

Water quality, quantity and ecosystems

Environment Canterbury's role is as the lead agency for managing the water resource



What we achieved this year

Within the water quality portfolio we contribute towards achievement of six main community outcomes:

Our contribution

Community outcome

- We monitored water quality at approximately 300 sites throughout Canterbury, including 60 bathing sites on rivers and lakes, and 164 sites on the regional water quality river and lake indicator sites network.
- 90% of wells sampled met the New Zealand Drinking Water Standard for nitrate-nitrogen concentration (94% last year).
- 85% of lakes and 55% of river bathing sites were graded as suitable for contact recreation (85% and 58% last year).
- We monitored stream life and habitat in aquatic ecosystems at 146 representative sites.
- 55% of foothill streams and 10% of lowland streams were graded with fair, good or very good ecosystem health (80% and 14% last year).
- The Urban Waterways public education campaign was launched across Christchurch, including a public awareness campaign and a new website (www.cleanwaterways.org.nz) to improve understanding of the links between stormwater systems and urban rivers.
- This year, 2,344 resource consents were issued, with conditions to protect water quality and quantity and 16,455 consent conditions were monitored for compliance. Action was taken to resolve the 509 cases that were graded as having serious non-compliance.

Water is in a healthy condition, clean and plentiful enough to support life

Recreational needs are met

Native plants and animals can thrive

The environment, in general, is to be looked after

Business and farming activities do not harm the environment

A strong economy

In this portfolio we report on six levels of service to illustrate our achievements this year.

Effect on the four well-beings



Reviewing environmental flows in rivers and groundwater enhances environmental well-being by ensuring that there is sufficient water of a high enough quality to support healthy ecosystems. Issue of resource consents to take, use and dam water enables the use of water to enhance social and economic well-being. Although limits on water abstraction could adversely affect the economic well-being of some water and land users, these limits enhance environmental, social and cultural well-being by protecting ecosystems, cultural and recreational uses of waterways. Providing a known reliability to abstractors also benefits economic well-being.

Clean and plentiful water increases social, cultural and environmental well-being. However, meeting the cost of complying with conditions for permitted and consented activities may adversely affect the economic well-being of some individuals or businesses.

