



Christchurch City Council  
**Climate Smart  
Strategy 2010-2025**

Ōtautahi/Christchurch and Te Pātaka o Rākaihautū/Banks Peninsula\*

# Forward

One of the defining aspects of life in Christchurch is our relationship with the climate. The hot dry summers, cold crisp winters, mild autumns and spring rains have all helped to grow our world renowned Garden City.

Springtime in Hagley Park, when the daffodils burst into life and cherry trees cast a canopy of blossom, is a sight that always lifts the spirits. Winter is over and a summer of family picnics at the Groynes, making sand castles on New Brighton Beach or walking along the Akaroa foreshore awaits.

This wonderful lifestyle we enjoy is made possible because of our stable climate. However, there are signs that our weather is becoming more variable as the climate changes.

The Eastern coastline throughout New Zealand is becoming drier as less rainfall leads to drought conditions year after year. While sudden downpours of rain can create floods and landslides. These extreme weather events are projected to occur more often and combined with a rising sea- level can affect our community and our economic pillars of farming and tourism.

That's why I'm pleased Christchurch takes climate change and its impacts seriously. The Council was one of the first in New Zealand to adopt a Climate Change Policy in 1995. Since then the Council has been applying that policy to many of our decisions.

One example of our commitment to reducing greenhouse gas emissions is the new Council Civic Offices. In addition to its energy efficient design, the building is powered using bio-gas from Burwood Landfill, saving costs and emissions. This climate smart building is the first 6 star green building in the South Island, helping to put Christchurch on the map as a world-class sustainable city.

It is initiatives such as this, and others contained within this Climate Smart Strategy that will turn the challenge of climate change into opportunities to enhance our resilience, prosperity and quality of life, now and for generations to come.

Working together for a Climate Smart Christchurch is smart thinking indeed.

Bob Parker  
Mayor

# Summary

The Climate Smart Strategy 2010 – 2025 sets the direction for community and Council actions that respond to issues and harness opportunities presented by climate change.

Our community is already responding to climate change in many ways. Through recycling, choosing local produce and by walking and cycling, each person is making a difference to reduce greenhouse gas emissions. Business and Council actions that improve energy efficiency and investments in cleaner technologies and renewable energy are adding to this collective community response to climate change. This Strategy builds on these positive actions and helps prepare for future changes.

In developing this Strategy, the Council is following New Zealand Government advice about anticipated changes for Christchurch and is meeting legal obligations placed on the Council to consider the impacts of climate change. Following this advice, our community within the next 90 years must prepare for:

- a. 50 – 80 centimetre rise in sea-level;
- b. a temperature increase of 2 degrees celsius;  
and
- c. changes in rainfall and extreme weather events.

This Strategy helps to deliver on the Council's sustainability policy. It sets a vision of a Climate Smart Christchurch that is resilient to the impacts of climate change such as coastal erosion, floods and droughts and able to make the social and economic transformations necessary in a future carbon-constrained world.

The vision tasks our community to work towards being powered by renewable energy such as biomass, wind, hydro, and solar power. To move away from a reliance on greenhouse gas emitting oil and coal and to create a more sustainable and secure basis for future generations to live and prosper.

## VISION

People and communities actively work towards a climate smart Christchurch that reduces its greenhouse gas emissions and is resilient to the social, cultural, economic and environmental effects of climate change.



## GOALS AND OBJECTIVES

To achieve the vision the Council will implement the following goals and objectives.

Goal 1. Understand the local impacts of climate change.	
Objective: 1	Understand the social, cultural, economic and environmental impacts of climate change on Christchurch.
2	Monitor and report changes and progress.

Goal 2. Provide leadership in addressing climate change.	
Objective: 3	Grow Council capacity to respond to climate change.
4	Grow community capacity and foster partnerships that respond to climate change.

Goal 3: Respond to the opportunities and challenges presented by climate change in ways that promote social, cultural, economic and environmental wellbeing.	
Objective: 5	Encourage sustainable households and communities.
6	Support a resilient, low-carbon and competitive economy.
7	Prioritise low-carbon transport.
8	Encourage green and healthy places and spaces.
9	Enhance local productive landscapes and the resilience of habitats and ecosystems.
10	Promote energy conservation, renewable energy and carbon sequestration.

## TARGETS

In 2008 approximately 3.6 million tonnes of greenhouse gases were emitted from Christchurch. This is equivalent to approximately 10 tonnes of greenhouse gas emissions per person per year. The key sources of emissions are from transport, energy use, waste and agricultural activities. This Strategy sets the following targets in each of these key areas.

### Greenhouse gas emissions

- 20% reduction in net greenhouse gas emissions from Christchurch by 2020 from a 2008 base year, (e.g. no more than 8 tonnes per person per year).
- 50% reduction in net greenhouse gas emissions from Christchurch by 2050 from a 2008 base year, (e.g. no more than 5 tonnes per person per year).

*Source: generally consistent with New Zealand Government climate change policy in 2009*

### Transport

- 50% reduction of greenhouse gas emissions from domestic transport by 2040 from a 2008 baseline.
- Increase coastal shipping's share of inter-regional freight.
- Increase rail's share of freight.

*Source: New Zealand Transport Strategy 2008*

### Energy

- At least 25% of total energy used (including transport) is from renewable sources by 2018.
- Reduce total energy consumption to no more than 107 Gigajoules per person per year by 2018.

*Source: Christchurch City Council Sustainable Energy Strategy 2008 - 2018*

### Waste

- 65% reduction of waste landfilled by 2020 (no more than 320 kg per person per year) from 1994 levels.
- Zero hazardous waste by 2020.

*Source: Christchurch City Council Waste Management Plan 2006*

## **Agriculture**

- No net rise in greenhouse gas emissions from agricultural activities from 2008.
- 15% increase in land area covered in woody vegetation by 2030 from a 2008 baseline.

*Source: new targets, but consistent with actions within the Christchurch City Council Public Open Space Strategy 2010*

Actions have been developed to implement the objectives and achieve the targets contained in this Strategy. The extent to which these actions are implemented will depend on decisions made in future Long-term Council Community Plans. Accordingly, timing and funding may

change from what is proposed, though there is a clear Council commitment to work towards the outcomes of this Strategy.

By working with communities and organisations identified in this Strategy we can create a resilient community, harness new green business opportunities and efficiently use clean renewable energy, to build a positive and enduring legacy for our children and grandchildren.

Together we can build a climate smart Christchurch.

# Contents

1.0	Introduction	6
2.0	Background	7
2.1	Purpose of the Strategy	7
2.2	Legal obligations for the Council to address climate change	7
2.3	New Zealand Government guidelines for local government	7
2.4	The effects of climate change on Christchurch	8
2.5	Policy Context	8
2.6	Christchurch greenhouse gas emissions	10
2.7	Christchurch greenhouse emissions	11
3.0	Setting The Direction	12
3.1	Our Guiding Principles	12
3.2	Vision, Goals and Objectives	12
3.2.1	Vision	12
3.2.2	Goals and Objectives	12
3.3	Targets	13
4.0	Taking Action	27
4.1	Action Criteria	27
4.2	Action Plan	27
4.2.1	Understanding	28
4.2.2	Leadership	30
4.2.3	Awareness and Resilience	31
5.0	Measuring Success	37
Appendix 1	References and supporting information available at <a href="http://www.climatesmart.govt.nz">www.climatesmart.govt.nz</a>	38
Appendix 2	Policy and planning documents related to climate change	39
Appendix 3	Key organisations involved in understanding or responding to climate change	41

# 1.0 Introduction

## “CLIMATE CHANGE”

The two most controversial words of the twenty-first century.

In little over a decade, climate change has gone from being a hotly debated scientific theory to being a politically accepted global issue. Though scientists may continue to research and debate whether the impact of climate change is being exaggerated or under-estimated, nations around the world are developing and implementing policies to reduce greenhouse gas emissions and transition to more sustainable economies and societies. New Zealand is one of those nations.

Even though New Zealand’s contribution to climate change is small (0.2% of global emissions, MFE, 2009). we have the fourth highest per person greenhouse gas emissions in the world. The impact of not reducing our emissions could be significant. As a trading nation, New Zealand’s fortunes are linked to our trading partners, who are taking the threat of climate change seriously. Our two biggest export earners, agriculture and tourism, with their brand promise of being 100% Pure, rely in part on New Zealand being seen as a world leader in environmental stewardship. Responding to climate change has become economically non-negotiable. It is also a moral imperative.

As New Zealanders we take great pride in our country, its world renowned landscapes, unique plants and animals and our superb quality of life. It is part of our national identity to ensure that our children and grandchildren can also enjoy life in New Zealand. Taking positive action on climate change now will help improve our wellbeing and create a positive and lasting legacy for future generations.

Fortunately, we have been responding to climate change for some time.

In 1995 the Christchurch City Council took a leading position on climate change by adopting its Climate Change Policy.

*Christchurch City Council Climate Change Policy (1995)*

- 1. That the Council acknowledge that climate change is occurring and adopt a precautionary approach when planning for future activities and works.*
- 2. That the Council when developing new policies and projects, take into account the effects of climate change where this is appropriate. Policies that initiate or support activities that counter the causes and effects of those changes, are to be preferred.*
- 3. That the Council’s response to climate change combine the limitation and adaptation approaches.*
- 4. That the Council develop transportation policies which serve to limit greenhouse gas emissions.*
- 5. That the Council support ongoing monitoring of climate change indicators such as sea level rise, greenhouse gas emissions and carbon sinks.*

In 2010, the Council continued to take a leadership role with the development of this Climate Smart Strategy. This Strategy clarifies the Council’s position on climate change and seeks to build on the past and present actions of our community and Council, so together we can create a Climate Smart future.

## “CLIMATE SMART”

Two inspirational words for the twenty-first century.

