

STATE OF THE  
**ENVIRONMENT**  
**REPORT** 2015

OUR LAND  
OUR WATER  
**OUR PLACE**



**MARLBOROUGH  
DISTRICT COUNCIL**





MARLBOROUGH STATE OF THE  
**ENVIRONMENT REPORT 2015**

OUR LAND  
OUR WATER  
**OUR PLACE**

Edited by: Peter Hamill, Alan Johnson, Steve Urlich, Bev Doole.

March 2016

ISBN: 978-1-927159-66-8

**MARLBOROUGH DISTRICT COUNCIL**

Cnr High and Seymour Streets  
PO Box 443, Blenheim 7240

Phone: 03 5207400 | Email: [mdc@marlborough.govt.nz](mailto:mdc@marlborough.govt.nz)

[www.marlborough.govt.nz](http://www.marlborough.govt.nz)

Front cover: Awatere Valley



**MARLBOROUGH  
DISTRICT COUNCIL**

## Foreword

*Naku te rourou, nau te rourou, kia ora ai te tangata*

*With your basket of knowledge and our basket of knowledge our future will be better aligned.*

We live within a beautiful environment. We have much to celebrate with the diversity of our landscapes and our people. Many people from outside our wonderful region may not appreciate that we have a range of environments of stunning scenery and biodiversity.

We have the vast expanse of Molesworth, the hill and high country of the Awatera Valley, powerful, twisting rivers from the Clarence in the south to the Pelorus in the west, and acres of green vines, productive farms and extensive forests. Our coastal environments are equally impressive, with 1800 km of sinuous coastline meandering from Cape Campbell to Croisilles Harbour, embracing the sheltered waters of our iconic Marlborough Sounds and opening out to the turbulent seas off D'Urville Island and Cook Strait.

Our wealth and economy as a province is underpinned by these natural resources. The health and resilience of these ecosystems therefore provide the very foundation for our livelihoods. Tourism, aquaculture, fishing, forestry, farming, viticulture and horticulture all rely on the quality of the air, land and water and the infrastructure provided by Council.

This State of the Environment Report provides a snapshot of how well we are doing as a region. The report looks at the pressure on different resources, the response from Council and the community, and the current condition of each domain: air, land, freshwater and coast, along with the state of our regional infrastructure. We also set out future responses and provide links to websites where more detailed information can be found.

There are many success stories within these pages, showcasing the good work done by many organisations and individuals since the last report in 2008.

However, we have our challenges too, with soil conservation, climate extremes, water quality, natural hazards, biodiversity loss, invasive species, overfishing, habitat loss and pollution of coastal waters creating significant stress on ecosystems.

Together we can tackle these issues as best we can. There is strength in collaboration and working together to find solutions. At the end of the report, there is a section called Play Your Part, offering tips and suggestions on how you can get involved.

## WE ALL HAVE A STAKE IN OUR LAND, OUR WATER, OUR PLACE.

*Ngā mihi nui*  
Peter Jerram | Chair,  
Environment Committee

**MARLBOROUGH  
DISTRICT COUNCIL**



Alistair Sowman | Mayor

**MARLBOROUGH  
DISTRICT COUNCIL**





# CONTENTS

## INTRODUCTION

	5
Setting the scene	7
Our people	8
Tangata whenua iwi	
Our land	14
Our water	16
Our place	20
Tourism and events	22

## INFRASTRUCTURE

Roads	25
Reserves	29
Water supply	35
Stormwater disposal	39
Wastewater (sewage)	41
Agricultural drainage on the Wairau floodplain	43

## ATMOSPHERE

Climate trends	47
Air quality and discharges	51

## FRESHWATER

Surface water quantity	57
Surface water quality	62
Groundwater quantity	66
Groundwater quality	72
Recreational water quality - rivers	76
Freshwater biosecurity	78

## LAND

Indigenous biodiversity	83
Biosecurity on land	87
Soils	92
Land cover and land use	95
Dairy farming	98
Winery waste	101
Forestry	106
Waste	110
Contaminated land	113
Natural hazards	116
Urban growth	126
Noise	128

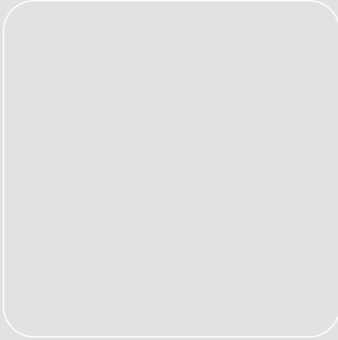
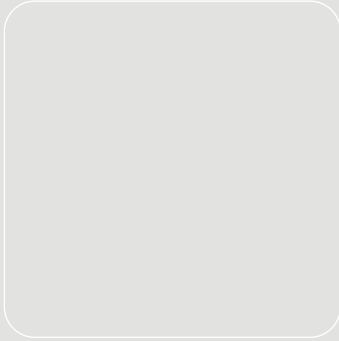
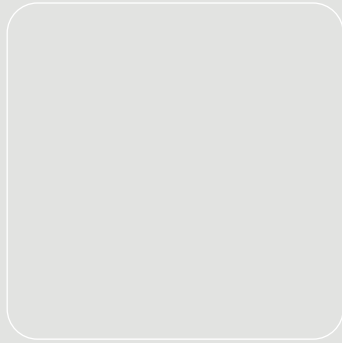
## COASTAL

Recreational water quality - coastal beaches	134
Coastal discharges	136
Coastal water quality	139
Aquaculture	141
Marine biosecurity	145
Marine biodiversity	148
Estuaries	151
Coastal marine structures	155
Ship wake effects	158
Oil spill response	160

## SOE 2015 | Play your part

162





### ACKNOWLEDGEMENTS

The development of this State of the Environment Report has been very much a team effort by the staff of the Marlborough District Council and thanks must go to all those who contributed to the creation of the report. A report such as this could not be put together without the input from current and past staff members who have had the forethought to collect long term data that can be used to analyse trends and changes over time.

Information from organisations external to the Marlborough District Council have also contributed to this report. To all who have provided information thank you for your contribution.

Thanks to Candice Hume from Astute Editing and Proof Reading for the final proof reading and Sharee Vitale from Stampede Design for the desktop design and final layout.



The rivers, mountains, coastal waters, lagoons and fertile plains of Marlborough make our region one of the most diverse in New Zealand. The physical beauty is undeniable and so is the need to look after this environment for future generations.