Other key achievements this year

- We advanced the Canterbury Water Management Strategy on behalf of the Canterbury Mayoral Forum, completing two rounds of stakeholder engagement and a public consultation programme in April 2009. We also completed technical studies on nitrates in groundwater and freshwater biodiversity.
- We facilitated a request for proposals on behalf of Rakaia-Selwyn consent holders for the supply and installation of water meters, dataloggers, data collection and data transfer.
- We finished scheduled hearings on 34 stages of Natural Resources Regional Plan Variation 1 Chapters 4-8 on water quality, water quantity, wetlands and beds and margins of lakes and rivers.
- We continued to work with cluster groups of consent holders in the Rakaia-Selwyn on reviewing consents, leading to a hearing in June 2009, and assessing options for future management of all takes in the groundwater zone.
- We held hearings for the Valetta and Ashburton groundwater zones, for the Ashburton stock water races and resource consents in the Waitaki catchment below the Waitaki dam.
- A study was commissioned to understand how Lake Benmore will respond to different amounts of nutrient inputs. This information will assist in setting quantitative management objectives for the lake.
- A network of automatic groundwater recorders (139) and monthly manual readings (301) to measure groundwater levels across the region was maintained.
- The groundwater monitoring network for quality and quantity was extended in the Mackenzie Basin. We can now measure and report on groundwater trends in the basin.
- We undertook a range of water quality and quantity investigations to help inform management of Lake Ellesmere/Te Waihora and part-funded the Waihora Ellesmere Trust co-ordinator.
- We maintained a network of 71 rainfall and 103 water level recording sites. One new rainfall and five new water level sites were established. Monitoring rainfall and river flows are key for understanding the water resource, flood warning and management of water takes. All information is available to the public.
- A major new report on water quality objectives for regional plans was produced.
- Studies were commissioned to understand sources of contaminants and sediments in Cashmere and Haytons Streams – tributaries of the Heathcote River.
- Regular groundwater quality monitoring involved collecting approximately 700 samples from about 300 wells across the region to assess changes and long-term trends in groundwater quality.
- A further 150 wells were sampled throughout the region as part of specific groundwater chemistry investigations, including determining the effects of land use on groundwater quality.
- A large number of complex public consent hearings placed heavy demand on consent processing resources in 2008/09. Applications involved in significant hearing processes included the Central Plains Irrigation scheme, the Hunter Downs irrigation scheme, Meridian's North Bank power scheme and combined applications in the Valetta and Selwyn-Waimakariri water zones. Ongoing work on these applications accounted for more than 20% of consent processing resources for the year.
- We continued work on a regional groundwater model and groundwater investigations to inform the management of groundwater allocation zones; a specific model run was also completed to support the Canterbury Water Management Strategy.
- A review was conducted on Environment Canterbury's network of lysimeters and the results published in a technical report.
- Documentation to support the consents process and the implementation of a requirement for the submission of aquifer test results was prepared for use by consultants.
- A report outlining draft Waipara River and tributaries environmental flow regimes was released for public comment.
- We ran a series of lessons in 31 classes for schools in Living Streams and urban catchments including Waihao, Christchurch City, Kaiapoi, Ashburton, Banks Peninsula, Ellesmere, and Waimate. Interest in water issues and the role that young people can play is increasing among schools outside the target Living Streams catchments and across the region.
- We prepared a new supplement to Waitaha Wai – Water of Canterbury, an educational booklet focusing on the Banks Peninsula.
- The Living Streams programme, which aims to improve the health of waterways in rural catchments in collaboration with community groups, has been extended to the Ohoka River, Orakipaoa, Taumatakahu and Dobbies Creek.
- We also extended the work undertaken on stream health in the Pahau catchment to the neighbouring St Leonards Drain.
- Handbooks were produced for the Living Streams programme that provide guidance on the restoration of rural streams, including fencing, planting, stock crossings and stream maintenance.
- We worked with the Orari River Catchment Group and the Lower Waitaki Management Society on projects on jet boat access and vehicle access to river beds, weed control and wetland enhancement.
- We facilitated the training of people involved in the subdivision and earthwork industry (consultants, engineers, contractors and local authority staff) with a focus on promoting industry best practice and new technology (e.g. chemical flocculants).
- We liaised closely with representatives from the dairy industry and Fish and Game and Forest and Bird, to develop a collaborative approach to managing the environmental impact of the dairy industry. All parties gave their support to Environment Canterbury's focus on assisting farmers with minor issues to achieve compliance and increasing both enforcement action and monitoring frequency for those farms where there is a history of significant non-compliance.
- We lodged submissions on 15 notified city/district plan changes to ensure consistency with regional policies and nine resource consent applications notified by city/district councils to address water-related issues.

Levels of service

This section reports on performance for 2008/09 against Annual Plan targets.

1. Setting sustainable allocation limits for groundwater to protect the environment and to provide groundwater abstractors with reasonable reliability of supply

Measure

Progress on establishing sustainable allocation limits for key groundwater allocation zones.

Target 2008/09

Water allocation limits are set by the dates in the table below.

We progressed work towards achieving 2009/10 targets.

Key groundwater zones	Allocation limits set
Ashburton River	2009/10
Christchurch West Melton	2009/10
Pareroa	2010/11
Waimakariri-Selwyn	2010/11
Rakaia - Selwyn	2010/11
Valetta	2013/14
Waipara	2013/14
Mayfield - Hinds	2015/16
Orari - Opihi	2015/16

Source: Environment Canterbury.

2. Ensuring nitrate-nitrogen concentrations in groundwater sources of drinking water meet New Zealand Drinking Water Standards, to protect human health

