies and rules, and non-statutory responses, for the catchment.

The Committee's initial discussion on equity was based on a number of principles and highlighted that virtually all policy decisions will have an equity dimension, and equity effects will be an important consideration in deciding how objectives should be achieved.[31] The baseline research has also identified equity issues and these, together with the RWC discussions, are distilled here and suggested as relevant principles to guide the Committee's considerations. These are unlikely to be a definitive list of principles, as they will be refined over time through ongoing committee discussions and community engagement:

- Where land uses generate sediment or non-point discharges to water, it is the responsibility of the land users to mitigate these effects and generally all land users should meet objectives for soil and water conservation. Unfairness could arise depending on how mitigation costs are allocated, for example, by all properties, size of farm or type of production. Unfairness also arises if the rules, monitoring or enforcement are insufficient to ensure mitigation takes place, leading to environmental costs borne by other water users.
- Every resident has a right to adequate, clean drinking water and sanitation.[32]
- Restrictions on the abstraction and use of water should be distributed fairly.

[30] Income inequality is a measure in the regional Global Progress Indicators - www.gpiwellingtonregion.govt.nz/outcomes/economic/prosperous-community/income-inequality/#indicators

[31] Notes by Jim Sinner on the RWC discussion of equity issues – 21 November, 2016

[32] Resolution 64/292 of the United Nations General Assembly explicitly recognized the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights.

- Land-owners and councils should have an appropriate plan, timetable, and any necessary assistance, for transition to new methods of management and allocation, including for urban storm and wastewater disposal
- Positive and negative effects of policies and rules should be identified and fairly distributed across water users and the population as a whole, including how any costs and ensuing benefits are allocated by types of household, and their ability to pay.

It is highly likely that costs (direct costs) and benefits (indirect positive and negative effects) will be spread unevenly across groups in the communities of the catchment, complicating the process of decision making around proposed plan policies and rules. A paper on equity considerations in freshwater management for the RWC to consider, pointed out that equity is relevant to the tasks of the Committee. Planning decisions affect who has access to and benefits from water, land uses, the quality of water and aquatic habitat available to the community, and who bears any costs, including with respect to future generations.[33]

For example, the economic analysis has found that the farming community, and parts of the farming community in particular, will bear costs of on-farm mitigation, pole planting and retiring land from grazing. There could be a negative flow-on effect from reduced farm revenue to others employed in the farm sector, including farm contractors and farm service providers, and these economic effects will flow further into the wider community.

Urban populations will bear the costs of enhanced wastewater treatment, costs reflected in rates bills/rentals and potentially in capital contributions for new connections to town sewerage systems (cost of housing). Rural populations could incur costs from any new rules around septic tank systems – including capital costs and annual running costs (electricity and higher maintenance for modern systems). On the other hand, those most likely to benefit from reduced *E. coli* or improved ecological status of waterways include those who drink water, and river users who enjoy natural and amenity values of the waterways. These people are most heavily represented in the population centres of the towns and amongst visitors to the area, including those from outside the Wairarapa.

Equity issues can also result from over allocation of a resource, such as the ability to abstract water and also to discharge into it. Because of the complex nature of river systems, an action in one part affects those using the resource downstream. So it is important that the mechanisms employed to manage water are seen widely to be fair to as many people as possible. This can include using tools such as planning rules, resource consents for land and water uses, or water charges that apply as widely as possible. Decisions must be weighed carefully for any possible equity issues or perception of equity issues (lack of clarity of purpose or unfairness can add to this problem).

Any real or perceived social inequity in the communities of the catchment is likely to have a further social impact because it can reduce social cohesion. In counter balance to this effect, social cohesion can be improved across the catchment by a shared knowledge of collective action to solve environmental problems, either at the regional level or at the local level through community investment in actions, and through local initiatives such as stream or wetland restoration and enhancement projects, for example. Positive environmental outcomes and awareness also have the potential to drive future positive economic and social outcomes, including employment and healthy

[33] Sinner, Jim (2016). Equity considerations in freshwater management. Prepared for Greater Wellington Regional Council and the Ruamāhanga Whaitua Committee, Cawthron Institute, Nelson.

lifestyles, through environmentally proactive communities. An additional benefit is the ability to promote an area that produces a wide range of food and beverage products alongside a vibrant visitor economy close to Wellington and on a main tourist route.

7 Management of change

Past experience in rural areas of New Zealand shows that when economic and social restructuring takes place as a result of external drivers of change (such as commodity price cycles, new technologies or government policies) then people, communities and towns can and will adapt. The ability to adapt (often referred to as resilience) will vary depending on the extent that the change is spread over a large number of people and communities or focused on one place, and the available social, financial, human, physical and natural capital in affected communities. Another aspect to consider is that the rationale for proposed changes is in this instance intended to provide significant environmental improvement. Both the process of implementing these improvements, and the expected environmental outcomes, will have potential benefits for employment, health and outdoor recreation – all important to social wellbeing.

Furthermore, it is helpful to consider the process of implementing plan changes for the catchment using an adaptive management approach. Adaptive management is often focused on ecological changes but this is also an appropriate approach for dealing with ensuing economic and social effects. In the end result, the mix of positive and negative outcomes for social wellbeing for the people and communities of the catchment will depend on the process of change management in support of policy and planning changes. Given changes are expected over an extended time period, it will be possible to respond and adapt through established planning processes.

The collaborative approach established for the technical modelling, analysis and development of policy and planning recommendations, should be extended into management of change through the WIP implementation programme. Key organisations will include, at least, the GWRC, iwi groups, the district councils (or council), farmer and grower organisations, East Coast Rural Support Trust, Fish and Game and other recreational groups, community organisations involved in restoration projects, Taratahi and other training organisations such as UCol, and Wellington Enviroschools.

Another aspect of managing change effectively is the system of communication and engagement that supports the process. This aspect of the WIP can build on the communication, stakeholder involvement and community engagement during its development. A comprehensive communications policy should include:

- Provision and regular updating of information on the GWRC website along with printed newsletters, pamphlets and media outputs
- Audio-visual material for displays at local markets and community events and alongside farmer field days and technology transfer activities
- Ongoing, face-to-face meetings with affected parties (e.g. farmers in particular areas), individually or in groups (catchment communities) along with social and health services, economic development agencies and the recreation and visitor sectors, to identify any social issues as they arise and to recommend specific mitigation or enhancement measures.

Finally, it is important to emphasise that monitoring is another critical aspect of an adaptive management strategy. While monitoring is rightfully focused on physical (water quality) and ecological indictors, it is important to report these over time in relation to the NOF and expected outcomes for health of people and communities. Future social monitoring can include regional

surveys of residents and recreation users, and local or sector surveys of residents or groups such as farmers, using questions specific to the WIP implementation and outcomes, and guided by the sorts of indicators in the social wellbeing framework (Table 1).

7.1 Adaption in farming systems

Specific mitigation actions, as examined in the scenario assessments, and changes envisaged in farming systems as farmers move towards advanced mitigation practices in the longer term, require technical support. This assistance to farm operators for new technology and innovation/farming systems should ideally take place within a strategy for the Wairarapa rural-economy and sustainability, a direction GWRC are currently moving in.

Another aspect for supporting farmers is assistance in adjusting to financial challenges and stress arising from changes such as pole planting, land retirement and riparian fencing, planting or restoration. A variety of measures may need to be tested such as:

- Land purchase or financial assistance for retirement of steep land or wetland restoration
- Technical advice for new or innovative uses of retired land
- Assistance to trial and access new technologies such as new species for pole planting
- Assistance with financial management of new technologies including dealing with rural lenders
- Subsidies for activities such as riparian planting or fencing
- Technical assistance for developing farm plans or other farm-specific responses by way of a farm advisory function in the WIP implementation or through subsidies for input by private farm advisors.

It will also be important to work with health providers and relevant agencies and rural organisations such as the Wairarapa District Health Board and the East Coast Rural Trust, to support farmers working through periods of change and increased levels of stress and potential mental health issues.

7.2 Assistance to households

Assistance may be needed for local councils to upgrade urban wastewater treatment and stormwater disposal services in the towns of the catchment. Central government may be one source of assistance. It may also prove necessary to assist economically vulnerable urban households that face increased costs through rates, rentals or capital requirements. Subsidy could also be investigated for actions by households such as installation of rainwater tanks, improved stormwater connections (sumps and pipes) or upgrading of septic tanks (rural areas). Assistance could include targeted rates relief, subsidy for works, or reduced consent fees (local and regional).

7.3 Maximising employment opportunities

Implementation of the WIP should create a range of employment possibilities that can offset, or supersede, any job losses to the regional economy. A coordinated strategy for maximising future on-farm and off-farm employment will include training and skills development. The local training and employment strategy can be based around iwi, existing providers such as Taratahi, and business and employment programmes of central government agencies. The aim is to take advantage of work in mitigation actions and new land uses, as well as focus the recreation and visitor sectors to maximise the opportunities from environmental improvements, and from innovative land uses that contribute to the already active, regional wine and food market. It is necessary to integrate outdoor recreation planning and management with a regional visitor strategy and regional economic development more broadly. Specifically, implementation of the WIP can:

- Ensure Taratahi, the ITOs, high schools, WINZ, and other training providers are well informed about the work opportunities that could arise in the mitigation actions on and off farm (such as plant nurseries)
- Work with these agencies and groups to define the required skill sets, timing of needs, and to identify priorities for particular groups
- Encourage employment opportunities for Māori in mitigation actions, environmental management and environmental monitoring
- Identify employment needs for farm servicing and seek ways to meet those needs locally through regular communication with the business sector.
- Promote visitor attractions and related businesses opportunities in the Whaitua by highlighting unique and improved ecological values
- Enhance access to the river, steams and wetlands by working with land owners on new and improved recreation opportunities such as board walks, visitor interpretation, viewpoints and hides, parking and picnic areas, and walking tracks.

7.4 Catchment communities

The RWC is developing the concept of catchment communities as a way of working more closely with people and communities of the catchment in implementing the WIP. Encouragement for community based environmental management and restoration projects, including Enviroschools, is an important step towards enhanced social outcomes. Advice can be sought from organisations including the CRIs and universities through the Our Land and Water[34] national science challenge (which includes matāuranga Māori), Ministry of Primary Industries and citizen science providers. The NZ Land Care Trust[35] is another source of advice, as an organisation that has extensive experience in the types of community-based and farmer-driven rural change envisaged in the WIP.

8 Conclusions

The social baseline for the Ruamāhanga catchment shows that it lies in a dynamic region with multiple land and water uses and values, and there are some notable underlying social-economic trends towards an increasingly multifunctional countryside.

The baseline identifies many direct and indirect connections between the people and communities of the catchment and the water resources of the Ruamāhanga River and Wairarapa Moana. Key land uses and freshwater values for the catchment area include:

- Pastoral farming – sheep and beef
- Dairy farming
- Specialist crops, wine and food products and associated hospitality
- Lifestyle properties
- Domestic and international tourism
- Outdoor recreation, particularly swimming and fishing
- Drinking water
- Waste and stormwater disposal
- Flood management
- Cultural uses, including mahinga kai
- Amenity values and attachment to place.

Along with manufacturing and the service sector, these activities generate employment and support the population in rural areas and the main settlements. Notable current social trends include:

[34] http://www.ourlandandwater.nz/
[35] http://www.landcare.org.nz/

- An ageing population
- An increase in single person households in urban areas
- Amenity migration and gentrification in the catchment spreading up the valley along the main commuting route
- Distinct social-economic disadvantage in the urban settlements compared to the surrounding rural areas
- Distinct social-economic disadvantage for the Māori population
- Resource constraints on expansion of dairying
- Changes in the patterns of outdoor recreation in response to declining water quality and ecosystem health, especially a reduction in angling effort and dislocation of contact recreation away from the main stem and Lake Wairarapa.

The baseline and projected trends are fundamental to assessment of a status quo scenario for policies and regulations around land and water. They also provide the basis for examining a number of aspirational scenarios for improving the freshwater environment. Of particular interest to this social assessment are potential effects on employment by sector, population changes relating to that employment, services based on population, personal and household income and social equity, including any specific effects identified for the Māori population (excluding cultural effects). Also important, are the potential effects on recreational activity based on water, amenity vales and sense of place through social connections to water.

The assessment phase incorporated input from the other social projects on connections to water, social equity and behavioural change, along with other collaborative modelling results, particularly economic and ecological results.

The assessment summary (Table 9) provides a qualitative assessment by the social assessment team, rating each element of social wellbeing in terms of the likely social outcomes for each scenario. This summary assumes that there will be a process of active change management and support for those most negatively affected, along with active ongoing management by GWRC and other relevant local and central government agencies to maximise benefits and outcomes from new policies and plans. These aspects are being considered by the Council as part of a developing programme for the Ruamāhanga Whaitua Implementation Programme.

Environmental and economic analysis has not distinguished much difference between the Silver and Gold scenarios. Similarly, the social analysis has found that the social benefits from the Silver Scenario are almost up to the benefits from the Gold Scenario, particularly in relation to *E. coli* modelling results and the potential gains for recreational uses of waterways, especially for contact recreation. The differences between scenarios appear to relate mostly to timing and the gains from additional riparian planting – offset by the costs to rural land holders. Overall, the combination of benefits to human health and lifestyles favours the Gold scenario in the longer term, through improved river and lake environments, wetlands and riparian planting, and new land uses, along with a community committed to environmental management backed by a diverse, more resilient and sustainable economy. The Silver scenario looks to have less social cost in the shorter term but with lesser gain.

Table 9: Summary of likely social wellbeing outcomes by scenario

Element of Social Wellbeing	BAU	Silver 2025	Silver 2040	Silver 2080	Gold 2025	Gold 2040	Gold 2080
Economy, business activity, income and employment	-	↓	↑	↑↑	↓	↑	↑↑
Physical and mental health	↓	↓	↑	↑↑	↓	↑	↑↑
Outdoor areas, natural environment and open space	↓↓	↑	↑	↑	↑	↑	↑↑
Lifestyles, leisure and recreation	↓	↑	↑	↑	↑	↑	↑↑
Lifelong learning and education	-	↑	↑	↑↑	↑	↑	↑↑
Personal, community and public safety and freedom from risk	↓↓	-	↑	↑↑	-	↑	↑↑
Housing, living space, neighbourhood & sense of place	-	↑	↑	↑↑	↑	↑	↑↑
Goods and services, retail and commercial space	-	↓	-	↑	↓	-	↑
Transport and communications	-	↓	-	↑	↓	-	↑
Family, social attachment and support (social cohesion)	↓	↓	↑	↑↑	↓	↑	↑↑
Participation in community and society (including equity)	↓	↓	↑	↑↑	↓	↑	↑↑

Summary assessment scale

Much worse ↓↓	A bit worse ↓	Same or very little change -	A little bit better ↑	A lot better ↑↑

The results of this assessment indicate that, from a social perspective, the Committee will have to consider additional tools to those modelled in the scenarios in order to achieve desired outcomes for water ways, while building social support. In implementing the full suite of tools through a sub-regional (Whaitua) chapter of the Plan, the Committee should consider who benefits and who bears the cost. The Committee should also consider the benefits from a phased approach, with adaptive management (monitoring and adjustment as required) to maximise social support – with a programme aimed initially at Silver 2040 as a minimum and then making additional adjustments over a specified period of time to achieve an advanced set of measures in the longer term. The final set of policy and plan changes should include a change management programme to support the efforts of urban areas, farmers, rural communities, and ecological restoration groups in adjusting to change and achieving the best mix of environmental, social, cultural and economic outcomes in the most equitable way possible.

Economic and ecological effects will flow into effects on people and communities, and potentially result in changes to social wellbeing outcomes. These social effects, both positive and negative, are likely to be distributed unevenly. By acknowledging the complex nature of social-environmental systems, it is possible to understand better that positive social wellbeing outcomes require ongoing public involvement and proactive management for affected groups. Flexibility in policy making, and well-targeted change, will assist people and communities to adapt and respond by taking advantage of new opportunities from environmental improvements.

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Annex 1 List and rationale for the inclusion or exclusion of meshblocks

The Spatial Framework Catchment Meshblock Definitions are as follows:

MB Code	AU Code	AU Name	TA Code	Rural IN/OUT	Explanation
2254701	578402	Whareama	48	Rural Outside	Small overlap into meshblock
2228502	578402	Whareama	48	Rural	Majority of meshblock area inside catchment
2254601	578402	Whareama	48	Rural	Majority of meshblock area inside catchment
2254602	578402	Whareama	48	Rural	Majority of meshblock area inside catchment
2254900	578402	Whareama	48	Rural Outside	Small overlap into meshblock
2255700	578402	Whareama	48	Rural Outside	Small overlap into meshblock
2255900	578402	Whareama	48	Rural	50/50 divide between east and west of hills but low pop
2256400	578402	Whareama	48	Rural	Majorty is west of the hills - Stronvar vicinity
2256500	578402	Whareama	48	Rural	Majority is west of the hills - Wainuioru vicinity
2263800	579502	Te Wharau	49	Rural	Majority is west of the hills
2263900	579502	Te Wharau	49	Rural	Majority is west of the hills - Gladstone vicinity
2264100	579502	Te Wharau	49	Rural	Majority is west of the hills - Gladstone
2264200	579502	Te Wharau	49	Rural	Majority is west of the hills - Gladstone vicinity
2273201	579802	Tuturumuri	50	Rural Outside	Putangirua Pinnacles - 35 people - coastal
2273202	579802	Tuturumuri	50	Rural Outside	Eastern side of range
2275500	579802	Tuturumuri	50	Rural	Majority is west of the hills
2275600	579802	Tuturumuri	50	Rural	Majority is west of the hills
2277000	579802	Tuturumuri	50	Rural	Majority is west of the hills - Tuturumuri

Annex 2 The population of the catchment

This annex contains further information about the people and major settlements of the catchment, including population change, age distribution, ethnicity and educational qualifications.

Population change

The number of people and households living in the catchment was relatively stable in the period between 2001 and 2006, but over the last ten years there has been growth of approximately 4,060 people and 2,780 households, an annual average increase of 278 households (Table 10). There has been significant growth, particularly in the southern half of the area, in the towns of Carterton (19.7%), Martinborough (14.7%), and Greytown (10.4%) and the rural areas of Carterton District (31.0%) and South Wairarapa (23.1%) over the last ten years.

Table 10: **Catchment population and household growth, 2001–2016**

Location	2001	2006	2013	2016	Change (%) 2001-2006	Change (%) 2006-2016
Population						
Masterton	19,990	19,980	20,720	21,040	-0.1%	5.3%
Carterton	4,210	4,210	4,810	5,040	0.0%	19.7%
Greytown	2,110	2,110	2,270	2,330	0.0%	10.4%
Featherston	2,380	2,400	2,320	2,340	0.8%	-2.5%
Martinborough	1,390	1,360	1,510	1,560	-2.2%	14.7%
Urban Areas	**30,090**	**30,060**	**31,630**	**32,310**	**-0.1%**	**7.5%**
Rural Masterton	2,440	2,470	2,640	2,700	1.2%	9.3%
Rural Carterton	2,720	2,940	3,550	3,850	8.1%	31.0%
Rural South Wairarapa	2,800	2,950	3,480	3,630	5.4%	23.1%
Rural Total	**7,960**	**8,360**	**9,680**	**10,180**	**5.0%**	**21.8%**
Catchment Total	**38,050**	**38,430**	**41,310**	**42,490**	**1.0%**	**10.6%**
Wellington Region Total	**440,320**	**466,300**	**486,700**	**498,180**	**5.9%**	**6.8%**
Households						
Masterton	7,990	7,920	8,690	8,950	-0.9%	13.0%
Carterton	1,700	1,710	2,080	2,210	0.6%	29.2%
Greytown	880	870	970	1,010	-1.1%	16.1%
Featherston	980	980	1,050	1,070	0.0%	9.2%
Martinborough	590	580	660	690	-1.7%	19.0%
Urban Areas	**12,140**	**12,060**	**13,450**	**13,930**	**-0.7%**	**15.5%**
Rural Masterton	870	910	1,040	1,080	4.6%	18.7%
Rural Carterton	1,010	1,060	1,370	1,490	5.0%	40.6%
Rural South Wairarapa	1,060	1,150	1,380	1,460	8.5%	27.0%
Rural Total	**2,930**	**3,120**	**3,800**	**4,030**	**6.5%**	**29.2%**
Catchment Total	**15,070**	**15,180**	**17,250**	**17,960**	**0.7%**	**18.3%**
Wellington Region Total	**166,870**	**173,350**	**185,380**	**191,710**	**3.9%**	**10.6%**

Age distribution

The distribution of population across age groups for the catchment as a whole, when compared to the Wellington region, reveals:

- the average proportion of 65–79 year olds living in the urban areas of the catchment is consistently higher than the average proportion living in the Wellington region, 15–17% compared to 10%

- for the 80+ years age group, the difference is even greater. The average proportion of vulnerable elderly[36] living in the towns vary between 14 and 17%, compared to the average proportion being 3% in the Wellington region
- the average proportion of the population between 20 and 64 years old, is consistently lower in the catchment, than the average for the Wellington region.
- the average proportion of children[37] living in the catchment is very similar to the average for the Wellington region.
- the average proportion of 15–19 year olds, is more than double in the catchment than in the Wellington region, 17–19% compared with 7%.

In the rural areas within the catchment, the proportion of the population in the age group 40–64 years, is consistently higher than the Wellington regional average (40%, 42% and 37% compared to 33% for the region). The average proportion of rural residents aged between 15 and 39 years, is much lower than the average in the region (22% compared to 34%). The average proportion of over 65s in the rural areas, is similar to the Wellington region at around 13%, but lower than in the urban areas of the catchment. The share of children residing in the rural areas is very similar to the urban average, as well as the average for the Wellington region, i.e. around 19%. The share of over 65s increased by 5% between 2001 and 2013, while the proportion of children decreased (-3%), which is similar to the trend across the catchment, the region and NZ as a whole, pointing to an ageing population.

Approximately 64% of households in the rural areas of the catchment own their usual residence. This proportion is slightly above the regional average (50%) and somewhat above the average for the urban areas in the catchment (58%).

As can be expected, in the rural areas privately occupied dwellings are mainly separate houses (92%), while only 2% are 'attached housing' and 2% classified as 'other'. The average proportion of dwellings that are separate houses, is higher than in the Wellington region, while the proportion of attached housing (2%) is well below the regional average (23%).

[36] 80+ years old
[37] 0–14 year olds.

Table 11: Age distribution – Towns vs rest of the catchment

Location	2013					
	0-14 Years	15-19 Years	20-39 Years	40-64 Years	65-79 Years	80+ Years
Masterton	18%	17%	17%	16%	16%	15%
Carterton	18%	18%	17%	16%	16%	15%
Greytown	20%	18%	17%	16%	15%	14%
Featherston	19%	18%	18%	16%	15%	14%
Martinborough	18%	19%	18%	16%	15%	14%
Rest of Catchment	17%	17%	16%	16%	17%	17%
Wellington Region	**20%**	**7%**	**28%**	**33%**	**10%**	**3%**
Location Quotient - Age compared with Wellington Region Average						
Masterton	0.90	2.51	0.62	0.50	1.63	4.57
Carterton	0.92	2.60	0.63	0.49	1.58	4.56
Greytown	1.01	2.65	0.61	0.49	1.52	4.22
Featherston	0.99	2.59	0.65	0.48	1.52	4.24
Martinborough	0.91	2.70	0.64	0.50	1.56	4.23
Rest of Catchment	0.85	2.45	0.59	0.50	1.71	5.13

Source: Statistics NZ, Census of Population and Dwellings

Ethnicity and length of residence

The catchment is made up of largely European residents (>85%), with Māori and Pacific peoples being the second largest group (>15%) and a small group (<10%) of residents make up the remaining ethnic groups. In the Wellington region, Europeans make up around 77% of the population, Māori and Pacific peoples just over 20% and Asian people just over 10%. Analysis of the rural areas of the catchment found a very high proportion of the rural areas identified their ethnicity as European (94%), with a further 10% Māori and 4% Pacific, Asian, Middle Eastern, Latin American, African and 'other' peoples.

