



Ministry for the
Environment
Manatū Mō Te Taiao



ENVIRONMENT NEW ZEALAND

2007



Environment New Zealand 2007 project team

The following people were part of the core Ministry for the Environment team, which planned, researched, wrote, and produced *Environment New Zealand 2007*:

Andrew van Bunnik, Anya Pollock, Eleanor Somerset, Jennie Francke, Josh Fyfe, Josh Preston, Julia Crosfield, Julia Porter, Justine Daw, Kati Thompson, Kiersten Leslie, Kirsty Johnston, Kurt Janssen, Libby Manley, Linda Stirling, Martin Kennedy, Mary-Anne MacLeod, Mike Thompson, Nick Zaman, Paul Franklin, Polleke Peeters, Robyn Reid, Roz Perry, Shaun Lewis, Tom Fitzgerald, Toni Wilson, Vera Power, Zoe Studd.

Published in December 2007 by the
Ministry for the Environment, Manatū Mō Te Taiao,
PO Box 10362, Wellington, New Zealand

ISBN: 978-0-478-30191-5 (print)
978-0-478-30192-2 (electronic)

Publication number: ME 847

This document and *Environment New Zealand 2007 – Summary* are
available on the Ministry for the Environment's website: www.mfe.govt.nz

Message from the Minister



The Government welcomes the publication of the second national state of the environment report. *Environment New Zealand 2007* provides a wealth of information about our environment and how it is changing over time. It also sets a compass against which we can chart New Zealand's journey towards greater sustainability.

Putting sustainability at the heart of our thinking and decision-making is important to this Government: the environment underpins the very foundations of New Zealand's national identity and quality of life. As the world moves to take greater action on environmental issues and a growing number of consumers demand environmentally-friendly products, we face both challenges and opportunities. With our enviable natural environment, efficient primary production, strong track record in renewable energy, and innovative business sector, New Zealand is well placed to respond.

Global climate change is probably the most significant environmental issue of the 21st century. Around the world, governments, businesses, households, and individuals are striving to reduce their greenhouse emissions. New Zealanders, too, must play their part. Using our energy and natural resources efficiently, adopting more sustainable transport and primary production, reducing waste, and encouraging afforestation are all important steps in responding to climate change and moving towards greater sustainability.

Climate change is not the only challenge we face. This report also highlights the decline in water quality New Zealand faces as a consequence of the increasing intensity of agricultural production. As we take action on this and other environmental concerns, regular environmental reporting will be important in tracking progress. Better understanding the impacts of our activities on the environment and targeting measures to reduce them will be an important part of reinforcing the 'clean and green' reputation we enjoy.

Environment New Zealand 2007 provides a timely platform for discussion about our environment and the pressures we are placing on it. I welcome the Ministry for the Environment's leadership in engaging with New Zealanders about how we can all play a part in making New Zealand a truly sustainable nation. I look forward to seeing progress towards this goal reflected in future state of the environment reports.

A handwritten signature in black ink, reading "Trevor Mallard". The signature is written in a cursive, flowing style.

Hon Trevor Mallard
Minister for the Environment

Preface



The environment is central to New Zealand and the Kiwi way of life. Our iconic landscapes have shaped our identity as a nation, and the resources from the land, freshwater, and sea underpin our valuable primary industries. The varied urban and rural landscapes in which we live, work, and spend leisure time form an integral part of our social, cultural, and economic well-being.

Environment New Zealand 2007 is New Zealand's second state of the environment report. It is published at a time when there is heightened attention around the world on protecting the environment for our children and our children's children. The risks from a changing climate, the desire to use valuable natural resources more efficiently, and the need to protect our health have all created a global momentum for environmental action.

This report builds on *The State of New Zealand's Environment 1997*. It is not, however, a simple update of that report. A decade on, much has changed.

Environment New Zealand 2007:

- reflects improvements in environmental monitoring and reporting by central and local government
- sets a benchmark against which environmental outcomes can be monitored over time
- represents another step in the commitment by central government to regular reporting on the state of New Zealand's environment
- highlights changes to environmental policy and resource management and new environmental standards and regulations.