Measure

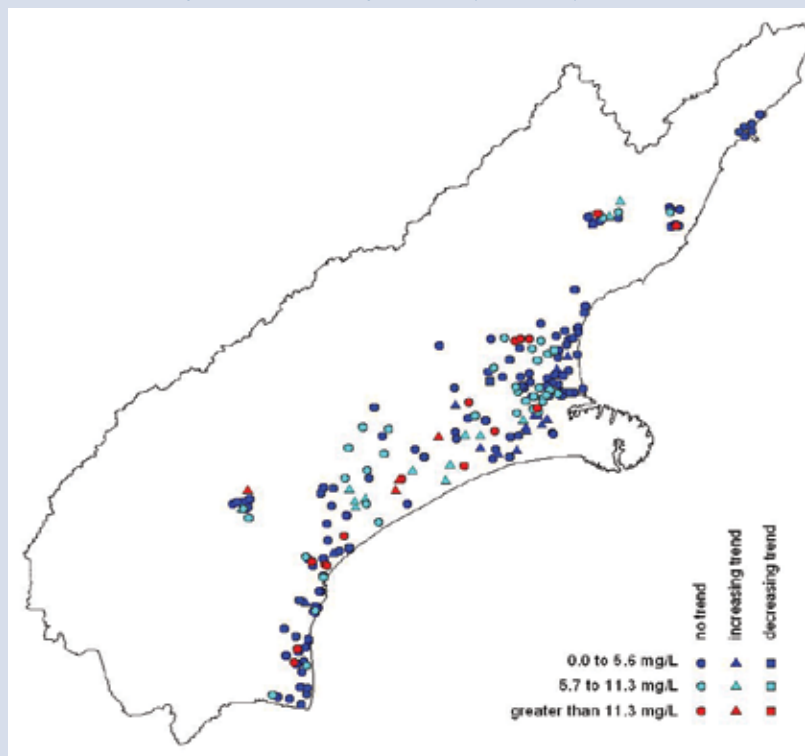
Concentrations of nitrate-nitrogen in groundwater sources of drinking water.

Target 2008/09

Compliance with the New Zealand Drinking Water Standard for nitrate-nitrogen of less than 11.3 milligrams of nitrate per litre of water.

Nitrate-nitrogen exceeded the standard at 11.6% of monitored wells (6% last year). *Not achieved.*

Trends in nitrate-nitrogen concentrations in groundwater (1999-2008)



Note: Groundwater is the receiving environment for a number of contaminants from natural and human activities on the land. An indicator of the general state of groundwater quality is the presence of nitrogen because of grazing animals, nitrogen-fixing plants, fertiliser use, septic tanks usage disposal, storm water runoff and other waste disposal which contributes nitrogen.

Source: Environment Canterbury.

3. Improving recreational water quality, to protect human health

Measure

The percentage of selected bathing sites at rivers and lakes that are suitable for contact recreation.

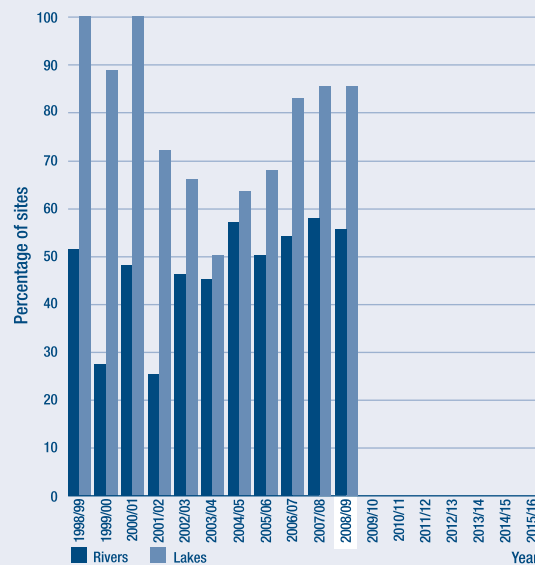
Target 2008/09

The percentage is increasing.

Not achieved for rivers (2008/09 55%; 2007/08 58%).

Not achieved for lakes (2008/09 85%; 2007/08 85%).

Percentage of bathing sites at lakes and rivers graded as suitable for contact recreation



Note: Some numbers in this graph have changed slightly from those reported in previous years, due to the data being recalculated to meet revised Ministry of Health and Ministry for the Environment protocols.

Source: Environment Canterbury.

Notes: A site is considered suitable for contact recreation when it receives a "Suitability For Contact Recreation Grade" of fair, good or very good, as defined in the Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (2003). Grading is reassessed at the end of each summer bathing season, based on the most recent five years' individual sample results as well as an assessment of risk factors. This gives a grade that reflects likely water quality at any time, not just when samples were collected. It allows for occasional exceedence of single sample trigger values, such as after heavy rain, at otherwise good quality sites.

Estuaries that are predominantly freshwater, such as the Waimakariri and Ashley river mouths, are included in this group of activities. Saline estuaries, such as Avon-Heathcote/Ihutai, are included in the Coastal Environment group of activities.

4. Improving aquatic health of lowland and foothill streams, to protect the environment

Measure

The percentage of lowland and foothill streams with fair or better ecosystem health. (On a scale of very poor, poor, fair, good, very good.)