Marlborough's economy – farming, viticulture, forestry, aquaculture, industry and tourism – relies on healthy soil and water, as does our way of life. Being able to grow our own vegetables, go walking, cycling, boating and fishing means sharing and looking after the resources that nature has provided.

Every five to seven years the Marlborough District Council produces an integrated State of the Environment Report - a comprehensive health check of what's happening to our land, air, freshwater and sea. This 2015 report is a treasure trove of information for anyone wanting to find out more about where we live, whether it's for buying a property, running a business or looking for the cleanest swimming spot.

State of the Environment monitoring is required under the Resource Management Act 1991 (RMA) to help the Council identify conditions and trends and make planning decisions to share and sustainably manage our natural resources. The information is gathered through regular monitoring programmes, research projects and compliance checks on resource consents and permitted activities.

Sustainable management is at the heart of the RMA and there is growing community concern about the need to find a balance between economic activity and development and protecting the environment for future generations. That balance is in the joint hands of the Council as the community's representative and



Ward Beach

central government, and the quality of their decision-making depends on robust research and monitoring.

## THE MARLBOROUGH ENVIRONMENT PLAN

The Council has been reviewing Marlborough's Resource Management Plans – these are the documents that set out objectives, policies and rules to manage how we use and protect our environment.

The 1995 Regional Policy Statement and two regional resource management plans are being merged into a single Marlborough Environment Plan to give a clear direction on resource management issues and create a more user-friendly plan. The Marlborough Environment Plan is due to be released for public submissions in early 2016.

The information in this State of the Environment report plays an important part in that planning process. It brings together monitoring and research from the past to help make good decisions for the future. It will also help inform those wanting to participate in the consultation process for the Marlborough Environment Plan.

### CONTACT US

The State of the Environment Report and annual updates are on the Council's website and staff are happy to help with any queries or requests for information.

Phone: 03 520 7400

Email: [mdc@marlborough.govt.nz](mailto:mdc@marlborough.govt.nz)



## How the report is organised

This 2015 State of the Environment report aims to provide high quality, easily understood information that is accessible to everyone. After this Introduction, the report has six chapters:

- Setting the Scene
- Freshwater
- Infrastructure
- Land
- Atmosphere
- Coast

Most chapters follow the Pressure, Response and State model used around the world for environmental reporting. This focuses on what the stresses are, what is being done about them, and what the results are. In addition, snapshots are presented of the changes since the 2008 State of the Environment Report.

These are presented as summaries, with pointers at the end of each section for those wanting more in-depth or technical information.

Data collected as part of the Marlborough District Council's monitoring programmes is not just used locally to manage our environment but adds to a national picture of New Zealand's state of the environment. In order to manage the consistency of data and provide the public with readily available information, the Land Air Water Aotearoa website [www.LAWA.org.nz](http://www.LAWA.org.nz) has been established. The website is managed by councils across the country with the assistance of the Ministry for the Environment and aims to provide environmental data and information to the public in an easy to understand format.

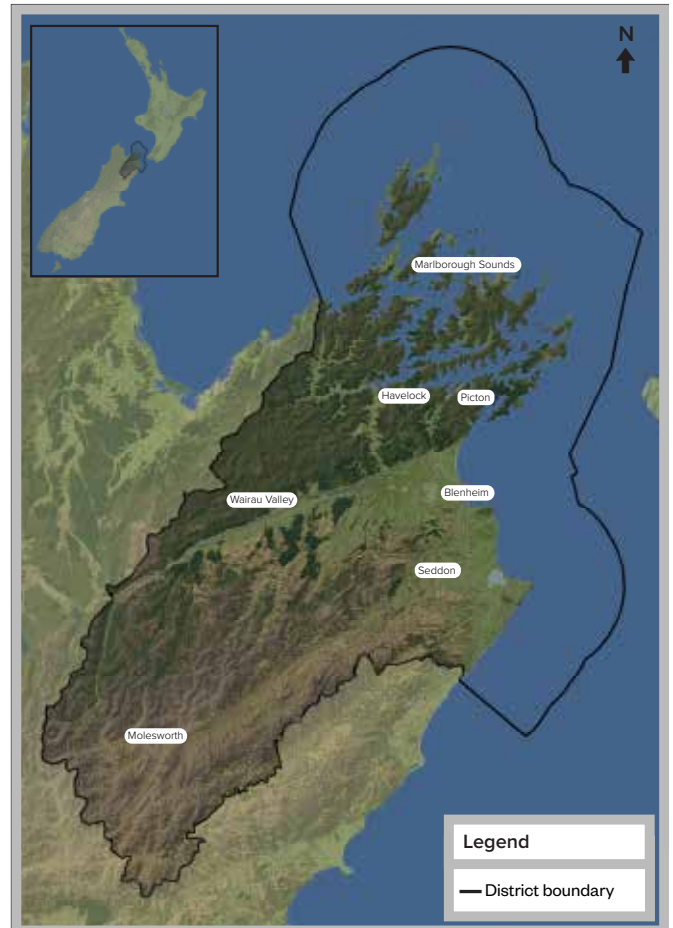
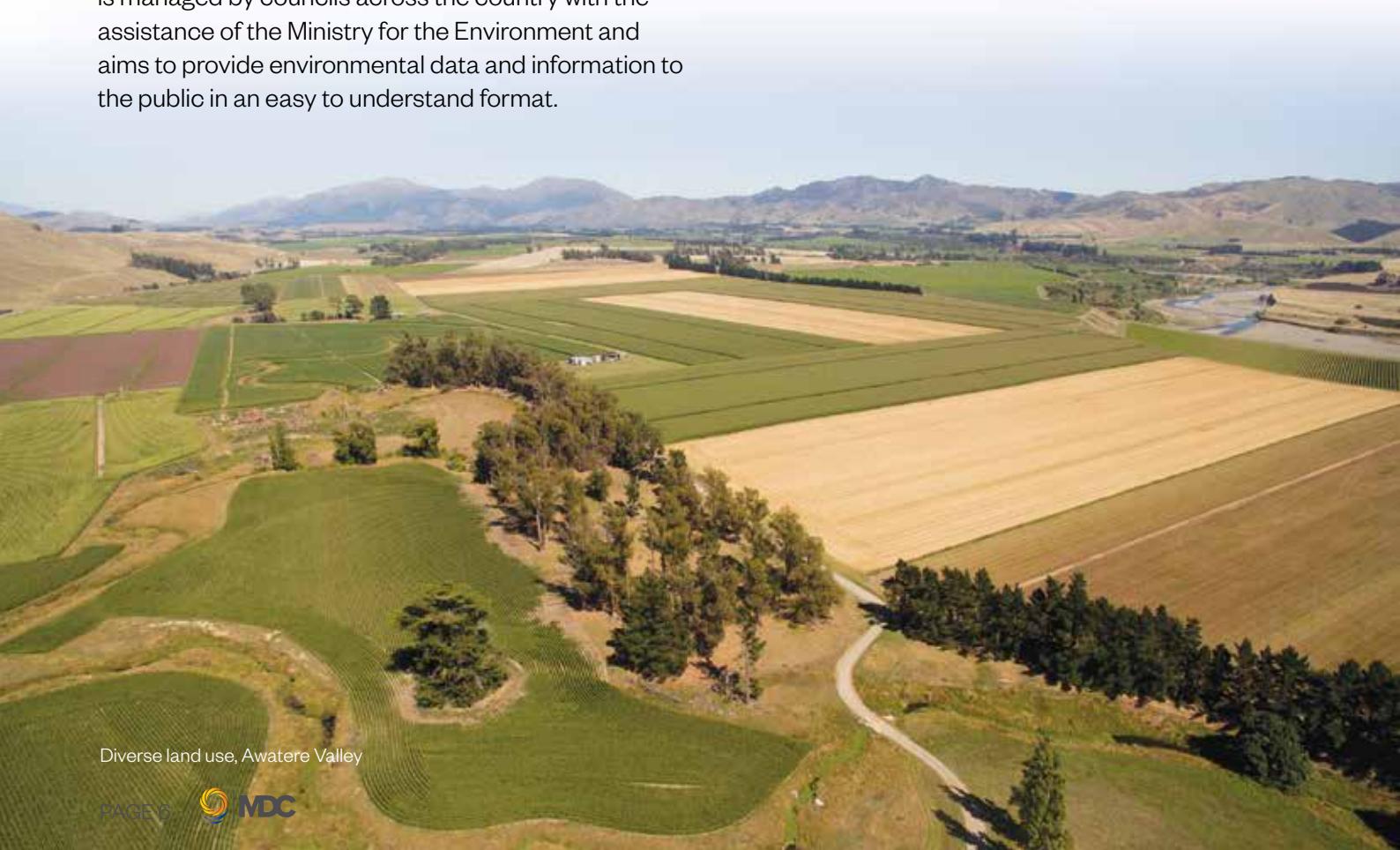