Since 1997, New Zealand has made significant progress in ensuring sound environmental information is available to support environmental decision-making. *Environment New Zealand 2007* advances this work by using environmental indicators and a range of mapping tools to present an overview of key aspects of New Zealand's environment. This report also summarises for decision-makers the most urgent pressures on, and challenges for, our environment.

I am very pleased to bring you *Environment New Zealand 2007*. I have confidence that, in creating a national picture of New Zealand's environmental well-being, this report will help shape the course of environmental management in New Zealand into the future.

Hugh Logan
Secretary for the Environment

Acknowledgements

Environment New Zealand 2007 represents the collective effort of many organisations. They have provided data, peer review comments, and made suggestions on the presentation of information. Without their support the completion of this report would not have been possible. We would like to thank the following organisations for their invaluable contribution:

AgriQuality, Auckland Regional Council, Biosecurity New Zealand, Crop and Food Research, Department of Conservation, Energy Efficiency and Conservation Authority, Environment Bay of Plenty, Environment Canterbury, Environment Centre Hamilton, Environment Southland, Environment Waikato, Environmental Choice New Zealand, Environmental Risk Management Authority New Zealand, Gisborne District Council, Greater Wellington Regional Council, Hawke's Bay Regional Council, Horizons Regional Council, Institute of Geological and Nuclear Sciences, Land Information New Zealand, Landcare Research, Local Government New Zealand, Maritime New Zealand, Marlborough District Council, Ministry of Agriculture and Forestry, Ministry of Economic Development, Ministry of Foreign Affairs and Trade, Ministry of Health, Ministry of Social Development, Ministry of Transport, Museum of New Zealand Te Papa Tongarewa, National Institute of Water and Atmospheric Research, Nelson City Council, New Zealand Food Safety Authority, Ngāti Kahungunu, Ngāti Kōhōi, Northland Regional Council, North Shore City Council, Ornithological Society of New Zealand, Otago Regional Council, PIPC (NZ) Ltd, Queen Elizabeth II National Trust, Sustainable Living Programme, Taranaki Regional Council, Tasman District Council, Te Rūnanga o Ngāi Tahu, Te Wānanga-o-Raukawa, The Treasury, University of Auckland, University of Otago, Wellington City Council, West Coast Regional Council.

Many people have made significant and, in most cases, voluntary contributions to this report, including peer review, writing assistance, project management, and administrative support. While not all of these contributions have made it into the final document, they were essential in helping us refine the content of this report. We would like to thank the following people for their contributions:

Andrew Stewart, Alastair Smaill, Alison Lane, Allan Hewitt, Amanda Hunt, Amanda Smale, Amber Duncalfe, Andrea Speir, Anne Sutherland, Anne McCrone, Astrid van Meeuwen, Avi Holzapfel, Barbara Rouse, Barry Robertson, Barry Gilliland, Beat Huser, Bill Birch, Bill Vant, Blair Fitzharris, Bob Rout, Bob Zuur, Brenda Gould, Brent Wood, Brett Longley, Brett Mullan, Brian Loyd, Brian Sorrell, Bruce Croucher, Bruce Middleton, Caroline Hart, Chris Arbuckle, Chris Blake, Chris Cameron, Chris Daughney, Chris Ecroyd, Chris McLay, Chris Purchas, Chris Robertson, Christina Robb, Clare Feeney, Clinton Duffy, Colin Dall, Colin Gray, Colin O'Donnell, Conal Smith, Craig Briggs, Craig Pauling, Craig Thompson, Dan Brown, Daphne Brasell, Darren Patterson,