Table 12 shows location quotients that reveal the average proportion of Māori living in the catchment is higher than in the Wellington region, whereas the proportion of Pacific peoples, Middle Eastern, Latin American, African (MELAA) and Asian peoples is significantly lower than in the Wellington region as a whole.

Table 12: Catchment ethnicity profile, 2013

	European	Māori	Pacific Peoples	Asian	MELAA	Other
Masterton	85%	20%	3%	2%	0%	2%
Carterton	89%	15%	3%	2%	0%	2%
Greytown	92%	10%	2%	2%	0%	3%
Featherston	88%	18%	3%	3%	0%	3%
Martinborough	86%	17%	3%	4%	0%	2%
Urban Areas	**87%**	**18%**	**3%**	**2%**	**0%**	**2%**
Rural Masterton	94%	10%	1%	0%	0%	2%
Rural Carterton	95%	9%	1%	1%	0%	2%
Rural South Wairarapa	93%	11%	1%	1%	0%	2%
Rural Total	**94%**	**10%**	**1%**	**1%**	**0%**	**2%**
Catchment Total	***88%***	***16%***	***3%***	***2%***	***0%***	***2%***
Wellington Region	**77%**	**13%**	**8%**	**11%**	**1%**	**2%**
Location Quotient - Ethnicity compared with Wellington Region Average						
Masterton	1.11	1.53	0.43	0.23	0.20	1.02
Carterton	1.15	1.12	0.33	0.17	0.14	1.31
Greytown	1.20	0.74	0.23	0.17	0.10	1.54
Featherston	1.14	1.41	0.36	0.26	0.19	1.67
Martinborough	1.12	1.33	0.42	0.34	-	0.93
Rural	1.22	0.76	0.15	0.08	0.07	1.14
Catchment Total	1.15	1.25	0.34	0.19	0.15	1.14

Source: Statistics NZ, Census 2013

The proportion of residents in the catchment born overseas is much lower than the average for the Wellington Region, 14% compared to 25%. The proportions have slightly changed over recent time (2001–2013), increasing from 11% to 14% of the population born overseas.

The patterns of people moving into the catchment are very similar to the Wellington Region, with around half of the population living in the same residence as they had 5 years ago. The proportion is somewhat higher for the rural population (54%), than for the urban residents (48%). Of people moving into the catchment, around 40% have moved in from elsewhere in NZ, and between three and 6% have moved into the area from overseas.[38] For the Wellington region, the figures are similar, except around 8% of people moving into the region were living overseas 5 years ago.
Further analysis of the population of each of the five main settlements is available in Annex 2.

The proportion of rural residents that were born outside of NZ (15%), has been increasing over time (+4%), but is still much lower than the Wellington regional average (25%).

Educational qualifications

Although the proportion of the population that has no formal qualification is lower in the rural areas of the catchment than in the urban areas (24% compared to 35%), it is still noticeably higher than the average for the Wellington region which is 16%. 26% of rural residents have indicated a tertiary qualification as their highest qualification, with just more than half (51%) of the rural population reported to have a high school qualification as their highest qualification. This is marginally higher than the average for the urban areas (47%) and the Wellington region (47%).

[38] The remaining share represents the population that were not yet born 5 years ago.

Table 13: Selected qualification groupings by district, 2013

	No Qualification	Level 1-4 Certificate (incl. Overseas High School Qualification)	Tertiary Qualification - Level 5 and above
Masterton	35%	47%	18%
Carterton	37%	48%	15%
Greytown	28%	50%	24%
Featherston	37%	44%	18%
Martinborough	29%	47%	26%
Urban Areas	**35%**	**47%**	**18%**
Rural Masterton	21%	53%	26%
Rural Carterton	25%	49%	26%
Rural South Wairarapa	25%	49%	26%
Rural	**24%**	**51%**	**26%**
Catchment Total	**32%**	**48%**	**20%**
Wellington Region	**16%**	**47%**	**37%**
Location Quotient - highest qualification compared with Wellington Region Average			
Masterton	2.17	1.01	0.49
Carterton	2.33	1.02	0.41
Greytown	1.75	1.07	0.64
Featherston	2.29	0.94	0.49
Martinborough	1.81	0.99	0.69
Urban Areas	**2.15**	**1.01**	**0.50**
Rural	**1.48**	**1.08**	**0.71**
Catchment Total	**2.01**	**1.03**	**0.54**

Source: Statistics NZ, Census of Population and Dwellings, 2013

Masterton

Masterton is the dominant urban area in the catchment, accommodating approximately 50% of population and households (21,040 people in 8,950 households in 2016). Since 2006, there has been growth of approximately 1,060 households in the town, an average increase of 100 per annum.

The key demographic patterns for Masterton are:

- Nearly a third (32%) of the population in Masterton is aged between 40 and 64 years. This has increased slightly (+1%) from the previous census. This proportion is similar to the Wellington region (33%) and somewhat lower than the rural average (40%) in the catchment. The proportion of over 65s is higher in Masterton than in the Wellington region (20% compared to 13%), while the proportion of 15–39 year olds in Masterton is much lower than in the Wellington region (27% compared to 34%).
- Masterton's ethnic composition is very similar to the other urban areas in the catchment:
- The largest proportion of the population is European (>85%),
- The number of Māori and Pacific peoples in the area increased slightly between 2001 and 2006, making up around 20% of the population in 2013.[39]

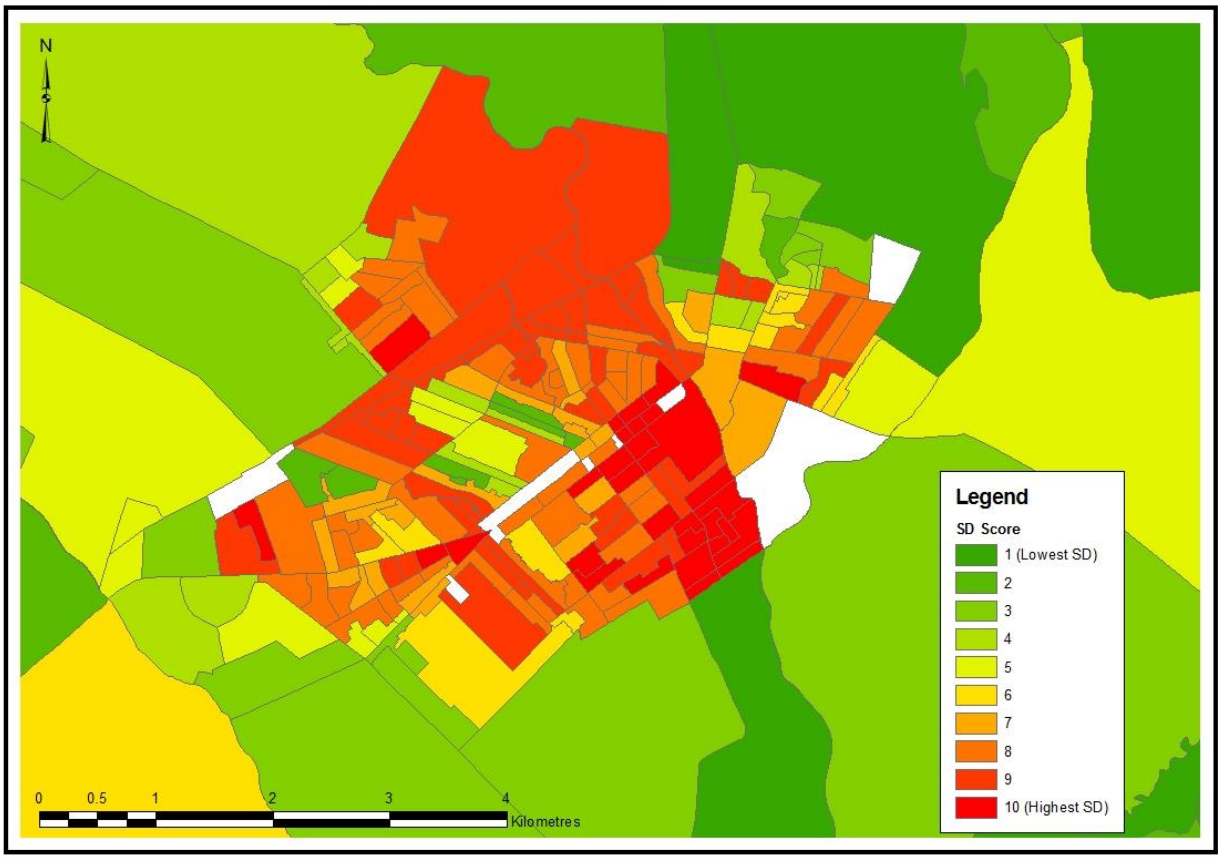
[39] Since it is possible for people to identify with more than one ethnic group, the proportions do not necessarily sum to 100%.

- Less than 5% of the total population fall into the remaining three categories (Asian, Other and MELAA[40]).
- Nearly 90% of residents in Masterton were born in NZ.
- Masterton has the lowest rate of home ownership of the urban areas in the catchment (55%). This is similar to the average Wellington Region rate of home ownership (50%).
- The majority of homes in Masterton are separate houses (84%), but there are around 12% of dwellings which are classified as 'attached housing'.[41] This is the largest proportion of attached housing in the catchment, however it is well below the 23% of dwellings in the Wellington region falling into this category.
- 5% of the Masterton population is reported to have no formal qualification. For nearly half of the residents (47%), a high school certificate[42] is their highest qualification, and around 18% has a tertiary qualification.[43] These proportions are very similar to the other urban areas and the catchment as a whole. However, a much higher average proportion has no qualification than the Wellington region average, 35% compared to 16%, and a much lower proportion has a tertiary qualification than the regional average (18% compared to 37%).

The Masterton urban area has a high level of socio-economic deprivation[44] (Figure 6).

[40] Middle Eastern, Latin American and African
[41] Two or More Flats/Units/Townhouses/ Apartments/Houses Joined Together
[42] NZQA Level 1-4, including a High School qualification obtained overseas.
[43] NZQA Level 5 and above
[44] The Socioeconomic Deprivation index was developed by the Department of Public Health at the University of Otago in Wellington, and updated after the 2013 census. The index combines census data relating to income, home ownership, employment, qualifications, family structure, housing, access to transport and communications to provide a score for each meshblock in NZ. The scores were converted to a 1 to 10 scale. A score of 1 represents the least deprived 10% of areas in New Zealand and a score of 10 represents the most deprived 10% of areas in New Zealand. The maps colour-code the meshblocks on a spectrum from bright red indicating the highest level of socioeconomic deprivation to bright green being the lowest level of deprivation, reflecting these scores.

Figure 6: Masterton socio-economic deprivation index, 2013



Carterton

Carterton has the second highest concentration of residents in the urban areas, and has experienced the largest population growth (20%) over the last 10 years. Population increased from around 4,200 in 2006 to just over 5,000 residents in 2016. Household numbers have increased by 500 households, approximately 50 per annum, over the same period.

The key demographic patterns for Carterton are:

- Carterton has a very similar distribution of population across the four age groups[45] to the rest of the urban areas and the catchment as a whole. Around a third (34%) of the residents are aged between 40 and 64 years, around 20% are children under 14 years old, and the remaining 46% is split between the 15–39 year old group and the over 65s (23% each). The average proportion of 15–39 year olds living in Carterton is lower than the regional average, while the proportion of over 65s living in this area is higher than the Wellington region average.
- The dominant ethnic group is European (89%), with 18% of the population also identifying themselves as Māori, and 7% as Pacific, Asian, Middle Eastern, Latin American, African and 'other' peoples.
- The proportion of residents that were born outside of NZ has increased somewhat over time, from 10% in 2001 to 14% in 2013. A very similar pattern to the rest of the urban areas.
- Approximately 61% of households in Carterton owned their usual residence. This is slightly above the average for the Wellington region (50%).
- A high share of dwellings (87%) in Carterton, are separate houses and 8% are some form of 'attached housing'.

[45] 0-14 years; 15-39 years; 40-64 years; 65 years and over.

- 37% of the population living in Carterton has no formal qualification, while for nearly half (48%) of residents a high school certificate is their highest qualification and a further 15% has obtained a tertiary qualification. This is similar to the rest of the catchment, but the share of the population with no qualification is more than double the Wellington regional average (37% compared to 16%), and the proportion of residents with a tertiary qualification is less than half of the region's average (15% compared to 37%).

There are high levels of socio-economic deprivation in the urban area (Figure 7), however the level of deprivation seems to be lower than that of Masterton and Featherston.

Figure 7: Carterton socio-economic deprivation index, 2013

Greytown

Greytown has also experienced some population growth (10%) since 2006, increasing from 2,110 residents in 870 households (2006) to 2,330 in 1,010 households (2016). A total increase of some 140 households.

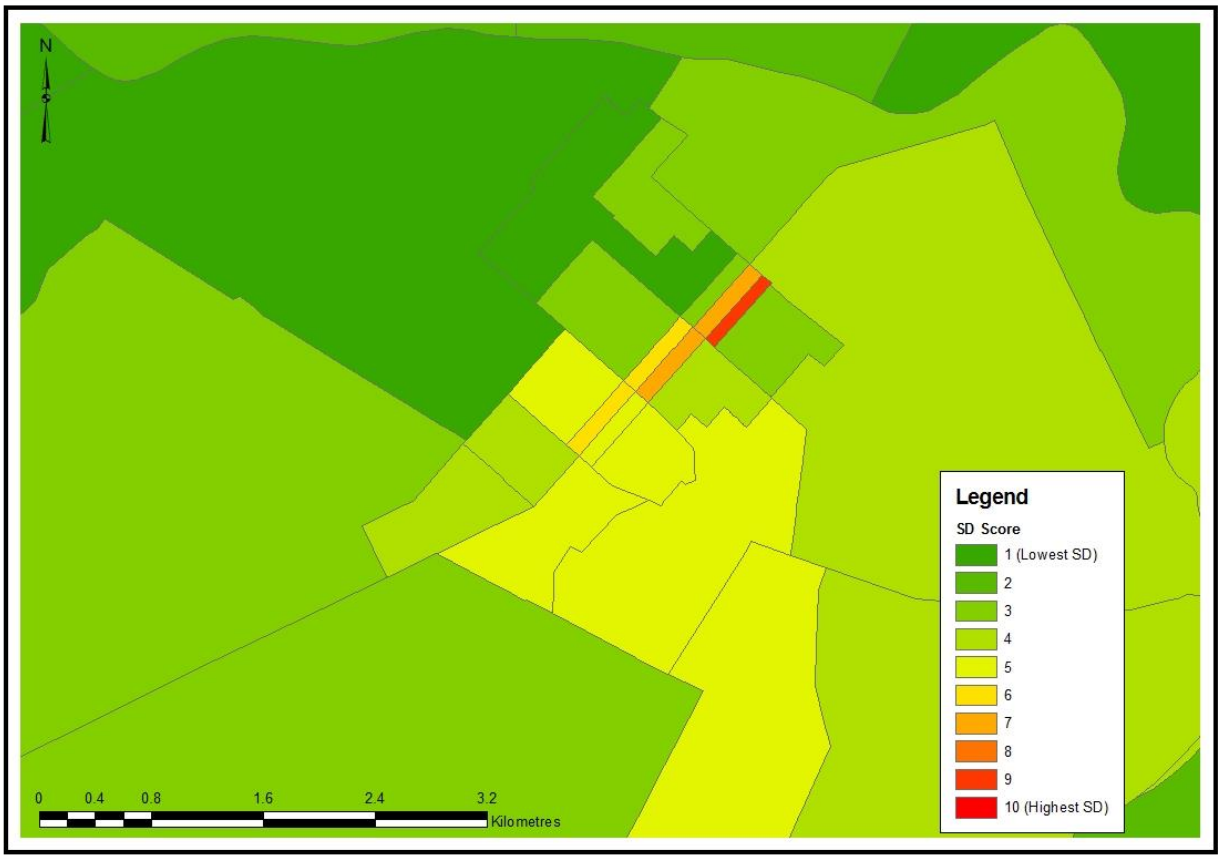
The key demographic patterns for Greytown are:

- Greytown has a very similar distribution of population across the four age groups[46] to the rest of the urban areas and the catchment as a whole. Just more than a third of the residents are aged between 40 and 64 years (35%), around 19% are children under 14 years old and a similar proportion (20%) fall into the 15–39 year old group. 28% of the people living in Greytown is over 65 years old – nearly double the average for the Wellington region.
- Approximately 92% of the population identified as European, with a further 10% Māori and 7% Pacific, Asian, Middle Eastern, Latin American, African and 'other' peoples. Greytown has the highest proportion of European population when compared with other urban areas in the catchment.
- Around 85% of the population in Greytown were born in NZ, a higher than average proportion than in the Wellington region, but consistent with the rest of the catchment.
- Greytown has the largest percentage of tenure holders owning their usual residence (67%) – nearly 20% above the average for the Wellington region.
- The vast majority (90%) of dwellings in Greytown, are separate houses, with 6% classified as 'attached housing'.
- For half of the residents a high school certificate is their highest qualification, while 28% of the population have no formal qualification and 24% have a tertiary qualification. This is consistent with the pattern across the rest of the urban areas and the catchment as a whole. Like the other urban areas, the average proportion of residents that have no formal qualification (28%) is much higher than the Wellington regional average (16%), and the proportion of residents that have a tertiary qualification is much lower than the Wellington regional average (24% compared with 37%).

Greytown has the lowest level of socioeconomic deprivation when compared to the other urban areas in the catchment, with only one of the meshblocks in the top 10% of deprived areas in NZ (score of 10) (Figure 8).

[46] 0-14 years; 15-39 years; 40-64 years; 65 years and over.

Figure 8: Greytown socio-economic deprivation index, 2013



Featherston

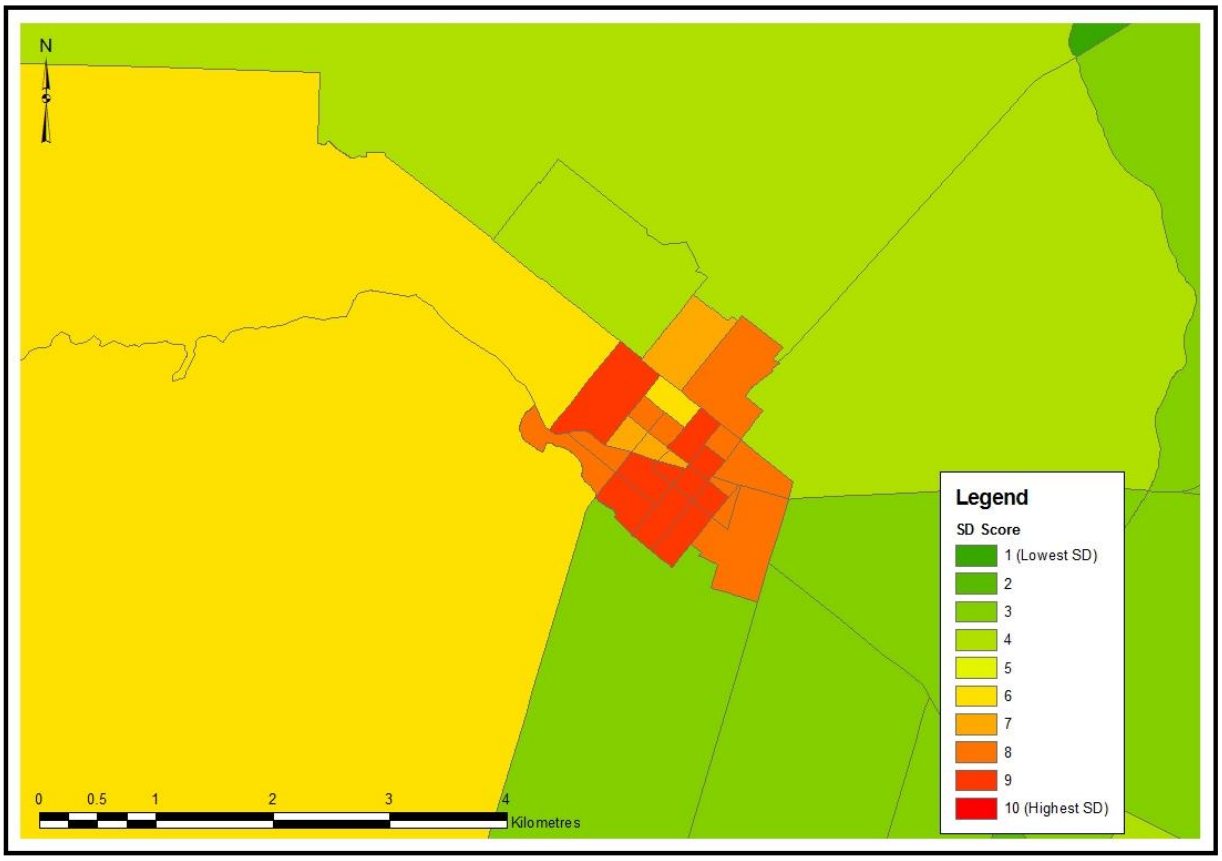
Featherston currently has 2,340 residents making up 1,070 households. The town has seen population decline from 2,390 people in 2006, while the number of households have increased by 90 households from 980 in 2006.

The key demographic patterns for Featherston are:

- When compared to the other urban areas, the distribution of population across the age groups is very similar. 36% of the population is aged between 40 and 64 years, 18% of residents are younger than 14 years and older than 65 years, respectively. 26% of the population fall in the age bracket 15 – 39 years old. Like the other urban areas, Featherston has a larger proportion of over 65s (18% compared to 13%), and a smaller proportion of 15–39 year olds (26% compared to 34%) than the Wellington regional average.
- Approximately 88% of the population identified themselves as European, with a further 18% Māori and 9% Pacific, Asian, Middle Eastern, Latin American, African and 'other' peoples.
- Like the rest of the urban areas and the catchment as a whole, more than 80% of residents are NZ born.
- Approximately 60% of households owned their usual residence.
- The vast majority (91%) of dwellings in Featherston, are separate houses, with 6% classified as 'attached housing', and 1% as 'other'.
- Featherston seems to have an overall lower level of qualification than the Wellington Region as a whole –
    - 37% of the population having no formal qualification (compared to 16% for Wellington),
    - 44% have only a high school certificate (compared to 47% for Wellington), and
    - 18% of residents have a tertiary qualification (compared to 37% for Wellington)

Featherston appears to have a high level of socio-economic deprivation (Figure 9), which is not surprising given the low level of formal qualifications held by the residents.

Figure 9: Featherston socio-economic deprivation index, 2013



Martinborough

Martinborough represents the smallest of the urban settlements in the catchment with less than 4% of the total population living here. Between 2006 and 2016 the population of Martinborough has increased from 1,360 to 1,560, and the number of households grew from 580 to 690, and increase of approximately 11 households per year.