Figure 1. Marlborough Region





# SETTING THE SCENE

*Marlborough is a special place to live, work and play and that is underpinned by our diverse landscape and environment.*

Within our region we have the coastal playground of the Marlborough Sounds, which also support much of New Zealand's aquaculture industry.

We have a world-renowned wine region, famous for exporting sauvignon blanc and bringing in tourists.

We have valleys, hills and high country for sheep, beef and forestry and irrigated plains for dairy farming.

We have plenty of space – more than a million hectares (ha) – for these industries, as well as recreational walking, cycling, hunting, boating, fishing, camping and tramping.

Our environment is not just about physical resources; it includes people and communities and having the ability to enjoy the nature around us.

There's been a growing awareness in recent years about the importance of sustainable management of our environment: the balancing act between using and protecting our natural resources.

While there may be many interpretations of what is "sustainable," there is an increasing understanding that we are caretakers, not owners, of the environment. Tangata whenua iwi call this kaitiakitanga.





# OUR PEOPLE

## TANGATA WHENUA IWI

*Toi tu te marae o Tane-Mahuta, toi tu te marae o Tangaroa, toi tu te tangata*

*When the land and sea are looked after, the people will be looked after*

Te Tau Ihu (top of the South) is home for eight iwi – Ngāti Apa, Ngāti Kōata, Ngāti Kūia, Ngāti Rārua, Ngāti Toa Rangatira, Ngāti Tama, Rangitāne and Te Ātiawa, while Ngāi Tahu have tangata whenua status for part of the east coast of Marlborough.

Each iwi has its own history and mana, aspirations and points of view. This individuality is reflected in their separate claims and eventual settlements with the Crown under Te Tiriti o Waitangi.

While operating as separate entities, iwi also work collectively (kotahitanga)

where there is common ground, such as support for Te Mana o te Wai, a national framework promoted by iwi leaders for the protection and enhancement of freshwater rivers, lakes and estuaries.

Kaitiakitanga of the natural environment is a guiding principle for tangata whenua iwi. It includes

guardianship, care, wise management and seeking action when a resource is under stress, such as a loss of shellfish in a traditional gathering area.

As kaitiaki, Marlborough tangata whenua iwi have an obligation to ensure that the mauri (life force) of the land, freshwater and sea is protected. Mauri embodies the spiritual as well as the physical, so from the Maori perspective damage to resources also causes spiritual damage. In the worst cases mauri can be destroyed entirely, such as contamination in the Ōpaoa River or over-fishing in the Marlborough Sounds.

Kaitiaki are committed to developing systems to understand and protect the mauri of the land, water and coastal environment and restoring mauri where it has been degraded by natural and human activities. Being effective kaitiaki relies on being heard and supported by the wider community, the Council and central government and action being taken, such as rahui to restrict access to vulnerable areas.

Rivers, streams and wetlands are particularly significant – they are like “arteries” of the environment and their health has a direct impact on the wellbeing of the people. Wetlands are important for biodiversity but many

have been drained for land development and lost as a source of traditional food.

To maintain the mauri of streams and rivers there needs to be a constant supply of good quality water flowing through them from the mountains to the sea - ki uta ki tai. There is concern about the amount



Pouwhenua - Ships Cove carving



Kai moana (credit Te Pa Wines)

of water taken from rivers for irrigation, the loss of vegetation along water margins and contaminants in fresh or coastal waters.

Marlborough's indigenous biodiversity has also suffered from forests being cleared and wetlands being drained. Any further loss of indigenous vegetation would be a significant issue for the landscape, plants and the habitat they provide.

When looking after the environment cultural indicators based on local observation and perception, such as changes in estuaries or a loss of shellfish for mahinga kai (food gathering) are valued alongside scientific monitoring.