## 2.0 Background

### 2.1 PURPOSE OF THE STRATEGY

The Christchurch City Council has prepared this strategy to:

- a) Respond to New Zealand Government advice received about future changes to our climate and sea level.;
- b) Meet legal obligations placed on the Council to consider the effects of climate change on the current and future social, cultural, economic and environmental well being of Christchurch.;
- c) Clarify the Council's role in responding to climate change through establishing a vision, goals, objectives and targets.;
- d) Replace the Climate Change Policy adopted by the Council in 1995.;
- e) Develop a high level action plan that will form the basis of a future detailed implementation plan to achieve the strategy outcomes.

### 2.2 LEGAL OBLIGATIONS FOR THE COUNCIL TO ADDRESS CLIMATE CHANGE

Four key Acts of Parliament place obligations on the Council to consider the effects of climate change:

#### *Local Government Act 2002*

The Local Government Act 2002 (LGA) places obligations on the Council to consider climate change because of the potential impacts on current and future social, cultural, economic and environmental wellbeing. The LGA also requires the Council to help achieve the Christchurch Community Outcomes many of which will be affected by climate change.

#### *Resource Management Act 1991*

Section 7 of the Resource Management Act 1991 (RMA) requires the Council to have particular regard to the effects of climate change when carrying out its functions. For example, in considering resource consent applications or considering changes to City and District Plans.

#### *Civil Defence Emergency Management Act 2002*

The Civil Defence Emergency Management Act 2002 requires the Council to manage risks to people and property, to enhance

community resilience and preparedness and to ensure adequate responses and recovery from emergencies.

#### *Climate Change Response Act 2002 (and subsequent versions)*

Legal obligations have been placed on the Council under the New Zealand emissions trading scheme to report and account for greenhouse gas emissions resulting from its operations, including forestry and waste disposal.

### 2.3 NEW ZEALAND GOVERNMENT GUIDELINES FOR LOCAL GOVERNMENT

The New Zealand Government has issued guidance to local government for responding to the impacts of climate change (MFE 2008, 2009, 2010). Following advice from central government, the Council is planning for (relative to 1990 levels):

- a. a 50 cm sea-level rise by 2100 and will consider the impact of at least an 80 cm sea-level rise by 2100;
- b. an average temperature increase of around 1°C by 2040 and 2°C by 2100; and
- c. changes beyond these levels, and to changes in rainfall and extreme weather events.

The New Zealand Government advice follows a mid-range projection of future changes from the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPPC, 2007). Greater levels of change are likely if greenhouse gas emissions are not successfully managed.

If we continue to follow a high emission path globally, we could expect to see a warming of between 4°C and 6°C and a 1 - 2 metre rise in sea level within 90 years (IPPC 2007). When longer timeframes are considered the effects become even more severe. Consequently, this Council recognises that continuing on a "business as usual" development path is not acceptable and that a precautionary approach is required for the reduction of greenhouse gas emissions and in our responses to projected changes over time.



## 2.4 THE EFFECTS OF CLIMATE CHANGE ON CHRISTCHURCH

Climate change presents both challenges and opportunities for Christchurch.

Examples of the potential positive effects of climate change include:

- Milder winters resulting in fewer winter deaths and less air pollution.
- A longer growing season and the potential to grow new crops or plant varieties.
- More rain in the headwaters of Canterbury rivers and hydro-lake catchments.
- Greater investment in, and access to, “green” solutions and technologies.
- Renewed focus on local production, local economy and local jobs.
- Renewed interest in building stronger communities and enhancing support networks.

Examples of the potential negative effects of climate change include:

- Increased likelihood of droughts, affecting primary production, the garden city identity, increasing the demand for limited supplies of water and raising the risk of fire.
- More intense periods of rain affecting low-lying areas and increasing the risk of landslides and road closures particularly on Banks Peninsula.
- Erosion and inundation of low-lying coastal areas particularly around the Avon-Heathcote Estuary and Brookland Lagoon areas, affecting communities, infrastructure, heritage and cultural sites and biodiversity.
- Establishment of new pests and diseases affecting human health and biodiversity.
- Social and economic disruption caused by natural hazards and rising fossil fuel prices.
- Displaced people from low lying and drought-prone nations wanting to live in Christchurch, which will place pressure on social services and infrastructure.

Investigations have already been undertaken by the Council to understand what many of these changes will mean for Christchurch. These reports are listed in Appendix 1. This Strategy aims to continue this work to better understand the potential challenges and opportunities and to establish flexible responses that benefit the current and future wellbeing of Christchurch.

## 2.5 POLICY CONTEXT

Because of the nature of climate change, this Strategy sits within and interacts with a wide variety of national, regional and local policies, strategies and plans (Figure 1). Key documents that relate to climate change in New Zealand and Christchurch are identified in Appendix 2. Many of these documents have established targets or goals that will assist in responding to climate change.

An objective of this Climate Smart Strategy is to include climate change considerations within Council and community decisions and actions. The Council can not do this alone. A wide variety of organisations will also need to support the direction of this Strategy. Organisations that have important roles to play are listed in Appendix 3 and have been identified beside specific actions within Section 4.

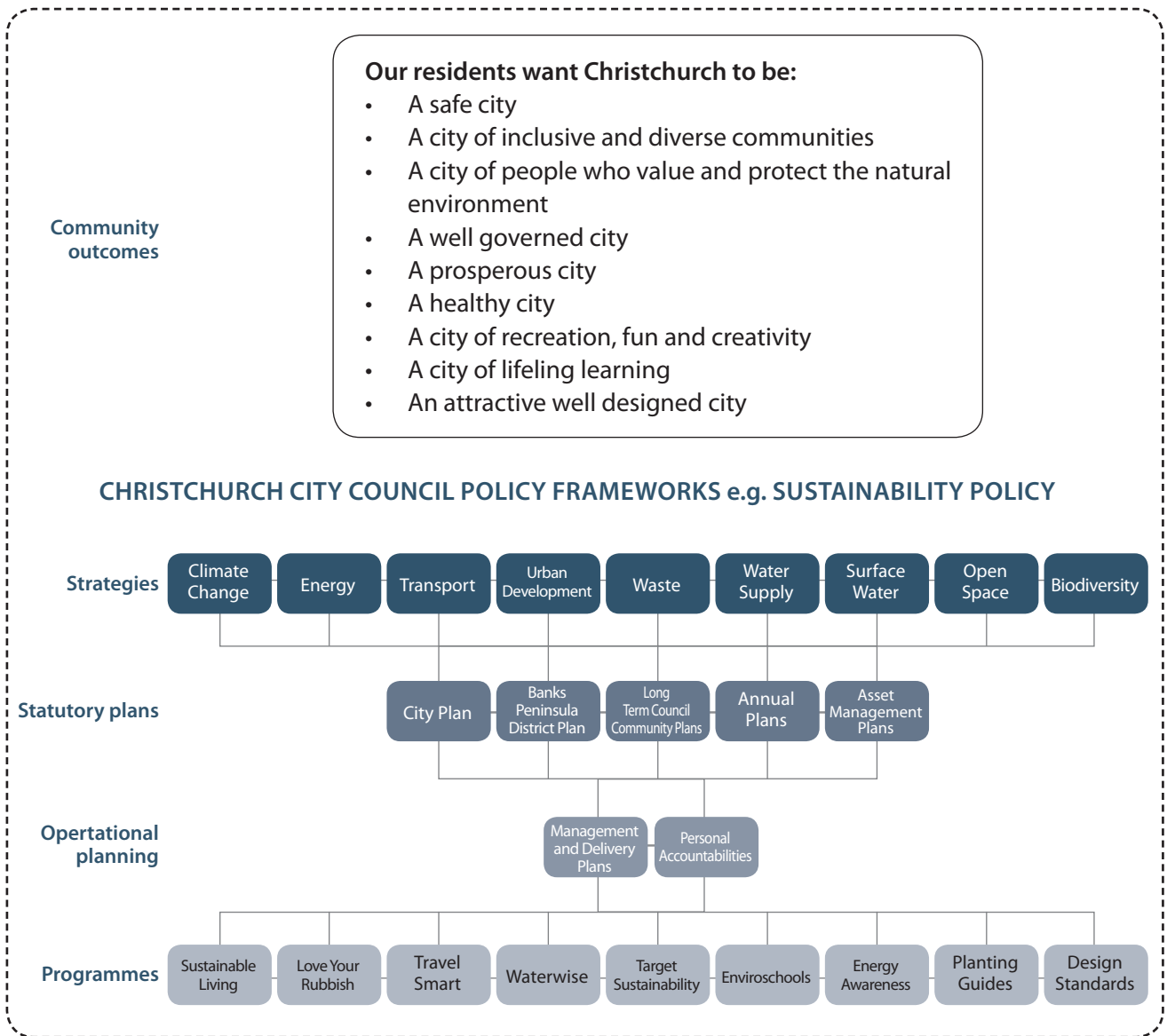


Figure 1. Christchurch City Council Planning and Delivery Framework

## 2.6 CHRISTCHURCH GREENHOUSE GAS EMISSIONS

In 2008 approximately 3.6 million tonnes of greenhouse gases were emitted from Christchurch (Figure 2). This is equivalent to roughly 10 tonnes of greenhouse gas emission per person per year. This is lower than the New Zealand average of 17 tonnes per person per year because of lower agricultural emissions in the Christchurch territorial area.

Transport fuels and the use of energy in homes and buildings (stationary energy) make up 85% of the emissions from Christchurch. Emissions from waste disposal, agricultural activities and industrial chemicals such as Perfluorocarbons and Hydrofluorocarbons, make up the 15%.

Emissions from waste and agricultural activities in Christchurch have been falling because of landfill gas recovery, community efforts to reduce waste and changes in land use and farming practices, especially on Banks Peninsula.

Assuming Christchurch follows regional trends in energy use (see notes), emissions from the use of energy for transport and in buildings has increased by 66% since 1990 (Figure 3). Much of this growth is related to increases in land transport and air travel (2006, Canterbury Regional Energy Survey).