The key demographic patterns for Martinborough are:

- More than a third of Martinborough's population is aged between 40 and 64 years (35%), which is similar to the rest of the urban area (33%), the catchment as a whole (35%), and also the Wellington region (33%). 19% of residents are children under the age of 14 years, which is also not unlike the rest of the catchment (19%) or the region as a whole (20%). The age groups 15–39 years and over 65s show similar patterns to the other urban areas and the catchment as a whole, i.e. a higher proportion of over 65s living in Martinborough than the regional average (20% compared to 13%) and a lower proportion of 15–39 year olds in Martinborough than in the Wellington region (22% compared with 34%).
- There were significant share of European people (86%), with a further 17% Māori and 9% Pacific, Asian, Middle Eastern, Latin American, African and 'other' peoples.
- Martinborough has the lowest proportion of residents born in NZ of the five urban areas (83%).
- Approximately 63% of households owned their usual residence.
- The vast majority (91%) of dwellings in Martinborough, are separate houses. Only 3% of dwellings are classified as 'attached housing' – the smallest proportion in each of the urban areas.
- Martinborough has the highest proportion of residents holding a tertiary qualification (26%) and one of the lowest proportions of residents having no formal qualification (29%) when compared to the other urban areas in the catchment. The proportion of residents with no qualification is still much higher than the average for the Wellington region (16%), and the share of the population that has a tertiary qualification is still well below the Wellington regional average (37%).

There are a few meshblocks in Martinborough coloured orange or red, indicating high levels of socioeconomic deprivation, and a large portion of the area coloured yellow (score=6) (Figure 10).

Figure 10: Martinborough socio-economic deprivation index, 2013

Rural Areas

The key demographic patterns for the rural areas are:

In the rural areas within the catchment, the proportion of the population in the age group 40–64 years, is consistently higher than the Wellington regional average (40%, 42% and 37% compared to 33% for the region). The average proportion of rural residents aged between 15 and 39 years, is much lower than the average in the region (22% compared to 34%). The average proportion of over 65s in the rural areas, is similar to the Wellington region at around 13%, but lower than in the urban areas of the catchment.[47] The share of children[48] residing in the rural areas are very similar to the urban average, as well as the average for the Wellington region, i.e. around 19%. The share of over 65s have increased by 5% between 2001 and 2013, while the proportion of children have decreased (-3%), which is similar to the trend across the catchment, the region and NZ as a whole, pointing to an ageing population.

A very high proportion of the rural areas identified their ethnicity as European (94%), with a further 10% Māori and 4% Pacific, Asian, Middle Eastern, Latin American, African and 'other' peoples.
The proportion of rural residents that were born outside of NZ (15%), has been increasing over time (+4%), but is still much lower than the Wellington regional average (25%).

[47] Average - 21% for the urban areas.
[48] 0-14 years.

Approximately 64% of households in the rural areas of the catchment, own their usual residence. This proportion is slightly above the regional average (50%) and somewhat above the average for the urban areas in the catchment (58%).

As can be expected, in the rural areas privately occupied dwellings are mainly separate houses (92%), while only 2% are 'attached housing' and 2% classified as 'other'. The average proportion of dwellings that are separate houses, is higher than in the Wellington region, while the proportion of attached housing (2%) is well below the regional average (23%).

Although the proportion of the population that has no formal qualification is lower in the rural areas of the catchment, than in the urban areas (24% compared to 35%), it is still quite a bit higher than the average for the Wellington region which is 16%. 26% of rural residents have indicated a tertiary qualification as their highest qualification, with just more than half (51%) of the rural population reported to have a high school qualification as their highest qualification. This is marginally higher than the average for the urban areas (47%) and the Wellington region (47%).

Annex 3 Households types with future projections

Detailed household breakdowns, based on family type (singles, couples, families, non-families), age of the head of household, and household income,[49] provide a robust framework for understanding the changing shift in household types overtime for a specific geographic catchment. This Annex presents the breakdown for 47 household types for the base 2013 year and projects the demographic shifts by household type out to 2031. These estimations of household numbers by type out to 2046 were derived from meshblock projections for Census Area Units using Statistics NZ projections and applying these to the various household types. These projections of current trends into the future will underpin the status quo scenario in the first instance and form the basis for considering the aspirational scenarios (bronze to gold) as well.

For the catchment as a whole, the following important patterns are identified:

- Approximately 29% of households in the catchment were single person households in 2016, which is higher than the Wellington Region average (25%).
- Currently single person households greater than 65 years make up nearly 16% of the total number of households in the catchment (1,190 households aged 65–74 years (7.0%) and 1,440 households aged 75+ years (8.5%)).
- Considerable growth in the number of single person households aged 75+ years is expected out to 2031, taking the total number of households to 2,360 or 13.6% of total catchment households. The number of single person households in the 65–74 years age group is also expected to grow between 2016 and 2031, increasing from 1,190 to 1,390 (8.0% of total catchment households).
- In 2016, approximately 33% of catchment households were couples, which is again higher than the Wellington Region average (28%).
- Households consisting of couples, with the head of the household between the ages of 15 and 64 years old, across all income brackets, are projected to decrease over time, from a total of 3,310 (2016) to 2,720 (2031). However, the number of households consisting of couples, with the head of the household older than 65, is expected to increase over time from 1,490 (2016) to about 2,100 (2031), increasing their share of total households from 13.6% to 17.6%.
- Two parent families currently make up 23% of total households. In the forecasted period, there is expected to be an overall decline in the number of two parent families with children, across all age groups and income brackets, except for the 30–39 years age group where the numbers are very flat, only growing by approximately 3 households per year. In some of the household types such as Two parents with children, aged 40–49 years, all incomes, there is an initial decline projected and then a slight increase at the end of the period, but still an overall downwards trend.
- The catchment has a similar share of one parent families to the Wellington Region overall, 10.1% compared with 10.3% respectively.
- There are lower shares of multi-family households (1.5%) and non-family households (3.1%) in the catchment in comparison to the Wellington Region (2.7% and 5.6% respectively).

Tables for the households and projected changes for urban and rural areas of the catchment are provided in Annex 3.

[49] Based on a special data request from Statistics NZ.

For the **urban areas** in the catchment, the notable characteristics of household types are:

- A higher share of households (28.8%) are singles in the urban areas than in the catchment as a whole (26.7%). There are high shares of single person households of retirement age (6.5% age 65–74 years and 8.1% aged 75+ years). The share of single person households is expected to grow to 31.7% by 2033.
- Evidence of an ageing population is apparent in the urban areas. Both Couples and Single Person households, 75+ years, are projected to show strong growth between 2016 and 2033, making up a larger portion of the total number of households as time goes on. Single person households, 75+ years, will grow to accommodate 11.9% of total households by 2033. Couples and Single Person households, 65–74 years old, will increase their share of total households from 13.9% (2016) to 15.2% (2033).
- Couples currently make up 29.7% of households living in the urban areas, and that share is set to remain relatively consistent out to 2033 (30.1%).
- Two parent families currently make up around 22.7% of the total number of households, and this is expected to decline slightly over time to 20.9% in 2033.
- Two parent families with children in the 40–49 year age group, all incomes, are displaying a U-shaped pattern. Two parent families with children in the 30–39 years age bracket is showing an inverse U-shaped pattern, with the number of households increasing between 2018 and 2028 from 600 to 680, then decreasing to 610 in 2033. As a whole there is very little growth expected over time in the number of families with children.
- The urban areas are expected to experience decreases in the shares of one parent families (12.8% to 11.9%), multi families (1.8% to 1.6%) and non-families (4.1% to 3.8%) between 2016 and 2033.

For the **rural areas** in the catchment, the following are important demographic patterns:

- Single person households are much less prevalent than in the catchment as a whole. In 2016, 19.7% of households were in this category in comparison to 26.7% for the overall catchment. However, while single person households 75+ years currently make up 2.9% of the total households, this proportion is projected to more than double (7.8%) by 2033. Overall the share of single person households will increase to 22% by 2031.
- The proportion of households that are couples (42%) is significantly higher in the rural areas, than for Whaitua catchment overall (32.6%). This share is expected to increase only slightly to 42.5% by 2031.
- There is also a significantly higher share of two parent households (29%) in the rural areas in comparison to the catchment overall (24.1%), but this share is expected to decline as more single person households appear, with expectations for 26.2% of households in 2033.
- The proportions of single parent families, multi-families and non-families are slightly lower than for the catchment as a whole, and the shares of these households are expected to stay broadly the same by 2033.
- The rural areas are also expected to experience an aging population, with households where the head of the household is aged 75 years and over increasing from 5.7% (2016) to 15.4% (2033).

Table 14: Catchment household profile by 47 household types, 2016–2033

47 Household Type	2016	2018	2023	2028	2033	2016 Share	2033 Share	2016-2031
Single Person 15-29 Years Q1-Q5	500	520	500	490	460	2.8%	2.4%	
Single Person 30-49 Years Q1-Q2	500	490	480	490	500	2.7%	2.6%	
Single Person 30-49 Years Q3-Q5	240	240	230	230	240	1.3%	1.2%	
Single Person 50-64 Years Q1-Q2	970	980	980	910	860	5.3%	4.4%	
Single Person 50-64 Years Q3-Q5	310	320	310	290	280	1.7%	1.4%	
Single Person 65-74 Years Q1-Q5	1,030	1,100	1,210	1,280	1,280	6.0%	6.6%	
Single Person 75+ Years Q1-Q5	1,190	1,270	1,540	1,850	2,130	6.9%	10.9%	
Couples 15-29 Years Q1-Q3	390	400	380	370	360	2.2%	1.8%	
Couples 15-29 Years Q4	320	330	320	310	300	1.8%	1.5%	
Couples 15-29 Years Q5	200	200	200	190	180	1.1%	0.9%	
Couples 30-49 Years Q1-Q3	210	210	200	200	210	1.1%	1.1%	
Couples 30-49 Years Q4	180	180	170	170	180	1.0%	0.9%	
Couples 30-49 Years Q5	280	280	280	280	290	1.5%	1.5%	
Couples 50-64 Years Q1-Q2	480	490	490	450	430	2.7%	2.2%	
Couples 50-64 Years Q3	430	440	430	400	380	2.4%	1.9%	
Couples 50-64 Years Q4	580	590	580	540	500	3.2%	2.6%	
Couples 50-64 Years Q5	660	670	660	610	570	3.6%	2.9%	
Couples 65-74 Years Q1-Q2	740	790	870	920	920	4.3%	4.7%	
Couples 65-74 Years Q3-Q5	650	710	780	820	820	3.9%	4.2%	
Couples 75+ Years Q1-Q5	670	720	910	1,130	1,340	3.9%	6.9%	
Two Parent Families 15-29 Years Q1-Q3	620	640	600	590	570	3.5%	2.9%	
Two Parent Families 15-29 Years Q4-Q5	410	420	400	390	370	2.3%	1.9%	
Two Parents, 1-2 Children 30-39 Years Q1-Q3	310	310	340	360	340	1.7%	1.7%	
Two Parents, 1-2 Children 30-39 Years Q4	250	250	280	290	270	1.4%	1.4%	
Two Parents, 1-2 Children 30-39 Years Q5	210	210	240	250	240	1.1%	1.2%	
Two Parents, 1-2 Children 40-49 Years Q1-Q3	270	270	240	230	250	1.5%	1.3%	
Two Parents, 1-2 Children 40-49 Years Q4	280	270	240	230	260	1.5%	1.3%	
Two Parents, 1-2 Children 40-49 Years Q5	400	390	350	340	380	2.1%	1.9%	
Two Parent Families 50+ Years Q1-Q3	290	300	310	300	290	1.6%	1.5%	
Two Parent Families 50+ Years Q4	220	220	230	220	210	1.2%	1.1%	
Two Parent Families 50+ Years Q5	370	370	370	350	330	2.0%	1.7%	
Two Parents, 3+ Children 30-39 Years Q1-Q3	200	200	220	230	210	1.1%	1.1%	
Two Parents, 3+ Children 30-39 Years Q4-Q5	230	230	260	270	250	1.2%	1.3%	
Two Parents, 3+ Children 40-49 Years Q1-Q3	100	100	90	80	90	0.5%	0.5%	
Two Parents, 3+ Children 40-49 Years Q4-Q5	260	250	220	210	240	1.4%	1.2%	
One Parent Families 15-29 Years Q1-Q5	600	610	570	550	530	3.3%	2.7%	
One Parent Families 30-39 Years Q1-Q2	320	320	360	380	340	1.7%	1.7%	
One Parent Families 30-39 Years Q3-Q5	60	60	70	70	70	0.3%	0.4%	
One Parent Families 40-49 Years Q1-Q2	340	330	300	300	330	1.8%	1.7%	
One Parent Families 40-49 Years Q3-Q5	140	140	130	130	140	0.8%	0.7%	
One Parent Families 50+ Years Q1-Q5	530	550	580	580	580	3.0%	3.0%	
Multi-Family All Ages Q1-Q4	150	150	150	150	150	0.8%	0.8%	
Multi-Family All Ages Q5	160	160	150	150	150	0.9%	0.8%	
Non Family Household 15-29 Years Q1-Q3	180	180	160	160	150	1.0%	0.8%	
Non Family Household 15-29 Years Q4-Q5	170	180	170	160	160	1.0%	0.8%	
Non Family Household 30+ Years Q1-Q3	270	280	290	300	310	1.5%	1.6%	
Non Family Household 30+ Years Q4-Q5	90	90	90	90	90	0.5%	0.5%	
Total	**17,960**	**18,410**	**18,930**	**19,290**	**19,530**	**100.0%**	**100.0%**	

Source: Statistics NZ, Census of Population and Dwellings, 2013 and M.E Projections based on Statistics NZ Age Projections by CAU

Urban areas

47 Household Type	2016	2018	2023	2028	2033	2016 Share	2033 Share	2016-2033
Single Person 15-29 Years Q1-Q5	370	380	360	350	330	2.7%	2.2%	
Single Person 30-49 Years Q1-Q2	410	400	400	400	410	2.8%	2.8%	
Single Person 30-49 Years Q3-Q5	190	190	190	200	200	1.3%	1.4%	
Single Person 50-64 Years Q1-Q2	810	820	820	750	720	5.8%	4.9%	
Single Person 50-64 Years Q3-Q5	240	240	240	220	210	1.7%	1.4%	
Single Person 65-74 Years Q1-Q5	870	920	1,010	1,060	1,060	6.5%	7.2%	
Single Person 75+ Years Q1-Q5	1,090	1,150	1,340	1,570	1,760	8.1%	11.9%	
Couples 15-29 Years Q1-Q3	310	310	290	280	270	2.2%	1.8%	
Couples 15-29 Years Q4	220	220	210	200	190	1.5%	1.3%	
Couples 15-29 Years Q5	140	140	130	120	110	1.0%	0.7%	
Couples 30-49 Years Q1-Q3	160	160	150	160	160	1.1%	1.1%	
Couples 30-49 Years Q4	130	130	120	130	130	0.9%	0.9%	
Couples 30-49 Years Q5	190	190	190	200	200	1.3%	1.4%	
Couples 50-64 Years Q1-Q2	340	340	340	310	300	2.4%	2.0%	
Couples 50-64 Years Q3	280	280	280	260	250	2.0%	1.7%	
Couples 50-64 Years Q4	400	410	410	370	350	2.9%	2.4%	
Couples 50-64 Years Q5	390	400	390	350	330	2.8%	2.2%	
Couples 65-74 Years Q1-Q2	570	600	660	690	690	4.2%	4.7%	
Couples 65-74 Years Q3-Q5	420	450	490	510	500	3.2%	3.4%	
Couples 75+ Years Q1-Q5	570	600	720	850	970	4.2%	6.6%	
Two Parent Families 15-29 Years Q1-Q3	510	520	480	460	440	3.7%	3.0%	
Two Parent Families 15-29 Years Q4-Q5	320	330	300	290	280	2.3%	1.9%	
Two Parents, 1-2 Children 30-39 Years Q1-Q3	240	240	260	270	240	1.7%	1.6%	
Two Parents, 1-2 Children 30-39 Years Q4	200	200	220	230	210	1.4%	1.4%	
Two Parents, 1-2 Children 30-39 Years Q5	150	160	170	180	160	1.1%	1.1%	
Two Parents, 1-2 Children 40-49 Years Q1-Q3	200	200	180	180	200	1.4%	1.4%	
Two Parents, 1-2 Children 40-49 Years Q4	190	180	170	170	190	1.3%	1.3%	
Two Parents, 1-2 Children 40-49 Years Q5	260	250	220	220	250	1.8%	1.7%	
Two Parent Families 50+ Years Q1-Q3	210	210	220	210	210	1.5%	1.4%	
Two Parent Families 50+ Years Q4	150	150	160	150	150	1.1%	1.0%	
Two Parent Families 50+ Years Q5	250	250	250	230	220	1.8%	1.5%	
Two Parents, 3+ Children 30-39 Years Q1-Q3	150	160	170	180	160	1.1%	1.1%	
Two Parents, 3+ Children 30-39 Years Q4-Q5	150	160	180	180	160	1.1%	1.1%	
Two Parents, 3+ Children 40-49 Years Q1-Q3	70	70	60	60	70	0.5%	0.5%	
Two Parents, 3+ Children 40-49 Years Q4-Q5	150	150	130	130	150	1.1%	1.0%	
One Parent Families 15-29 Years Q1-Q5	550	560	510	490	470	3.9%	3.2%	
One Parent Families 30-39 Years Q1-Q2	290	300	330	350	310	2.1%	2.1%	
One Parent Families 30-39 Years Q3-Q5	50	60	60	70	60	0.4%	0.4%	
One Parent Families 40-49 Years Q1-Q2	300	290	270	270	290	2.0%	2.0%	
One Parent Families 40-49 Years Q3-Q5	130	130	120	120	130	0.9%	0.9%	
One Parent Families 50+ Years Q1-Q5	470	480	510	500	500	3.4%	3.4%	
Multi-Family All Ages Q1-Q4	130	130	130	130	120	0.9%	0.8%	
Multi-Family All Ages Q5	120	120	120	120	120	0.8%	0.8%	
Non Family Household 15-29 Years Q1-Q3	140	140	120	120	110	1.0%	0.7%	
Non Family Household 15-29 Years Q4-Q5	140	140	130	120	120	1.0%	0.8%	
Non Family Household 30+ Years Q1-Q3	240	240	250	260	260	1.7%	1.8%	
Non Family Household 30+ Years Q4-Q5	70	70	70	70	70	0.5%	0.5%	
Total	**13,930**	**14,220**	**14,530**	**14,740**	**14,790**	**100.0%**	**100.0%**	

Rural areas

47 Household Type	2016	2018	2023	2028	2033	2016 Share	2033 Share	2016-2033
Single Person 15-29 Years Q1-Q5	130	140	140	140	130	3.3%	2.7%	
Single Person 30-49 Years Q1-Q2	90	90	90	90	90	2.1%	1.9%	
Single Person 30-49 Years Q3-Q5	50	50	40	40	40	1.2%	0.8%	
Single Person 50-64 Years Q1-Q2	160	170	170	160	140	4.0%	3.0%	
Single Person 50-64 Years Q3-Q5	80	80	80	70	70	1.9%	1.5%	
Single Person 65-74 Years Q1-Q5	160	180	200	220	220	4.3%	4.7%	
Single Person 75+ Years Q1-Q5	100	120	200	280	370	2.9%	7.8%	
Couples 15-29 Years Q1-Q3	80	90	90	90	90	2.1%	1.9%	
Couples 15-29 Years Q4	100	100	110	110	110	2.4%	2.3%	
Couples 15-29 Years Q5	60	70	70	70	70	1.7%	1.5%	
Couples 30-49 Years Q1-Q3	50	50	50	50	50	1.2%	1.1%	
Couples 30-49 Years Q4	50	50	50	50	50	1.2%	1.1%	
Couples 30-49 Years Q5	90	90	90	90	90	2.1%	1.9%	
Couples 50-64 Years Q1-Q2	150	150	150	140	130	3.6%	2.7%	
Couples 50-64 Years Q3	150	150	150	140	130	3.6%	2.7%	
Couples 50-64 Years Q4	170	180	170	170	150	4.3%	3.2%	
Couples 50-64 Years Q5	270	270	270	260	230	6.4%	4.9%	
Couples 65-74 Years Q1-Q2	170	190	210	230	230	4.5%	4.9%	
Couples 65-74 Years Q3-Q5	230	260	290	310	320	6.2%	6.8%	
Couples 75+ Years Q1-Q5	100	120	200	280	360	2.9%	7.6%	
Two Parent Families 15-29 Years Q1-Q3	110	120	130	130	130	2.9%	2.7%	
Two Parent Families 15-29 Years Q4-Q5	90	90	100	100	100	2.1%	2.1%	
Two Parents, 1-2 Children 30-39 Years Q1-Q3	70	70	80	90	90	1.7%	1.9%	
Two Parents, 1-2 Children 30-39 Years Q4	50	50	50	60	60	1.2%	1.3%	
Two Parents, 1-2 Children 30-39 Years Q5	60	50	60	70	70	1.2%	1.5%	
Two Parents, 1-2 Children 40-49 Years Q1-Q3	70	70	60	50	60	1.7%	1.3%	
Two Parents, 1-2 Children 40-49 Years Q4	90	90	80	70	80	2.1%	1.7%	
Two Parents, 1-2 Children 40-49 Years Q5	150	150	120	110	120	3.6%	2.5%	
Two Parent Families 50+ Years Q1-Q3	80	80	90	90	90	1.9%	1.9%	
Two Parent Families 50+ Years Q4	70	70	70	70	70	1.7%	1.5%	
Two Parent Families 50+ Years Q5	120	130	120	120	110	3.1%	2.3%	
Two Parents, 3+ Children 30-39 Years Q1-Q3	40	40	50	50	50	1.0%	1.1%	
Two Parents, 3+ Children 30-39 Years Q4-Q5	70	70	80	90	90	1.7%	1.9%	
Two Parents, 3+ Children 40-49 Years Q1-Q3	30	30	30	20	30	0.7%	0.6%	
Two Parents, 3+ Children 40-49 Years Q4-Q5	110	110	90	80	90	2.6%	1.9%	
One Parent Families 15-29 Years Q1-Q5	50	60	60	60	60	1.4%	1.3%	
One Parent Families 30-39 Years Q1-Q2	30	30	30	30	30	0.7%	0.6%	
One Parent Families 30-39 Years Q3-Q5	10	10	10	10	10	0.2%	0.2%	
One Parent Families 40-49 Years Q1-Q2	40	40	30	30	30	1.0%	0.6%	
One Parent Families 40-49 Years Q3-Q5	10	10	10	10	10	0.2%	0.2%	
One Parent Families 50+ Years Q1-Q5	60	60	70	80	80	1.4%	1.7%	
Multi-Family All Ages Q1-Q4	20	20	20	20	20	0.5%	0.4%	
Multi-Family All Ages Q5	30	30	30	30	30	0.7%	0.6%	
Non Family Household 15-29 Years Q1-Q3	40	40	40	40	40	1.0%	0.8%	
Non Family Household 15-29 Years Q4-Q5	30	40	40	40	40	1.0%	0.8%	
Non Family Household 30+ Years Q1-Q3	30	30	40	50	50	0.7%	1.1%	
Non Family Household 30+ Years Q4-Q5	20	20	20	20	20	0.5%	0.4%	
Total	**4,020**	**4,210**	**4,430**	**4,610**	**4,730**	**100.0%**	**100.0%**	

Annex 4 Farming, employment and livelihoods

This annex contains detailed information about agriculture and horticulture in the catchment and the livelihoods derived from these sectors. This information is from the most recent agricultural census (2012) and more recent data from business and employment surveys.