Protecting the mauri of natural resources should be the overarching goal for all resource management planning and practices in the region and there is a strong desire for Maori environmental practices such as kaitiakitanga to be recognised and implemented.

The Resource Management Act (RMA) sets up a relationship between iwi, the Crown and local authorities. The Act requires the Council to recognise Maori values and include iwi in decision-making in the use and protection of natural resources, especially those of cultural and ancestral importance.

Te Tiriti o Waitangi settlements negotiated by Te Tau Ihu iwi and the Crown in recent years acknowledge the role of kaitiaki based on traditional associations of each iwi with ancestral lands, water, sacred sites and taonga. This recognition reinforces the mana (authority) of each tangata whenua iwi as they plan for their future.



WANT TO FIND OUT MORE?

- Marlborough's Tangata Whenua Iwi, Chapter 3, Marlborough Environment Plan: View Statutory Acknowledgement Smart Maps: [www.maps.marlborough.govt.nz/treaty/portal/](http://www.maps.marlborough.govt.nz/treaty/portal/)



## WHATUNGARONGARO TE TANGATA TOITŪ TE WHENUA

### PEOPLE COME AND GO BUT THE LAND REMAINS

The years since the 2008 State of the Environment report have been an important time in history for iwi in Marlborough, with the signing of their Te Tiriti o Waitangi (Treaty of Waitangi) settlements.

It was a long and difficult process for iwi as the history of the loss of land, the immediate harm to their tupuna (ancestors) and the subsequent harm suffered by their descendents was researched, documented and debated. Iwi claims for many hundreds of millions of dollars from the Crown were eventually negotiated down to tens of millions.

Te Tiriti o Waitangi settlements between the eight Te Tau Ihu (Top of the South) iwi and the Crown became law in August 2014. The settlements include apologies from the Crown, cultural and financial redress, statutory acknowledgements and other legal instruments that formally recognise the relationship of each iwi to coastal, land and freshwater sites.

The Crown's apologies and acknowledgments are based on historical accounts as described in the Deed of Settlement of each iwi:



Te Atiawa Trust Chair Glenice Paine, Local MP and Government Minister signing the Te Tiriti o Waitangi settlement

- Ngāti Apa ki te Rā Tō
- Te Ātiawa o Te Waka-a-Māui
- Ngāti Kōata
- Ngāti Kuia
- Rangitāne o Wairau
- Ngāti Rārua
- Ngāti Tama ki Te Tau Ihu
- Ngāti Toa Rangatira

The Statutory Acknowledgements in each deed are an important part of the process. It is legal recognition of the cultural, spiritual and historical association of each tangata whenua iwi with an identified area, for instance Rangitāne and Te Pokohiwi (Wairau Bar), Ngāti Kōata and Moawhitu (D'Urville Island) or Te Ātiawa and Totaranui.

In some cases several iwi have an acknowledged relationship with the same site, such as Ngāti Kuia, Ngāti Apa and Rangitāne at Puhikereru (Mt Furneaux), Ngāti Toa and Ngāti Rarua with the Wairau River and Ngāti Kuia, Ngāti Tama, Te Ātiawa, Ngāti Koata and Ngāti Toa with Te Hoiere (Pelorus) River.

The settlement process provided for the establishment a River and Freshwater Advisory Committee with representatives from each Te Tau Ihu iwi. This collective has the ability to work with the Marlborough District Council, Nelson City and Tasman District Council to progress iwi issues around the regions' rivers and freshwater.

Te Tiriti o Waitangi settlements have enabled some iwi to be more actively involved in resource and environmental management in Marlborough. This includes developing Iwi Management Plans that identify their relationships with land, water and significant places and how these resources are to be protected, maintained or enhanced.

The Plans provide a framework for consultation and as more are developed it is important that the Council and community give them full recognition in planning and decision-making.

As the post-settlement era begins, Marlborough tangata whenua iwi that have made environmental sustainability a priority will be looking forward to engaging in planning for the future of the region's natural resources.



#### WANT TO FIND OUT MORE?

- Deeds of Settlement  
[www.govt.nz/organisations/office-of-treaty-settlements/](http://www.govt.nz/organisations/office-of-treaty-settlements/)
- Te Tau Ihu Statutory Acknowledgements 2014:  
View Statutory Acknowledgement Smart Maps :  
[www.maps.marlborough.govt.nz/treaty/portal/](http://www.maps.marlborough.govt.nz/treaty/portal/)

Mt. Tapuae-O-Uenuku





# THE PEOPLE OF MARLBOROUGH

## How many

The number of people living in Marlborough is still increasing and so is our average age. On Census night in 2013 there were 43,416 people living in Marlborough. That's 858 more than in 2006 (up 2%) but well behind our population growth in the 1990s.

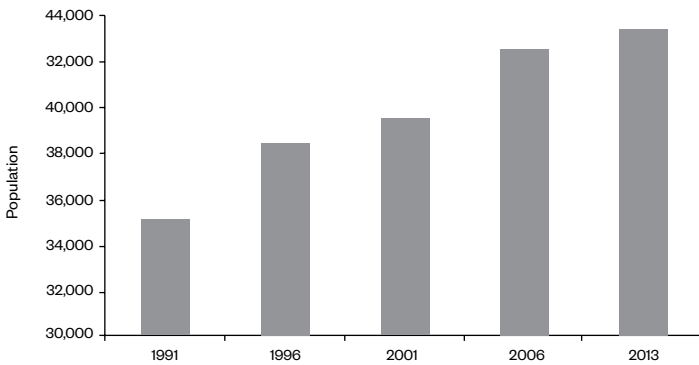


Figure 1: Marlborough District Population - Census 1991-2013

Renwick and Waikawa were the most popular places to move to, with the biggest population growth since 2006 - both up 13%. Blenheim is home to more than 55% of the Marlborough population, with 24,654 people (up 4%).



Blenheim Market

The number of Maori living in Marlborough increased by 501 people to make up 11% of our population. The other main ethnic groups are Asian (2.8%) and Pacific Island (2.3%).

## How old

Marlborough continues to be a desirable place in which to age – we have the highest proportion of older people in New Zealand, with 20.5% of our population

aged 65 or more. (This age group makes up 14.3% of the total New Zealand population.)

At the other end of the scale, Marlborough doesn't have as many young people, with 17.9% of our population aged under 15 years compared to 20.4% nationally.

The median age (half are younger and half are older than this age) in Marlborough is 45 years, compared to 38 years for the rest of New Zealand.