Hydro electricity is an important source of renewable energy for Canterbury (Figure 4). In 2008 only 20% of the total energy used in Christchurch was from renewable sources including wood fires, hydro and wind power (Christchurch City Council Sustainable Energy Strategy 2008-18). Carbon emitting fossil fuels such as petrol, diesel, liquid petroleum gas, aviation fuel and coal and make up 80% of our total energy supply.

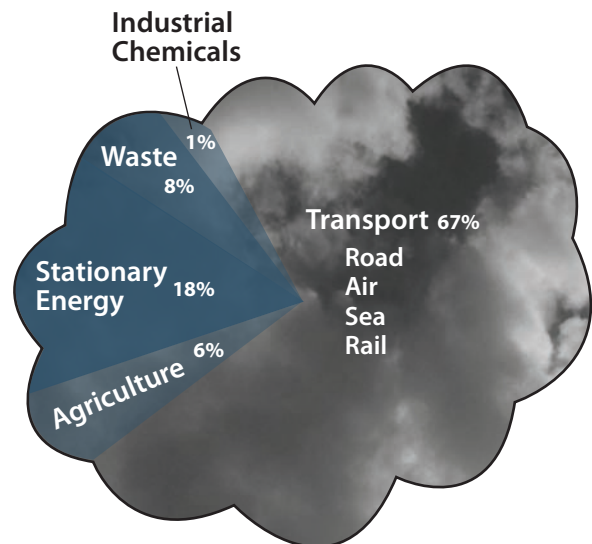


Figure 2. Total Christchurch greenhouse gas emissions by source in 2008 (3.6 million tonnes)

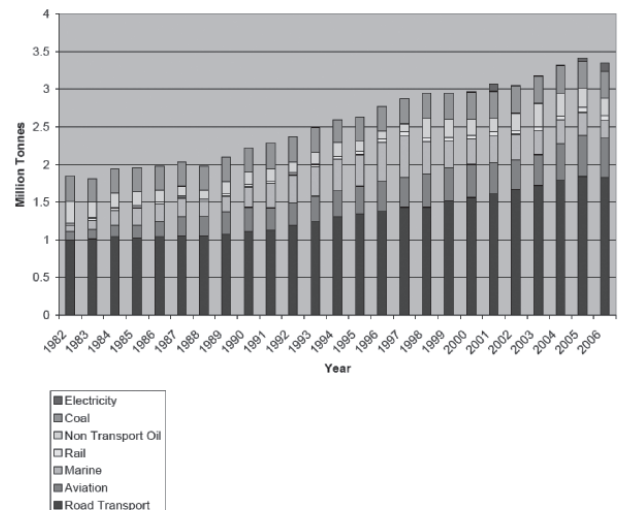


Figure 3. Energy related greenhouse gas emissions in Canterbury

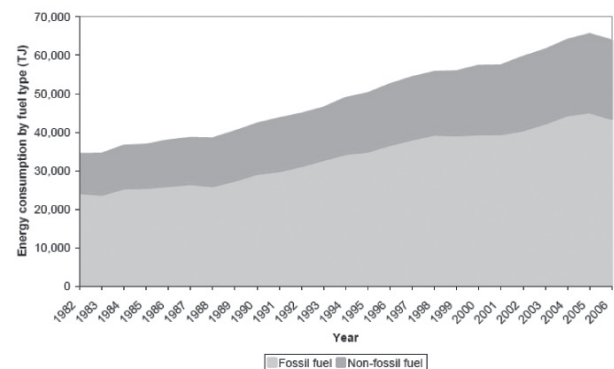


Figure 4. Proportion of renewable and non-renewable energy used in Canterbury

## 2.7 CHRISTCHURCH GREENHOUSE EMISSIONS

Non-renewable energy used in Council buildings, swimming pools, street lights, water pumps and vehicles is the main source of greenhouse gas emissions from the Council. The Council through its internal energy management programme has reduced the total amount of energy used. The Council has moved, where possible, to renewable forms of energy such as wind energy, bio-gas captured from Burwood Landfill and the

Christchurch Waste Water Treatment Plant, and waste vegetable oils and wood for heating.

From its 1994 baseline the Council has reduced its energy related carbon emissions by 57% and now generates approximately 10,000 tonnes of carbon emissions each year. This is expected to fall further as the Council introduces new energy saving measures and renewable energy solutions.

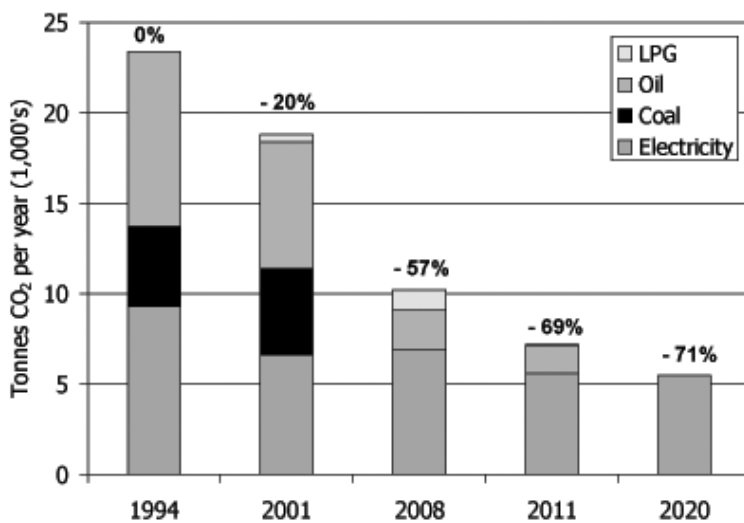


Figure 5. Actual and projected total greenhouse gas emissions for the Christchurch City Council from 1994 to 2020

Notes for Canterbury and the Council greenhouse gas emission calculations:

1. It is not currently possible to accurately separate greenhouse gas emissions arising from the Christchurch territorial area from Canterbury data. Canterbury figures have been used that will be broadly similar to the patterns of energy consumption for Christchurch (Source: 2006 Canterbury Regional Energy Survey).
2. Following government advice the Council assumes 28% of the electricity used in Canterbury arises from natural gas generation and not hydro generation.
3. Forest and vegetation cover in the Christchurch rural area has increased slightly over the last 15 years. To be conservative no carbon sequestration from native or exotic forest growth has been counted.
4. Stock numbers (e.g. cattle and sheep) in the Christchurch rural area have fallen over the last 15 years. To be conservative no carbon benefit has been attributed to stock removal.
5. In line with greenhouse gas accounting protocols, the Council's data excludes emissions from Council Controlled Organisations and contractors who are encouraged to establish their own environmental management systems (see actions under Leadership Section 4).

## 3.0 Setting The Direction

The Council proposes the following guiding principles, vision, goals and objectives to address the risks and maximise the opportunities presented by climate change.

### 3.1 OUR GUIDING PRINCIPLES

“Local government in New Zealand is required to operate under a range of principles that are set out in law or that have evolved through good practice and case law. All must be kept in mind when dealing with climate change effects” (MFE, 2008).

The Council’s Climate Smart Strategy adopts the principles established in the Council’s Sustainability Policy designed specifically to meet these obligations. The principles, which are a package with no principle predominating, are:

- **Stewardship and Kaitiakitanga** - each person and organisation has a duty of care.
- **Anticipation** – we must consider the foreseeable needs of future generations.
- **Holism** - have a global perspective, thinking of whole systems and their interconnections.
- **Precaution** - we must deal cautiously with risk and irreversible effects.
- **Equity** – fairness within and between generations and cultures, caring for those most affected..
- **Justice** – doing what is right based on our communities strong ethics, morals and laws.
- **Participation** - inclusive and transparent decision making and working together around common goals.

### 3.2 VISION, GOALS AND OBJECTIVES

The Vision is supported by three goals, each with a series of objectives.

#### 3.2.1 VISION

People and communities actively work towards a climate smart Christchurch that reduces its greenhouse gas emissions and is resilient to the social, economic and environmental effects of climate change.

#### 3.2.2 GOALS AND OBJECTIVES

##### Goal 1. Understand the local impacts of climate change.

Objective: 1	Understand the social, cultural, economic and environmental impacts of climate change on Christchurch.
2	Monitor and report changes and progress.

##### Goal 2. Provide leadership in addressing climate change.

Objective: 3	Grow Council capacity to respond to climate change.
4	Grow community capacity and foster partnerships that respond to climate change.

##### Goal 3. Respond to the opportunities and challenges presented by climate change in ways that promote social, cultural, environmental and economic wellbeing and resilience.

Objective: 5	Encourage sustainable households and communities.
6	Support a resilient, low-carbon, competitive economy.
7	Encourage healthy places and spaces.
8	Prioritise low-carbon transport.
9	Enhance local productive landscapes and the resilience of habitats and ecosystems.
10	Promote energy conservation, renewable energy and carbon sequestration.

### 3.3 TARGETS

Through this Strategy the Council is establishing targets for the total amount of greenhouse gas emissions generated from Christchurch. It is also setting targets for each of the key sources of greenhouse gas emissions. Where possible targets from existing Council and national policies have been used, resulting in some differences in base years and end points.

This Strategy sets the following targets for each key area:

#### Total greenhouse gas emissions

- 20% reduction in net greenhouse gas emissions from Christchurch by 2020 from a 2008 base year (e.g. no more than 8 tonnes per person per year).
- 50% reduction in net greenhouse gas emissions from Christchurch by 2050 from a 2008 base year (e.g. no more than 5 tonnes per person per year).

*Source: generally consistent with New Zealand Government climate change policy in 2009*

#### Transport

- 50% reduction of greenhouse gas emissions from domestic transport by 2040 from a 2008 baseline.
- Increase coastal shipping's share of inter-regional freight.
- Increase rail's share of freight.

*Source: New Zealand Transport Strategy 2008*

#### Energy

- At least 25% of total energy used (including transport) is from renewable sources by 2018.
- Reduce total energy consumption of no more than 107 Gigajoules per person per year by 2018.