David Crawford, David Kelly, David Mole, David Weinstein, Dennis Bush-King, Dennis Gordon, Derek Brown, Dhilum Nightingale, Dick Burgess, Don Newman, Ed Brown, Eddie Grogan, Eddy Goldberg, Edward Mason, Elaine Wright, Erin Wynne, Ewen Robertson, Frances Graham, Fred King, Fred McLay, Gail Tipa, Garry McDonald, Gary Bedford, Gary Morgan, Gavin Forrest, Ged Shirley, Georgina Hart, Gerald Rys, Gerda Kuschel, Ginny McLean, Glen-Marie Burns, Glenn Stevens, Gordon Brailsford, Graeme King, Graham Sparling, Grant Barnes, Grant Rae, Greg Bodeker, Gretchen Johnston, Hans van Kregten, Helen Davies, Helen Plume, Howard Larsen, Hugh Logan, Hugh Robertson, Iain McGlinchy, Ian Flux, Ian West, Illona Keenan, Irene Clarke, James Court, Jane Tier, Janine Bell, Jeff Page, Jeff Seadon, Jeff Smith, Jenny Easton, Jenny Heine, Jeremy Helson, Jo Evans, Jocelyn Rennie, John Allard, John Dowding, John Greer, John Hannah, John Leathwick, John Saker, John Talbot, Jonny Horrox, Joseph Arand, Joseph Thomas, Julie King, Juliet Milne, Kareema Yousif, Karen Bell, Katherine Hay, Kathy McNeill, Kathy Perreau, Kelly Beuth, Kent Hammond, Kevin Guerin, Kevin Mahon, Kim Currie, Kirsten Forsyth, Laura Watts, Leigh Stevens, Len Brown, Lesley Woudberg, Lester Thorley, Libby Masterton, Lindsay Gow, Lucinda Blackley, Luke Roper, Lynley Povey, Lynnette Hartley, Maria Gracie, Mark Neeson, Martin Cryer, Marianne Vignaux, Mary De Winton, Mary Livingston, Mary-Anne Baker, Matt Hickman, Matt Pinkerton, Matthew Bloxham, Matthew Everett, Matthew Smith, Matthew Taylor, Megan Beecroft, Michael LeRoy-Dyson, Michelle Begbie, Mike Barton, Mike Clare, Mike Clear, Mike Freeman, Mike Goldsmith, Mike Plivelich, Mike Scarsbrook, Misty Skinner, Moira Pryde, Murray Buchanan, Murray McLea, Natalia Foronda, Neal Gordon, Nick Dalgety, Nick Kim, Nigel Corry, Norm Thornley, Pamela Mace, Paul Cashmore, Paul Futter, Paul Lane, Paul Pendergrast, Paul Scholes, Pavan Sharma, Penny Race, Perry Davy, Peter Dilks, Peter Ettema, Peter Newsome, Peter Stephens, Peter Taft, Peter Winsley, Phil Gurnsey, Phil Sutton, Rachel Depree, Rachel Hargreaves, Reece Hill, Rhys Taylor, Richard Earl, Richard Keys, Richard Lynch, Richard McKenzie, Richard Taylor, Rob Bell, Rob Hitchmough, Robert Brodnax, Robert Gibb, Robert Smith, Robin Taylor, Rod Forbes, Rogan Colbourne, Roger Smith, Sam Weiss, Sandra Preston, Sarah Adams-Linton, Sarah Cook, Sarah Davies, Sarah Pinkerton, Selva Selvarajah, Serge Peeters, Shirley Hayward, Simon Banks, Simon Buckland, Simon Wear, Sonia Petrie, Spencer Clubb, Stacey Perkins, Stuart Badger, Stuart Burgess, Sue Powell, Susa Kupa, Susan Allen, Susan Bisset, Susannah Sharpe, Susie Osbaldiston, Susie Wood, Suz Baird, Tamsin Mitchell, Tanya Gray, Ted Jamieson, Teresa Aberkane, Terry Carter, Terry Greene, Tim Baker, Todd Kriebel, Tom Hall, Tony Petch, Tony Phipps, Trecia Smith, Trevor James, Trish Kirkland-Smith, Ude Shankar, Vivienne Smith, Warren Gray, Warren Tuckey, Wayne Jones, Wayne Smith.

The report's strengths owe much to the above contributors and reviewers. However, the Ministry for the Environment bears full responsibility for the final text.