Table 15: Wairarapa farms by type and district, 2012

Farm Type	Masterton District	Carterton District	South Wairarapa District	Total
Sheep farming (specialised)	200	70	70	340
Beef cattle farming (specialised)	80	80	70	230
Sheep-beef cattle farming	110	50	60	220
Forestry	140	30	20	190
Dairy cattle farming	30	50	90	170
Grape growing	10	10	50	70
Other crops growing nec	30	10	20	60
Olive growing	10	10	30	50
Deer farming	10	20	-	30
Horse farming	10	10	10	30
Grain-sheep and grain-beef cattle farming	10	-	-	10
Nursery production (outdoors)	5	5	5	15
Other fruit and tree nut growing	5	5	5	15
Other livestock farming nec	5	5	5	15
Other grain growing	-	5	5	10
Pig farming	5	5	-	10
Other	5	5	-	10
Apple and pear growing	-	-	5	5
Nursery production (under cover)	-	-	5	5
Vegetable growing (under cover)	5	-	-	5
Vegetable growing (outdoors)	5	-	-	5
Berry fruit growing	-	-	5	5
Stone fruit growing	-	-	5	5
Citrus fruit growing	5	-	-	5
Poultry farming (eggs)	5	-	-	5
Total	**685**	**370**	**460**	**1,515**

Source: Statistics NZ Production Agricultural Census, 2012

Table 16: Wairarapa areas in main horticultural crops by district, 2012

Fruit Type	Masterton District	Carterton District	South Wairarapa District	Total
Wine grapes	130	150	580	860
Olives	50	30	90	170
Pears	C	C	10	10
Plums	C	-	10	C

Source: Statistics NZ Agricultural Production Census, 2012

With approximately 1.8 million livestock in the Wairarapa (Table 17), the area accounts for approximately 8.2% of North Island livestock. More than 85% of the livestock are sheep, with a further 12% in beef and dairy. There are small numbers (less than 10,000 head), in deer, pigs, goats, horses and all other livestock categories.

Table 17: Number of livestock by type, 2012

Livestock	Masterton District	Carterton District	South Wairarapa District	Total
Total sheep	844,510	296,790	430,540	1,571,840
Total beef cattle	57,890	23,510	44,800	126,190
Total dairy cattle	22,950	27,360	46,550	96,860
Total deer	3,700	3,850	730	8,280
Horses	590	200	280	1,070
Goats	170	S	C	C
Alpacas and llamas	170	C	C	C
Total pigs	120	C	C	C
All other livestock	C	C	5	5
Ostriches and emus	C	C	C	C

Source: Statistics NZ Agricultural Production Census, 2012

Just over half the farms in each of the TAs are less than 100 ha in size (54% in Masterton District, 59% in Carterton District, and 53% in South Wairarapa District) (Table 18). Approximately 43–44% of farms are under 40ha in size. Masterton District has approximately 50 farms that are greater than 1,000ha, and there are a further 20 and 40 farms of that size in Carterton District and South Wairarapa respectively, noting these figures cover areas to the east of the catchment boundary.

Table 18: Number of farms by size, 2012

Farm Size	Masterton District	Carterton District	South Wairarapa District	Total
<5 ha	70	40	70	190
5–9	60	30	50	140
10–19	80	50	40	170
20–39	70	30	30	130
40–59	40	20	20	80
60–79	20	10	10	40
80–99	20	20	20	50
100–199	60	40	50	140
200–399	80	50	70	200
400–599	50	20	30	100
600–799	40	10	30	80
800–999	20	10	10	40
1,000–1,999	50	10	20	80
2,000–3,999	5	5	10	20
4,000 ha +	-	5	5	10
Total	**665**	**350**	**465**	**1,470**

Source: Statistics NZ Agricultural Production Census, 2012

In 2012, the Agricultural Census recorded 410,000 ha in farms, of which the majority (68%) was grassland (286,300 ha) (Table 19). There were also significant shares of farms used for plantations of exotic trees intended for harvest (12%, 52,300ha) and native scrub and regenerating native bush (10%, 40,000 ha). For land that was specifically being used for forestry production, there was approximately 910 ha planted and 640 ha for harvesting.

Table 19: Land use by farm type, 2012

Farm Type	Masterton District	Carterton District	South Wairarapa District	Total
Grassland	131,430	57,430	97,420	286,280
Plantations of exotic trees intended for harvest	33,950	10,680	7,640	52,270
Native scrub and regenerating native bush	13,900	7,310	18,800	40,010
Mature native bush	4,190	1,830	8,950	14,970
Other land	3,940	1,680	4,070	9,690
Grain, seed and fodder crop land	2,100	2,300	3,740	8,140
Harvested exotic forest area awaiting restocking	720	130	360	1,210
Tussock and danthonia used for grazing	C	230	C	230
Horticultural land and land prepared for horticulture	C	220	C	220
Total Land	**190,230**	**81,810**	**140,980**	**413,020**

Source: Statistics NZ Agricultural Production Census, 2012

To produce supplementary feed, the largest area (19,840 ha) was used for pasture or lucerne, with a smaller area for forage brassicas (6,170 ha), and less than 5,000 ha total for each the other supplementary feed crops (other, maize silage, lucerne, other crops silage, and cereal silage) (Table 20).

Table 20: Area (Ha) utilised for supplementary feed production, 2012

Supplementary Feed (Ha)	Masterton District	Carterton District	South Wairarapa District	Total
Pasture/lucerne (hay, silage, and balage)	4,070	4,950	10,820	19,840
Forage brassicas	2,040	1,470	2,660	6,170
Other supplementary feed crops	450	420	520	1,380
Maize silage	140	330	590	1,050
Lucerne	120	230	250	600
Other crops silage	130	40	220	390
Cereal silage or cereal balage	60	110	180	350
Maize green feed	C	30	150	180
Total Land	**7,010**	**7,580**	**15,390**	**29,960**

Source: Statistics NZ Agricultural Production Census, 2012

There was a small area in grain and seed crops. Approximately 1,990ha were used to grow 11,150 tonnes of barley. Smaller areas were used for growing field/seed peas (950 ha, 2,150 tonnes), wheat (830 ha, 4,230 tonnes), maize grain (180 ha, 1,250 ha), and herbage seeds (110 ha).

Table 21: Grain and seed crops, Wairarapa 2012

Grain and Seed Crops		Masterton District	Carterton District	South Wairarapa District	Total
Hectares (Ha)	Barley	580	680	720	1,990
	Field/seed peas	260	300	390	950
	Wheat	50	380	400	830
	Maize grain	-	50	130	180
	Herbage seeds	C	70	40	110
	Oats	C	C	-	-
	Vegetable seeds	C	C	C	-
	All other grain and seed crops	-	C	C	-
	Total	**890**	**1,480**	**1,680**	**4,060**
Tonnes	Barley	3,450	3,870	3,840	11,150
	Wheat	300	1,870	2,070	4,230
	Field/seed peas	540	700	910	2,150
	Maize grain	-	C	1,250	1,250
	Oats	C	C	-	-
	Total	**4,290**	**6,440**	**8,070**	**18,780**

Source: Statistics NZ Agricultural Production Census, 2012

Employment in primary production and other sectors

The predominant economic activities in the catchment are agriculture, forestry and fishing (Table 22) although the share of businesses operating in those industries has declined over time from 38.4% in 2000 (1,700 businesses) to 26.9% in 2014 (1,450). Employment in that sector has also declined from 4,150 jobs (MEC[50]s) in 2000 to 3,470 MECS in 2014, a 16% decrease (Table 16). The second largest sector, rental, hiring and real estate services has increased its share of activity from 13.8% in 2000 to 19.5% in 2014 (1,050 units). However, employment has fluctuated in the sector between a low of 310 MECS in 2011 and a high of 460 MECs in 2003 and 2005. There are currently 400 jobs in the sector, which accounts for only 2.2% of the catchment's jobs. Other sectors with high shares of employment are health care and social assistance (11.4%, 2,110 MECs), retail trade (11.0%, 2,040 MECs), manufacturing (9.8%, 1,820 MECs), education and training (8.1%, 1,500 MECs) and construction (7.8%, and 1,440 MECs) and accommodation and food services (7.4%, 1390 MECs), a sector that fluctuates but is growing overall. The three single, largest employers are in timber processing, meat processing and hospital services.

Comprehensive data is available regarding the agricultural land uses in each territorial authority, in terms of types and size of farms, forestry, horticulture and activities that support those industries, in the Statistics NZ Agricultural Census. The most recent information is for 2012.

The most dominant forms of agricultural activity occurring in the three territorial authorities are sheep and beef cattle farming, with 340 sheep farms, 230 beef cattle farms and a further 220 sheep-beef cattle farms. Forestry (190 farms), Dairy cattle farming (170 farms), and grape growing (70 farms) are other important agricultural activities. Geographically, the majority of Masterton District has nearly three quarters of forestry farms (73%), and just over one half of sheep farms (58%) and sheep-beef cattle farms (51%). Beef cattle farming is relatively evenly distributed throughout the three TAs. Nearly three quarters of grape growing enterprises were located in the South Wairarapa District. There was approximately 860 ha planted for wine grapes and a further 170 ha planted for

[50] MEC = Modified Employment Count, a measure of total employment that includes all paid employees and working proprietors, from Statistics NZ's Business Frame and Linked Employer Employee Database.

olive growing. Since 2000, the agriculture, forestry and fishing sector has seen significant changes in the following ways:

- An increase in the number of businesses and employment in the "Other" Agriculture and Fishing Support Services.
- An increase in the number of businesses and employment classified as Sheep-Beef Cattle Farming
- An increase of 30 Olive Growing businesses, however only accompanied by a slight increase in employment of 10 MECs
- The number of Sheep Farming (Specialised) businesses has declined by 41% (150 geos) and 520 MECs (-237%).
- The number of Dairy Cattle Farming businesses has declined by 31% (100 geos) and 220 MECs (78%).
- A decline in the number of businesses operating in Beef Cattle Farming (Specialised) (-48 geos, -20%) and employment (-170 MECs, 91%).
- An increase in the number of businesses involved in Other Crop Growing n.e.c. (30, 208%), with a slight decline in employment (-2 MECs, -12%).
- An increase in the number of Beekeeping businesses (10 geos, 183%), and a significant increase in the number of employees (180 MECs, 2000%).
- A decline in the number of businesses operating in Vegetable Growing (outdoors) (-25 geos, -77%) and employment (-40 MECs, 186%).
- A decline in the number of businesses operating in Apple and Pear Growing (-20 geos, -77%) but a very slight increase in employment (5 MECs, 21%).
- A decline in the number of businesses (-25 geos, -23%) and employment (-50 MECs, -50%) in the forestry sector.

Employment in the catchment's hospitality sector (Accommodation and Food Services) increased by 310 MECs (28%) to reach 1,390 MECs in 2014. That level is slightly below the 1,440 MECs peak reached in 2008, although employment in the sector is relatively stable, having fluctuated between 1,340 and 1,440 MECs since 2008. Recreation services employment has fluctuated in a similar way, and is now at 250 MECs, up 23% from 2000, but slightly off the peak of 280 which has been hit in several years since then. Employment in tourism and hospitality is discussed further in Section 6, below.

Table 22: Catchment employment by industry category, 2000–2014

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Change 2000-2014 (n)	Change 2000-2014 (%)
Agriculture, Forestry and Fishing	4,150	4,230	4,560	4,160	4,080	4,110	3,870	3,620	3,400	3,330	3,340	3,360	3,420	3,460	3,470	- 680	-16.4%
Mining	30	30	30	40	40	40	40	20	20	20	10	20	30	20	30	-	3.9%
Manufacturing	2,120	2,070	2,020	2,040	2,090	2,120	1,950	1,860	1,910	1,760	1,790	1,780	1,700	1,770	1,820	- 300	-14.0%
Electricity, Gas, Water and Waste Services	40	70	60	80	60	60	40	30	30	30	30	10	50	50	60	20	35.4%
Construction	1,020	1,100	1,120	1,210	1,250	1,380	1,560	1,720	1,770	1,660	1,500	1,410	1,420	1,720	1,440	420	41.7%
Wholesale Trade	380	370	360	400	430	490	540	530	500	510	550	490	580	550	540	160	39.5%
Retail Trade	2,010	2,010	2,090	2,140	2,140	2,130	2,140	2,170	2,200	2,210	2,130	2,160	2,120	2,130	2,040	30	1.4%
Accommodation and Food Services	1,080	1,220	1,290	1,260	1,250	1,280	1,310	1,430	1,440	1,400	1,390	1,340	1,350	1,360	1,390	310	28.4%
Transport, Postal and Warehousing	560	530	540	540	520	530	500	530	590	550	490	490	470	460	480	- 80	-13.7%
Information Media and Telecommunications	240	240	260	730	130	130	220	210	170	180	180	170	190	190	180	- 60	-23.5%
Financial and Insurance Services	220	220	230	240	230	220	240	260	250	260	250	260	260	200	210	- 10	-4.6%
Rental, Hiring and Real Estate Services	450	390	460	460	440	460	450	360	440	380	340	310	320	320	400	- 50	-11.5%
Professional, Scientific and Technical Services	470	540	520	590	630	710	750	800	840	860	820	840	910	920	990	520	112.2%
Administrative and Support Services	250	460	370	500	560	550	500	570	550	560	500	590	520	470	500	250	102.7%
Public Administration and Safety	490	490	470	470	470	500	530	520	540	620	570	520	580	470	530	40	8.6%
Education and Training	1,270	1,310	1,210	1,260	1,270	1,250	1,260	1,450	1,480	1,410	1,440	1,480	1,580	1,450	1,500	230	18.2%
Health Care and Social Assistance	1,650	1,600	1,680	1,760	1,710	1,800	1,830	1,870	2,000	2,050	2,090	2,100	2,030	2,120	2,110	460	27.5%
Arts and Recreation Services	200	190	200	200	220	270	280	280	250	230	250	280	270	270	250	50	22.7%
Other Services	630	610	590	580	590	570	560	580	510	580	570	540	540	540	580	- 50	-7.0%
Total	**17,260**	**17,660**	**18,070**	**18,670**	**18,110**	**18,590**	**18,570**	**18,820**	**18,890**	**18,610**	**18,230**	**18,140**	**18,310**	**18,480**	**18,520**	**1,260**	**7.3%**

Table 23: MECs for selected industry sectors

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Change 2004-2014 (n)	Change 2004-2014 (%)
Nursery Production (Under Cover)	-	4	13	9	8	8	8	4	-	1	1	1	n/a
Nursery Production (Outdoors)	61	54	17	26	24	17	20	19	22	20	19	-43	-69%
Turf Growing	-	-	-	-	-	-	-	-	-	-	-	-	n/a
Floriculture Production (Under Cover)	1	1	0	0	-	-	-	-	-	-	-	-1	-100%
Floriculture Production (Outdoors)	3	1	1	2	2	1	1	1	1	-	-	-3	-100%
Mushroom Growing	46	41	46	45	46	46	40	35	36	40	40	-6	-12%
Vegetable Growing (Under Cover)	3	12	7	16	3	6	3	6	2	2	1	-2	-74%
Vegetable Growing (Outdoors)	66	58	28	21	56	46	31	30	33	74	21	-45	-68%
Grape Growing	444	346	351	333	355	362	353	291	280	302	281	-163	-37%
Kiwifruit Growing	0	0	-	-	-	-	-	-	-	-	-	0	-100%
Berry Fruit Growing	9	6	5	5	5	5	5	5	4	1	17	9	100%
Apple and Pear Growing	67	51	37	28	21	23	22	28	44	46	86	19	28%
Stonefruit Growing	27	5	8	6	6	6	6	5	6	10	7	-19	-73%
Citrus Fruit Growing	-	-	-	-	-	-	-	-	0	1	1	1	n/a
Olive Growing	10	7	9	8	7	5	6	6	12	8	9	-1	-13%
Other Fruit and Tree Nut Growing	18	4	3	3	4	3	2	2	2	2	2	-16	-90%
Sheep Farming (Specialised)	969	520	563	472	375	287	336	398	395	631	531	-437	-45%
Beef Cattle Farming (Specialised)	216	149	148	137	162	123	98	120	120	131	114	-102	-47%
Beef Cattle Feedlots (Specialised)	-	-	-	-	-	-	-	-	-	-	-	-	n/a
Sheep-Beef Cattle Farming	311	862	747	715	635	687	720	652	659	460	503	192	62%
Grain-Sheep and Grain-Beef Cattle Farming	31	22	12	21	18	23	29	46	24	29	47	15	49%
Other Grain Growing	10	14	19	19	17	30	7	7	24	5	12	2	21%
Other Crop Growing n.e.c.	11	24	10	7	18	15	22	21	33	34	37	26	232%
Dairy Cattle Farming	733	747	700	634	642	616	630	635	633	646	639	-94	-13%
Poultry Farming (Meat)	12	1	1	-	1	1	1	1	1	1	1	-11	-94%
Poultry Farming (Eggs)	20	41	32	36	37	32	58	69	57	57	71	50	247%
Deer Farming	16	21	16	19	21	26	16	23	27	24	23	7	41%
Horse Farming	40	38	16	16	35	38	30	32	32	31	32	-8	-21%
Pig Farming	34	31	37	39	34	32	47	53	46	17	22	-12	-36%
Beekeeping	12	17	35	77	95	102	106	99	131	155	184	173	1467%
Forestry	90	73	69	63	56	23	21	24	33	18	20	-70	-78%
Logging	139	140	132	111	87	96	87	89	91	87	81	-58	-42%
Hunting and Trapping	36	16	10	6	15	6	6	9	9	9	5	-31	-86%
Shearing Services	198	322	318	354	258	228	276	270	270	259	271	73	37%
Meat Processing	30	44	45	45	47	48	50	47	47	45	55	25	83%
Cured Meat and Smallgoods Manufacturing	75	85	90	95	110	110	120	130	140	200	210	135	179%
Milk and Cream Processing	-	-	-	-	-	-	-	-	-	-	-	-	n/a
Cheese and Other Dairy Product Manufacturing	4	1	3	3	3	0	3	3	1	3	9	6	148%
Oil and Fat Manufacturing	-	1	1	1	1	1	1	1	1	1	1	1	n/a
Beer Manufacturing	6	4	4	0	1	-	-	0	1	2	1	-5	-78%
Wine and Other Alcoholic Beverage Manufacturing	145	126	108	100	85	81	62	113	95	96	97	-49	-34%
Reconstituted Wood Product Manufacturing	-	-	-	-	-	-	-	-	-	-	-	-	n/a
Printing	189	173	167	189	215	204	185	204	226	213	238	49	26%
Printing Support Services	4	4	8	9	5	5	8	1	1	1	1	-3	-83%
Veterinary Services	61	52	56	53	59	63	48	47	52	56	63	2	4%

The urban areas currently account for 59.4% of businesses (3,190 Geos) and 74.0% of employment (13,710 MECs) in the catchment. There has been modest growth in employment in the urban areas between 2000 and 2014, with 515 new businesses (19.2%) and 875 new jobs (6.8%), an annual average increase of 37 businesses and 62 jobs.

The most important industry sectors in the urban areas in terms of employment activity are:

- Health Care and Social Assistance, 2,090 MECs (160 Geos), average size 13.1 MECs
- Retail Trade, 1,810 MECs (290 Geos), average size 6.3 MECs
- Education and Training, 1,300 MECs (85 Geos), average size 15.3 MECs
- Accommodation and Food Services, 1,220 MECs (170 Geos), average size 7.3 MECs
- Construction, 1,180 MECs (375 Geos), average size 3.2 MECs.

In percentage terms, the industry sectors that have shown the most significant growth are:

- Professional, Scientific and Technical Services, 140 businesses (geos) (97.8%) and 425 jobs (MECs) (107.3%)
- Administrative and Support Services, 40 geos (74.1%) and 205 MECs (100.9%)
- Construction, 110 geos (39.4%) and 265 MECs (28.6%).[51]

The industry sectors showing the greatest decline in percentage terms were:

- Mining, -1 Geos (-33.3%) and -19 MECs (-84.0%)
- Agriculture, forestry and fishing, -158 Geos (-31.9%) and -370 MECs (-26.2%)
- Manufacturing, -27 Geos (-16.3%) and -340 MECs (-26.0%).

Finally, it is important to note that a high number of people commute into Wellington to work and employment outside the three districts is not included in the business and employment data discussed above. However, as an indication of the importance of commuting to work, it is notable that the 2013 census showed that 828 people travelled to work by train and the numbers progressively increase for areas closest to Wellington, from Masterton south through Carterton, Greytown and Featherston. The 2013 Census shows that in respect to place of work, 33% of the residents of South Wairarapa work outside the district, with 648 workers in Wellington City. The rest work in Carterton or Masterton. For Carterton District the data show that 44% work outside the district, mostly in Masterton. Masterton, in contrast, with its larger labour market, has just 16% working outside the district.[52]

Seasonality of work

In a discussion of potential social outcomes from land and water management, members of the RWC[53] noted the importance of permanent verses seasonal work to the people and communities of the catchment. The issue of seasonal work in the catchment was explored as part of the social baseline using two sources of data, and neither gives a complete picture. It is possible, however, to

[51] While the Financial and Insurance Services sector has shown the largest percentage increase in businesses (216.0% or 110 geos), the sector has experienced a decline in the number of people employed (-3.1% or -6 MECs). Similar patterns have occurred in the Rental, Hiring and Real Estate Service sector (55.0% geos and -3.5% MECs), and Information Media and Telecommunications (34.8% geos and -27.3% MECs).

[52] Profile.idnz.co.nz for profiles of the three districts including travel to work data and maps.

[53] RWC meeting on 21 November, 2016.

interpret official data sets to confirm that with a strong sectoral basis in agriculture, horticulture and tourism, the catchment economy experiences seasonal fluctuations in employment.

The seasonal nature of employment in agriculture in the Wellington region is clear and follows similar trends to those observed at a national level with a peak around March and trough in the winter months.[54] Although no seasonal data is published at a sub-regional level, there is no reason to expect any different patterns in the Ruamāhanga catchment from those observed in the wider Wellington region and, if anything, the catchment seasonal variations will be more pronounced. In 2014, Agriculture, Forestry and Fishing employment made up 19% of total catchment employment, making it the largest sector by employment. Similarly, with the retail sector, in which a number of tourism occupations are based, there is a distinct seasonal pattern at the regional level, with a clear peak in the December quarter. In 2014, 11% of catchment employment was engaged in the retail sector, compared with 8.5% in the Wellington Region as a whole.

Using another data source, the Quarterly Employment Survey, it was possible to estimate[55] the magnitude of seasonal employment changes in the catchment. Some key observations include:

- In the Agriculture sector, the difference between the highest and lowest employment numbers is around 347 MECs, i.e. 10% of total employment in the catchment in this sector.
- In most sectors the seasonal variation in employment when expressed as a proportion of the total employment in that sector, is quite low.
- Over the whole of the catchment, the difference between the highest and lowest employment numbers, is 610 MECs, representing approximately 3% of the total number of MECs in the catchment.

This high-level approach could possibly mask the true magnitude of the seasonal peaks in specific industries. The broader the classification of economic sectors, the less pronounced the peaks and troughs tend to be. When analysing specific industries, for example viticulture, apple orchards, shearing or bee keeping, we are likely to find greater seasonal variation than when analysing the Agriculture, Forestry and Fishing sector as a whole.

There is no official data on seasonal migrant workers in the Wairarapa, but anecdotal information[56] and interviews point to the viticulture and horticulture (e.g. apple)[57] industries as recruiting migrant workers – as is the case in other parts of the country.

