

A wide-angle photograph of a beach scene. The foreground is a dark, sandy beach. The middle ground shows the ocean with white-capped waves breaking. The background is a vast blue sky filled with soft, white, scattered clouds. The overall atmosphere is bright and serene.

Chapter 1

Introduction

Introduction

This Regional Environment Report uses a sustainability framework as a basis for analysing the state of the Canterbury environment over the period from 2001 to 2007. The framework has been developed to increase understanding of the relationship between human and natural processes, consider how this impacts on the environment and then reflect on how Environment Canterbury responds to the need to manage resources in a sustainable way.



Environment Canterbury's activities

Environment Canterbury contributes to sustainability outcomes consistent with its statutory responsibilities. Its work is divided into 13 groups of activities - air quality; coastal environment; democratic process; emergency management; energy; hazards; land; navigation safety; pests and biosecurity; public passenger transport; regional land transport; waste, hazardous substances and contaminated sites; water quality, quantity and ecosystems. Within each group of activities, Environment Canterbury's responsiveness in delivering community outcomes covers a range of activity types¹:

- Investigating – determining the nature of the issue to be addressed and defining the science needed to understand the issue
- Policy and plan making – developing policies and plans of action to contribute to achieving the outcomes sought
- Implementing – undertaking tasks to implement the plan of action either through
 - regulating: requiring others to undertake action to achieve the outcome;
 - facilitating: educating and encouraging others to undertake action to achieve the outcome
 - operational: undertaking or contracting actions to achieve the outcome.
- Monitoring: measuring the outcome achieved or indicators of the service provided

Subject areas covered by this report

Environment Canterbury's programme of activities is covered in this report under the following chapters. Some groups of activities have had to be divided into a number of chapters, due to the diversity of subject matter or the quantity of material involved, eg water is divided into two chapters.

- Surface water quantity, quality and ecosystems
- Groundwater
- Biodiversity
- Pests
- Land resources
- Coastal environment
- Air quality
- Energy
- Transport
- Hazardous substances
- Contaminated sites
- Solid and hazardous waste
- Natural hazards

This report covers information gathered since the last Canterbury Regional Environment Report in 2001. However, there are instances where a longer-term perspective is appropriate and earlier data have been included.

The information presented here is the most up-to-date available for reporting and generally includes data from 2007, although in some instances data were only available up until the end of 2006.

¹ In early 2008, Environment Canterbury implemented the results of an organisational design review, one consequence of which was a realignment of the way types of activities or functions are delivered. While the activity types set out above have been largely retained, plan making and consenting are now grouped together, and strategic activities across Environment Canterbury have been given greater emphasis. In this report, however, the response sections are tabulated using the previous activity types, reflecting the timing of their preparation.

A sustainability framework for environmental reporting

This Regional Environment Report is quite different in its format to previous environment reports for Canterbury. The main distinguishing feature is that it is set in a sustainability framework. Previous reports described the state of the Canterbury environment, along with any observable trends over the reporting period. However, this report puts those observations into a wider context. This approach has been developed to help fulfil Environment Canterbury's reporting responsibilities under the Resource Management Act and the Local Government Act, both of which are underpinned by a central theme of sustainability.

The Resource Management Act 1991 promotes the sustainable management of natural and physical resources and requires regional councils to measure the state of the environment and report on the effectiveness of their policies and plans at not less than five-yearly intervals. At the same time, under the Local Government Act 2002, regional councils are required to contribute to community outcomes with respect to four well-beings that form the basis for defining sustainability in New Zealand: environmental, economic, social and cultural well-being. There is also a requirement to report on the community outcomes for the region and the level of service that Environment Canterbury's programme of activities contributes to those outcomes. These parallel reporting responsibilities provide an opportunity to develop a common reporting framework which incorporates sustainability concepts.

The framework that is used in this report, and will be extended eventually to community outcome reporting, has been adapted from the work of Black and Hughes (2001). Its basis is four interlinked components: resources, processes, outcomes and responses. The relationship between these components is described in Figure 1.1. Essentially, this model is an extension of the pressure-state-response framework traditionally used in state of environment reporting, and its more complex variant, drivers-pressure-state-impact-response (DPSIR) model developed in the Organisation for Economic Co-operation and Development (OECD).

In the context of environmental reporting, this framework is designed to describe the resource base for the Canterbury region, and the human-induced processes related to the use of the resource base which have led to the outcomes that have been observed. The observations also drive the response by Environment Canterbury in terms of the programme of activities it undertakes.