Contents

Message from the Minister	1
Preface	2
Acknowledgements	3
About this report	4
Section one: Setting the context	7
Chapter 1: Environmental reporting	9
Chapter 2: Our environment and people	33
Section two: Pressures on the environment	55
Chapter 3: Household consumption	57
Chapter 4: Transport	83
Chapter 5: Energy	101
Chapter 6: Waste	119
Section three: State of the environment	143
Chapter 7: Air	145
Chapter 8: Atmosphere	181
Chapter 9: Land	211
Chapter 10: Freshwater	259
Chapter 11: Oceans	311
Chapter 12: Biodiversity	347
Glossary	404
Index	428

About this report

Purpose of this report

Environment New Zealand 2007 uses a set of environmental indicators to report on key aspects of the New Zealand environment and to track how these aspects have changed over time.

This report will:

- provide useable and constructive information to foster informed decision-making on matters that affect the environment and encourage appropriate management approaches
- increase New Zealanders' understanding about the state of, and pressures on, our environment
- highlight the aspects of the environment that have come under particular pressure and those that require priority attention
- motivate all New Zealanders to take action to protect and conserve the environment.

Environment New Zealand 2007 is intended to be informative and thought-provoking for both those New Zealanders responsible for environmental decision-making and general readers alike. While much of the content is technical in nature, the report aims to present information at a level that is relevant to all readers.

The report will play an important role in establishing regular and ongoing national-level reporting on the state of New Zealand's environment. In part, its value is in setting a benchmark against which environmental outcomes can be monitored over time.

Differences between the 2007 and 1997 reports

Environment New Zealand 2007 is New Zealand's second national state of the environment report. The 2007 report differs in several fundamental ways from the first report, *The State of New Zealand's Environment 1997*.

The 1997 report drew largely on qualitative information to present a comprehensive, narrative picture of the state of New Zealand's environment. It gathered together detailed information on the historical and contemporary pressures and influences on the New Zealand environment, and analysed this in-depth. Because the majority of the analysis in the 1997 report remains valid today, the 2007 report does not repeat it.

Since 1997, there have been significant advances in environmental monitoring, data collection, and data reporting at the national level. These advances allow *Environment New Zealand 2007* to provide a more quantitative picture of key aspects of New Zealand's environment than was possible in the 1997 report. To do so, the 2007 report introduces a core set of national-level environmental indicators and reports against them. Unlike the 1997 report, the 2007 report makes use of ecological classification systems to extrapolate and interpret this quantitative information across New Zealand (see chapter 1, 'Environmental reporting'). In doing so, the 2007 report follows international best practice for state of the environment reporting at the national level.

Data used in this report

Environment New Zealand 2007 uses data collected by central and local government agencies, non-government organisations, and Crown Research Institutes at different time intervals. Consequently, much of the data does not neatly span the decade between 1997 and 2007. For each chapter, we have used the best data available to determine trends over time. This report is based on information and data available before the end of July 2007.

Some chapters in the 2007 report use data derived from national environmental monitoring networks. Readers should bear in mind that national-level monitoring in New Zealand is mostly carried out in locations known, or expected, to have poor environmental quality. This can mean that 'healthy' areas of the environment are not well represented in the data collected. For example, water quality in New Zealand's national parks network is not regularly monitored and reported on because water quality in national parks is known from occasional monitoring to be generally very good. Where such data anomalies occur, these are noted in the relevant chapters.

Structure of this report

Environment New Zealand 2007 is divided into three sections.

Section one: Setting the context

Section one describes the environmental indicators and classification tools used in this report and provides an overview of New Zealand's environment, population, and demography.

Section two: Pressures on the environment

Section two examines selected pressures on New Zealand's environment, including household consumption, transport, energy, and waste.

Section three: State of the environment

Section three reports on the quality of New Zealand's air, atmosphere, land, freshwater, oceans, and biodiversity.

Structure of chapters

The chapters in sections two and three are structured under six standard headings:

- At a glance
- Introduction
- National environmental indicator(s)
- Current pressures and trends or Current state and trends
- Changes since the 1997 report
- References.

Text boxes

The 2007 report uses 'text boxes' like this one to provide additional information to interested readers. Most text boxes are categorised as shown below.

- Text boxes entitled 'Government action on ...' and 'Local action on ...' outline how central government, local government, iwi, and community groups take action to protect the environment.
- 'More about ...' text boxes provide more detailed information on technical matters discussed in the body of the chapter.