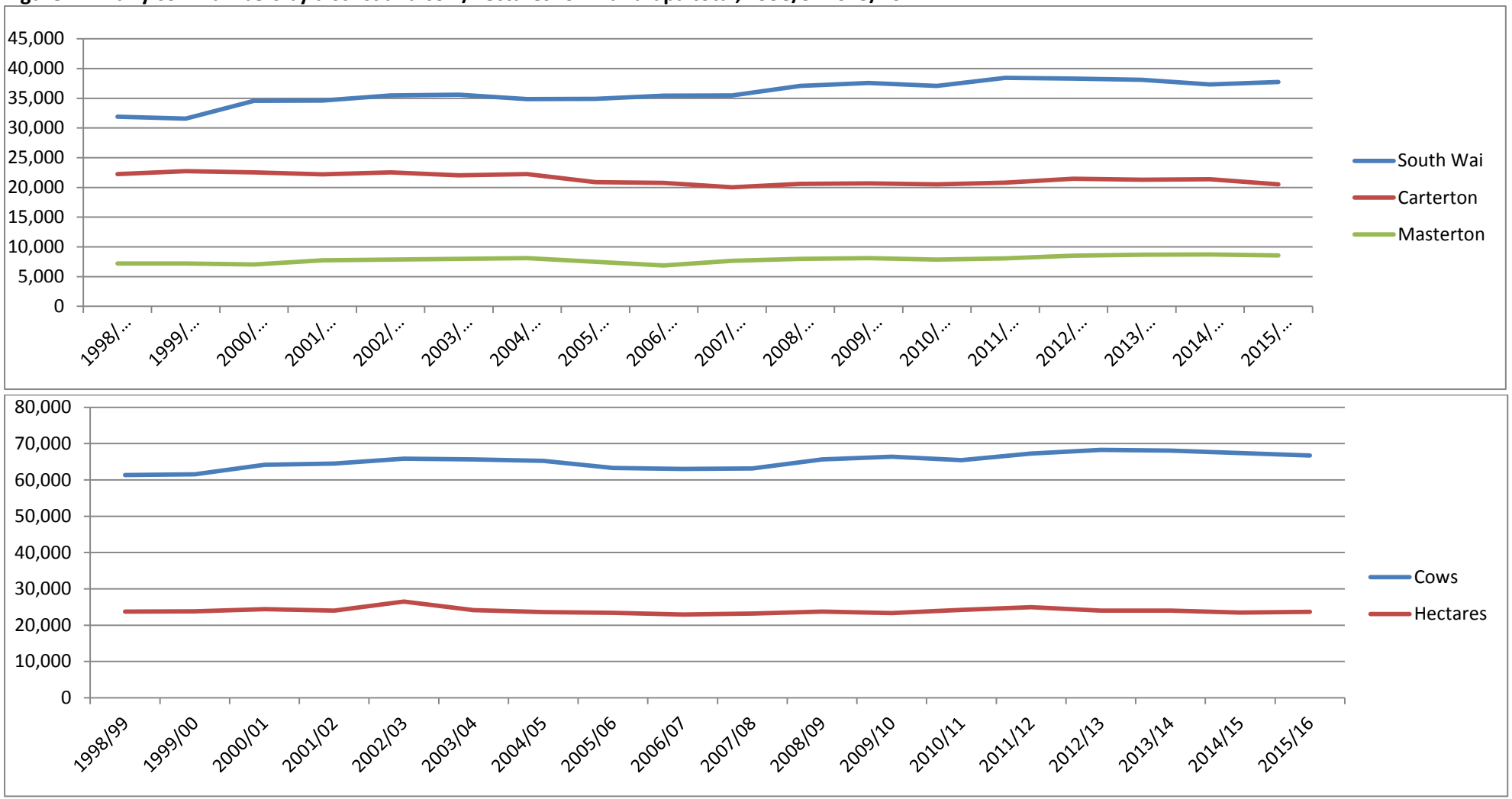
[54] Data from Statistics New Zealand's Linked Employer Employee dataset (LEED) was used to explore the seasonal nature of employment. The data is only available in quarterly intervals and at the regional level. It is also aggregated into 20 sectors of the economy, which is too coarse to enable detailed assessment of trends in specific industries, such as dairy, grape growing, wine making or beekeeping, and only enables general observations about seasonal employment in the catchment.

[55] National seasonal factors were calculated by comparing the quarterly employment numbers for each industry Anzsic 1D level – 19 sectors. to the March quarter - assumed as the base since Business Demographic Data from Statistics NZ is captured in February of each year.

[56] www.nzherald.co.nz/wairarapa-times-age/news/article.cfm?c_id=1503414&objectid=10965252

[57] http://decisionmaker.co.nz/6.%20More%20Solomon%20Islands%20dollars%20please.pdf

Figure 11: Dairy cow numbers by district and cow/hectares for Wairarapa total, 1998/9–2015/16



Dairy farming in the Wairarapa

Data[58] on dairy farming in the Wairarapa are shown in Figure 11. It is important to consider the lack of growth in the area of dairy farming in the catchment over the last 20 years, reflecting the unavailability of extra water for irrigation necessary. Over the period shown, there has been a small lift in cow numbers with increased productivity per hectare. The constrained area in dairy and the number of cows are important because they in turn limit the nutrients discharged to water.

Water and fertiliser use

In water use terms, the following information is available about irrigable land area:

- 15,250ha is equipped for irrigation.
- Spray systems are the most important form of irrigation (13,400 ha)
- Micro systems are the second most important form of irrigation (1,150ha)
- Flood systems are used for a minority of irrigable area (530ha).

From a discharge perspective, it is also important to understand the quantity of chemicals used to treat the land (Table 24). Approximately 47,200 tonnes of lime were applied to farms and 32,770 tonnes of superphosphate were applied. Smaller quantities of urea (8,070 tonnes) and other fertiliser were applied in that particular season.[59]

Table 24: Chemicals used and areas of effluent sprayed by district, 2012

Grain and Seed Crops		Masterton District	Carterton District	South Wairarapa District	Total
Tonnes	Lime	23,480	9,540	14,180	47,200
	Superphosphate	18,090	5,870	8,820	32,770
	Urea	2,430	1,900	3,740	8,070
	All other nitrogen containing fertilisers	1,740	650	1,630	4,010
	Diammonium phosphate (DAP)	960	820	1,460	3,230
	Potassic Superphosphate	800	840	1,550	3,190
	Ammonium sulphate	210	150	310	670
	Dolomite	C	C	C	-
	Total	**47,710**	**19,770**	**31,690**	**99,140**
Hectares (Ha)	Effluent – area sprayed over	880	2,110	2,590	5,580
	Nitrification inhibitor applied to the farm	C	C	1,050	1,050
	Urease inhibitor applied to the farm	C	C	1,020	1,020
	Total	**880**	**2,110**	**4,660**	**7,650**

Source: Statistics NZ Agricultural Production Census, 2012

[58] Data from Dairy NZ supplied by Wairarapa Water.
[59] Up to June 2012.

Annex 5 Outdoor recreation

This Annex contains additional baseline information about outdoor recreation uses of the catchment's water bodies.

Outdoor recreation in the Wairarapa

The Wairarapa region is the setting for a wide variety of outdoor recreation activities. Participants in a recent social mapping study viewed rivers and lakes in the Wairarapa region as "extremely important for recreation" for both locals and tourists. Two key settings for water based recreation in the Wairarapa region are: (1) the Ruamāhanga River, and (2) Lake Wairarapa and its wetland area: Wairarapa Moana. Other sites of significance for water-based recreation are the Waiohine Gorge (swimming, tubing, rafting, kayaking, trout fishing, camping, picnicking and tramping, caving and hunting (red deer)), and the Waingawa and Waipoua Rivers. Data pertaining to the recreational use of five further sites (Te Mara, Black Creek; Tividale, Mangaterere and White Rock Road) have been presented as part of the Wairarapa Water Use Project.

A recent survey for river and coastal recreation use in the Wellington Region indicates that the Ruamāhanga River is the most popular site in the Wairarapa for river recreation, with fishing and swimming among the most predominant uses. It is the Wairarapa area's principal trout fishery (brown and rainbow) offering a variety of fishing experiences from classic backcountry fishing in its upper reaches in the Tararua Conservation Park, to trolling for sea run browns in the tidal zone near its outlet to Lake Onoke. The river's close proximity to roads provides relatively 'easy access' (although anglers are reminded that sections of the riverbed are in private ownership which restricts access). Fishing maps for the area provide directions to and descriptions of key access points. The level of use of the river for angling can be estimated by comparing results from the National Angling Survey (produced by NIWA for Fish and Game New Zealand) as discussed below.

Lake Wairarapa – the third largest lake in the North Island – is a key recreational site. It is the only waterbody in the catchment listed in the Ministry for the Environment's 2004 inventory of Potential Water bodies of National Importance for Recreation. The lake is surrounded by wetlands which drain into Lake Onoke and makes up a large part of Wairarapa Moana – the largest wetland in southern North Island (9000 hectares). Wairarapa Moana provides opportunities for walking and wildlife viewing (including spotting rare species of plants and birds, such as the Caspian Tern). Recreational fishing is also popular here (brown trout, kahawai, perch, flounder, eels and inanga – whitebait. Duckshooters are reported as visiting the Lake Wairarapa wetlands in large numbers in season, with several hundred reported on opening day, and bags including ducks, geese, black swan, and shelducks. Interviews confirm this area is still popular with hunters. Matthews and Boggy Pond Wildlife Reserves provide wetland bird-watching opportunities (ducks, swans, white herons, stilts, bitterns, royal spoonbills and many other species). These wetland areas are popular with ornithologists for the availability of wading and other bird life. The Wairarapa Lake Shore Scenic Reserve, at the north end, provides opportunities for picnicking and nature viewing, and is popular with walkers, mountain bikers, picnickers, campers and duck-hunters. The Wairarapa Yacht Club operated out of a building on the domain for over 75 years, and the Ruamāhanga Powerboat Club shared these rooms before shifting to the diversion in recent years. The Lake is important as a site for windsurfing. Also, various nature conservation activities on and around the Lake (and in other

waterways and their riparian areas) have a recreational and social development component, for which the importance to participants should not be under-estimated.

The websites of Destination Wairarapa and Department of Conservation provide resources from which the following recreation inventory has been derived for the catchment, with added information from interviews and RWC meetings and workshops. Further discussion of fishing, swimming and boating is provided below.

- Tramping, and walking[60]
  - There are tramps and walks into the Tararua Ranges at various points including Waiohine Gorge, the Tauherenikau and Waingawa rivers
  - Kahikatea Walk, Carter Reserve, Gladstone – on the Ruamāhanga
  - Rimutaka Forest park – includes the Rimutaka Rail Trail
  - Aorangi Forest Park
  - Wairarapa Moana – includes Boggy Creek wetland walk

- Boating, canoeing, rafting, tubing, kayaking
  - on rivers flowing out of the Tararuas including the Waingawa and Tauherenikau
  - on the Ruamāhanga River, various spots
  - at the Waiohine Gorge
  - waka ama and kayaks on Lake Henley in Masterton

- Horse Trekking – includes trails along rivers and river beds

- Picnicking on the banks of the Ruamāhanga River, at rivers spots, Henley Lake and Lake Wairarapa

- Quad-biking, including in river beds

- Cycling
  - vineyard cycle tours
  - the Greytown Trail – a 5km route used as a walking track and cycle trail connecting South Greytown to Woodside Station
  - Tora Mountain Bike Park
  - Riven Rock Mountain Bike park
  - Route 52 – a gently rolling road that connects Hawkes Bay and Wairarapa and takes 2–3 days one way
  - the Rimutaka Rail Trail – a gently graded 18 km walk or mountain bike ride over the Rimutaka Ranges and part of the longer Rimutaka Cycle Trail through to Featherston.

- Camping, including sites in the towns, in the forest parks and in coastal areas
  - Kiriwhakapapa in the northern catchment
  - Mount Holdsworth in the Tararua Ranges
  - Waiohine Gorge
  - Morrisons Bush, Ruamāhanga River north of Martinborough

[60] www.wairarapanz.com/see-and-do/walks

- Fishing
  - Brown trout fishing in the streams and main stem of the Ruamāhanga River
  - Rainbow trout fishing – Ruamāhanga River below Masterton
  - Rainbow trout in Henley Lake
  - Rudd, Perch, brown and sea-run trout in Lake Wairarapa
  - Flounder in Lakes Wairarapa and Onoke
  - Mullet in Lake Onoke
  - Whitebait in Lake Onoke and lower Ruamāhanga River
  - See also the list in Table 25 reporting angler days, below

- Hunting
  - In the Tararua ranges – pigs and deer
  - In the Eastern hills – pigs and deer
  - Around Lake Wairarapa – game birds
  - In farm ponds and dams – game birds
  - Along the rivers and streams – game birds

- Swimming at key spots including:
  - Double Bridges (Ruamāhanga River, north of Masterton, on SH2 towards Opaki)
  - Black Rock Road swimming hole (Ruamāhanga River, near Masterton)
  - Waipoua River (in Masterton close to Mawley Motor Camp – less used today)
  - Te Or Ore Bridge (Ruamāhanga River, near Masterton)
  - Wardels Bridge (Ruamāhanga River, below Masterton)
  - Waingawa River – at Kaituna (at the end of Upper Plain Road)
  - Waingawa (at the Pines, near Masterton)
  - Waiohine River (Gorge, approx. 15km from SH2)
  - Waiohine River (SH2 Bridge)
  - Carters Reserve and the Cliffs (Ruamāhanga River, below Masterton)
  - Tauherenikau River (swimming hole at the end of the Tauherenikau Gorge, 15 mins from Featherston)
  - Turanganui (South of Martinborough)

Destination Wairarapa promotes swimming in the region: “When it’s hot in Wairarapa you just have to take the plunge! These are some top Wairarapa swimming spots – including a few hidden gems...”[61] Young people in particular are reported to use the swimming holes in streams rising from the Tararuas, for example, “…by 2pm there was a crowd of around 30 teens, kids and adults sunbathing, reading, lazing in the shallows or jumping off rocks.” [62] In this article about the Kaituna swimming spot on the Waingawa, one teen is quoted as saying: "The water's beautiful, so clear... just refreshing," reinforcing a point made during interviews for this study that the rivers are still high quality where they leave the forested valleys. There are important indications, however, that water quality lower down is declining, pushing swimming activity up the smaller steams, making it less

[61] www.wairarapanz.com/see-and-do/swimming
[62] www.stuff.co.nz/dominion-post/news/75337077/Swimming-holes-busy-as-scorching-summer-day-hits-Wairarapa

accessible for those without easy access to a motor vehicle. During key-informant interviews, people commented that spots close to town waste-water outfalls and the lower river in general with agricultural intensification on the flood plains, are less popular today. These include spots such as Black Rock, Te Ore Ore, Wardell's Bridge and the Cliffs. Furthermore, media coverage points to rising public concern about suitability of the rivers for swimming, as well as Henley Lake, which is regularly closed for contact recreation.[63] There are a number of factors in the perception of declining swimability in the catchment, which include presence of pathogens (bugs) as identified by available data and warning signs, the presence of periphyton (slime and also cyanobacteria), clarity (including sediment), and insufficient flow or depth (holes).[64]

Information about trout fishing is available on a number of websites and pamphlets produced by Fish and Game and NZFishing.com. These sites have interactive maps where it is possible to track the main access points and fishing areas. Fishing for brown trout in the catchment has been popular for many years and this includes the main stem of the river and its many tributaries. There is also fishing for trout in Lake Wairarapa as well as a number of other fish, including perch that have been introduced over time. However, there are indications that, like swimming, the river fishery may be under threat from declining water quantity and quality, and changes to the form of the river through gravel extraction and flood control works, with reduced areas of backwaters and decline in the natural patter of riffles and pools.

The Wairarapa Fish and Game Club members point to declining numbers of fishing days in Wairarapa waters as identified by the National Angling Survey (Table 25) and the numbers of fishing licence sales for the Wairarapa. Figures for the total catchment indicate a significant, consistent decline in angler days as surveyed over a period of twenty years.

Table 25: Ruamāhanga angler days by water body, 1994/5 to 2014/15

Water body	1994/95	2001/02	2007/08	2014/15
Kourarau Dam	850	610	90	5
Lake Henley	2250	280	270	500
Lake Onoke	0	30	10	10
Oporua Spillway	80	0	160	0
above Mt Bruce	0	150	30	60
Mt Bruce – Masterton	0	360	610	630
Masterton – Martinborough	0	4970	3140	2310
below Martinborough	0	1090	1300	460
Lake Wairarapa	200	150	110	280
Tauherenikau River	360	220	160	150
Huangarua River	0	60	60	50
Waiohine River	1320	960	780	310
Mangaterere Stream	260	160	0	0

[63] www.stuff.co.nz/dominion-post/news/local-papers/wairarapa-news/77653347/Masterton-District-Council-says-Henley-Lake-toxic-algae-problem-unsolvable; www.stuff.co.nz/dominion-post/news/75557691/some-of-wairarapas-best-swimming-holes-are-now-too-dried-up-or-polluted-to-swim-in

[64] Factors identified during interviews and a community workshop in Masterton.

Tauweru River	50	140	300	10
Waingawa River	430	140	140	60
Atiwhakatu Stream	0	30	0	20
Waipoua River	140	260	80	20
Kopuaranga River	520	520	310	80
undefined	7390	330	1330	0
Total catchment	13860	10470	8880	4980

Note: Data from Fish and Game supplied by the Wairarapa Fish and Game Club.

In comparison, data for licence sales (Table 26) suggest that, while there are fluctuations over time, there is no indication of a long-term decline in the number of anglers given the outlay they make for a licence, although anglers point to the sharp decline since the 2014–15 season with concern. It is probable that a decline in angler days would eventually be reflected in a decline in licence sales.

Table 26: Fish licence sales (full licence equivalents), Wairarapa, 2006/7–15/16

Area	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Northern Wairarapa	46.2	39.4	22.6	22	33.5	67.9	133	124	136	98
Masterton	341.7	384.3	283.3	309.1	297.6	260.1	277	288	311	246
Southern Wairarapa	29.1	35.7	29.3	21.2	21.3	15.1	26	26	25	11
Total LEQ	417	459.4	335.2	352.3	352.4	343.1	436	438	472	355

Notes: License equivalents (LEQs) are a way of equating day and week licenses to full season licenses, hence LEQ sales are less than the total number of anglers. Data from Fish and Game supplied by the Wairarapa Fish and Game Club.

Annex 6 The visitor sector

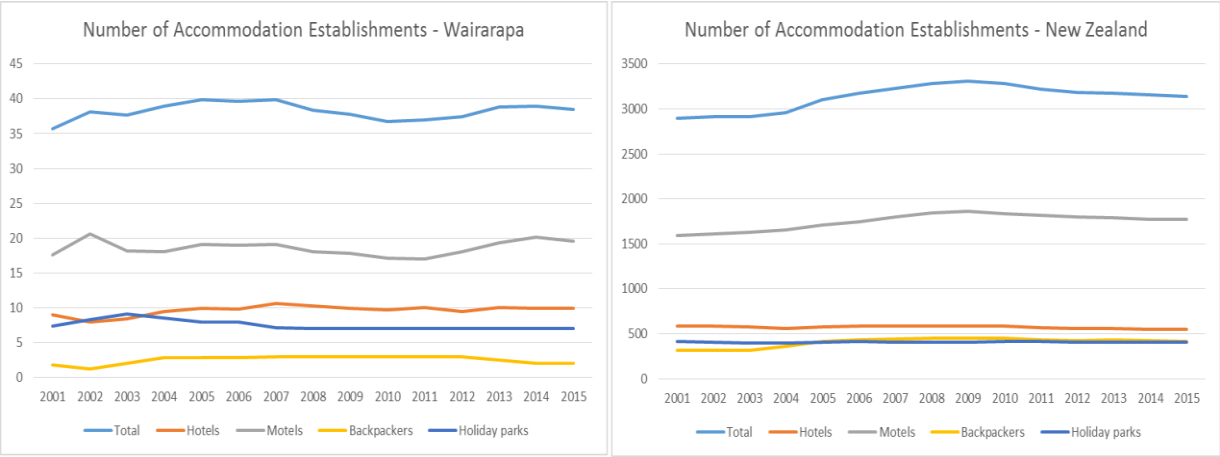
This annex includes further information about the numbers of people who visit the Wairarapa, accommodation outlets, employment in hospitality and expenditure of visitors.

Visitors and accommodation

There is a total of 38 accommodation establishments[65] in Wairarapa. Over recent years, the regional tourism organisation (RTO – Destination Wairarapa) area has experienced very similar growth patterns as for the rest of New Zealand, i.e. little growth overall in the number of accommodation establishments. Growth in the number of hotels has been higher in the Wairarapa than for the rest of NZ (where negative growth has been reported), but growth happening in backpacking lodges has been slower in Wairarapa than in NZ overall. Despite the relatively slow growth in the number of establishments, both capacity and total guest nights have grown, and once again very similar patterns of growth for the sector as a whole can be seen in Wairarapa as in the rest of NZ.

Overall, the average total capacity[66] as measured in stay-unit-nights available, has increased slightly both in Wairarapa and for the whole of NZ. The growth over time is quite stable for all of the providers with the most significant growth in capacity in backpackers accommodation (Figure 12).

Figure 12: Number of Wairarapa accommodation establishments, 2001–2015



NZ is currently experiencing a tourism boom, with total guest nights[67] having grown by some 4 million over the past five years (2011–2015[68]), or 13% growth. By comparison, the total guest nights in Wairarapa has only grown a total of 4.6% over the same period. The five-year period before that (2006–2010) saw only a 3% growth in total visitor nights for NZ as a whole, and 1.5% for Wairarapa.

[65] An "establishment" is the smallest statistical unit operating within a single physical location and owned by a single enterprise. The term is used to represent what is usually called the 'geographic unit' in other Statistics NZ publications. The data relies on business units included in the NZ business frame and may not include some types of accommodation that do not operate as a distinct business unit, including some smaller B&Bs, farm/home stays, holiday homes, camps, huts, marae or schools.

[66] The basic measure of an establishment's capacity is described as stay-unit nights available. It is defined as one stay unit multiplied by one night. For example, 10 units in a motel available for guest use (whether occupied or not) for the full 31 days in July would have a capacity of 310 stay-unit nights.

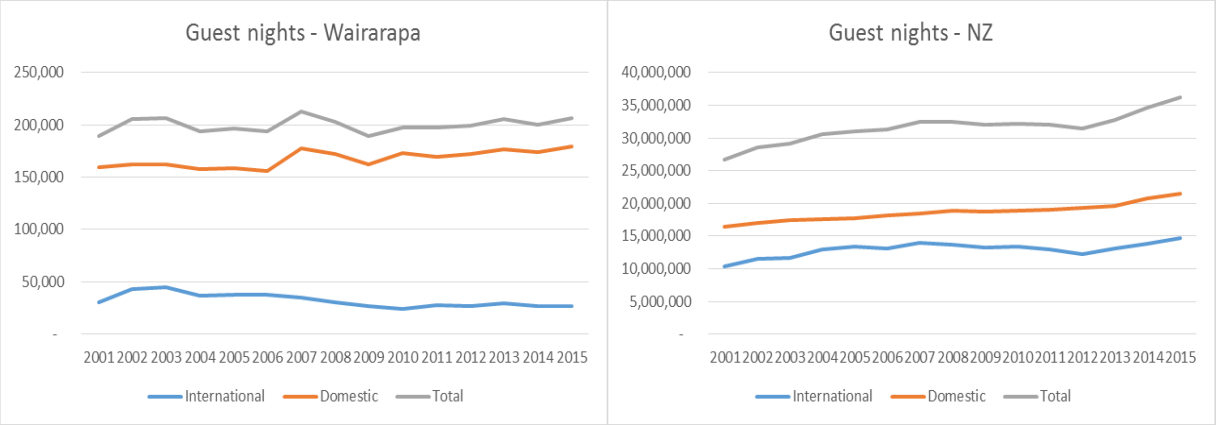
[67] The guest night measure is equivalent to one guest spending one night at an establishment. For example, a motel with 15 guests spending two nights would report that they had provided 30 guest nights.

[68] Figures are reported as at the end of each year, therefore the period 2011–2015 includes 2011, making it a 5-year period.