*Source: Christchurch City Council Sustainable Energy Strategy 2008 - 2018*

#### Waste

- 65% reduction of waste landfilled by 2020 (no more than 320 kg per person per year) from 1994 levels.
- Zero hazardous waste by 2020.

*Source: Christchurch City Council Waste Management Plan 2006.*

#### Agriculture

- No net rise in greenhouse gas emissions from agricultural activities from 2008.
- 15% increase in land area covered in woody vegetation by 2030 from a 2008 baseline.

*Source: new targets, but consistent with actions within the Christchurch City Council Public Open Space Strategy 2010*

# Understanding

## GOAL 1. UNDERSTAND THE LOCAL IMPACTS OF CLIMATE CHANGE.

### INTRODUCTION

Climate change science is complex and evolving. Understanding the impacts of climate change on New Zealand, and specifically Christchurch and Canterbury, is essential for the Council to develop and implement strategies to manage the risks and harness opportunities. Monitoring and research needs to be an on-going process to ensure the Council and community have the most accurate information on which to base decisions for the future. Equally important is monitoring and reporting back on the implementation of the actions within this Strategy to ensure the results achieved are advancing towards the vision.

### PROGRESS TO DATE

The Council and other organisations are monitoring, investigating and responding to the potential impacts of climate change. Greater understanding and certainty is required of the local social, cultural, economic and environmental impacts before some responses can be implemented.

#### *Examples of current Christchurch City Council actions:*

- ✓ Monitoring, investigations and modelling seeking to understand the potential impacts of climate change on coastal and low lying areas, stormwater management and water supplies.
- ✓ Changes to the Christchurch City Plan are proposed (Variation 48) to place controls on development in areas vulnerable to flooding, such as raised floor levels and set-backs from waterways.
- ✓ Civil Defence and Emergency Management to provide comprehensive management of major natural hazards.

#### *Examples of the supporting actions of others:*

- ✓ Climate change related science and advice from the Intergovernmental Panel on Climate Change and the New Zealand Government.
- ✓ Research organisations building understanding about climate change issues and responses including Universities, Crown Research Institutes, New Zealand Climate Change Centre, Royal Society of New Zealand and Science New Zealand.
- ✓ Monitoring and reporting of physical changes and resource use undertaken by Environment Canterbury including monitoring coastal changes such as beach profile and deep water waves, surface and ground water, freshwater use, energy use, waste, recycling and uptake of public transport.
- ✓ Regional planning and actions undertaken by Environment Canterbury that consider climate change impacts such as the Proposed Natural Resources Regional Plan and Regional Coastal Environment Plan, improvements to Waimakariri River stop banks and the Community Resilience Unit.

# Objective 1

## UNDERSTAND THE SOCIAL, CULTURAL, ECONOMIC AND ENVIRONMENTAL IMPACTS OF CLIMATE CHANGE

Undertake a programme of investigations, following the latest New Zealand government advice and scientific research, to build understanding of the social, cultural, economic and environmental impacts of, and potential responses to, climate change.

This objective includes understanding impacts and potential responses to climate change issues of particular importance to Christchurch such as sea-level rise, natural hazards (e.g. droughts, floods, and landslides), water supply, surface water, public health, equity issues, cultural heritage and biodiversity.

### Benefits:

- Improve ability to anticipate and proactively respond to climate change issues and opportunities.
- Improve ability to avoid and manage risks for the community.
- Increase ability to consider the feasibility, costs and benefits of options for responding to climate change.

## case study



### RESPONDING TO A RISING TIDE

New Brighton Beach 2008

Many parts of low-lying Christchurch and coastal areas are already vulnerable to extreme weather events such as floods, storms and high tides. These impacts are expected to get worse with climate change. The Council is currently making changes to the City Plan and will consider changes to the Banks Peninsula District Plan that will identify and manage development in vulnerable areas. Examples include requiring new properties to be further away from rivers and the sea, raising the floor level of new buildings and reducing the density of development to reduce risks to people and property in vulnerable locations.



# Objective 2

## MONITOR AND REPORT CHANGES AND PROGRESS

Develop a programme of monitoring and reporting of key social, cultural, economic and environmental factors that relate to climate change.

This objective involves developing:

- a) Systems to measure Christchurch's greenhouse gas emissions, use of renewable energy and understanding of climate change impacts and responses.
- b) Local indicators to detect physical changes to our environment and climate, such as temperature, frost occurrence, rainfall, sea-level and changes in biodiversity,
- c) Monitoring and research programmes to provide more certainty about climate change impacts, such as modelling river, aquifer and

coastal systems.

- d) Indicators of hazards, public health and bio-security risks,
- e) Ways to make key indicators of climate change accessible to the public to enhance understanding and motivate appropriate changes in behaviour.

### Benefits:

- Enable locally relevant information to be provided to the community about climate change.
- Improve assessments of the effectiveness, costs and benefits of policies and approaches used to address climate change.
- Improve certainty about local impacts and responses to climate change.

## case study



### WATCHING WATER CHANGES

### Avon River monitoring station

A network of monitoring stations in local rivers, streams and aquifers, managed by Christchurch City Council and Environment Canterbury, gauge changes in water levels. Combined with weather forecasting they provide warning systems for floods and drought. Data gathered also forms the basis of models that help build understanding about future changes to our waterways and flood risks.

# Leadership

## GOAL 2. PROVIDE LEADERSHIP IN ADDRESSING CLIMATE CHANGE

### INTRODUCTION

The Council has a critical role providing leadership for the community on responding to climate change. While the government manages the international and national responses to climate change, councils can raise awareness and encourage behaviour change at the local level. The best way to achieve such behaviour change is to lead by example. As a major owner of community buildings and places (for example, offices, libraries, recreation facilities, social housing, parks and gardens) the Council has significant opportunities to demonstrate how to manage resources in a more sustainable way, reducing carbon emissions and using renewable forms of energy. The Council can work with other organisations in New Zealand and abroad to share successes and access expertise for solutions to local challenges.

### PROGRESS TO DATE

The Council is working to minimise its carbon footprint by reducing energy use and shifting to renewable forms of energy. Collaboration with other organisations is enabling the exchange of ideas and growing expertise within the Council to provide necessary leadership for the years ahead.

### *Examples of current Christchurch City Council actions:*

- ✓ Christchurch City Council internal performance excellence, sustainability and energy management programmes provide leadership in Christchurch and exhibit best practice in local government in New Zealand.
- ✓ Council construction and use of buildings that have a high level of sustainability including the new civic offices, and the South Christchurch and Riccarton Libraries.
- ✓ Internal travel demand management activities resulting in 40% of Council staff regularly cycling, walking and taking the bus to work.
- ✓ Heating QEII Pools with landfill gas resulted in carbon credits that have helped pay for the actions contained in the Sustainable Energy Strategy.
- ✓ Sand dune and salt marsh restoration projects to improve natural coastal defences and allow inshore movement of coastal ecosystems.
- ✓ Construction and management of stop banks, sea walls and coastal defences.

### *Examples of the supporting actions of others:*

- ✓ Organisations that exchange ideas and provide leadership for addressing climate change in New Zealand and internationally, such as the ICLEI – Local Government for Sustainability, Australasian Mayors for Climate Protection and Energie-Cités.
- ✓ Sharing successes through national awards and council and community benchmarking, such as Excellence in Local Government Awards, Energywise Awards and New Zealand Quality Of Life assessments.
- ✓ Local and global initiatives that raise awareness about climate change or support positive behaviour changes, for example Earth Hour, Walk to Work and the Bike Wise Challenge.

# Objective 3

## GROW COUNCIL CAPACITY TO RESPOND TO CLIMATE CHANGE

Establish a programme of capacity building within the Council to improve responses to climate change.

This objective includes internal education about the impacts and opportunities for responding to climate change and a review of Council documents and actions to ensure climate change is being adequately and consistently addressed (e.g. City and District Plans). Decision-making tools to better enable climate change considerations will be included in Council decisions, and actions will be developed along with a corporate resource efficiency programme to manage the Council's resource use and greenhouse gas emissions.

### Benefits:

- Improve Council understanding and response to the issues and opportunities presented by climate change.
- Strengthen Council-wide responses to climate change such as the integration of land-use and transport planning, infrastructure design and hazard management.
- Accelerate uptake of best practise approaches that respond to climate change.
- Provide leadership in carbon management and environmental performance for the Christchurch community.
- Improve management of risks and natural hazards.
- Reduce costs through improved resource efficiency.

## case study



### LEADING BY EXAMPLE

Artist impression of the Council's new civic offices

The Council's new Civic Office is a leading example of an energy efficient, low carbon, green and healthy building. Innovations include a tri-generator to heat and power the building using bio-gas piped from Burwood Landfill, passive ventilation systems, use of efficient and natural lighting and the collection of rainwater for flushing toilets. The new Civic Office is a clear and practical example of the Council's commitment to sustainability and to providing leadership in addressing climate change.

# Objective 4

## GROW COMMUNITY CAPACITY AND FOSTER PARTNERSHIPS THAT RESPOND TO CLIMATE CHANGE

Collaborate on climate change issues and opportunities locally, in the region and across New Zealand.

This objective includes working with key local, regional and national partners to advance climate change understanding and responses. Potential partners include, but are not limited to, the Greater Christchurch Urban Development Strategy partnership, the Canterbury Regional Energy Forum, Canterbury Civil Defence and Emergency Management Group, the Regional Waste Joint Standing Committee, Council Controlled Organisations, Christchurch Agency For Energy, Ngai Tahu and community, business and environmental organisations. Support and advocacy to regional and central government is also an important part of this

work in collaboration with Local Government New Zealand.

### *Benefits:*

- Improve the ability to respond to climate change at the local, regional and national level.
- Accelerate responses to climate change through shared learning, implementation, cost savings and reduced duplication of effort.
- Represent the interests of Christchurch and influence regional and central government climate change related policies and responses.
- Local stakeholders are more active and supported in climate change mitigation and adaptation.

