

ENVIRONMENT

Our Environment

Christchurch City Council's Environmental Newsletter

PLAN TO SET GROUND RULES FOR NATURAL RESOURCES

Christchurch residents must be able to continue to drink high quality 'untreated' groundwater. Healthy river ecosystems and an attractive river environment have to be maintained, and agricultural and commercial businesses should continue to have sufficient water supply for their operations.

These are some of the City Council's preliminary comments on selected chapters of Environment Canterbury's Discussion Draft Natural Resources Regional Plan (NRRP). Soil conservation, water quality and quantity, wetlands and the impact of afforestation on water are all covered in the chapters.

The City Council's submission expresses concern that the plan allows for deterioration of the current high water quality of the first aquifer to the limits set in the New Zealand Drinking Water Standards. Christchurch obtains about one third of its public water supply from the first aquifer and the City Council believes it is questionable whether city residents would support a drop in standards.

The submission adds that suggested new rules relating to water quality would impose a substantial social and financial

burden on Christchurch residents by requiring a big increase in the number of resource consents. These would be necessary for all new sewer pipelines,

to take and use water, and for all storm water discharges in community drinking water supply zones.

Also, within the Christchurch/West Melton aquifer recharge area the plan restricts hazardous substances storage facilities, intensification of land uses and new activities that involve contaminants that pose a significant risk to groundwater quality. These restrictions would effectively prohibit urban growth west of Stanmore Road, the City Council says.

Despite specific concerns about water quality and some other provisions the Council supports the plan in principle.

The NRRP attempts to address some of Canterbury's most significant environmental issues particularly relating to

degradation of our land and water resources. Some examples of the type of issues the plan addresses include:



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CHRISTCHURCH

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- Loss of the life-supporting capacity of soils, for example through soil erosion and soil contamination;
- Reduction of summer low flows of rivers due to large-scale afforestation;
- Adverse effects on the integrity, distinctive characteristics and contribution to a regional sense of identity of wetlands;
- Adverse effects on water quality through discharges of contaminants to surface water bodies or groundwater;
- Protection of community drinking water sources;
- Setting appropriate flow and/or level regimes for the management of rivers, lakes and groundwater to protect instream/intrinsic values.

Environment Canterbury has incorporated a range of regulatory and non-regulatory methods to tackle these issues, including

education, advocacy, information and promotion, regional rules and resource consents.

Submissions on the draft discussion document, which closed at the end of March, will be considered over the next few months with the Proposed Natural Resources Regional Plan (chapters 4,5,6,7, and 9) being formally notified in February 2003. At this time the plan, which will have statutory effect, will be open for public submissions. The City Council will make further comments then.

To read the full discussion draft plan visit www.ecan.govt.nz

Adele Scoon
Assistant Planner

AIR QUALITY: NEW RULES FOR HOME HEATING

New rules for home heating are set to clean up the air in Christchurch. Subsidies for clean home heating and insulation will help residents make the change.

At the end of March Environment Canterbury approved the air chapter of the Natural Resources Regional Plan, which proposes banning open fires and setting stricter emission criteria

for burners in Christchurch. All households in Canterbury will receive information on the new rules for home heating and the incentives scheme in June.

Open fires, the most polluting form of home heating, are the first to go. From 2006, households in Christchurch will not be allowed to use them. Households currently using high-emission wood and coal burners have to replace their burners 15 years after installation, but not before 2008. These burners can be replaced with authorised low-emission burners (1 gram per kilogram of fuel burnt and 65 per cent space heating efficiency), but the incentives scheme will encourage the installation of insulation and other forms of clean heating such as heatpumps, flued gas, diesel and oil appliances instead.

New homes, and homes which are not heated by wood or coal, will not be allowed to install wood and coal burners from 2003. And from 2004 only low-emission wood burners can be installed in existing homes.

In the rest of Canterbury burners installed after 2004 must meet the same low-emission criteria and new open fires will need a resource consent. But existing open fires and coal and log burners can be used indefinitely.



Environment Canterbury will notify the proposed air chapter of its Natural Resources Regional Plan for formal submissions late May. At the same time, it will seek public comment on its \$38.5 million help package for Christchurch residents who want to better insulate their homes and switch to cleaner forms of heating.