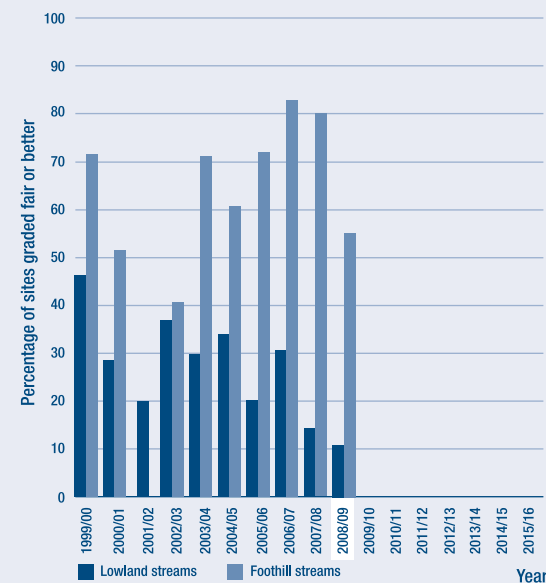
Target 2008/09

The percentage is increasing.

Not achieved for lowland streams (2008/09 10%; 2007/08 14%).

Not achieved for foothill streams (2008/09 55%; 2007/08 80%).

Percentage of Canterbury foothill and lowland stream sites graded fair or better.



Notes: No data for foothill streams in 2001 due to high rainfall and associated flooding.

Aquatic health is assessed by the abundance and diversity of large insects, worms and snails (macroinvertebrates) in rivers and streams throughout Canterbury, not including major braided rivers. The streams measured are representative of the different stream types present in Canterbury.

Source: Environment Canterbury.

5. Authorising resource users to use natural and physical resources in a way that the environmental effects remain acceptable to the community

Measure 1

The percentage of resource consent applications processed in compliance with the statutory time-frames set down in the Resource Management Act 1991.

Target 2008/09
90%.

2,344 applications were processed. High demand for consents from water, dairy & property development-related activities, coupled with increased numbers of notifications and hearings required in water resource constrained areas, and for some large individual applications, has resulted in many consent applications across all portfolios not being able to be completed within statutory timeframes. Difficulties in recruiting staff have compounded this problem. Recent process improvements, coupled with reductions in demand for consents, and improvements in recruitment are starting to show significant improvements in timeframe performance.

Not achieved (45%).

Processing of applications



Source: Environment Canterbury Resource Management Act Database.

Measure 2

The percentage of resource consents consistent with Resource Management Act 1991 requirements, including proposed and operative regional plan requirements.

Target 2008/09
100%.

Not achieved (95%).

An external audit of consent decisions determined that all decisions to grant consent were appropriate and that generally appropriate conditions were applied.

However for some of the consents audited, consideration of specific objectives, policies, rules or effects that required consideration for decision-making were not adequately documented, and were therefore graded as non-compliant

Consent conditions – non-compliance actioned



Source: External audit of sample of issued consents.

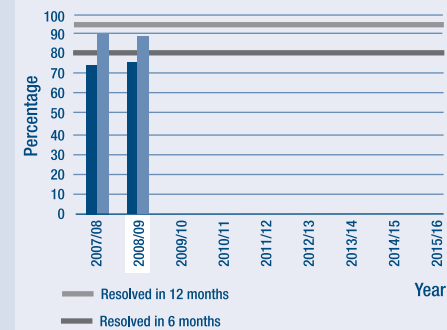
Measure 3

The percentage of significant or major non-compliance¹ with resource consent conditions resolved.

Target 2008/09
80% are resolved in six months.
95% are resolved in 12 months.

73% of non-compliances addressed by Environment Canterbury in the 2008/09 year related to water. Targets were close to being achieved (76% within six months and 89% within 12 months). *Not achieved*.

Consent conditions – non-compliance resolved



Source: Resource Management Act Database.

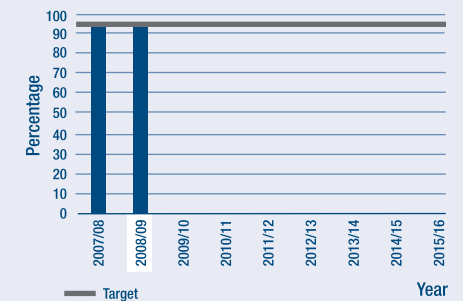
Measure 4

The percentage of environmental incidents resolved.