Growth in Wairarapa has not kept pace with the tourism boom in the rest of the country. In the longer term, it is expected that there will be a general upward trend in total guest nights for NZ as a whole, with the growth set to continue over the next five years.[69]

When examining the guest night split between international[70] and domestic[71] nights (Figure 13), Wairarapa has seen a 3% decline in international visitors over the last five years, and a 12.7% total decline from 2001 to 2015. This pattern is contrary to the NZ trend overall which has seen a 13% increase in international visitor nights over the period between 2011 and 2015, and a total increase of around 42% (2001–2015). The data show that with a strong domestic base the Wairarapa is well placed to expand its international visitor sector.

Figure 13: Wairarapa international and domestic guest nights, 2001–2015



Visitor statistics for the Wairarapa Region are regularly reported in media releases posted and archived on the website Destination Wairarapa.[72] For the recent summer of 2015–16, the organisation points to a marked increase in domestic and international travellers and, in that same commentary, makes note of growing visitor demand for information about local wine, outdoor activities, beaches and walks – the pillars of the area's tourism mix.[73] Strong growth in the local tourism sector was also reported in 2015.[74] Current commentary[75] suggests that the tourism sector is continuing to perform well.

The Martinborough Top 10 Holiday Park, for instance, reports strong growth in the months of January and February 2016, with domestic guest numbers up 40% and international guests up by 12% on the previous year.[76] Strong growth in the local tourism sector was also reported in 2015.[77] Further current commentary[78] also suggests that the tourism sector is continuing to perform well:

[69] *New Zealand Tourism Forecasts 2016–2022.* Ministry of Business, Innovation & Employment. (May 2016).
[70] International guest night: equivalent to one foreign guest spending one night at an establishment.
[71] Domestic guest night: equivalent to one New Zealand resident spending one night at an establishment.
[72] www.wairarapanz.com
[73] Destination Wairarapa (2016)
[74] Fulton (2015)
[75] www.wairarapanz.com/media-releases/international-visitors-attracted-wairarapa
[76] Destination Wairarapa (2016)
[77] Fulton (2015)
[78] www.wairarapanz.com/media-releases/international-visitors-attracted-wairarapa

> International visitor guest nights in the Wairarapa for the year ending March 2016 were the highest in nine years. Commercial Accommodation Monitor statistics released this week showed international guest nights grew 22.4% while domestic guest nights grew 5.8%. Combined, they make for the second highest volume of guest nights on record and follow on from what has been described by Destination Wairarapa, the regional tourism organisation, as the busiest summer on record. Interestingly, Wairarapa recorded the second highest percentage growth nationally in international guest nights behind Whakatane … While Destination Wairarapa works hard to grow the international visitor market, Mr Hancock [Destination Wairarapa General Manager] says it will not be at the expense of the domestic market. He is cognisant of the fact that international visitors make up 15% of the region's total visitor market, with remaining visitors coming from Wellington, Manawatu, Auckland, Hawke's Bay, Canterbury and Waikato.

While domestic tourism is critically important, stakeholders have also noted strong growth in the Chinese visitor market and spend (the latter up 150% on 2013) and, in response, the RTO is now working closely with local operators to ensure they are "China Ready".[79] This includes holding a series of 'China Visitor Insights Workshops'. Masterton District Council are supporting a proposed extension to the Wellington Airport runway, anticipating that it will provide a significant boost to Wairarapa's GDP, in part via a marked increase in the Asian tourism market.[80].

Destination Wairarapa's Strategic Plan 2014–2025[81] characterises the region's destination mix (its composite of key attractions and amenities) and spells out the organisation's vision, growth targets and priority investment areas (i.e., key projects). The document emphasises a desire to: (1) increase the size of the winter tourism market, and (2) raise the profile of the region as a destination for free independent travellers (those who travel by campervans and rental vehicles). The 'Have a Great Wairarapa Winter Unwind' is an example of a new initiative designed to increase winter visitation.[82] Another initiative is the formation of a partnership with Tourism Radio to encourage free independent travellers to drive along SH2. To the same end, Destination Wairarapa is also working closely with the Motor Caravan Association to promote the Wairarapa to its members.[83] The RTO is also seeking to derive maximum benefit from the promotion and hosting of conferences, supporting niche product development, enhancing public-private partnerships (including with the Department of Conservation) and promoting the Rimutaka Cycle Trail – part of the Nga Haerenga New Zealand Cycle Trail network.

Over the last 10 years, events have become a key component of the Wairarapa region's economic and tourism development strategy and economy.[84] Destination Wairarapa promotes a 'portfolio' of events for the region, which includes:[85]

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[79] www.wairarapanz.com/media-releases/destination-wairarapa-work-local-business-ensure-they-are-china-ready

[80] www.wairarapanz.com/media-releases/destination-wairarapa-work-local-business-ensure-they-are-china-ready

[81] Destination Wairarapa (n.d.)

[82] www.wairarapanz.com/Wairarapa-Winter-Unwind

[83] Destination Wairarapa (2016)

[84] Destination Wairarapa (n.d.); Go Wairarapa (2005); Smith (2008)

[85] For a full list see http://www.wairarapanz.com/about-wairarapa/wairarapa-events

- Carterton Daffodil Festival
- Jazz in Martinborough
- Huri – Wairarapa's Bike Festival
- KOKOMAI Creative Festival
- Masterton A&P Show
- Martinborough Fair
- Martinborough Skyline Mountain Bike Challenge
- Toast Martinborough
- Wairarapa Balloon Festival
- Wairarapa Country Music Festival
- Wairarapa Wines Harvest Festival
- Wings over Wairarapa Air Festival

Some of these events are long established and others of more recent provenance. They appeal to a range of tastes and are important for local residents and visitors alike.

Most of these festivals have professional webpages containing information about the event, including the businesses involved and estimates for the number of people who attended. Wairarapa also benefits from events held in neighbouring jurisdictions. For example, in 2016, the Masterton and Martinborough i-SITE Visitor Information Centre reported 6 extra coachloads of visitors to the area during the Edenborough Military Tattoo which was held in neighbouring Wellington City.[86] The owners of the Martinborough Top 10 Holiday Park have also reported very significant revenue increases (76%) during the weekend of the Edenborough Military Tattoo.[87]

Rural retreats (farm-stays and bed and breakfast accommodation) are a key feature the Wairarapa tourism mix, particularly in Martinborough which is an anchor destination for visitors.[88] Small, home-based accommodation providers (i.e. those with a turnover of under $30,000) account for about 60% of the region's tourism businesses. Sixteen percent of all tourism businesses were combined with farming or other activities[89] pointing to a strong agri- and rural-tourism sub-sector.

Since the 1990s, a strong connection has developed between the local tourism industry, and the Wairarapa's niche food and boutique wine producers.[90] This link is expressed very strongly in place promotion material, visitor guide books and in the region's flagship events, particularly Toast Martinborough. Wine trails and a vineyard tour industry have also developed off the back of the success of the local wine industry.[91] An additional effect has been the growth in the number of cafes and restaurants selling local food and wine.[92] This trend combined with the region's close proximity to Wellington, has meant Wairarapa has become an attractive place in which to buy (rural) property

[86] Destination Wairarapa (2016)
[87] Destination Wairarapa (2016)
[88] Alteljevic (2009); Howland (2014)
[89] Ateljevic (2009)
[90] Huang (2014)
[91] E.g. www.martinboroughwinetours.co.nz; www.winesfrommartinborough.com/visitor_information
[92] Taylor et al. (2015)

and live.[93] The influx of people to reside on lifestyle blocks has increased the diversity of the population, provided more employment opportunities, and expanded the range of restaurants and cafes in Wairarapa.

An additional effect has been the growth in the number of cafes and restaurants selling local food and wine.[94] This trend combined with the region's close proximity to Wellington, has meant Wairarapa has become an attractive place in which to buy (rural) property and live. Wellington residents are particularly active in the region's property market. Moreover, professional couples from other parts of New Zealand have purchased several hectares of farmland and built houses. On these lifestyle blocks these couples keep a few sheep or goats, plant vineyards or olive groves, establish a cottage industry, as well as continuing to work part-time in their professional occupations.[95] The influx of people from Wellington to reside on lifestyle blocks has increased the diversity of the population, provided more employment opportunities, and expanded the range of restaurants and cafes in Wairarapa.

Wairarapa also has an abundance of heritage resources including Māori archaeological sites, waahi tapu, early European buildings and sites of historical significance, and museums. The findings of the 2014 TOI Wairarapa Survey of Arts, Culture and Heritage indicates that Māori heritage is particularly important to the Wairarapa.[96] The vast majority of respondents to the survey agreed that raising the visibility of a Māori perspective of Wairarapa history (heritage and arts) would enrich the visitor and community experience (87%). Most also felt that bi-lingual signage should be visible throughout the region (67%).

Another element of Wairarapa's destination mix is the area's natural resource base which provides the setting for a variety of outdoor recreation opportunities. These are discussed in the next section

Visitor expenditure

A primary effect of visitors to the Wairarapa is the money they spend on goods and services, expenditure that flows into the rest of the economy. Tourist spending has increased across all categories in Wairarapa since 2009, with the exception of 'other tourism products, which has decreased by $1.7m. Growth has been driven mostly by growth in domestic tourism spending, since there has been very little growth in international spending in the RTO, and in some cases, for example accommodation services, there has been a decline in international tourist spending. There has been a noticeable increase in domestic tourist spending in Wairarapa between 2013 and 2015 in most categories, with the exception of 'other tourism products'. As a portion of total tourist spending, retail sales in Wairarapa account for nearly 60%, while that is only around 44% for NZ as a whole. The ratio of product spend to total spend has stayed very stable over the past seven years. For NZ as a whole, total tourism spending has increased over the period between 2009 and 2015 with a sharp increase in 2015 (Annex 4). In contrast to the Wairarapa, where there has been a decline in domestic (and overall) tourist spending on 'other tourism products', NZ as a whole has

[93] A series of cadastral maps was studied and revealed these lifestyle blocks are concentrated around the edges and roads in and out of the main towns, especially Martinborough, Greytown and Carterton.
[94] Taylor et al. (2015)
[95] Schrader (n.d.)
[96] TOI (2014)

seen a large increase in this area (54% for 2009–2015). International tourist spending has either declined or remained stable in most categories across NZ as a whole between 2009 and 2013, with the exception of spending on 'accommodation services' which has grown slightly. However, during the past two years international tourist spending has grown across NZ, with high growth reported in 2015. Growth in both international and domestic tourist spending is expected to continue.[97]

In market share terms[98] very little has changed over the same period. Wairarapa accounts for less than one percent of total tourist spend in NZ. The Wairarapa Food and Beverage serving services have experienced the largest increase in market share (+0.1%), while Accommodation services, Cultural, recreation and gambling services and Other tourism products, have seen a decrease in market share.

Employment in hospitality and tourism

The effect of a strong local tourism economy spreads into related sectors.[99] Employment in the retail trade and services sector of South Wairarapa District grew by 13% (80 FTEs) between 2012 and 2013, and by 4.2% per annum (240 FTEs) between 2003 and 2013. Most of the increase over the latter period occurred in food and beverage services and food retailing industries.[100] The retail trade and services sector is the second highest source of employment in South Wairarapa with 22% of all FTEs in 2013.[101] In 2010, the Tourism Industry Association of New Zealand (TIA) reported tourism FTEs as a percentage share of employment by Territorial Local Authority.[102] Figures relevant to the current assessment are: (1) South Wairarapa: 13.6% share of employment, (2) Carterton: a 13% share, and (3) Masterton District: a 9.3% share.

Table 27: Tourism sector employment by selected industry sectors, 2004–14

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Change 2004-2014 (n)	Change 2004-2014 (%)
Accommodation	367	382	340	396	402	397	387	361	349	365	378	11	3%
Cafes and Restaurants	253	314	429	466	464	520	512	468	483	516	537	284	112%
Takeaway Food Services	195	172	129	118	119	109	133	139	131	131	117	- 78	-40%
Catering Services	153	125	115	117	120	105	106	106	122	107	135	- 18	-12%
Pubs, Taverns and Bars	199	199	207	244	240	203	182	194	195	181	166	- 33	-17%
Clubs (Hospitality)	83	80	91	83	88	66	65	72	65	61	53	- 30	-36%
Scenic and Sightseeing Transport	-	3	4	7	7	6	3	6	-	-	-	-	n/a
Amusement and Other Recreation Activities n.e.c.	13	10	10	14	12	9	15	14	9	9	3	- 10	-77%

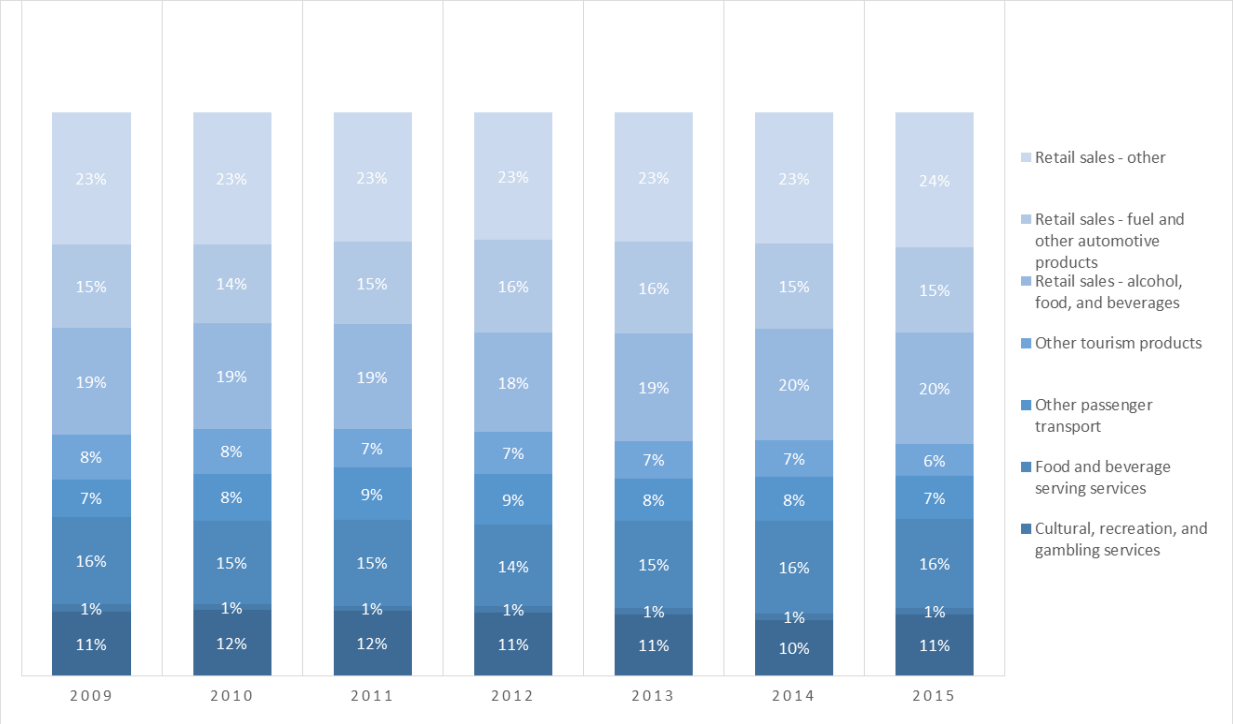
Employment in the tourism industry is difficult to interpret, since tourism is not a sector by itself, but rather captured in the economic activities of other sectors, e.g. Cafes and Restaurants not only serve tourists but also residents. However, if tourism increases, the Café and Restaurant sector is likely to grow, similarly for other sectors shown. Also, because other social changes are present, changes in

[97] New Zealand Tourism Forecasts 2016-2022 (May 2016). Ministry of Business, Innovation & Employment.
[98] Wairarapa tourist spending as a percentage of NZ tourist spend by product
[99] Taylor et al. (2015)
[100] Stokes et al. (2014): 106-107
[101] Stokes et al. (2014): 108
[102] Ministry of Economic Development (2010).

some sectors, such as Pubs, Taverns and Bars is affected by changes such as licencing, road policing rules and sports on TV. Table 27 provides data on employment for a number of sectors at the most detailed level available, to trace changes over recent years. Observations about these trends are:

- Employment by Cafes and Restaurants has shown the greatest growth, increasing from 253 MECs[103] in 2004, to 537 MECs in 2014 (112% increase).
- Employment in the Scenic and Sightseeing Transport sector grew strongly between 2005 and 2009, but has since fallen to zero.
- Amusement and Other Recreation Activities have displayed the greatest percentage decline in employment since 2010, declining from 15 MECs (2010) to 3 MECs (2014), noting small numbers involved.
- Takeaway and food services have shown the greatest decline in overall number of employees, falling from 195 MECs (2004) to 117 MECs (2014).
- The number of employees in the Accommodation sector grew strongly between 2004 and 2008, from 367 to 402 MECs, then decreased slightly to 349 MECs in 2012. However, between 2012 and 2014 the employment in this sector has been growing, seemingly reflecting the growth in tourist numbers reported.

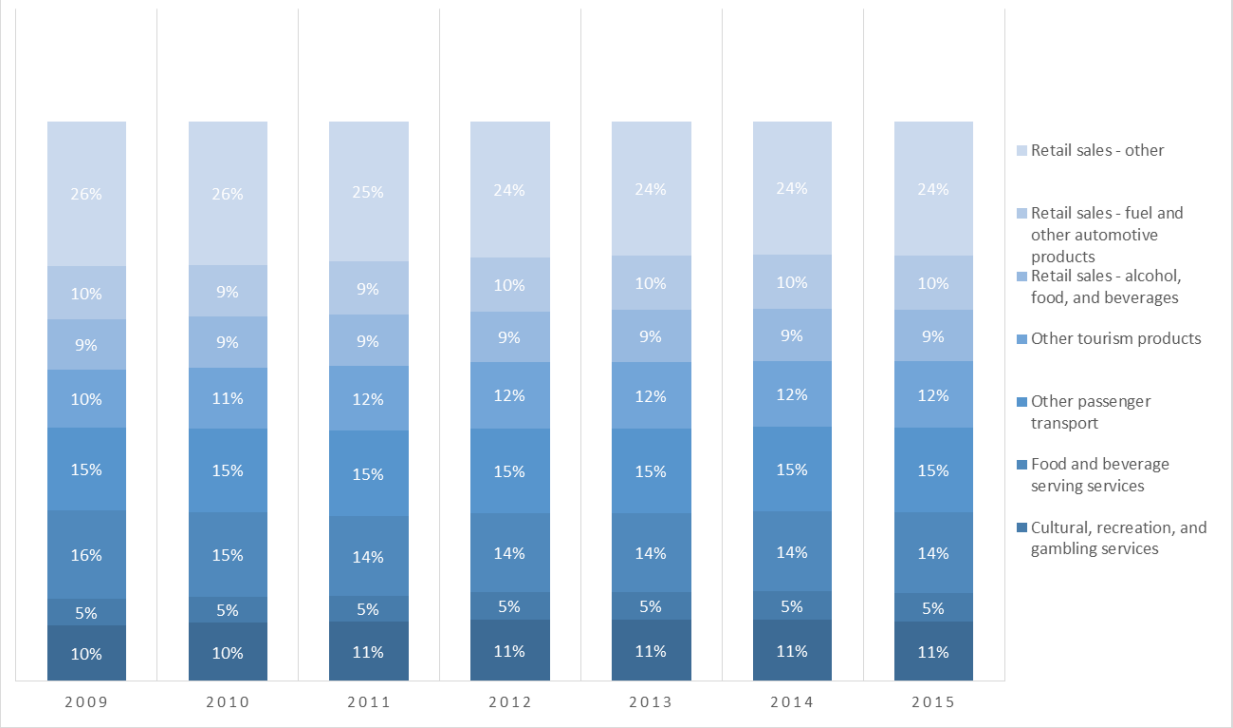
Figure 14: Wairarapa tourism spending by product, 2009–2015



Source: Ministry of Business, Innovation and Employment – Regional Tourist Estimates

[103] Modified Employment Count – includes both employees and working proprietors.

Figure 15: New Zealand tourism spending by product, 2009–2015



Source: Ministry of Business, Innovation and Employment – Regional Tourist Estimates

Table 28: Wairarapa tourist spending market share

	2009	2010	2011	2012	2013	2014	2015	Change (2009-2015)
Accommodation services	0.85%	0.88%	0.84%	0.77%	0.70%	0.69%	0.77%	-0.08%
Cultural, recreation, and gambling services	0.19%	0.15%	0.15%	0.16%	0.18%	0.18%	0.17%	-0.02%
Food and beverage serving services	0.73%	0.77%	0.82%	0.76%	0.78%	0.89%	0.83%	0.10%
Other passenger transport	0.34%	0.44%	0.47%	0.45%	0.36%	0.40%	0.37%	0.04%
Other tourism products	0.57%	0.57%	0.45%	0.47%	0.40%	0.43%	0.37%	-0.20%
Retail sales - alcohol, food, and beverages	1.56%	1.61%	1.56%	1.46%	1.45%	1.65%	1.62%	0.06%
Retail sales - fuel and other automotive products	1.14%	1.19%	1.19%	1.28%	1.20%	1.19%	1.18%	0.04%
Retail sales - other	0.67%	0.71%	0.71%	0.70%	0.68%	0.76%	0.75%	0.08%
Total	**0.74%**	**0.78%**	**0.77%**	**0.75%**	**0.71%**	**0.77%**	**0.75%**	**0.01%**

Source: Ministry of Business, Innovation and Employment - Regional Tourist Estimates

Considering international tourist expenditure in the Wairarapa by source market, it is evident that the Wairarapa has very similar patterns to the rest of NZ:

- Australia is the main source market (on average 40% of total spend by international tourists). Spend by Australian tourists grew over the period between 2009 and 2013, but has shown a slight decline since then.
- Spending by UK tourists had declined over the same period, and has only slightly recovered over the past two years. The proportion of tourist spend by UK tourists is higher in Wairarapa than the NZ average.
- Although Chinese tourist spend has grown strongly (10% increase 2009–2015) in NZ as a whole, it has remained very low in the Wairarapa (<1%), but has grown nonetheless.

- Another significant source market of tourist spending is from Europe, but tourist spending in both Wairarapa (8%–9%) and NZ as a whole (95–11%) has remained stable, with very little growth.
- Spending patterns by American tourists are very similar in Wairarapa as for NZ – around 10% of the total spend by all tourists
- The growth of tourist spending by tourists from the 'rest of Asia' has grown somewhat in both Wairarapa (+2.38% 2009–2015) and New Zealand (+3.59% 2009–2015).
- The Wairarapa RTO saw a 2.43% increase in tourist spending by German tourists, while NZ as a whole experienced only a 1.25% growth from the same source market.