Health professionals and scientists have long decried the state of Christchurch's air. Winter wood and coal burning, combined with the city's geography, worsen health problems for people with lung and heart conditions. "But it's not just sick people that suffer," said Richard Johnson, Environment Canterbury chairman. "The air smells bad. It tastes bad – we know there's a problem, and now we've got a process to do something about it."

Jamita de Jongh
Communications Officer, Environment Canterbury

ANTI-LITTER RESOURCE TARGETS TEENS

Teenagers are among the worst litter bugs in Christchurch. In order to encourage those responsible to clean up their act, the City Council has produced an anti-litter education programme aimed at Year 9 and 10 students.

Written by English teacher adviser Mike Fowler, *The City that Shines* includes the following activities to raise awareness of littering, and show the need for personal responsibility and how students can positively influence their peers:

- **On Your Doorstep** introduces litter enforcement and asks students to research litter and find out the views of others on the issue. It also raises the issue of litter in waterways by reviewing print media coverage and introducing the Waterlink website.
- **Making a Point** asks students to argue both sides - in support of and criticising young people's approach to the litter issue.
- **The City that Shines** introduces students to slogans such as 'Slam dunk the junk' and 'Leave only your footprints', and strategies used over the years to push the anti-litter message. Students are then asked to design a poster or logo targeting teenagers.
- **Sunday Morning** encourages students to look out for and identify problem sites in their community, then to write a description of a scene they know well at different times of the day - when littered and at another time.

- **Starting Young** introduces students to a range of anti-litter messages using a range of visual media and encourages them to review the medium and the messages used. They are also given the task of designing their own characters to carry an anti-litter message for younger students.

The resource is linked with key aspects of the junior English programme and is designed to develop skills assessed under the National Certificate of Educational Achievement.

The City that Shines has been trialed at Middleton Grange, Christ's College, Shirley Boys' and St Margaret's secondary schools. Feedback has been positive with Middleton Grange teachers reporting that the programme is socially relevant and works well at a range of ability levels.

Schools can apply for up to three copies each using order forms which will be sent to them. The resource will also be available on the council's website www.ccc.govt.nz

Kerry Everingham

Education and Promotion Co-ordinator



NATIVE GARDENS AWARD

Native planting and buildings at Christchurch's Te Kura Kaupapa Maori o Te Whanau Tahia are a "stunning combination of architecture and landscaping", according to ecologist Dr Colin Meurk.

Its native planting, though still relatively young, integrates the buildings and open spaces and creates a very attractive setting for the Lyttelton Street school built in 1999, he says.

Te Kura's landscaped grounds were among 31 school, community, commercial and private gardens which received an inaugural Native Gardens Award in March. The gardens ranging from about one metre square to two hectares were assessed by Dr Meurk, landscape architect Jeff Weston,



botanist Dr Murray Parsons and horticulturist Neiel Drain. All entrants received a certificate or award of merit.

The aim is to recognise gardens that demonstrate a notable contribution to the city's natural heritage and biodiversity. It is open to all native gardens, private, commercial and community owned. Entry forms are available from

September onwards and any individual, group or business may make nominations.

The Native Gardens Award is co-ordinated by the Canterbury Horticultural Society with the support of the Christchurch City Council.

CHANGES IN OUR CLIMATE – WHAT DOES IT MEAN FOR CHRISTCHURCH?



Climate Change

Climate change is a natural phenomenon, which in recent times has been given a helping hand by humans through increasing greenhouse gas emissions. The earth is currently becoming a warmer place, with the global average temperature increasing by about 0.6°C over last century. Since instruments were first used to record temperature in 1861, the 1990s was the warmest decade and 1998 the warmest year. In addition to becoming a warmer planet, sea levels are rising, weather patterns changing and snow and ice are retreating from many areas. In 2001 the International Panel on Climate Change (IPCC) reported that: “There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.”

A report, which looks at the potential impacts of climate change on Christchurch and possible responses, is currently being prepared for the City Council. Much of the information used in this report is sourced from the IPCC and a series of reports, commissioned last year by the Ministry for the Environment, examining the impacts of climate change on New Zealand.

General Trends

Due to the oceans which surround New Zealand, and their slow response to changes in global temperatures, it is expected that New Zealand will warm by only about two thirds of the global average over the coming decades.

The Canterbury Plains are expected to become warmer and drier, and to experience more frequent, and potentially more severe, droughts. In contrast to the drier conditions expected on the coast and plains, increased rainfall is expected in the foothills, meaning that rivers with their headwaters near the main divide could become more prone to flood and erosion events.