Target 2008/09
95%.

Achieved. (900 incidents, 95.2%).

Incidents resolved



Source: External audit of sample of issued consents.

¹ Significant non-compliance means there have been moderate, serious or persistent adverse environmental effects. This also includes repeated minor non-compliance with nil or short-term adverse environmental effects, and unauthorised activities.

6. Setting and reviewing sustainable environmental flows on rivers and streams to protect the environment and to provide water abstractors with a reasonable reliability of supply

Measure

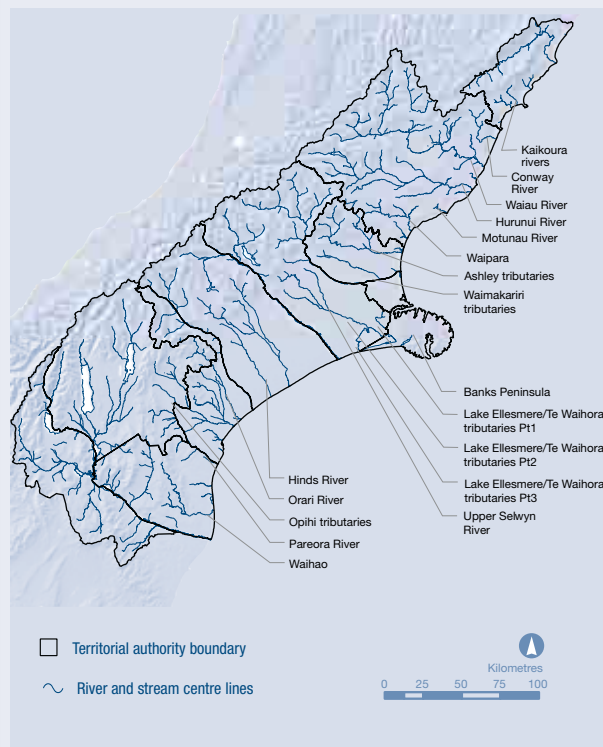
Progress made on reviewing of environmental flows on key rivers and streams not already incorporated in regional plans.

Target 2008/09

Stages in the environmental flow review programme are completed by the dates set out in the table below.

Environmental Flow Review Programme		
Key rivers or catchments	Target for 2008/09	Result
Ashley Tributaries	Notify Variation to the NRRP	<i>Not achieved</i> – Research done – no variation recommended. Results workshopped in June 2009 and reported to RPC in July 2009.
Orari River	Establish a Community Advisory Group	<i>Achieved.</i>
Lake Ellesmere/Te Waihora tributaries	Notify variation to the NRRP for Pt 2 and Pt3	<i>Not achieved.</i>
Upper Selwyn	Establish a Community Advisory Group	<i>Not achieved</i> – technical work commissioned.
Paereora River	Notify variation to the NRRP	<i>Not achieved</i> – technical work received.
Waiau River	Notify variation to the NRRP	<i>Not achieved</i> – technical work commissioned and Community Advisory Group process started.
Waimakariri tributaries	Notify variation to the NRRP	<i>Not achieved</i> – Research done – no variation recommended. Results workshopped in July 2009.

Environmental Flow Review Programme – location of key rivers or catchments



Note: Environmental flows are reviewed every 10 years.

Source: Environment Canterbury.

Financial summary

\$000	Actual 2008/09	Budget 2008/09	Actual 2007/08
Total Expenditure	19,978	17,697	16,045
Funded by:			
General rates	12,232	12,232	11,334
Targeted rates	437	431	135
Grants	98	-	53
User pays and other	5,995	4,562	4,849
Total Funding	18,762	17,225	16,371
Reserves Increase/(Decrease)	(1,216)	(472)	326

A public consultation programme on the strategic options for water in Canterbury has been completed and a paper has been delivered to central government. The cost over-runs of this accelerated work programme will be funded from a combination of external funding and additional rating in future years.

NRRP hearings were completed at significantly greater cost than budgeted. Variation 27, dealing with the cumulative effects of land use on nutrient levels in surface and groundwater, has been added and a substantial contract was let with NIWA for Waitaki lakes water quality.

Capital expenditure

Refer to Appendix 1, page 96, for more information on capital expenditure associated with this activity. Capital expenditure associated with this group of activities was funded from general funds and included as depreciation expense.