Table 29: Wairarapa tourist spending by source of visitor

Wairarapa RTO								
	2009	2010	2011	2012	2013	2014	2015	Change (2009-2015)
Africa and Middle East	3.3%	2.4%	3.4%	4.0%	4.1%	1.4%	1.4%	-1.98%
Australia	34.2%	41.2%	42.9%	43.3%	44.1%	42.8%	36.2%	1.99%
Canada	3.8%	3.5%	2.7%	3.5%	2.6%	3.7%	3.5%	-0.29%
China	0.1%	0.2%	0.3%	0.4%	0.5%	0.8%	1.0%	0.89%
Germany	3.2%	3.3%	3.5%	3.2%	3.1%	5.0%	5.6%	2.43%
Japan	2.5%	2.6%	3.0%	2.1%	2.9%	2.3%	1.1%	-1.39%
Korea, Republic of	0.2%	0.2%	0.1%	0.1%	0.2%	0.3%	0.1%	-0.06%
Rest of Americas	0.8%	0.4%	0.5%	0.6%	0.8%	0.3%	0.7%	-0.06%
Rest of Asia	3.1%	4.0%	2.6%	5.1%	5.7%	3.9%	5.5%	2.38%
Rest of Europe	8.0%	9.0%	7.6%	8.0%	8.2%	8.4%	9.3%	1.34%
Rest of Oceania	1.3%	0.7%	1.1%	1.4%	2.7%	1.7%	2.4%	1.12%
UK	26.5%	22.3%	20.8%	19.0%	15.6%	17.3%	20.7%	-5.86%
USA	13.0%	10.3%	11.4%	9.1%	9.7%	12.0%	12.5%	-0.51%

New Zealand								
	2009	2010	2011	2012	2013	2014	2015	Change (2009-2015)
Africa and Middle East	3.8%	3.5%	3.7%	4.8%	3.2%	1.7%	1.5%	-2.33%
Australia	28.5%	33.4%	33.7%	33.1%	34.1%	32.1%	26.9%	-1.58%
Canada	2.7%	2.4%	2.2%	2.5%	2.1%	2.4%	2.5%	-0.21%
China	4.7%	5.3%	6.2%	7.8%	11.4%	11.5%	15.2%	10.59%
Germany	4.3%	4.0%	4.0%	3.4%	3.1%	5.0%	5.6%	1.25%
Japan	6.0%	4.0%	4.3%	3.1%	3.7%	2.8%	2.3%	-3.69%
Korea, Republic of	2.4%	2.0%	2.5%	1.8%	2.1%	2.1%	1.7%	-0.69%
Rest of Americas	1.2%	1.3%	1.2%	1.2%	1.3%	0.9%	1.4%	0.19%
Rest of Asia	5.6%	6.5%	7.2%	7.4%	9.5%	8.3%	9.2%	3.59%
Rest of Europe	9.9%	9.4%	9.7%	10.8%	8.6%	10.0%	9.9%	-0.06%
Rest of Oceania	3.7%	5.2%	4.3%	4.9%	4.0%	3.1%	2.7%	-0.98%
UK	17.5%	14.8%	13.0%	11.8%	9.6%	9.8%	11.3%	-6.19%
USA	9.7%	8.2%	8.0%	7.3%	7.3%	10.2%	9.8%	0.12%

Source: Ministry of Business, Innovation and Employment - Regional Tourist Estimates

Annex 7 Social services and social capital

Social services and social needs

There is a wide range of social support services located in Masterton and the surrounding region. The majority of the services based in Masterton serve the Wairarapa region as a whole. Some regional social service providers are located outside Masterton, either in Wellington, Palmerston North or nationally. Population and incomes are key factors in the provision and use of social services, in terms of their scope and capacity. Access to social services, and to social support and connection, are key aspects of social wellbeing. Water is important for its economic purpose contributing economic activity and employment that drives population and incomes. A sector representative commented to us that water is central to health, "*Our social wellbeing is driven by water: drinking, waste and recreational activity"*.

Primary health care is located throughout the three districts and hospital services are available in Masterton.[104] An identified gap is access to some types of specialist care based either in Wellington or Palmerston North, such as chemotherapy. Distance to travel, accommodation, transport and associated cost are issues noted during discussions with providers, but it was also noted that the Wairarapa has a "can do attitude" to finding solutions and supporting patients.

As noted in section 4.2, the proportion of the population aged 65–79 is relatively high (compared to the region as a whole) across the districts and very high when considering those aged 80 years plus, indicating the catchment has a high preference for retirement. In addition to support for those staying in their own home, services for the elderly include around 15 rest homes/retirement villages, and day-care.[105]

Rental housing is tight and prices are rising a little with increased demand from buyers, although this varies across the district.[106] Prices are often compared to Wellington and the cost of travel to work, especially for those commuting longer distances. There has been a slight rise in building consents for new dwellings across the district, reflecting the uneven growth in population.[107] Social housing is provided in the Wairarapa area by the district councils and several trusts, including Trust House Foundation.

A principal focus of social and community services is on mothers and their children, and gaps in the services identified recently include support for young fathers, mental health services, parenting programmes for older children and teenagers, access to early childhood education, and affordable housing. It is noted that social services would benefit from more effective networking and access to a greater range of social housing.[108] There has been particular concern about family violence, with a number of programmes in response. Masterton experienced change in the 1980s and 1980s with the withdrawal of agricultural subsidies, centralisation of government staff away from Masterton, closing of the freezing works and other social upheaval. Although the forestry industry gave some

[104] www.wairarapa.dhb.org.nz/about-us/our-region
[105] www.wairarapa.dhb.org.nz/your-health/older-people
[106] www.nzherald.co.nz/wairarapa-times-age/news/article.cfm?c_id=1503414&objectid=11605792
[107] www.nzherald.co.nz/wairarapa-times-age/news/article.cfm?c_id=1503414&objectid=11523868
[108] Taylor et al. (2014)

new economic activity a number of social issues, including increased family violence, emerged. This led to the "Violence-Free Wairarapa campaign" to channel community concern into positive action. The Masterton-based Violence-Free Network Wairarapa is now "regarded as a model in the way it brought together government and voluntary agencies that were previously uncoordinated in how they dealt with domestic abuse".[109] The Violence Free Network Wairarapa covers all the district and facilitates integration and collaboration between around 40 government and non-government organisation for prevention, intervention, networking and training to prevent violence.

The Wairarapa DHB funds Safer Wairarapa to support a safer environment with collaboration for specific outcomes, for example avoiding injury. This organisation has a comprehensive, on-line data base of community organisations that demonstrates the variety available. They also assist health by producing specific resources, such as a resource for teenage years and "The Wairarapa Blokes Book".[110]

Tertiary providers include the Taratahi agricultural training centre near Masterton and the UCol campus in Masterton, which provides a range of tertiary training aiming to meet the needs of the district. There are also programmes to prepare youth for work. Youth in Education ,Training and Employment is a collaboration of Wairarapa principals, careers people from schools, WINZ, Careers NZ, the Ministry of Education, councillors, tertiary providers, and Wairarapa employers.[111] They aim for a "bottom up", proactive, collaborative and supportive network to identify and match the needs of young people and employers in the Wairarapa.[112] Their initiative is a Youth Employability Passport – Licence to Work, a yearlong programme to be piloted in the Wairarapa in 2017.

Sport Wellington Wairarapa provides a central hub at the Wairarapa Sports House in Masterton and supports a wide range of sport activity across the three Districts in schools, clubs and associations. Each district maintains a number of sporting facilities.[113] Health providers have noted the link between recreational activity and mental and physical health and in particular the need for access to free, river swimming for youth and people on lower incomes, who do not have easy access to vehicles or income for other recreational opportunities, such as swimming further inland or at public pools, or recreating in gyms.

Overall, the available organisations and services are a strong base of social capital and provide numerous opportunities for social connection and cohesion. They also support a "can do" attitude to solving local issues in a community-led approach across the social sectors. Besides national funding sources and Council funding there is community funding available in Masterton and Greytown through the Lands Trust[114] (WEBSITE), providing community funding along with liquor trusts.

[109] www.noted.co.nz/currently/profiles/the-turbulent-times-of-masterton-mayor-bob-francis/?mobile_switch=desktop
[110] www.wairarapasocialservices.org.nz/about_us/index.html
[111] www.waireap.org.nz/schools/yete/
[112] https://times-age.co.nz/getting-youth-working/
[113] www.sportwellington.org.nz/wairarapa
[114] www.greytowntrustlands.org.nz and http://mtlt.org.nz are sources of community funds.

The availability of people to take part in voluntary activities is an important dimension of social capital, especially as greater responsibility is placed on community-based organisations and family members as primary providers of care in the household. Census 2013 contains a question regarding unpaid activities for the usually resident population count aged 15 years and over in the last four weeks up to the Census. The categories included that can be categorised as 'volunteerism' were: Looking after a child who does not live in own household; Helping someone who is ill or has a disability who does not live in own household; and Other helping or voluntary work for or through any organisation, group or marae. Results for the catchment are provided in Table 30.

Table 30: Volunteering activities for the catchment, 2013

	Looking After a Child Who Does Not Live in Own Household	Helping Someone Who is Ill or Has a Disability Who Does Not Live in Own Household	Other Helping or Voluntary Work for or Through Any Organisation, Group or Marae	Share of residents that Volunteer
Masterton	2,688	1,647	2,598	48%
Carterton	588	369	591	45%
Greytown	321	177	306	48%
Featherston	273	171	297	45%
Martinborough	168	105	198	43%
Urban Areas	4,038	2,469	3,990	47%
Rural Masterton	297	183	360	45%
Rural Carterton	441	258	474	46%
Rural South Wairarapa	387	204	444	43%
Rural Total	1,125	645	1,278	45%
Catchment Total	5,163	3,114	5,268	46%
Wellington Region	54,054	30,942	57,831	41%
Location Quotient - source of income compared with Wellington Region Average				
Masterton	1.18	1.26	1.07	1.15
Carterton	1.09	1.19	1.02	1.09
Greytown	1.23	1.19	1.10	1.17
Featherston	1.05	1.15	1.06	1.08
Martinborough	0.99	1.08	1.09	1.05
Urban Areas	1.15	1.23	1.06	1.13
Rural	1.06	1.06	1.12	1.10
Catchment Total	**0.92**	**0.94**	**1.23**	**1.12**

Source: Statistics NZ, Census of Population and Dwellings, 2013

In Masterton, the proportion of residents helping someone that is ill or has a disability, is slightly higher than the average for the Wellington Region, 11% compared with 9%. In Greytown the share of residents looking after a child who does not live in their own household is somewhat higher than the Wellington regional average, 19% compared with 16%.

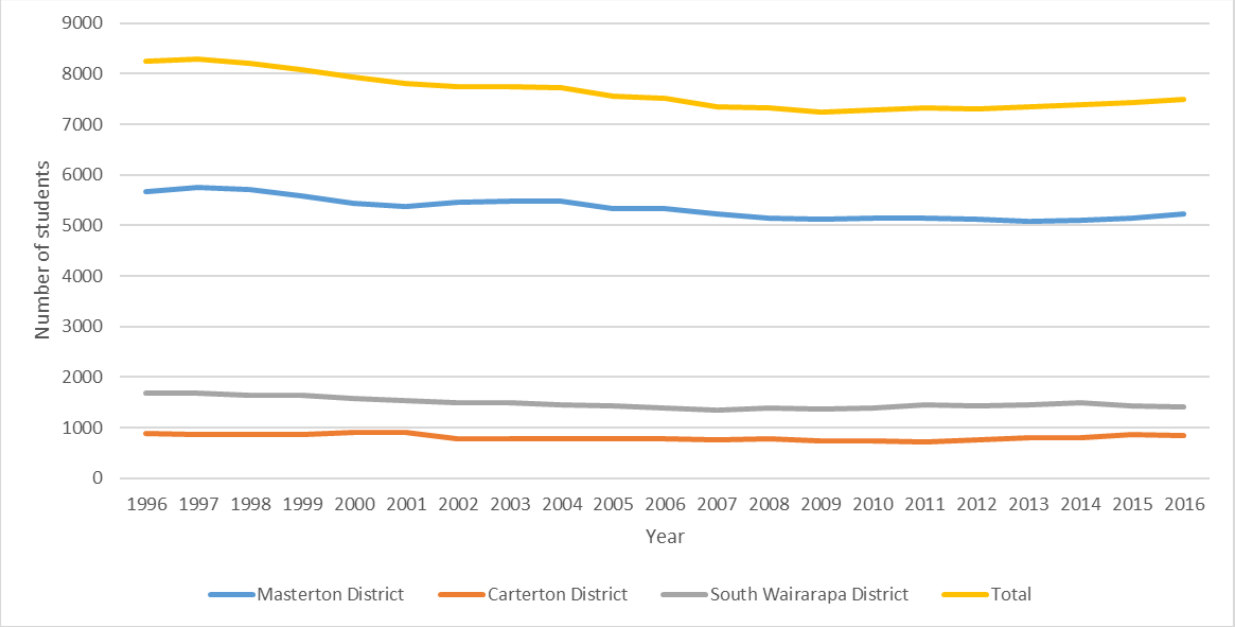
As a whole, it is evident that across the catchment, residents 15 years and older volunteer at a rate (43%–48%) that is higher than the average for the Wellington region (41%). Nearly half (46%) of the

residents in the catchment as a whole stated that they do volunteering of some sort, reinforcing this aspect of social capital if very important to the catchment population.

Schools and school rolls

Schools are key hubs for communities both rural and urban. The rolls of schools provide, along with demographic data, an indication of the vitality of a community. While the population of the Combined Districts has increased by between 2001 and 2013, this growth is not reflected in the total number of pupils attending school in the Wairarapa, documented in Annex 5. As Figure 16 shows, the total number of pupils enrolled at schools in the combined districts has fallen since 1996 but with a small uplift in recent years. Schools in the three districts had a total roll of 7,484 students as reported by the Ministry of Education on 1 July 2016 (Table 31 has a breakdown for each school over time). These schools provide a variety of educational types including state and integrated schools, single-sex, boarding, kura kaupapa and a teen-parent unit. In addition, there are a number of education centres, playcentres, kindergarten, kōhanga reo and childcare centres throughout the three districts.[115]

Figure 16: Wairarapa districts school rolls at 1 July 1996–2016



Source: Ministry of Education

Nearly 30 schools or pre-schools are members or friends of the Enviroschools programme, which "supports children and young people to plan, design and implement sustainability actions that are important to them and their communities". In recent projects, students learned to assess water quality and invertebrate and compare levels of pollution in Wairarapa waterways.[116]

[115] www.childcareonline.co.nz/directory/childcare-centres-wairarapa.html
[116] http://www.enviroschools.org.nz/in_your_region/wellington/featured-projects/wairarapa-moana

Table 31: School rolls 1996–2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bideford School	17	24	20	19	22	12	10														
Carterton School	320	293	260	255	310	325	302	313	333	346	322	322	325	316	326	334	347	354	322	308	285
Castlepoint School	16	15	12	6																	
Chanel College	340	325	301	275	250	265	269	251	279	327	344	383	388	378	385	379	351	324	293	290	299
Cornwall Street School	169	176	162	157	143	149	141	148													
Dalefield School	57	64	56	59	54	58	56	54	56	57	59	53	58	54	54	49	66	54	55	55	53
Douglas Park School									315	290	327	343	319	331	350	387	367	385	391	362	383
Featherston School	277	276	238	212	200	183	157	129	114	111	129	117	107	101	105	76	75	62	71	60	79
Fernridge School	104	115	123	137	133	140	135	138	184	164	163	162	169	187	200	184	189	178	196	198	207
Gladstone School (Masterton)	104	101	110	112	115	107	101	104	99	117	131	136	157	120	118	94	107	109	108	131	126
Greytown School	289	324	327	320	313	323	342	379	381	347	334	314	308	291	305	322	319	340	341	330	329
Hadlow Preparatory School	170	173	159	158	188	198	194	196	191	191	194	195	194	197	187	196	193	187	189	192	186
Harley Street School	180	182	191	184	196	204	211	202													
Hiona Intermediate	168	157	149	127	115	113	101	103													
Homeleigh Christian School	48	49	36	32	26	32	29	25	14	12	19	7									
Kahutara School	86	92	93	113	111	96	93	100	86	79	75	73	69	79	72	82	99	98	109	117	107
Kuranui College	551	552	549	579	565	540	497	464	468	477	452	446	461	455	459	507	493	492	503	459	444
Lakeview School									485	466	492	468	446	461	441	405	410	436	447	455	425
Lansdowne School	200	201	215	211	174	178	172	192													
Makoura College	436	409	415	393	374	365	425	402	347	306	317	273	257	246	277	293	287	286	289	328	313
Martinborough School	240	217	212	188	153	164	164	173	179	171	162	162	181	203	197	214	198	251	246	254	247
Masterton Central School	268	299	297	271	264	267	278	234													
Masterton East School	166	157	139	129	100	67															
Masterton Intermediate	421	439	432	438	456	475	475	479	479	451	404	382	412	407	361	397	416	401	347	366	436
Masterton Primary School									398	324	259	253	205	205	232	230	232	240	257	270	260
Masterton West School	199	222	223	192	176	164	169	163													
Mauriceville School	35	34	31	28	33	28	29	29	25	29	27	25	22	29	30	32	29	24	19	14	13

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Miki Miki School	25	18	16	15	16	15	12	9													
Okautete School	19	20	19	10	11																
Opaki School	136	126	126	127	143	136	130	138	149	162	164	162	163	156	155	163	172	170	180	187	200
Pirinoa School	84	63	65	52	56	42	59	57	45	36	40	33	30	33	36	21	30	28	27	29	42
Ponatahi Christian School	56	68	73	87	99	103	89	85	82	83	81	77	78	74	67	73	74	81	88	100	101
Rathkeale College	226	240	248	243	238	237	231	269	282	289	290	277	247	268	265	264	279	300	295	300	303
Solway College	140	155	138	112	110	102	115	120	136	123	130	129	143	135	137	134	148	140	133	137	136
Solway School	121	145	153	180	173	155	168	182	198	208	205	210	208	200	190	186	197	205	206	222	221
South End School	205	196	217	211	178	151	128	124	107	95	101	90	93	105	110	102	93	122	131	142	152
South Featherston School	35	26	29	32	47	57	60	58	58	59	67	65	68	67	61	63	70	65	63	56	57
St Mary's School (Carterton)	85	76	89	94	97	100	109	107	93	81	80	89	78	74	71	65	76	76	94	122	131
St Matthew's Collegiate (Masterton)	276	294	283	297	310	316	312	326	333	335	332	331	334	330	335	343	352	352	363	334	322
St Patrick's School (Masterton)	270	279	274	295	283	282	264	253	279	249	232	231	246	256	265	267	250	232	226	231	250
St Teresa's School (Featherston)	97	103	108	109	104	107	100	102	101	121	115	113	128	122	133	137	118	109	114	112	99
Te Kura Kaupapa Māori O Wairarapa	39	43	36	40	61	63															
Te Wharau School (Masterton)	24	17	13																		
Tinui School	61	55	59	73	63	66	67	61	69	63	55	62	64	61	55	62	71	64	53	45	37
TKKM o Wairarapa							97	96	104	110	119	102	82	62	57	66	55	59	81	89	76
Totara Drive School	274	297	290	275	282	306	293	295													
Tuturumuri School	21	23	26	28	34	28	26	28	25	28	25	25	28	24	24	27	23	16	13	11	12
Wainuioru School	53	49	38	44	35	35	45	57	53	64	51	49	64	69	77	87	90	84	90	78	85
Wairarapa College	1093	1068	1117	1104	1076	1006	1036	1036	1102	1128	1160	1134	1135	1097	1094	1026	973	960	993	980	1015
Wairarapa Teen Parent Unit								19	19	19	21	25	24	24	26	25	22	25	25	22	21
Whareama School	37	38	48	55	50	53	50	52	45	32	32	29	24	27	28	26	32	32	37	36	32
	8238	**8295**	**8215**	**8078**	**7937**	**7813**	**7741**	**7752**	**7713**	**7550**	**7510**	**7347**	**7315**	**7244**	**7285**	**7318**	**7303**	**7341**	**7395**	**7422**	**7484**

Source: Ministry of Education

Annex 8 Income flows, deprivation and equity

The pattern of social-economic deprivation

There is an evident pattern between the relatively low social-economic status (level of social deprivation[117]) in the towns and the much higher status of the surrounding rural areas. This pattern is very clear in the maps provided in Annex 2. Further analysis, including individual and household income, unemployment, people on benefits and specific characteristics of the Māori population, are included in this annex. Table 32 provides data on sources of income from the 2013 Census.

Table 32: Selected sources of income (Benefits, Pensions, Superannuation, and Allowances), 2013

	Superann., Pensions, Annuities	Unemployment Benefit	Sickness Benefit	Domestic Purposes Benefit	Invalids Benefit	Student Allowance	Other Govt Benefits, Payments or Pension
Masterton	27.6%	3.9%	3.3%	3.5%	4.6%	1.4%	5.3%
Carterton	32.7%	4.0%	2.8%	3.1%	2.5%	1.1%	4.4%
Greytown	38.4%	1.9%	1.2%	1.9%	1.7%	1.0%	3.5%
Featherston	25.4%	4.9%	3.9%	5.5%	4.8%	1.1%	5.1%
Martinborough	28.9%	1.9%	1.4%	2.5%	0.9%	0.04%	3.9%
Urban Areas	**29.1%**	**3.7%**	**3.0%**	**3.4%**	**3.9%**	**1.3%**	**4.9%**
Rural Masterton	18.9%	1.6%	0.4%	1.0%	0.8%	1.1%	3.6%
Rural Carterton	17.9%	1.6%	1.4%	1.2%	1.1%	1.6%	3.3%
Rural South Wairarapa	20.4%	1.2%	0.8%	1.1%	1.1%	1.6%	3.6%
Rural Total	**19.1%**	**1.5%**	**0.9%**	**1.1%**	**1.0%**	**1.4%**	**3.5%**
Catchment Total	26.8%	3.2%	2.5%	2.9%	3.3%	1.3%	4.6%
Wellington Region	**19.1%**	**3.2%**	**2.0%**	**2.3%**	**2.2%**	**3.2%**	**4.0%**
Location Quotient - source of income compared with Wellington Region Average							
Masterton	1.35	1.20	1.68	1.55	2.13	0.45	1.31
Carterton	1.60	1.23	1.42	1.38	1.17	0.34	1.09
Greytown	1.88	0.60	0.63	0.85	0.81	0.33	0.87
Featherston	1.24	1.54	1.97	2.43	2.21	0.35	1.28
Martinborough	1.41	0.61	0.71	1.11	0.41	0.01	0.97
Urban Areas	1.42	1.16	1.54	1.52	1.81	0.39	1.23
Rural	0.93	0.47	0.47	0.48	0.47	0.45	0.87
Catchment Total	0.88	**1.00**	**1.29**	**1.28**	**1.50**	**0.41**	**1.14**

Source: Statistics NZ, Census of Population and Dwellings, 2013

The Census (2013) data reveals in respect to social-economic status that:

- In the urban areas, the average proportion of benefits categorised as pensions, superannuation or annuities, are consistently higher than the Wellington regional average at 25.4%–32.7% compared with 19.1%. This is to be expected, since the age distribution table shows that the average proportion of residents aged 65+ is higher in the urban areas of the catchment than in the Wellington region.
- Across the catchment, the proportion of student loans as a source of income, makes up a lower share of the total in source of income numbers than in the Wellington region, 0.04%–1.6% compared with 3.2%.
- Sickness, Domestic Purposes and Invalids Benefits, each make up a lower proportion or total benefits in the rural areas of the catchment and Greytown, than in the Wellington region (2%, 2.3%, 2.2%).
- A similar proportion of Unemployment benefits is paid out in the catchment as a whole (3.2%)as in the Wellington region (3.2%). The proportion in Masterton (3.9%), Carterton

[117] As measured in a composite index developed by Otago University.

(4%) and Featherston (4.9%) is slightly higher than the Wellington regional average (3.2%), and lower in Martinborough (1.9%) and Greytown (1.9%).

When considering benefits, it is important to note that on 15 July 2013, the Welfare Reform changes came into effect and three new benefits[118] replaced most of the previous benefits. As a result of these changes, data post-July 2013 is not comparable to data pre-July 2013.[119] Additionally, benefit numbers are not available because of confidentiality concerns at meshblock level for the catchment, so the TA level is reported in Table 33.[120] Numbers in Table 33 are reported as at September for each year.