Council Activities

The Council has both direct and indirect effects on local greenhouse gas emissions, through activities involving energy and resource use and through its planning functions, especially urban design and transport policy. Significant reductions in future emissions will require changes in the way the Council operates and the technology it uses. This might be achieved through reducing the amount of coal used, replacing the existing vehicle fleet with lower emission vehicles and through mitigation measures such as plantings around the city to absorb carbon dioxide and act as carbon sinks.

Indirectly the Council can influence emissions from Christchurch by providing leadership in the reduction of emissions and implementing a planning regime which encourages low emission lifestyles through compact urban design and facilitating transport options which do not rely on private vehicles.

Ecosystem Impacts

Climate change is not the main threat to biodiversity but does constitute an added stress. It is unclear what the effects will be on our native flora and fauna, although they have often proven resilient in the past. Drought and increased temperatures may result in changes in species composition, especially in our waterways and wetlands. The introduction of new weeds, pests and diseases and the risk of fire will all have adverse effects, whereas an increase in atmospheric carbon dioxide will benefit plant growth, as long as water is not a limiting factor. Planting native trees as carbon sinks would result in benefits both to greenhouse gas reduction and to biodiversity.

Coastal Impacts

Sea levels around New Zealand have been rising since at least the mid 1800s and are expected to rise by approximately 0.4 metres by 2100. While Christchurch’s dune system should continue to accrete, although at a slower rate, the low-lying

areas around Brooklands Lagoon and the Avon-Heathcote Estuary will be at risk of inundation. In areas where development provides a barrier for the natural inland migration of coastal vegetation these ecosystems will be subjected to coastal squeeze. Some sections of Christchurch's coastline can be expected to suffer increased erosion, including the terminal end of South Brighton Spit and Sumner and Taylor's Mistake beaches. Sea lettuce may become more of a problem in the Avon-Heathcote Estuary.

Greenfield development should be avoided in areas at risk from coastal flooding and protective measures may be required in areas of existing development. Allowing for generous coastal buffer zones will provide room for coastal processes to continue without affecting infrastructure and for coastal ecosystems to retreat inland as sea level continues to rise.

Agricultural and Business Impacts

The greatest impact for agriculture is the threat of drought. The irrigation of crops and pasture will become critical and the expansion of dairying within Canterbury will be dependent on water availability. Management of water resources, both surface and underground, will become more difficult, with the need to balance in-stream with out of stream uses.

Changing conditions may result in changed pasture composition and assist the establishment and spread of certain weeds and pests, whereas increased carbon dioxide concentrations may have a fertilizing effect on some crops. New crops are likely to become viable and provide opportunities for new processing and infrastructural industries. Tourism may thrive in the warmer, drier conditions, although the skiing season could be reduced.

The introduction of carbon tax, or similar, will affect all businesses and plantation forestry may become an attractive landuse option, depending on its value for carbon trading.

Health Impacts

Cantabrians face the risk of increased skin cancer as a warmer climate attracts us outdoors. UV levels are expected to remain high for some years yet due to a delayed recovery of the ozone hole. Rising temperatures mean that mosquitoes capable of carrying dengue fever may establish in Canterbury, and that there will be more really hot days when heat stress will be a problem.

Increased heavy rainfall events may affect the quality of some water supplies and can bring added risk to lives and property from flooding. Additional stress on affected groups, especially those with limited resources, will mean that some people are more susceptible than others and may need improved access to assistance.

Climate Change Policy

In response to the United Nations Framework on Climate Change (UNFCCC) the New Zealand government has confirmed its intention to ratify the Kyoto Protocol in 2002. This Protocol aims to stabilize greenhouse gas emissions, from industrialized countries, at 1990 levels, on average, in the period 2008-2012. The details of how New Zealand will meet its targets are still being finalised.

Jenny Ridgen

Environmental Scientist

ICEBERGS, CLIMATE CHANGE AND SEA LEVEL RISE

Reports of giant icebergs breaking away and ice shelves disintegrating in Antarctica hit the headlines earlier this year. Although there is sufficient water locked up in the West Antarctic Ice Sheet (an area covering about one third of Antarctica) to raise global sea levels by 5-6 metres, as long as these icebergs continue to be derived from the huge floating ice shelves of Antarctica, they won't cause changes in sea level. These huge lumps of ice displace the same amount of water whether or not they are attached to an ice shelf. The real concern is whether the complete removal of an ice shelf, as has happened around the Antarctic Peninsula, will cause land-based ice to be lost more quickly, resulting in sea level rise.