## case study



### PARTNERSHIPS TO MANAGE CHANGE

Community meeting

The Greater Christchurch Urban Development Strategy (UDS) partnership between Christchurch City Council, Selwyn and Waimakariri District Councils, Environment Canterbury and the New Zealand Transport Agency, aims to manage urban development in ways that create more liveable and sustainable communities. Considering the impacts of climate change in the UDS is critical. Christchurch City Council can take a supportive leadership role to ensure all partners have a shared understanding of climate change and can proactively and consistently respond to the challenges and opportunities to achieve better outcomes for all our communities.

# Awareness and Resilience

## GOAL 3. RESPOND TO THE OPPORTUNITIES AND CHALLENGES PRESENTED BY CLIMATE CHANGE IN WAYS THAT PROMOTE SOCIAL, CULTURAL, ECONOMIC AND ENVIRONMENTAL WELLBEING

### INTRODUCTION

In addition to the objectives already discussed, the Council proposes six objectives to raise community awareness and resilience, and encourage innovative responses to the challenges and opportunities presented by climate change. These objectives are:

- ✓ Encourage sustainable households and communities..
- ✓ Support a resilient, low-carbon and competitive economy.
- ✓ Prioritise low-carbon transport.
- ✓ Encourage green and healthy places and spaces.
- ✓ Enhance local productive landscapes and the resilience of habitats and ecosystems.
- ✓ Promote energy conservation, renewable energy and carbon sequestration.

### PROGRESS TO DATE

The Council is one of many organisations already responding to climate change. These are just a few examples of what is being achieved in Christchurch and around the country currently (2010).

#### *Examples of current Christchurch City Council actions:*

- ✓ Council programmes to encourage energy, water and waste reduction such as Energy Awareness Week, Waterwise and Love Your Rubbish.
- ✓ Council programmes that promote sustainable behaviours in schools such as Learning Through Action, School Travel Plans, Walking School Bus, Safer Routes and cycle safety.

- ✓ Strong community programmes aimed at building closer and more caring communities, including activities such as neighbourhood week, events and community grants and appropriate community facilities.
- ✓ Council support of community gardens in Christchurch.
- ✓ Target Sustainability services that provide advice, support and tools for local businesses to reduce waste and improve energy and water efficiency.

#### *Examples of the supporting actions of others:*

- ✓ Central government programmes that raise awareness about climate change, energy efficiency and promote sustainable behaviours, such as [www.sustainability.govt.nz](http://www.sustainability.govt.nz).
- ✓ Central government climate change, energy, transport and agriculture policies including an emission trading scheme, forestry grants and warm home subsidies.
- ✓ Environment Canterbury activities including Clean Heat advice and financial support, promotion of public transport, water management and the Community Resilience Unit.
- ✓ Non-government agencies that raise awareness and promote sustainable behaviours such as Greenpeace - "Be the Change", Transition Towns, Sustainable Living Education Trust and Sustainable Otautahi-Christchurch.

# Objective 5

## ENCOURAGE SUSTAINABLE HOUSEHOLDS AND COMMUNITIES

Build understanding and community resilience to the impacts of climate change.

This objective includes actions that build community understanding about the local impacts of climate change, grow community preparedness and encourage more sustainable behaviours and choices. By working in partnership with existing behaviour change programmes, opinion leaders, community organisations and schools, this programme will deliver an integrated package of support on the themes of climate change, energy and water efficiency, waste minimisation, sustainable

transport and the natural environment, to households, schools and communities. Opportunities to share successes and to celebrate excellence in environmental stewardship will also be provided.

### *Benefits:*

- Improve community understanding and resilience to the local impacts of climate change.
- Increase ability for the community to reduce greenhouse gas emissions.
- Encourage and inspire others to take positive action on climate change.

## case study



### SMARTER SCHOOLS AND CONNECTED COMMUNITIES

### Worm farm at Our Lady Fatima School

The Council's Learning Through Action programme and Enviroschools Canterbury aim to help students, parents and whole communities be more sustainable. Enviroschools in Christchurch are helping their students and communities address real life challenges and explore ideas that reduce rubbish, save energy, conserve water and help make more sustainable transport choices. Growing these skills helps our community and young people reduce greenhouse gas emissions and prepare for a changing future.

# Objective 6

## SUPPORT A RESILIENT, LOW-CARBON AND COMPETITIVE ECONOMY

Encourage the transition to a resilient low-carbon and competitive economy by working together to capture and implement climate smart ideas.

This objective includes developing ways to identify, nurture and fund ideas that respond to the challenges and opportunities presented by climate change. A Climate Smart business summit, together with incentives and funding tools, will be considered to identify and develop local business opportunities in green technologies and solutions. A programme of practical advice and support will also be developed through the Council's Target Sustainability programme to help local businesses manage their greenhouse gas emissions and transport.

### Benefits:

- Increase understanding about climate change risks and opportunities.
- Grow the ability to identify and foster good ideas to meet challenges and opportunities.
- Improve the competitiveness and future proofing of the Christchurch economy by attracting and nurturing green technologies and solutions to the region.
- Reduce the carbon footprint and enhance resource efficiency of the local economy and an improved ability to export leading edge solutions to the world.
- Enable greater access to leading edge green solutions for the Christchurch community.

## case study



### Target Sustainability

Target Sustainability provides free support to help Christchurch businesses become sustainable through reducing waste and being energy and water efficient.

The type of support depends on your business and ranges from step a hotline question service, through to tailored consultancy services. Sustainability consultancy services on offer.

### RESOURCE EFFICIENCY IS GOOD FOR BUSINESS

Target Sustainability website

Each year Target Sustainability helps over 100 Christchurch businesses reduce waste and improve energy and water efficiency by providing free practical advice and support. Through this resource efficiency support businesses can increase their competitiveness, strengthen staff engagement, enhance customer relationships and improve financial returns.

# Objective 7

## PRIORITISE LOW-CARBON TRANSPORT

Prioritise low-carbon transport solutions and encourage more sustainable travel choices.

This objective includes developing ways to reduce greenhouse gas emissions arising from transport. This will involve a combination of good land-use planning, infrastructure design and operation and the encouragement of walking, cycling, public transport and low carbon transport technologies. New and existing businesses offering low-carbon transport options in Christchurch, such as hybrid taxis, bio-diesel buses, electric vehicles and inner-city bicycle hire, will be encouraged. Electric vehicle charging stations within homes and throughout the city will be investigated.

### *Benefits:*

- Create more liveable, walkable, safer and healthier communities.
- Enable our community to be more resilient to higher energy prices and less reliant on fossil fuels.
- Increase access to low-carbon transport options reducing carbon emissions, changing social norms and help create positive visitor experiences in Christchurch.
- Improve uptake of low-carbon solutions helping to reduce pollution and congestion.
- Increase green business opportunities and jobs for Christchurch.

## case study



### THE SHUTTLE – LOW CARBON AND CONVENIENT

City Shuttle Bus

Every 10 minutes between 7.30 am and 10.30 pm, most days, a rates-funded hybrid-electric bus takes locals and visitors on a circuit of central city shops and sights. The Shuttle, manufactured by a local company, Design Line, is a low-carbon transport option that is good for the local economy, kind on the environment and convenient.



# Objective 8

## ENCOURAGE GREEN AND HEALTHY PLACES AND SPACES

Encourage best practice developments and buildings that are good for people and the environment.

This objective includes developing methods, in partnership with industry, to encourage best practice solutions throughout the lifecycle of the built environment – location, design, construction, operation, renovation and deconstruction. In collaboration with key industry partners and organisations interested in sustainable solutions, build and promote best practice examples of sustainable and carbon neutral homes in Christchurch. Develop a programme to increase the affordability and uptake of efficient and renewable energy solutions for buildings, such as solar hot water

heating systems. Provide free, independent and reliable advice to home builders and renovators through the introduction of an Eco-Design Advisory Service.

### *Benefits:*

- Improve public health, wellbeing and cost savings through better building location, design, operation and greater consideration of future needs and natural hazards.
- Improve access to up-to-date and independent advice about building design, construction and renovation.
- Reduce energy, water, waste and carbon footprints through more efficient and better building design, performance and material choices.

## case study



### SOUND ADVICE BUILDS BETTER HOMES

Auckland City Eco-design advisor

Eco-Design Advisors provide free, independent advice to designers, builders and home renovators about sustainable design and refurbishment. The Council intends to follow the example of other councils who offer Eco-Design Advisors to provide assistance over the phone or counter, offer site visits and public and professional presentations. Supported by the latest science and industry knowledge from BRANZ, the Advisors will help to build warm, dry homes that are cheaper to run and better for Christchurch.

# Objective 9

## ENHANCE LOCAL PRODUCTIVE LANDSCAPES AND THE RESILIENCE OF HABITATS AND ECOSYSTEMS

Enhance opportunities to grow and find locally sourced food and enhance the resilience of natural ecosystems to the impacts of climate change.

This objective includes strengthening policy and planning measures to protect local productive land from development that reduces its productive capacity. The Council encourages the establishment of new productive land within Christchurch including home gardening, community gardens, school gardens and the use of appropriate parks for vegetables and fruit trees. Habitats and ecosystems will be managed

to enhance resilience to the impacts of climate change, such as new pests, drought, fires and coastal erosion.

### *Benefits:*

- Improve access to locally grown, fresh, healthy, low-carbon sources of food.
- Enhance the local economy and self-sufficiency, increasing community resilience to future price rises.
- Strengthen community connections and support public health.
- Improve stewardship of our natural heritage.

## case study



### GROWING COMMUNITIES AND NEIGHBOURHOODS

### Community garden

Christchurch is also known as the 'Garden City' and has over 780 parks and gardens. With many keen gardeners there is an opportunity to encourage local vegetable and fruit production in appropriate places throughout the city. Eating locally produced seasonal food helps reduce our carbon emissions. Christchurch also has a growing number of community gardens that bring people together from all walks of life to share knowledge and enjoy gardening and food. Community gardens act as social hubs where people can learn skills, such as how to grow, cook and preserve fresh and healthy food.