Table 33: Benefit numbers by type and TAs, 2013–16

	2013				2014				2015				2016			
	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits
Masterton District	205	110	151	7	176	99	160	6	193	86	145	12	156	93	137	7
Carterton District	780	490	779	28	752	473	806	20	753	417	803	30	792	372	806	40
South Wairarapa District	230	140	171	16	227	134	183	11	220	S	180	S	212	S	168	S
Wellington Region	**13,267**	**6,986**	**9,062**	**581**	**13,457**	**6,432**	**9,084**	**399**	**13,597**	**6,093**	**9,016**	**400**	**13,805**	**5,809**	**8,941**	**342**
Share of the Region																
Masterton District	2%	2%	2%	1%	1%	2%	2%	2%	1%	1%	2%	3%	1%	2%	2%	2%
Carterton District	6%	7%	9%	5%	6%	7%	9%	5%	6%	7%	9%	8%	6%	6%	9%	12%
South Wairarapa District	2%	2%	2%	3%	2%	2%	2%	3%	2%	S	2%	S	2%	S	2%	S

Source: Ministry of Social Development, Benefit Fact Sheets 2013-2016

Key observations about these recent benefit numbers are that:

- In Masterton District, Jobseeker benefits have decreased from 2013 to 2016. In Carterton and South Wairarapa Districts, and the region, the numbers have changed very little.
- The next largest share in all three areas as well as the region, is made up of the Supported Living Payment (SLP). In Carterton SLP accounts for around 38% in 2013, increasing to 40% in 2016. This figure is consistently higher than the Wellington regional average. In Masterton, the numbers of SLP benefits has decreased between 2013 and 2016.

Annex 9 Social-economic status of the Māori population

It is important to consider the occupation, income and qualification profile of Māori residents in the catchment area in order to understand what proportion of Māori workers are in blue collar and white collar occupations and the degree to which the Māori population differs from the population overall. The information is presented by Statistics NZ at the TA level, so includes information for some residents who live outside the catchment. Nonetheless, the comparisons provided here point to significant disparities in economic opportunities for Māori in the Wairarapa and suggest that economic opportunities from the use of land and water will be of considerable interest both to the Māori population and to policy makers concerned with equitable distribution of the costs and benefits of natural resource policies. These issues for Māori should be considered in light of their losses of property and Treaty rights in the early decades of European settlement.[121]

The following key occupation patterns for Māori are evident in Table 34.

[118] Jobseeker support, Sole Parent support and Supported Living payment.
[119] www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/index.html
[120] Also, for South Wairarapa TA some numbers are suppressed - marked with an 'S' in the tables.
[121] Stirling (2012).

- Māori are much less likely to work in occupations such as Managers, and Professionals and slightly less likely to work as clerical and administrative workers than the total population. They are consequently much more likely to work as Labourers (26.1%) than the total population (15.3%).
- The proportion of Māori employed as Labourers across all three of the districts is more than double what the proportion is in the Wellington Region, 25–27% compared to 12%.
- Conversely, the proportion of Māori working as Professionals (13–17%), and Clerical and Administrative workers (7–8%) is much lower across the districts than in the Wellington Region (21% and 14% respectively). Carterton has the highest proportion of Māori working as Professionals (17%), and South Wairarapa the lowest (13%).
- Masterton district has a slightly higher average proportion of Māori employed as Machinery operators and Drivers than the average in the Wellington region, 8% compared with 7%. The proportion of Technicians and Trades workers is also somewhat higher for Masterton than for the Wellington region (13% compared to 11%)
- The proportion of the Māori population working as Machinery operators and Drivers in Carterton, is slightly below the average in the Wellington region, 4% compared to 7%. The share of the Māori population working as Sales workers is also marginally lower for Carterton district than the Wellington region as a whole, 7% compared to 10%.
- The proportion of the Māori population working as Sales workers in the South Wairarapa district, is quite a bit lower than the Wellington regional average, 6% compared to 10%.

Table 34: Occupations for Māori, 2013

	Managers	Professionals	Technicians and Trades Workers	Community and Personal Service Workers	Clerical and Administrative Workers	Sales Workers	Machinery Operators and Drivers	Labourers
Maori Population								
Masterton District	140	200	190	170	110	110	110	370
Carterton District	50	60	40	50	30	30	20	100
South Wairarapa District	80	60	60	50	40	30	30	110
Total	**270**	**320**	**290**	**270**	**180**	**170**	**160**	**580**
Wellington Region	***3,110***	***4,660***	***2,430***	***2,610***	***3,120***	***2,140***	***1,470***	***2,770***
Shares by Occupation								
Masterton District	10.3%	14.1%	13.3%	12.0%	8.1%	8.1%	8.1%	26.1%
Carterton District	14.9%	16.5%	9.9%	12.4%	7.4%	7.4%	4.1%	27.3%
South Wairarapa District	16.6%	13.2%	12.6%	11.3%	7.9%	6.0%	7.3%	25.2%
Total	**12.3%**	**14.3%**	**12.6%**	**11.9%**	**8.0%**	**7.6%**	**7.3%**	**26.1%**
Wellington Region	***14.0%***	***20.9%***	***10.9%***	***11.7%***	***14.0%***	***9.6%***	***6.6%***	***12.4%***
Location Quotient - comparing occupation to the Wellington Region (Maori stats)								
Masterton District	0.74	0.68	1.22	1.03	0.58	0.85	1.24	2.10
Carterton District	1.07	0.79	0.91	1.06	0.53	0.78	0.63	2.20
South Wairarapa District	1.19	0.63	1.15	0.96	0.57	0.62	1.11	2.03

Source: Statistics NZ, 2013 Census QuickStats about Māori

The Māori population across all three districts are less likely to earn above $50,000 per annum than the Wellington regional average – 7%, 12%, 11% for Masterton, Carterton and South Wairarapa respectively – compared to 16% for Wellington region (Table 35). This is not unexpected when examining the occupations held by the largest portion of Māori population in the districts. People in occupations such as Labourers and Machinery operators and Drivers (i.e. blue collar workers), tend to earn less than Professionals (i.e. white collar workers). Personal income across the other brackets are consistent in the districts with the Wellington regional average.

Table 35: Personal Income for Māori (per annum), 2013

	Loss	Zero income	$1–$15,000	$15,001 - $50,000	$50,001 or more
Masterton District	20	250	650	980	180
Carterton District	-	60	130	240	60
South Wairarapa District	-	60	210	280	90
Total	**20**	**370**	**990**	**1,500**	**330**
Wellington Region	***190***	***3,720***	***8,590***	***12,810***	***5,870***
Shares by Income					
Masterton District	0.8%	10.2%	26.5%	39.9%	7.3%
Carterton District	0.0%	10.5%	22.8%	42.1%	10.5%
South Wairarapa District	0.0%	8.0%	28.1%	37.5%	12.0%
Total	**0.6%**	**11.5%**	**30.8%**	**46.7%**	**10.3%**
Wellington Region	***0.5%***	***10.1%***	***23.3%***	***34.8%***	***15.9%***
Location Quotient - comparing personal income to the Wellington Region (Maori stats)					
Masterton District	1.58	1.01	1.13	1.15	0.46
Carterton District	-	1.04	0.98	1.21	0.66
South Wairarapa District	-	0.80	1.21	1.08	0.76

Source: Statistics NZ, 2013 Census QuickStats about Māori

The pattern for the Māori population is very similar to that of the catchment as a whole, i.e. the average proportion of the population that have acquired a tertiary qualification is lower than the Wellington regional average, while the average proportion of residents with no formal qualification is higher in the catchment than for the Wellington region as a whole (Table 36).

Table 36: Highest qualification for Māori, 2013

	No qualification	Level 1-4 + Overseas	Tertiary Qualification
Masterton District	940	1,220	290
Carterton District	190	300	80
South Wairarapa District	240	390	100
Total	**1,370**	**1,910**	**470**
Wellington Region	***9,660***	***19,060***	***7,740***
Shares by Qualification			
Masterton District	38.3%	49.8%	11.9%
Carterton District	33.3%	53.4%	13.2%
South Wairarapa District	33.1%	53.5%	13.5%
Total	**36.5%**	**50.9%**	**12.5%**
Wellington Region	***26.5%***	***52.3%***	***21.2%***
Location Quotient - comparing highest qualification to the Wellington Region (Maori stats)			
Masterton District	1.44	0.95	0.56
Carterton District	1.26	1.02	0.62
South Wairarapa District	1.25	1.02	0.63

Source: Statistics NZ, 2013 Census QuickStats about Māori

Benefit numbers for Māori are presented only at the TA (Territorial Authority) level in Table 37 (2013–2016). Because of the Welfare Reform changes noted above, data pre-July 2013 cannot be compared to data post-July 2013. Some of the key observations from the data are:

- The distribution by type of benefits received by Māori, has remained stable in the Wellington region over the period between 2013 and 2016.

- In Masterton District, the proportion of Māori receiving a Jobseeker benefit has remained lower than the Wellington regional average, varying between 22 and 27%, compared to 29% for the region. This is also the case in the South Wairarapa district, with Māori making up between 21 and 29% of people receiving a Jobseeker benefit. In Carterton District the proportion of beneficiaries receiving a Jobseeker benefit, have remained above the Wellington regional average (26–38%) between 2013 and 2016.
- The proportion of beneficiaries receiving Sole Parent support that are Māori, have risen between 2014 and 2016 in Masterton District. In Carterton District this figure has also risen from 41% of beneficiaries being Māori in 2013, to 47% in 2016. This happened while the overall number of beneficiaries receiving Sole Parent Support in Carterton District has fallen over the same period of time. Data for the South Wairarapa was suppressed over the past two years due to confidentiality concerns. In 2013 and 2014, the proportion of Māori was very similar to the Wellington regional average.
- Between 2013 and 2016, the proportion of Supported Living payments made to Māori in the Carterton District has been consistently higher than the average in the Wellington region, 25–27% compared with 21%. In the South Wairarapa District, Māori make up a somewhat lower proportion of beneficiaries than the Wellington regional average, 16–19% compared with 21%. In Masterton District the proportion made up by Māori receiving Supported Living payments is very similar to the Wellington regional average, which is around 21%.

Table 37: Share of benefits paid out to Māori

	2013					2014					2015					2016				
	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Total (all main benefits)	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Total (all main benefits)	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Total (all main benefits)	Jobseeker	Sole Parent Support	Supported Living Payment	Other main benefits	Total (all main benefits)
Masterton District	24%	31%	19%	57%	25%	22%	30%	20%	67%	24%	26%	36%	21%	58%	27%	27%	42%	21%	43%	29%
Carterton District	36%	41%	25%	32%	33%	38%	44%	26%	35%	35%	36%	45%	26%	57%	34%	36%	47%	27%	50%	35%
South Wairarapa District	21%	41%	16%	38%	25%	29%	44%	19%	45%	29%	27%	S	19%	S	27%	25%	S	16%	S	26%
Wellington Region	**29%**	**41%**	**21%**	**31%**	**29%**	**29%**	**42%**	**21%**	**33%**	**29%**	**29%**	**42%**	**21%**	**32%**	**29%**	**29%**	**43%**	**21%**	**32%**	**29%**
Location Quotient - Benefit shares compared with Wellington Region Average																				
Masterton District	0.85	0.75	0.93	1.87	0.85	0.75	0.72	0.97	2.05	0.81	0.90	0.87	0.97	1.82	0.93	0.92	0.99	1.01	1.34	0.98
Carterton District	1.27	1.01	1.20	1.05	1.13	1.31	1.05	1.25	1.07	1.18	1.24	1.08	1.24	1.77	1.17	1.22	1.09	1.31	1.57	1.18
South Wairarapa District	0.75	0.99	0.77	1.22	0.86	0.99	1.05	0.90	1.40	1.00	0.93	S	0.89	S	0.92	0.87	S	0.77	S	0.89

Source: Ministry of Social Development, Benefit Fact Sheets 2013-2016

Annex 10 Physical infrastructure and drinking water

The largest physical infrastructure issues in the district appear to be with the discharge of treated wastewater to streams and rivers, and the quality of the water supply in Carterton. The five main towns, Masterton, Carterton, Greytown, Featherston and Martinborough, all discharge wastewater either directly or indirectly into the Ruamāhanga River. All three districts are investigating, planning and undertaking upgrades over the next 30 years to move to land based discharge systems. By discharging to land, further filtration occurs before the wastewater reaches the water system, which should reduce the negative effects that the municipal discharges have on the river.[122]

The overview provided in this section is drawn from sources that include the councils, public health organisations and their relevant reports and maps. It was clear from discussions at a community meeting and RWC scenario workshop that the Committee recognises there is a significant infrastructure investment required to improve wastewater and stormwater disposal and to maintain quality supplies of potable water. The potential costs of this investment will be considered by the economic and social assessments in the scenario phase.

Masterton

The stormwater system in Masterton consists of approximately 33 to 46 kilometres of pipes, four kilometres of stop banks and 800 man holes. These stormwater assets are considered adequate for current and forecast demand, but the age and condition of the system varies and therefore progressive renewals across the network, with an average estimate of $1.775 million per year, has been budgeted over the 30 years to 2045.[123]

Stormwater accounted for 2% of the District operating expenditure in 2015/16 and there is $3.3 million set aside for renewals and upgrades over the ten years to 2025.[124] A 2014 survey of residents found 4% were very satisfied and 67% fairly satisfied with the stormwater services (15% did not know; 14% not very satisfied or very dissatisfied). The drivers for change for the stormwater system are assessed as climate change (moderate), demand for improvement in services or changes in customer expectations (low/moderate), and population (low).

The wastewater system includes 172 kilometres of pipes, 13 pump stations and 4 treatment plants, with wastewater systems in Masterton, Riversdale, Castlepoint and Tinui (Masterton District Council 2015a, c). Masterton's water and wastewater systems also supply the Waingawa industrial area in Carterton district.[125]

Over the next 30 years, $120 million will be invested in wastewater system upgrades – including continued renewal of the Homebush Wastewater Treatment Plant, and sewer and plant renewals at Tinui and Riversdale. The system is adequate for current and forecast demand, but the age and condition varies considerably. A progressive pipe renewal programme over the 30 years to 2045 is estimated at $1.863 million per year, with overall asset renewals including rural schemes estimated at $4.184 million per year.

[122] Chrystall 2007
[123] Masterton District Council (2015b, 2016)
[124] Data on Masterton is from Masterton District Council (2015a, b and c.)
[125] Carterton District Council (2015c)

In Masterton, the wastewater system includes the Homebush Wastewater Treatment Plant which was recently upgraded at a cost of $46 million; however, there is a need for further upgrades to reduce the amount of treated wastewater being discharged to the Ruamāhanga River. In 2016/17 $1.45 million is budgeted to investigate initiatives to reduce the discharge into the Ruamāhanga River, and $1.1 million on sewer reticulation renewals. Sewage systems accounted for 18% of the operating expenditure in 2015/16.

The Riversdale Sewerage Scheme was built in 2010–12 and has a treatment plant with disposal via an irrigation scheme. In Castlepoint there is a wastewater reticulation system and a waste stabilisation pond followed by three wetland cells, and in Tinui a wastewater reticulation system with discharge to a constructed wetland.

The 2014 annual Masterton residents survey found 19% were very satisfied and 74% fairly satisfied with the wastewater service (with 4% not very satisfied, 1% very dissatisfied and 2% did not know).[126]

The district has 184 kilometres of water mains, 8 kilometres of trunk mains, one water tank, two reservoirs, two storage tanks and treatment facilities at Masterton and Tinui. Masterton is the only community with fully serviced water, with Tinui semi-serviced (water only), and other residential areas unserved (roof water) or with private water supplies. The critical assets are the Kaituna Water Treatment plant, the main pipe from Kaituna to the Masterton urban area and urban storage reserves.

Masterton's water supply infrastructure is adequate for current and forecast demand, but its age and condition varies considerably. The average budget for renewals over the 30 years to 2045 is $1.690 million for the pipe network, and $2.711 million per year including rural assets. In 2014, the annual residents survey found 25% were very satisfied and 68% fairly satisfied with water supply, with 6% not very satisfied and 1% very dissatisfied.[127]

The council expects to invest $81 million over the next 30 years, including water main and connections renewals of $19.9 million in the first ten years. Major upcoming investments include water metres in year five of the Long-term plan and a storage dam in year 12. These are based on the assumption that the water take consent, to be renewed in 2017, will result in greater water access restrictions from the Waingawa in times of low flow. Water meters have the potential to reduce demand by around 30% and assist with identifying leaks in the system. Investment will also be needed to improve rural drinking water supplies to meet higher standards from the Ministry of Health. As at December 2016, the Masterton water supply has an AA grade.[128] In Masterton, population is likely to be a minimal demand driver on the water supply infrastructure, with demand more likely to come from industrial sectors.

In 2016/17, capital spend on the water system includes $310,000 on urban water treatment, $2,950,000 on the reticulation system, and $35,000 on the rural supply system. Water supplies accounted for 8% of operating expenditure in 2015/16.

[126] Masterton District Council (2015c)
[127] Masterton District Council (2015d)
[128] ESR (2016)

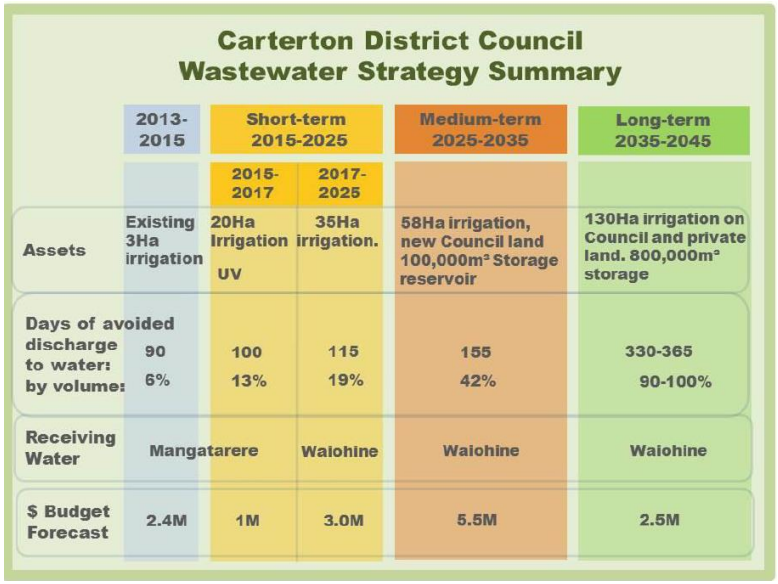
Carterton

Carterton's urban stormwater system consists of some pipe reticulation (12.4 kilometres) and open drains (6.5 kilometres).[129] Newer urban areas, such as recent subdivisions, are more likely to have pipe reticulation and developments are required to have onsite stormwater disposal within the development. In rural areas, there is 20 kilometres of open drains, some of which are dual purpose with the water race network. Overall, the network is considered adequate for most rainfall events and 73% of urban residents surveyed in 2014 are very or fairly satisfied with the stormwater drainage. There can be some localised flooding due to system overload, but this is usually short in duration and has minimal impact.

Carterton District Council notes that the goal is to maintain the current level of service with 3-yearly reviews. It considers that a change in the level of service is the dominant factor for new works, rather than population growth. However, only 1% of the capital spend in the long-term plan is allocated to stormwater. The urban wastewater has between 2,300 and 2,400 houses connected to the system and consists of 38 kilometres of gravity reticulated mains with 15 pump stations at strategic locations. The condition of the system varies, with some pipes up to 70 years old.

The system feeds into the Dalefield Road Wastewater Treatment Plant and discharges to land (by central pivot irrigator onto land adjoining the plant) and water (nearby stream). The long-term vision is to shift all discharge to ground, which means significant investment over the next 30 years, see Figure 17. Under the long-term plan, $2 million has been allocated over the next 10 years for sewage treatment, which is 18% of the capital spend under the plan, in addition to 13% of the operating budget. [130]

Figure 17: Carterton Wastewater Strategy



Source: Carterton District Council 2015b

[129] Information in this section is from Carterton District Council (2015a, b, c and d.)
[130] Carterton District Council 2015b

Currently, the main industrial contributor to wastewater is the Premier Beehive factory, which in 2014 was measured to be contributing a biological load greater than the rest of the township. The factory is implementing onsite treatment and this is expected to reduce its biological load. No other industrial growth is expected in Carterton.[131]

Of urban residents surveyed in 2014, 97% were very or fairly satisfied with the wastewater system (Carterton District Council 2015a). The Council's objective is to maintain the current level of service with specific minor exceptions and review every 3 years.[132]

Carterton's water supply is gravity fed, sourced from the Kaipaitangata Stream approximately 10 kilometres west of the town. There is also a borefield in Lincoln Road that can be used in need. The Kaipaitangata Stream intake are in average condition and three of the four bores are in good operable condition, while the fourth needs redevelopment but is not required to supply current consumption levels.[133] As at December 2016, the Kaipaitangata supply was graded at E (Unacceptable level of risk) and the Fredrick Street Bore at D (Unsatisfactory level of risk) with the distribution network at C (Marginally satisfactory, moderately low level of risk.[134]

Water treatment facilities are relatively modern and in average condition. There is 1500 cubic metres of storage at the stream and 500 cubic metres at Lincoln Road. The reticulation system is up to 70 years old.

Of urban residents surveyed in 2014, 95% were very or fairly satisfied with the town water supply. Under the long-term plan, 5% of the capital spend is allocated for the water supply system, and 13% of the operating budget. Water supply in Carterton is charged on a user pays basis. Water use initially fell after the introduction of metered charging, but has been rising again and water restrictions were in place in 2015 for the first time since implementation. There are possible future supply issues as the consent for water take is due for renewal and the council expects the allocation to reduce, meaning consumption in the area needs to fall.

South Wairarapa

Over the long-term, the council plans to provide stormwater protection to all properties in urban areas.[135] The Council considers eighty-three percent of culverts are in an average or better condition with minimal renewal required.[136]

There are four wastewater systems as outlined in Table 38 below. The treatment and disposal of wastewater is a key issue for the district over the next 40 years with the aim to progressively move from discharges to waterways to land by 2048 in Martinborough, Greytown and Featherston. A 170-hectare farm adjacent to the oxidation ponds in Featherston and a 116-heacatre farm near Greytown have been purchased as part this change. Iwi identified wastewater as a key issue, including 'no sewer release to rivers and waterways' and 'no impact of sewer to receiving environment'.

[131] Carterton District Council (2015b)
[132] Carterton District Council (2015b)
[133] Carterton District Council (2015c)
[134] ESR (2016)
[135] This section is based on South Wairarapa District Council (2015)
[136] South Wairarapa District Council (2015)

Table 38: Wastewater systems in South Wairarapa

	Pipes	System	Treatment	Discharge	Notes
Featherston	25 kilometres	95% gravity with 5% pumping	oxidation ponds	open channel into Donald's Creek	Urban
Greytown	20 kilometres	95% gravity with 5% pumping	sewage ponds	Papawai Stream, which flows into the Ruamāhanga River	Urban – 90% coverage with some septic tanks
Martinborough	20 kilometres	100% gravity	single anaerobic pond	Ruamāhanga River	Urban
Lake Ferry	3 kilometres				Rural system

The water systems in the district are set out in Table 39 below. There are also private rain water and bore systems for rural residents and a small reticulated supply that services residents in Pirinoa. Current work includes renewals and the alternative Featherston supply project. Currently, the water supply systems in the South Wairarapa are ungraded for water quality.[137]

Table 39: Water systems in South Wairarapa

	Featherston	Greytown	Martinborough
Pipes	36 kilometres	30 kilometres	38 kilometres
Open water races	40 kilometres	225 kilometres	
Primary water source	Waiohine River including a filtration plant		Herricks Wells (four bores) which pump water from an underground aquifer in the vicinity of the Ruamāhanga River
Alternative supply		a well that is required when turbidity in the Waiohine River limits the filtration plant operation	
Emergency supply	catchment and reservoir system in Boar Bush Gully		Huangarua channel
	concrete intake at Tait's Creek		
Other	Longwood Water Race	Moroa Water Race from the	

[137] ESR (2016)

	taking water from the Tauherenikau River for stock water to rural properties	Wiohine River which directs water not needed for town water supply to stock water	

Source: South Wairarapa District Council (2015)