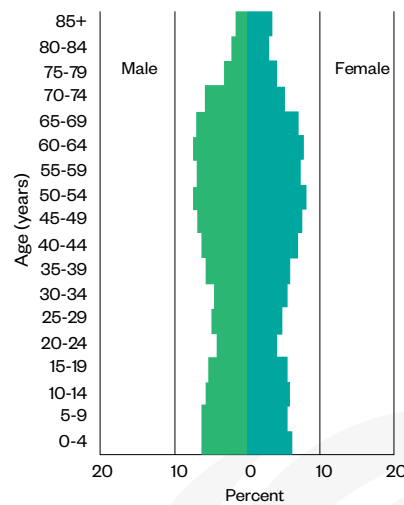


Figure 2: Age and sex of people - Marlborough Region 2013 Census

## Where we're from

Since 2001, 3,858 people have moved to Marlborough and almost all of them were born overseas. The largest group was originally from the UK or Ireland (about half), with other new residents coming from Asia, Eastern Europe, the Americas and Pacific Islands.

The Canterbury earthquakes in 2010 and 2011 led to an outflow of people into Marlborough and neighbouring regions. While this move was temporary in most cases, 1,848 people were living permanently in Marlborough in 2013 who had been resident in Canterbury in 2008. On the other hand, a slightly higher number (1,875) moved from Marlborough to Canterbury during that time, which may reflect the pull of workers to help with the Christchurch rebuild.

Another dimension is the workforce that lives in Marlborough for part of the year to work in our primary industries. It is estimated that up to 4,000 seasonal workers come here each year from elsewhere in New Zealand and from overseas.

## What about the future?

Statistics New Zealand calculates a range of scenarios to predict our future population based on projected birth rates, mortality rates and migration patterns. Based on the “medium growth” scenario, the number of people living in Marlborough in 2046 is expected to reach 49,500, about 14% more than the 2013 Census population. However, this is lower than the projected 2036 population of 49,800.

Population peaks followed by declines are already happening in parts of New Zealand and other developed countries. It is mainly due to an ageing population and lower birth rates.

49.2% of Marlborough’s population is male, 50.8% is female. The gender balance is relatively even through the different age groups.

The proportion of older people living in Marlborough is also expected to grow by 2046 when about 35% will be aged 65 and over, compared to 20.5% in 2013. In 2015, this group rose to 22% currently residing in Marlborough compared to a national average figure of 15%. The proportion of young people remains steady at 18% and has done so since 2006; this group however is projected to fall to about 14% in the longer term.

The number of working-age people living in Marlborough is expected to reduce to 50% of the population by 2046, compared to 60% in 2013. This group currently sits at 61% of the population, according to the Infometric Data Source.

In 2015, the population growth showed a 1.12% growth in population versus 1.9 nationally. This growth was made up of a natural increase of 100 and a net migration of 400.

Omaka Classic Fighters

## OUR HOUSES IN 2015

- The Housing Affordability Index has improved for Marlborough residents purchasing a home from an index of 10.3 in 2008 to 7.5 in 2014. This index rates more favourably than residents in nearby Tasman and Nelson (9.5) and the New Zealand average of 8.8.
- Home ownership: 70.9% of Marlborough households owned the home they were living in or it was owned by a family trust (64.8% for NZ).
- The average household: 2.4 people (2.7 for NZ)
- Median weekly rent in Marlborough: \$283 (\$347 for NZ).
- Average house price in Marlborough: \$354,125 (\$505,900 for NZ).
- Since 2013, the average house price has risen by about 4% while the NZ average has risen by about 8.5%, this latter figure likely reflecting the Auckland housing market effect.
- Internet access in Marlborough is 75% (76.8% for NZ).

[From 2013 Census data and Quoteable Value and 2015: Infometrics Data Source]

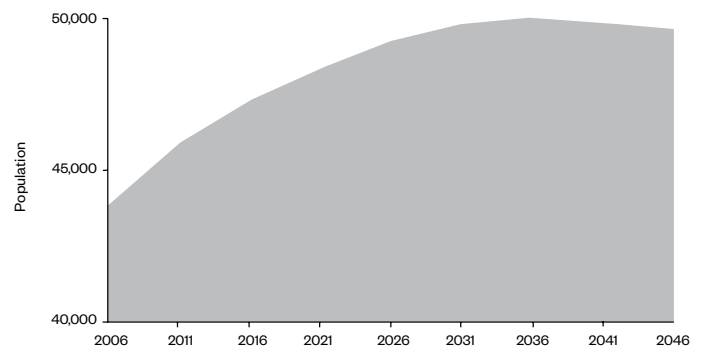


Figure 3: Marlborough's projected population growth





# OUR LAND

*Tectonic plates, sea-level changes, glaciers and rivers have all played a part in the formation of Marlborough's 1,049,128 ha land area.*

The region's mountain ranges and river valleys were formed 25 million years ago when the Pacific and Indo-Australian tectonic plates collided resulting in two distinct geographical areas: the Marlborough Sounds to the north and the Wairau and Awatere Valleys to the south.

## THE MARLBOROUGH SOUNDS

The Sounds were originally river valleys but under the pressure of tectonic forces were submerged and filled in by the sea to create 1800 km of convoluted coastline bordered by Tasman Bay to the west to Te Koko-o-Kupe / Cloudy Bay to the east.

The land is rugged, sloping steeply up from the shore to prominent spurs and ridges. Bays, coves, beaches, peninsulas, headlands and cliffs all mark the point where the land and water meet.

Soils have developed on mainly metamorphic rocks such as schist and greywacke-schist. An ultramafic (volcanic based) mineral belt runs through D'Urville

Island and western parts of the Sounds, supporting some distinctive vegetation and rare plants. Argillite or pakohe, much prized by Maori for tool making, is also found here.

Rain from the west makes for a moist climate, which combined with the mixed soil types creates a variety of habitats including broadleaf and beech forests, regenerating native bush and some pockets of original podocarp forests (totara, rimu, matai and kahikatea).

The Sounds are home to rare and threatened species including tuatara, the Maud Island frog and the Cook Strait giant weta. Predator-free islands administered by the Department of Conservation also provide sanctuary for endangered birds such as kiwi and takahe.