# Objective 10

## PROMOTE ENERGY CONSERVATION, RENEWABLE ENERGY AND CARBON SEQUESTRATION

Make it easier to reduce energy use, switch to renewable sources of energy and use plants to absorb greenhouse gas emissions.

This objective includes identifying areas on Council and private land suitable for the regeneration, or planting of, trees and shrubs to absorb carbon dioxide or the production of biomass energy. Ways to encourage organisations, individuals and visitors to offset their emissions, such as the Kaikoura Trees for Travellers programme, will be investigated. Options for using agricultural and industrial by-products and organic and wastewater residues for biomass energy will also be investigated. Energy conservation measures will be undertaken as

part of other objectives within this Strategy and from actions within the Council's Sustainable Energy Strategy.

### *Benefits:*

- Enhance the potential to absorb unavoidable carbon emissions from Christchurch.
- Improve market opportunities for businesses that become carbon neutral by reducing and offsetting emissions.
- Enhance biodiversity, catchment flood protection and surface water quality through the restoration of native bush and forests.
- Greater use of organic by-products and waste for the generation of low-carbon energy.

## case study



### A LOW-CARBON FUTURE POWERED FROM WASTE

### Algae ponds Christchurch wastewater treatment

Breakthrough technology that converts waste into bio-fuel is being trialled at the Christchurch Wastewater Treatment Plant. Solray Energy is transforming algae grown by NIWA in the sewage ponds into a renewable source of oil. Algae grown on nutrients that would have been flushed into the sea are harvested and converted into bio-oil to reduce our reliance on fossil fuel. Christchurch, with its numerous sources of agricultural bi-products and organic-rich wastes was an ideal location to develop this technology that could one day help power the future.

# 4.0 Taking Action

## 4.1 ACTION CRITERIA

The following criteria have been developed to assist in the selection of priorities and in the evaluation of proposed actions. These criteria are based on those adopted by the New Zealand Parliamentary Commissioner for the Environment in assessing and comparing environmental risks and responses.

	Criteria	The Council will give preference to actions that:
1	Scale and extent	Address the main sources of greenhouse gas emissions or address an impact that is widespread and significant, over more localised impacts.
2	Rate of change	Address issues that are rapidly getting worse, over those which are less urgent.
3	Irreversible	Address issues before they are potentially irreversible or that have a tipping point or threshold beyond which effective responses are much more difficult.
4	Achievable	Are readily able to be implemented - where we have sufficient knowledge, resources, acceptance and that are technologically feasible.
5	Benefits	Result in multiple and widespread benefits for the community.
6	Collaborative	Build or strengthen partnerships and community support.

## 4.2 ACTION PLAN

This section contains a high level action plan to meet the Strategy Objectives. A subsequent detailed Climate Smart Implementation Plan will be developed with specific actions, timing and budgets (Figure 5). Therefore, the actions, budget and timing provided in this Strategy are

indicative only. The actual budget allocation and timing will be determined through future Long Term Council Community Plans.

Because of the broad nature of this Strategy the Council intends to work with a wide range people and organisations within the community to advance the objectives of the Strategy. This includes, but is not limited to, government organisations, tangata whenua, community organisations, environmental groups, research and educational institutions and business sector organisations. Appendix 3 provides examples of the types of organisations that have a role in understanding and responding to climate change in New Zealand.

Within this high level action plan, the Council has identified key organisations that could assist in the implementation of specific actions. Throughout the strategy development and consultation phases, agreement was sought on how these organisations can best work with the Council. Through the implementation phase agreement will continue to be sought with these organisations to help achieve the outcomes of this strategy.

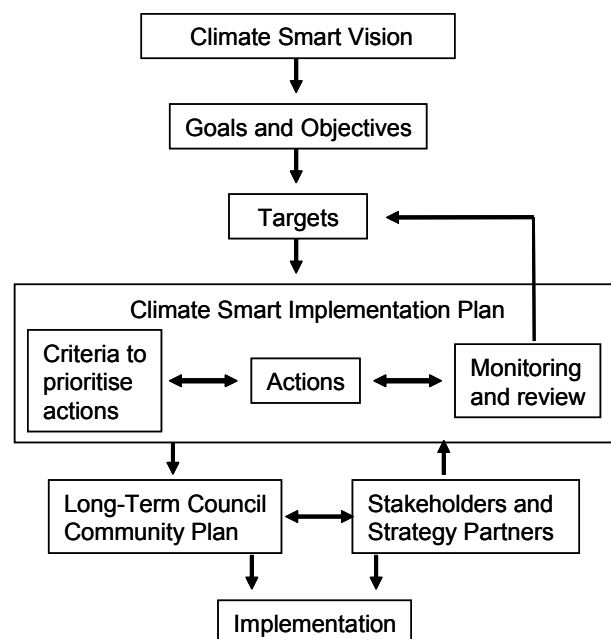


Figure 5 Climate Smart Strategy Implementation Framework

To deal effectively with climate change we must reduce greenhouse gas emissions to help global efforts aimed at reducing the harmful effects of climate change (mitigation) and we must adapt to the unavoidable impacts of climate change on our way of life (adaptation). This action plan identifies whether each action is chiefly a mitigation or adaptation response or both.

#### 4.2.1 UNDERSTANDING

##### Objective 1. Understand the social, cultural, economic and environmental impacts of climate change on Christchurch

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Investigate physical changes (A)</b> Investigate the effects and potential responses to physical changes, such as to coastal areas, water supply, surface water and indigenous biodiversity, including the impact these will have on people, the economy, land use, infrastructure and the management of natural and physical resources.</p>	High	Environment Canterbury NIWA, Canterbury University	2013 - 2020	20,000	80,000
<p><b>2. Investigate health effects (A)</b> Investigate the impacts and potential responses to climate change related health issues, such as heat exhaustion, water and food borne diseases, vectors, asthma, skin cancer, equity issues and emergency management.</p>	High	Community Public Health, Environment Canterbury, Centre for Sustainable Cities	2016 - 2018	0	20,000
<p><b>3. Investigate impacts on tangata whenua (A)</b> Understand, monitor and respond to the impacts of climate change on tangata whenua values such as mahinga kai, wahi tapu and kaitiakitanga using both western science and matauranga Maori and cultural monitoring methods.</p>	High	Ngai Tahu, Environment Canterbury	2014 - 2025		30,000
<p><b>4. Investigate heritage effects (A)</b> Review the management of cultural and natural heritage sites such as historic buildings, monuments, settlements and outstanding natural features to ensure that climate change is taken into account.</p>	Medium	Historic Places Trust, NIWA, Ngai Tahu, Department of Conservation	2018 – 2020	0	20,000
<p><b>5. Scholarship and work placement (A+M)</b> Establish a climate change related post-graduate scholarship and encourage summer scholarships at local universities and work placement opportunities within the Council.</p>	Low	Canterbury and Lincoln Universities	2013 – 2020	0	15,000

## Objective 2. Monitor and report changes and progress

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Monitoring and Reporting (A+M)</b> Develop a key set of local social, cultural, economic and environmental indicators that relate to climate change and report the indicators in a way that is useful for decision makers, helps builds community understanding and motivates change, e.g. a web-based sustainability dashboard measuring key trends over time and pointing people toward actions they can take to improve the measures reported.</p>	High	Environment Canterbury NIWA, Canterbury University	2012 - 2025	10,000	40,000
<p><b>2. Genuine Progress Indicator (A+M)</b> Establish and monitor a regional “genuine progress indicator” to better reflect the overall progress and wellbeing of our community and the interdependencies between our economic activity, society and environment.</p>	Low	New Zealand Centre of Ecological Economics, Environment Canterbury	2013	0	30,000

## 4.2.2 LEADERSHIP

**Objective 3. Grow Council organisational capacity to respond to climate change**

**Objective 4. Grow community capacity and foster partnerships that respond to climate change**

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Build understanding (A+M)</b> Undertake a programme of internal capacity building for staff and elected representatives to ensure climate change is considered in Council decisions and actions. Use tools, such as guides, induction information, professional development, training and establishing internal systems and process, to assess climate change risks and lifecycle costs and benefits.</p>	High	Environment Canterbury NIWA, Canterbury University, NZ Climate Change Centre	2010 – 2015	0	15,000
<p><b>2. Review Council documents and actions (A+M)</b> Review Council strategies, plans and actions to ensure climate change is adequately addressed. For example - within the City and District Plans, the Urban Development Strategy, Healthy Environment Strategies and Statements of Intent for Council subsidiaries.</p>	High	Environment Canterbury	2011 - 2025	0	30,000
<p><b>3. Foster partnerships (A+M)</b> Foster partnerships within the community to encourage local actions and work with government organisations to enhance policy and legislative frameworks that respond to climate change, e.g. regional collaboration on climate change, joint awareness programmes and support for local and national advocates.</p>	High	Urban Development Strategy Partners, Local Government NZ, Ngai Tahu, community, business and environmental organisations	2012 – 2025	0	Staff Time
<p><b>4. Resource efficiency (M)</b> Establish a programme of corporate resource efficiency and carbon management following an appropriate and recognised environmental management system and publicly report and promote the Council's sustainability performance and the actions taken.</p>	Medium	Target Sustainability	2012 – 2025	0	50,000
<p><b>5. Council Controlled Organisations</b> Work with Christchurch City Holdings Limited to ensure climate change adaptation and mitigation responses are adequately addressed by Council Controlled Organisations.</p>	Medium	Christchurch City Holdings Limited	2012 - 2025	0	Staff Time