The environment represents one of the four well-beings described in the Local Government Act. As well as the environmental aspects of resources, processes and outcomes, this framework provides an opportunity for alignment of the other three well-beings under each component, as shown in Figure 1.1. As a result, resources, processes and outcomes each have an environmental, social, cultural and economic dimension. The environmental components are described below:

1. Resources

Environmental resources, also referred to as natural capital, include renewable and non-renewable natural resources, ecosystems and aesthetic features, land and water resources, air quality, and climatic conditions. They also include adverse features that influence resource conditions such as propensity to earthquakes, floods and droughts and air pollution climatology. Other natural physical resources include temperature, rainfall, wave climate and energy.

2. Processes

Processes are the means by which people interact with the natural environment, or one another, in a way that produces outcomes. Environmental processes are described as the use of resources by people, and involve the nature of that interaction, eg water extraction or the discharge of contaminants.

3. Outcomes

Environmental outcomes are the changes that have occurred to the environmental resources as a result of the processes operating on the resource. Examples include loss of habitat through land clearance, or an increase in base stream flows as a result of augmentation.

4. Responses

Responses are the initiatives taken as a result of the outcomes observed. Generally, these responses intend to change the processes that are identified as having the greatest impact on the resource in terms of outcomes that need addressing. For example, controls on the amount of groundwater that is taken may be intended to help maintain water levels in the aquifer. On the other hand, responses can be aimed at enhancing the resource directly (eg riparian planting in areas where vegetation has been previously removed).

Within each chapter of this report, there are sections describing the resource base, the processes – both natural and human – relating to the use of the resource, and the environmental outcomes that result, based on available monitoring information. The responses by Environment Canterbury to address the observed outcomes are then described. The key trends and the key indicators are also presented.

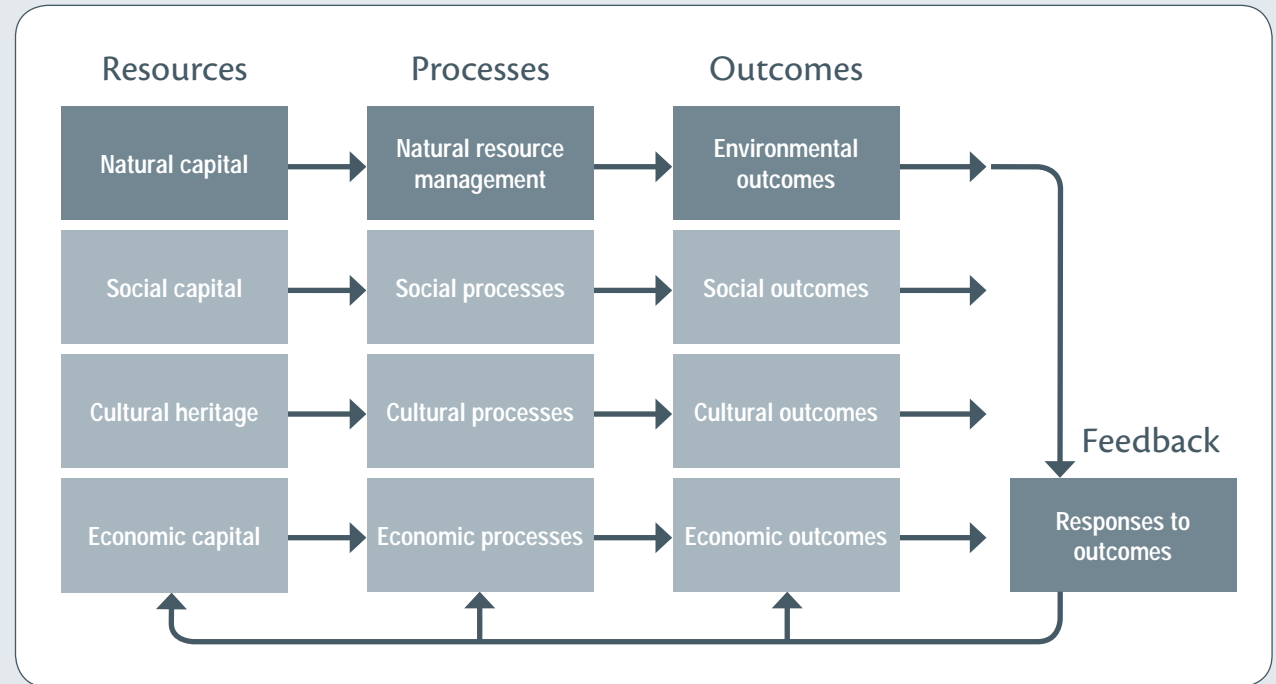


Figure 1.1 A framework for reporting sustainability outcomes (after Black and Hughes, 2001). The dark shaded boxes represent those elements relevant to state of the environment reporting (this report). The other boxes encompass the well-beings, in addition to environment, that councils must report on under the Local Government Act 2002