The arrival of humans brought about significant changes, with much of the original native forest and bush cleared for timber and pastoral farming, followed in some areas by exotic forestry. With the marginal economics of farming in the Sounds, many areas have been left to revert to native bush. Pine forests planted in the 1970s are now in the harvesting phase, causing issues of steep slope erosion and sedimentation into the Sounds.

About 60% of the land in the Sounds is owned by the Crown and much of it is looked after by the Department of Conservation as public reserves.



## WAIRAU AND AWATERE VALLEYS AND FURTHER SOUTH

Along the east coast of Marlborough the Wairau and Awatere rivers meander to the Pacific Ocean, laying down the stone and soils that built up the fertile plains.

Along the way these rivers and their tributaries flow through glacial landscapes, native and exotic forests, tussock, grasslands and modified plains covered with vineyards.

Extensive flood management and drainage systems have benefited 10,000 ha of productive land on the Wairau Plain. A rapid expansion of vineyards has seen the removal of shelterbelts as land was converted from the more traditional sheep and beef farming, orchards and horticulture. Clay, loess and stony loam soils have built up on the Wairau floodplains while dune sands, beach gravels and estuarine deposits feature along the coast.

The Awatere Valley and Flaxbourne on the dry east coast have historically been pastoral farming areas. However, many parts have also been converted to vineyards and exotic forestry, with the potential for more grapes and cropping if the proposed Flaxbourne water scheme goes ahead. The dry climate soils have developed on a base of sedimentary rocks including greywacke, argillite, conglomerate, limestone and wind-blown soils.

To the south, inland from Ward and Seddon, dryland hills and mountain ranges are home to high country farms. Extensive sheep and beef farming continue to be the main land use, with much of the land owned by the Crown and leased back to run-holders. The relative isolation and climatic difficulties of this high country is in stark contrast to the intensively managed river plains of lowland Marlborough.





# OUR WATER

Marlborough has many waterways, from high country streams to broad braided rivers and deep swimming holes. We rely on good water and plenty of it for farming, growing grapes, industry, recreation and drinking.

And the water's not just there for humans to use. The Council has a responsibility to look after the water for the fish, birds and insects that rely on it too. Healthy plant and animal life are good indicators of a healthy waterway.



Torrentfish

Under the Resource Management Act it is the Council's responsibility to look after the region's water and make sure we share it fairly. Council staff regularly monitor:

- river flow and levels – checking there is enough for irrigation and stream life
- groundwater – how much water is underground in aquifers and how much is abstracted
- rainfall – including flood risk warnings
- water meters – how much water is used by farmers and industry
- water quality – Checking the water is suitable for instream life and human usage
- water quality for swimming – summer testing for recreation
- water quality for drinking – screening for harmful bacteria

## RIVERS

Marlborough's three main rivers are the Wairau, Awatere and Te Hoiere / Pelorus. They each have large catchments reaching into the wetter western and alpine boundaries of the province, which provide relatively reliable flows.

The Wairau is a braided river that runs for 145 km along a gravel bed, fed by significant tributaries including the Branch, Wye and Waihopai. A long history of river control works has changed the



Awatere River

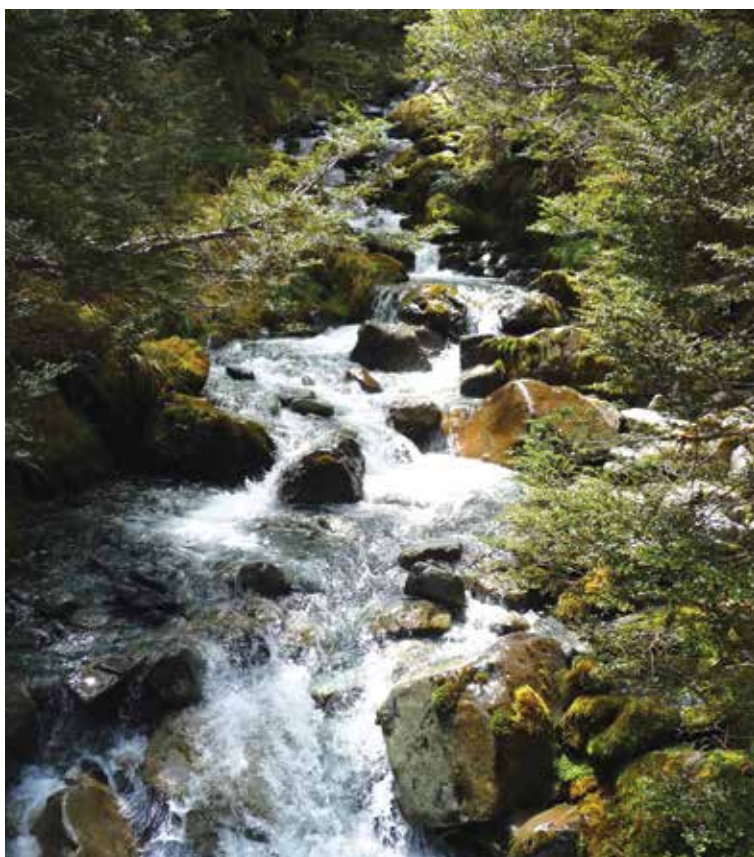
channels and streams across the Wairau Plain to drain wetlands for conversion into pasture and to reduce the risk of flooding. The Wairau River flows into Te Koko-o-Kupe / Cloudy Bay at the Wairau Bar with a lagoon system to the south.

The Awatere River rises in the high country of Molesworth and flows 110 km into Clifford Bay on the east coast. It is steeply graded and confined to a rocky channel for most of its length but gradually broadens out into several braids, creating fertile river terraces and mudstone cliffs on the way. Water in the Awatere River is cloudy with fine sediments dissolved from the mudstone it flows through.

In the southern part of the District lies part of the Clarence catchment, where the Acheron River runs through high country farms for 68 km from the high divide between the Wairau, Clarence and Awatere catchments.

In northern Marlborough, the Te Hoiere / Pelorus River runs for 70 km from high in the Richmond Ranges down into the estuary at Havelock. Its main tributaries are the Rai and Wakamarina, which also have rock and gravel beds. The upper Te Hoiere / Pelorus is mainly native forest reserve, while the Rai is bordered by dairy farms and exotic forestry.

The Marlborough Sounds has hundreds of short, steep creeks but few rivers. The largest are the Kenepuru, Kaituna and Graham Rivers and the Waitohi Stream in Picton.