## 4.2.3 AWARENESS AND RESILIENCE

### Objective 5. Encourage sustainable households and communities

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Community awareness (A+M)</b> Grow community awareness about the local impacts of climate change and opportunities for responding. This would include hosting events, community talks, professional development sessions, web-based information and the publication of related monitoring and research.</p>	High	Environment Canterbury, NIWA, WWF, Sustainable Otautahi Christchurch, Canterbury University, NZ Climate Centre	2012-2018	0	20,000
<p><b>2. Sustainable households (A+M)</b> In association with other Council education and civil defence programmes, develop and deliver a capacity building and behaviour change programme for households, marae, runanga and communities to positively respond to climate change, which would include the promotion of energy, transport, water and waste reduction along with emergency preparedness.</p>	Medium	Environment Canterbury, Sustainable Living, Transition Towns, Neighbourhood support Canterbury, Nga Runanga	2012-2025	0	50,000
<p><b>3. Sustainable schools and early learning centres (A+M)</b> Develop and deliver an integrated schools and early learning centre programme to improve the resource efficiency and promote behaviour changes to help address climate change. This would include energy and travel demand management activities.</p>	Medium	Environment Canterbury, Ministry of Education, Enviroschools Canterbury, Schools and early learning centres.	2011-2025	30	130,000
<p><b>4. Share successes and foster champions (A+M)</b> Encourage excellence in environmental stewardship and enhance the sharing of ideas through awards, competitions, development of environmental ambassadors or role models and through the promotion of case studies and positive stories,</p>	Low	Champion Canterbury Awards, Enviroschools Canterbury, Environment Canterbury, Keep Christchurch Beautiful	2015-2025	0	10,000



## Objective 6. Support a resilient, low-carbon and competitive economy

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Target Sustainability (A+M)</b> Develop best practice guidelines for businesses on greenhouse gas accounting and reduction, travel demand management and support Christchurch businesses in the use of these tools through the Council's Target Sustainability programme.</p>	High	Target Sustainability consultants	2012 - 2025	0	40,000
<p><b>2. Climate smart business summit (A+M)</b> Promote the establishment of a "Climate Smart Business Summit" to build business understanding of climate change impacts and to encourage innovation and collaboration in addressing climate change impacts, reducing greenhouse gas emissions and harnessing opportunities.</p>	Medium	Canterbury Employers Chamber of Commerce, Canterbury Development Corporation, Sustainable Business Network	2012 - 2022	0	15,000
<p><b>3. Innovation incubator and funds (A+M)</b> Investigate options to assist and fund low-carbon business opportunities, technologies and solutions in Christchurch. This could include business mentoring and networking, support for product commercialisation and incentives to promote investment in solutions..</p>	Medium	Canterbury Employers Chamber of Commerce, Canterbury Development Corporation, Canterbury Innovation Incubator	2013	0	Staff Time

## Objective 7. Prioritise low-carbon transport

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Prioritise sustainable transport (M)</b> Build capacity to ensure that all improvements to the road network, transport system and travel demand management programmes effectively improve opportunities for public transport, walking, cycling and car pooling. And ensure all are able to deliver on the extent of change required to respond to climate change. This would include education and advocacy to shift social and political norms, integrated land-use and transport planning and professional development for transport planners and engineers to ensure climate change is adequately addressed.</p>	High	Environment Canterbury, Regional Transport Committee, NZ Transport Agency, Living Streets, and Spokes	2012 – 2025	0	20,000
<p><b>2. Tomorrows transport today (M)</b> Encourage new, and support existing, low-carbon transport businesses such as biofuel buses, hybrid or electric taxi services, inner-city cycle hire and cycling tourism businesses. Council support could include incentives, grants, fast tracking Council processes, recognition in tendering processes or in the allocation of public space and access to Council events.</p>	Medium	Environment Canterbury	2012 – 2025	0	Staff Time
<p><b>3. Electric vehicle recharging stations (M)</b> Encourage key industry players to consider the future needs and options for providing electric vehicle charging stations in Christchurch homes and in key locations throughout the city in preparation for the deployment of partial and fully electric vehicles in Christchurch.</p>	Low	Environment Canterbury, Christchurch Agency For Energy, Nissan	2010 – 2015	0	Staff Time

## Objective 8. Encourage green and healthy places and spaces

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Sustainable built environments (A+M)</b> Encourage good practice design, construction, operation, renovation and deconstruction including greater consideration of natural hazards and full lifecycle costs and benefits for buildings and land use. This action could include design guides, training, incentives, support for a home builders cluster and the promotion of the HomeStar and GreenStar rating tools.</p>	High	BRANZ, Beacon Pathway, NZ Green Building Council	2012 – 2017	0	60,000
<p><b>2. Hazard register (A)</b> Establish an integrated electronic hazard register to improve the management and accessibility of hazard information relating to properties.</p>	High	Environment Canterbury, Property Insight	2012 – 2016	0	50,000
<p><b>3. Solar City Christchurch (M)</b> Reduce barriers and increase the affordability and uptake of solar and heat pump hot water heating systems by fast-tracking consents, low-interest long-term loans and the accreditation of systems and installers.</p>	Medium	Christchurch Agency For Energy, Environment Canterbury, Solar City	2015 - 2025	0	Staff Time
<p><b>4. Eco-Design Advisor (A+M)</b> Establish and promote an Eco-Design Advisor service in Christchurch to provide free, reliable and independent advice to designers, builders and renovators.</p>	Medium	BRANZ, Christchurch Agency For Energy, Environment Canterbury, , Community Energy Action	2012 – 2022	0	90,000
<p><b>5. Demonstrate best practice (A+M)</b> In partnership with key industry players develop and promote local examples of best practice sustainable design including low-carbon or carbon neutral buildings. This could include show-homes or research homes such as the Now-Home and awards linked to GreenStar and HomeStar rating tools</p>	Low	Christchurch Agency For Energy, Beacon Pathway, Community Energy Action	2012	0	Staff Time

## Objective 9. Enhance local productive landscapes and the resilience of habitats and ecosystems

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Protect local productive land (A+M)</b> Strengthen planning and policy measures to ensure that priority areas of local productive land in close proximity to Christchurch are protected from non-productive uses and development. This will include a review of City and District Plans and regional planning documents to better manage lifestyle blocks and residential development in areas such as Marshlands.</p>	High	Environment Canterbury, Urban Development Strategy Partners	2012 – 2014	0	Staff Time
<p><b>2. Edible Gardens (A+M)</b> Enhance opportunities for local food production, including promoting home gardening, community gardens, fruit trees and vegetables in suitable open spaces and local market gardens and farmers markets.</p>	Medium	Community Garden Groups, Sustainable Otautahi Christchurch, Transition Towns	2012 - 2018	0	30,000
<p><b>3. Resilient habitats and ecosystems (A)</b> Ensure the management of local habitats and ecosystems take into account climate change impacts, such as drought, fires, new pests, sea-level rise and changes in species diversity and range.</p>	Low	Environment Canterbury, Department of Conservation, Conservation groups, Federated Farmers	2016 - 2025	0	Staff Time

## Objective 10. Promote energy conservation, renewable energy and carbon sequestration

Action (Adaptation / Mitigation measure)	Priority	Council plans to work with	Time Period	Indicative Budget (\$ per year)	
				Existing	New
<p><b>1. Energy efficiency (M)</b> Through the Christchurch Agency for Energy, the Council's education programmes and with key industry players encourage energy efficiency in Christchurch.</p>	High	Christchurch Agency for Energy	2013 - 2025	0	Staff Time
<p><b>2. Clean Energy Future (M)</b> Through the Christchurch Agency for Energy and with key industry players encourage the uptake of sustainable renewable energy solutions for Christchurch including such things as local biomass, biofuel, waste to energy, wind and solar solutions.</p>	High	Christchurch Agency for Energy	2013 – 2025	0	Staff Time
<p><b>3. Carbon farming and offsets (M)</b> Encourage the regeneration or planting of suitable local areas and enable organisations and individuals to make use of these carbon and biodiversity benefits through programmes like Kaikoura's Trees For Travellers and the Permanent Forest Sinks Initiative.</p>	Medium	Ministry for Agriculture and Forestry, Landcare Research, Trees for Travellers Programme	2018 – 2025	0	20,000

## 5.0 Measuring Success

It is important for the Council and community to know whether the actions, proposed in this Strategy, are taking Christchurch towards the Climate Smart Vision. To enable progress to be measured, targets have been set for Christchurch greenhouse gas emissions. Monitoring will track progress towards the targets and enable reviews of the implementation plan and the Strategy.

Local government is required to undertake environmental and community monitoring under the Local Government Act (2002) and the Resource Management Act (1991). Monitoring for this Strategy will build on programmes already undertaken by the Council as part of 'State of the Environment', City Plan and community outcomes monitoring and reporting. Monitoring reports will be used to inform reviews of the implementation plan and the Strategy. The results of the monitoring programme will provide a means for auditing the implementation of the Strategy which will be reviewed in 2016.

# Appendix 1

## REFERENCES AND SUPPORTING INFORMATION AVAILABLE AT [WWW.CLIMATESMART.GOV.T.NZ](http://WWW.CLIMATESMART.GOV.T.NZ)

### 1. References:

(CCC, 2002) Impacts of Climate Change on Christchurch, Christchurch City Council, August 2002.

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MFE, 2010, Preparing for future flooding: A guide for local government in New Zealand, Ministry for the Environment, May 2010.

MFE, 2009, Preparing for coastal change: A guide for local government in New Zealand, Ministry for the Environment, March 2009.

MFE, 2009a, New Zealand 2020 and 2050 Emissions Target, Ministry for the Environment, July 2009.

MFE, 2008, Preparing for climate change: A guide for local government in New Zealand, Ministry for the Environment, July 2008.

NIWA, 2009, Review of the frequency of high intensity rainfalls in Christchurch, NIWA, August 2009.

NIWA, 2001, Impacts of Climate Change on the Coastal Margins in Canterbury, NIWA, July 2001.

TNT, 1999, Study of the effects of sea-level rise for Christchurch, Tonkin and Taylor, August 1999.