Typical Sounds stream

## AQUIFERS

### The connection between rain, river and aquifers on the Wairau Plain

Aquifers are large amounts of underground water. Formed by rocks and gravels with water in between, aquifers are like natural storage tanks that are recharged by rain or seepage from rivers. Aquifer water can be accessed by drilling a well and pumping the water up to the surface. Like rivers, aquifers go down if there's not enough rain or if too much water is drawn off.

The Wairau Aquifer is the largest in Marlborough and runs under the central and northern Wairau Plain, extending out into Te Koko-o-Kupe / Cloudy Bay. Water from this aquifer is used for irrigation, industry and domestic use.

Towards the coast the Rarangi Shallow Aquifer, formed by beach sands and gravel, sits on top of the Wairau Aquifer. The two are separated by a layer of sediment known as the Dillons Point Formation. Rarangi residents rely on the shallow aquifer for their water.

Aquifers in the Southern Valleys around Brancott, Benmorven, Omaka, Taylor and Riverlands have less gravel and more sediment, which slows the passage of water. They rely on rain and small streams to top them up and when this surface water dries up in the summer, the aquifers also suffer.

The Rai, Kaituna and Te Hoiere / Pelorus valleys have much smaller aquifers and are limited to under the gravels of their river beds.

Other areas in Marlborough such as the Sounds, Awatere and Flaxbourne do not have the geology to store groundwater in aquifers so they rely on surface water – rivers and creeks – instead.





Wairau Lagoons

## Wetlands and Estuaries

There used to be large expanses of wetlands in Marlborough and travel across the boggy Wairau Plain, especially in winter, was hard going. This is indicated by early European settlers calling Blenheim The Beaver and they set about draining the swamps and wetlands for farm land.

Over time many of the remaining wetlands have been drained and recontoured to make way for productive farmland and vineyards. This has had a detrimental effect on biodiversity – the plant and animal life supported in these special environments. As awareness of this grows, some companies are making significant efforts to replant and restore wetland areas on their land.

An estuary is the wetland area where a river meets the sea. There are a range of estuaries in Marlborough, from sheltered bays in the Sounds to more exposed river mouths on the rugged east coast.

The Wairau Lagoon east of Blenheim is a shallow waterway of channels and islands that covers about 2400 ha. Te Pokohiwi (the Boulder Bank) forms the



Rarangī residents rely on aquifers for their water supply

boundary between the lagoon and Te Koko-o-Kupe / Cloudy Bay and is the first place Maori settled in New Zealand more than 800 years ago, finding the waters rich with fish and seafood. The lagoon area is internationally important as a nursery for fish and a feeding ground for migrating birds. Estuaries and coastal wetlands in the Sounds are home to a wide variety of birds, fish and aquatic invertebrates and play an important role in processing run-off from different land uses in the surrounding area.





Only remnant wetlands remain on the Wairau Plain

A healthy estuary is productive and rich in animal life and many coastal fish such as flounder depend on estuaries as spawning grounds. Increased sedimentation from surrounding land can cause estuaries to become muddier, which reduces the habitat for shellfish, fish and birds.

## COASTAL MARLBOROUGH

Marlborough has two distinct coastal areas: the Marlborough Sounds and the East Coast. Their marine environments are equally distinct – together they contain about 1800 km of coastline, or approximately 10% of New Zealand's total coastline.

The Sounds run from Cape Soucis in the west to Robin Hood Bay in the east. Within this labyrinth of bays the seafloor takes many forms, including deep mud, coarse sand, shell and bedrock with reefs and rocky outcrops. This supports a large range of marine plants and animals, from rare bryozoan corals, king shag and dusky dolphin to mussels and blue cod.

The east coast's exposed shores and large ocean swells are a stark contrast to the enclosed Sounds. As well as gravel beaches there are rocky and mudstone reefs and unique limestone platforms that are home to many species, including kelp, algae, limpets, periwinkles and paua. Those diving and fishing offshore find crayfish, surf clams, scallops, butterfish, moki and cod.

## COMPETING INTERESTS IN THE MARLBOROUGH SOUNDS

The Marlborough Sounds have supported people for at least 800 years, with Maori valuing their strong ancestral links to the area and the rich mahinga kai (food gathering).

The first Europeans in the area were whalers, loggers and farmers and the commercial use of the Sounds continues today with aquaculture, forestry, fishing, farming and tourism. At the same time the Sounds are home for many residents and bach owners. It is also the place for a great holiday or fishing trip and the chance to swim, kayak and enjoy the sheltered coastal waters.

Managing these competing interests is a complicated task and the Marlborough District Council works with Government agencies to try to ensure that land and public water space is shared fairly and used sustainably.

Issues include maintaining water quality, protecting marine ecosystems, ensuring access to beaches and bays and protecting the special views and landscape features of the Sounds.

The Council regulates the different activities in the Sounds through its resource management planning framework and consenting process. This is backed up by research and monitoring to provide information for future planning and protection of the Sounds.

Public notification of the new Marlborough Environment Plan in 2016 is an important opportunity for everyone who works, lives or plays in the Sounds to have a say about the future of this special part of Marlborough.



Pipi Bay



# OUR PLACE

## CLIMATE

Marlborough's temperate climate is an important factor in attracting people to live in the region and enjoy the great outdoors. It is also key to the success of our primary industries, including the growing of grapes, pasture and forestry.

Blenheim is always a frontrunner for the most sunshine hours in New Zealand and took the title in 2015 with 2,814 hours. This is good when it comes to ripening grapes and attracting tourists, but not so good when summer turns to drought.

Average daily temperatures in Blenheim range from a minimum of 7.8°C to a maximum of 18.4°C, with summer highs in the 30s and winter lows close to zero. While winter temperatures can be chilly, the classic Marlborough winter day has a frosty start followed by clear blue skies, boosting the tally of annual sunshine hours.

The amount of rain varies dramatically throughout the region – parts of the Marlborough Sounds receive 2600 mm a year, compared to an average of 650 mm in Blenheim and even less on the east coast. The threat of drought is not just a lack of rain; it is also a result of drying winds, particularly the hot nor'wester. November is the windiest month in Marlborough, while May is the calmest.

## ECONOMY

The Marlborough economy relies heavily on primary industries – winegrowing, farming, forestry and aquaculture – as well as tourism. These core sectors drive other parts of our economy, including manufacturing, business services, retail and transport.

While there is diversity in the Marlborough economy, there is also interdependence, which means if a core sector is struggling, their support industries will also suffer.

Economic performance can be measured by Gross Domestic Product (GDP) – the total value of goods produced and services provided. In 2015 Marlborough's GDP was \$2.174 billion (compared with \$1.785 billion in 2004). In our neighbouring regions

in 2015 Nelson City had GDP of \$2.292 billion and Tasman District had a GDP of \$1.624 billion.

After strong growth since 2000 (ranging from 4.6% to 11.4% per year) Marlborough's economy was hit by the global financial crisis in 2009. GDP growth did not return until 2012 and was relatively weak until 2014 when growth reached 2.9%. Marlborough experienced a 3% growth in GDP in 2015.

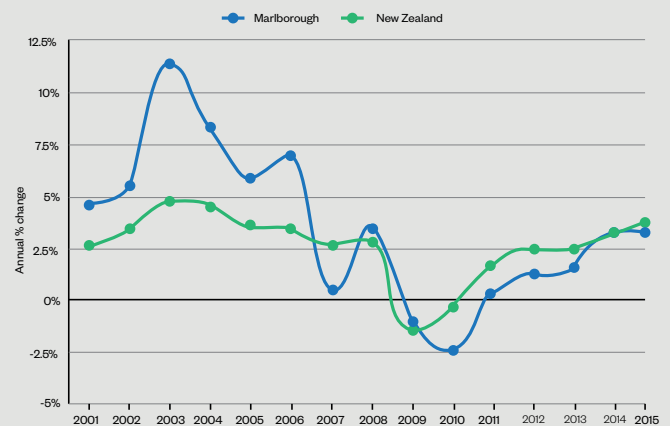


Figure 1: Marlborough GDP growth 2000-2014

In 2015, aquaculture increased slightly on the 2014 data, but is yet to reach the 2012 levels in all three measures as the industry underwent a period of rationalisation, which may be related to changing ocean conditions. Pastoral farming continues to contract and forestry had an increase in employment and businesses, with GDP reflecting the increased activity.

In 2015, the higher performing clusters were grape growing, tourism and aviation. Aviation continues to impress with high business numbers remaining stable. Interestingly the number of employees in Aviation grew only slightly.

## INDUSTRY STRUCTURE

Manufacturing, including wine production, accounted for 23.7% or \$514 million of Marlborough's GDP in 2015. Within the manufacturing sector, beverages make up 15.4% (\$336 million) of Marlborough's GDP and 61% of all manufacturing GDP. Wine dominates this category (\$316 million), although beer is a growing niche (\$15.9 million).

While vineyards and marine farms are highly visible on the land and in the sea, this breakdown shows that manufacturing of food and beverage products and other related services are more valuable to the region, based on GDP.

## CLUSTER ANALYSIS OF SECTOR GROUPS

Another method of analysing the economy is to consider clusters of activity. For example, the forestry cluster includes tree nurseries, harvesting and processing as well as exported logs. In 2015, logging, forestry and sawmilling attributed to 79.9% of the wood sector GDP, only 11% of the sector's GDP from wood manufacturing.

GDP and employment in each cluster gives an indication of their importance to the region. The wine cluster dominates the Marlborough economy. Overall, growth in these clusters was quite small or negative between 2006 and 2014.

Table 1: Gross Domestic Product, employment and businesses between 2006 and 2015

CLUSTER	GDP 2015 (2006)	EMPLOYMENT 2015 (2006)	BUSINESSES 2015 (2006)
Grape growing and wine manufacturing	\$371m (\$426m)	2,454 employees (2,289)	803 businesses (649)
Tourism	\$98.4m (\$88m)	2,174 employees (1,683)	Unknown
Aviation (including RNZAF Woodbourne)	\$74.1m (\$63.8m)	868 employees (812)	42 businesses (14)
Aquaculture, seafood, fishing and processing	\$68.1m (\$63.4m)	854 employees (803)	185 businesses (167)
Pastoral farming and meat processing	\$64.8m (\$66.4m)	951 employees (1,134)	526 businesses (785)
Forestry and wood products manufacturing	\$52.0m (\$40.4m)	477 employees (550)	335 businesses (353)

Vineyard





# TOURISM AND EVENTS

Tourism was worth \$294 million to Marlborough in 2015. The province's natural attractions and major events such as the Wine and Food Festival and the Classic Fighters Air Show are recognised as playing an important role in this result.

These sorts of events showcase the region and its products, attract national and international tourists and boost the economy through eating out, shopping and accommodation.

Similar benefits are achieved by niche sporting events that have become part of Marlborough's annual calendar. For example, competitors in the Forrest Grape Ride and the St Clair Half Marathon not only indulge in their favourite exercise, they get to experience the Marlborough landscape, taste the region's produce and have a holiday as well.

An economic analysis of the 2015 Marlborough Wine and Food Festival showed:

- 3,240 visitors from outside the region spent more than \$1.3 million on goods and services including accommodation, food and beverages, transport and retail shopping
- these visitors generated nearly \$800,000 of GDP in the Marlborough economy

- this was a 321% return on regional investment. (The average return on investment for an Auckland major event was 73%).

Tourism and large events drive regional economic growth by creating local businesses and employment and supporting other businesses on the periphery such as supermarkets, builders and accountants. However, the continuing growth and success of our tourism industry depends on looking after the natural environment and landscape that visitors come to experience.

## SUSTAINABLE MANAGEMENT

Marlborough's way of life relies on sound environmental management practices – looking after our people, our land, our water and our place for future generations. The way natural and physical resources are managed will be increasingly important in the coming years.

As a community we need to recognise that there is only so much land, water and coastal space available for development and we may reach limits in being able to allocate some of those resources for more economic growth.

Understanding the state of our environment and having the information to plan for future needs will help ensure we maintain the balance between using and protecting Marlborough's natural resources.



### WANT TO FIND OUT MORE?

- Te Tau Ihu Statutory Acknowledgements [maps.marlborough.govt.nz/Treaty/portal/](http://maps.marlborough.govt.nz/Treaty/portal/)
- 2013 Census results: [www.stats.govt.nz](http://www.stats.govt.nz)
- Natural Character of Marlborough's Rivers, May 2014
- Ecologically Significant Marine Sites in the Marlborough Sounds, MDC, 2011
- Marlborough Region Economic Profile <http://ecoprofile.infometrics.co.nz/Marlborough+Region>