### 2. Useful website links:

- a. New Zealand Government Climate Change website  
[www.climatechange.govt.nz](http://www.climatechange.govt.nz)
- b. Environment Canterbury Climate Change website  
[www.ecan.govt.nz/advice/sustainable-living/pages/climate-change.aspx](http://www.ecan.govt.nz/advice/sustainable-living/pages/climate-change.aspx)
- c. Intergovernmental Panel On Climate Change  
[www.ipcc.ch](http://www.ipcc.ch)
- d. Carbon Footprint Calculators  
[www.carbonzero.co.nz](http://www.carbonzero.co.nz)

# Appendix 2

## POLICY AND PLANNING DOCUMENTS RELATED TO CLIMATE CHANGE

	Statutory	Voluntary
International	United Nations Framework Convention on Climate Change Kyoto Protocol 1997	
National	<p>Resource Management Act 1991 Energy Efficiency and Conservation Act 2000 Local Government Act 2002 Civil Defence and Emergency Management Act 2002 Climate Change Response Act 2002 Building Act 2004</p> <p>National Policy Statements:</p> <ul style="list-style-type: none"> <li>• New Zealand Coastal Policy Statement 2008</li> <li>• Proposed Sea-level Rise Management</li> <li>• Proposed Flood Risk Management</li> <li>• Proposed Freshwater Management</li> <li>• Proposed Renewable Electricity Generation</li> <li>• Proposed Urban Design</li> </ul> <p>Emissions Trading Climate Change Response (Emissions Trading) Amendment Act 2008 Climate Change Response (Emissions Trading Forestry Sector) Amendment Act 2009 Climate Change (Unique Emissions Factors) Regulations 2009 Climate Change (Other Removal Activities) Regulations 2009</p> <p>Energy &amp; Transport Climate Change (Stationary Energy and Industrial Processes) Regulations 2009 Climate Change (Liquid Fossil Fuels) Amendment Regulations 2009</p>	<p>New Zealand Biodiversity Strategy 2000</p> <p>New Zealand Waste Management Strategy 2002</p> <p>New Zealand Energy Efficiency and Conservation Strategy 2007</p> <p>New Zealand Energy Strategy to 2050 – Powering Our Future 2007</p> <p>Sustainable Land Management and Climate Change Plan of Action 2008</p> <p>New Zealand Transport Strategy 2008</p> <p>Sustainable Development for New Zealand 2003</p> <p>Urban Design Protocol</p>



Regionalw	<p>Regional Policy Statement 1998</p> <p>Regional Coastal Environment Plan 2005</p> <p>Proposed Canterbury Natural Resources Regional Plan</p>	<p>Canterbury Regional Economic Development Strategy 2005</p> <p>Greater Christchurch Urban Development Strategy 2008</p> <p>Canterbury Regional Land Transport Strategy 2008-2018</p> <p>Canterbury Regional Travel Demand Management Strategy 2008</p> <p>Canterbury Regional Land Transport Programme 2009-2019</p> <p>Draft Regional Energy Strategy 2009</p> <p>Canterbury Region Biodiversity Strategy 2008</p> <p>Canterbury Regional Pest Management Strategy (2005-15)</p> <p>Canterbury Civil Defence and Emergency Management Group Plan</p> <p><b><i>Ngai Tahu plans, policies and strategies</i></b></p>
Local	<p>Christchurch City Plan</p> <p>Banks Peninsula District Plan</p> <p>Long-term Council Community Plan</p>	<p>Pedestrian Strategy 2001</p> <p>Cycling Strategy 2004</p> <p>Metro Strategy 2006 - 2016</p> <p>Waste Management Plan 2006</p> <p>Sustainability Policy 2007</p> <p>Visitor Strategy 2007 - 17</p> <p>Strengthening Communities Strategy 2007</p> <p>Sustainable Energy Strategy 2008 - 2018</p> <p>Water Supply Strategy 2009</p> <p>Surface Water Strategy 2009</p> <p>Biodiversity Strategy 2009</p> <p>Public Open Space Strategy 2010</p> <p>Travel Demand Management Strategy 2009</p> <p>Christchurch Transport Plan (in development)</p>

# Appendix 3

## KEY ORGANISATIONS INVOLVED IN UNDERSTANDING OR RESPONDING TO CLIMATE CHANGE

	Organisation	Role
International	Inter-governmental Panel on Climate Change	The IPCC is a scientific body that reviews and assesses the scientific, technical and socio-economic information produced worldwide relevant to understanding climate change. It does not conduct any research or monitor climate related data or parameters.
	United Nations Framework Convention on Climate Change	The ultimate objective of the UNFCCC is to achieve the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The UNFCCC provides a forum for global policy and advocacy.
National	Ministry for Environment	MfE provides leadership on environmental sustainability across central and local government, and the community. MfE has specific RMA functions including the issue of national policy statements. MfE coordinates climate change responses across government and is responsible for reporting under the UNFCCC and the Kyoto Protocol.
	Ministry of Foreign Affairs and Trade	MFAT has responsibility for leading New Zealand's international climate change negotiations. The Ministry of Foreign Affairs works closely with domestic departments in this role.
	Ministry of Economic Development	MED is responsible for the energy sector under the New Zealand Energy Strategy, the management of the New Zealand Emission Unit Register and provides tools and support for the sustainability of New Zealand businesses such as the "Enviro-Step" business monitoring tool.
	Ministry of Civil Defence and Emergency Management	MCDEM provides policy advice, support, and develops partnerships and understanding to ensure New Zealand is resilient to the social and economic consequences of disasters – following a reduction, readiness, response and recovery approach. Including natural disasters related to climate change.
	Ministry of Transport	MOT is responsible for transport policy including climate change and energy responses within the New Zealand Transport Strategy.

	Ministry of Agriculture and Forestry	MAF works to ensure the sustainable use of New Zealand natural resources including managing, bio-security, state forest, supporting rural communities, ensuring the humane and responsible use of animals. MAF also manages the Permanent Forest Sinks Initiative, Afforestation Grant Scheme and sustainable farming fund.
	Ministry of Research Science and Technology	MoRST has a pivotal role in supporting research into climate change and science and technology base responses to climate change.
	Department of Conservation	DoC is responsible for the conservation of New Zealand's natural and historic heritage for the benefit of present and future New Zealanders. DoC manages marine and terrestrial reserves and advocates for the conservation of natural and cultural resources.
	National Institute of Water and Atmospheric Research (NIWA)	NIWA is a Crown owned research and consultancy company which focuses on atmospheric, marine and freshwater research. NIWA runs a National Climate Centre which offers a range of commercial consultancy services to government, business and individuals.
	Energy Efficiency and Conservation Authority	EECA promotes energy efficiency and renewable energy solutions for homes and businesses. It manages the Warm Homes Grants Scheme, grants for businesses and local government and motivates best practice through national awards.
	Federated Farmers of New Zealand	Federated Farmers is an independent rural advocacy organisation that aims to add value to the business of farming and encourage sustainability through best practice approaches. Farmer training, education campaigns and events, drought support, awards for best practice relate strongly to climate change impacts and responses.
Regional	Environment Canterbury	The role of ECan is to promote the sustainable management of natural and physical resources, primarily under the RMA (1991), including the preparation of a Regional Policy Statement, National Resources Regional Plan and a Regional Coastal Plan. These statements and plans directly impact Christchurch City Council's Plans and should include climate change considerations.

	Te Runanga o Ngai Tahu	TRONT is the organisation established by the Te Runanga o Ngai Tahu Act (1996) that services the Ngai Tahu iwi's statutory rights. Ngai Tahu has a strong commitment to protecting the natural environment and protecting and enhancing tangata whenua values such as mahinga kai, wahi tapu and kaitiakitanga.
	Canterbury District Health Board (CDHB)	Public health planning , monitoring and service provision for the region and will need to consider the health and equity related impacts of climate change. CDHB can also role model more sustainable practices and approaches in its operations.
	Canterbury Development Corporation	Canterbury Development Corporation's role is to stimulate economic growth, defined as improving standards of living and quality of life by generating economic wealth. CDC chiefly supports exporting sectors, establishes business clusters and incubators, hosts businesses summits and task force groups.
	Canterbury Employers Chamber of Commerce	Canterbury Employers' Chamber of Commerce provides business advice, support and services to small and medium business in Canterbury. Understanding and responding to climate change will be key for the continued viability of its members and wider community.
	Urban Development Strategy partners	This Strategy provides the primary strategic direction for the Strategy partners (Environment Canterbury, Christchurch City Council, Selwyn and Waimakariri District Councils and the New Zealand Transport Agency) that cover the greater Christchurch area, for managing and planning for urban development while protecting the area's natural resources.
Local	Christchurch City Council	The Council together with its Community Boards plans for the social, cultural, economic and environmental wellbeing of current and future generations. Specifically the planning and provision of essential services, community facilities and regulation of city development. The Council's ability to provide these services will depend on its ability to manage the effects of climate change.
	Maahanui Kurataiao Limited	MKT represents the six Papatipu Runanga within the Christchurch territory. A Memorandum of Understanding (MoU) formalises how the Runanga, represented by MKT, can participate in Council decision-making processes, and the preparation of strategies such as the Climate Smart Strategy.

	Educational organisations	<p>Community education is a vital part of our responses to climate change. Organisations that can build understanding and encourage behaviour changes in our community include:</p> <ul style="list-style-type: none"> <li>• Canterbury University</li> <li>• Lincoln University</li> <li>• Christchurch Polytechnic Institute of Technology</li> <li>• Primary and secondary schools</li> <li>• Early childhood centres</li> <li>• EnviroSchools Canterbury</li> <li>• Sustainable Living Education Trust</li> </ul>
	Community Organisations	<p>Community organisations operate at many levels in our community bringing people together around common interests or locations. They form the glue that unites people, build understanding and enhance community resilience and grass roots action. Examples include:</p> <ul style="list-style-type: none"> <li>• Residents associations</li> <li>• Conservation trusts</li> <li>• Environmental groups</li> <li>• Transition Town organisations</li> <li>• Community garden organisations</li> <li>• Sustainable Otautahi Christchurch</li> <li>• Neighbourhood support groups</li> </ul>