Over the last 50 years the Antarctic Peninsula has warmed 2.5°C, compared with a global average increase of only 0.6 ± 0.2 °C over the last century. Fortunately this rapid increase in temperature has not

occurred over the whole of the continent. However, around the Antarctic Peninsula several ice shelves have retreated rapidly, with some like the Larsen and Wordie ice shelves disintegrating completely. What has surprised scientists is the rapid rate at which the remains of the Larsen B ice shelf broke up this summer - over a period of just 31 days.



While there is still a lot of uncertainty about the future contribution of Antarctic ice to sea level rise, it is currently believed to be close to zero, and this is not expected to change significantly in the next 100 years. One of the reasons for this is that warmer air can hold more moisture, thus increasing the amount of snow that falls onto this icy continent.

Jenny Ridgen

Environmental Scientist

VOLUNTEERS PLAY KEY ROLE

A referral from Volunteering Canterbury has created new opportunities and a lot of personal satisfaction for Dyan Duffy.

The mother of two children had been seeking part-time work. Faced with a deafening silence from prospective employers she decided to go to Volunteering Canterbury, which refers volunteers to local non-profit organisations needing a helping hand.

As a result Dyan began working for the Christchurch Environment Centre as a volunteer last October. She was such an asset that the organisation managed to obtain funding to offer her a paid position in early April.

Using her administration skills Dyan helps tackle the constant stream of office work at the centre, which provides information and resources on environmental issues and supports other environmental groups. She has also inputted the bulk of the centre's resources on a new database.

Working at the Environment Centre has been a very positive experience. "It's a very friendly place and I'm learning a lot about the environment and organics," says Dyan. "It also gives me a chance to upgrade my skills."

She was one of the volunteers who received Volunteering Canterbury Volunteer Recognition Awards in March. These were presented by the Governor General Dame Sylvia Cartwright at a special ceremony in the Great Hall at the Arts Centre.

Volunteering Canterbury manager Ruth Gardner says the centre has about 220 local organisations on its books needing assistance from volunteers. Most are welfare groups but referrals are also made to environmental groups including Willowbank, Orana Park, the Summit Road Society, Birdlands and Ferrymead Heritage Park.



Other organisations are welcome to register. "We're always happy to offer new opportunities for volunteers," says Ruth. So far the charitable trust, which has been operating since 1988, has registered and referred over 10,600 volunteers. About a third of them are under 25, with many looking for experience in different fields or a chance to express their creativity.

In return Volunteering Canterbury aims to:

- Uphold the rights and responsibilities of volunteers;
- Provide and promote information and resources on volunteering;
- Encourage the community to understand and value voluntary work as part of a wide definition of work;
- Promote cross cultural understanding where the special role of tangata whenua is recognised.

Life has been particularly hectic for Volunteering Canterbury staff over the past 18 months. Last year saw many activities associated with the International Year of Volunteers. The local organisation has also recently hosted a major conference on *Inspiring Volunteers Whakamana te Kaupapa Aroha ki te Takata a Rohe* and launched its dynamic website – www.cvc.org.nz

"Like all voluntary organisations we do wonders with small resources," says Ruth Gardner. "We have a totally committed board and very good links within the community." Grants from the City Council, NZ Lottery Grants Board, Community Organisation Grants Scheme and trusts provide most of Volunteering Canterbury's funding.

Along with other organisations currently based in Christchurch Community House in Cashel Street, Volunteering Canterbury is preparing to move into the former Westpac building at 141 Hereford St in late May.

Jennie Hamilton

CITY GROWTH SLOWS – CENSUS

Christchurch City's population increased from 309,030 to 316,227 between March 1996 and March 2001, according to the 2001 Census of Population and Dwellings. This growth rate was 2.3%, compared to 6.9% between 1991 and 1996.

Recent population growth in Christchurch was at a similar level to that experienced between 1981 and 1991. Its pattern is consistent with national trends.

According to Statistics New Zealand's medium population projection, Christchurch City's resident population is expected to increase to 358,000 by the year 2021. Growth during this period will occur at a progressively slower rate as a result of a gradual reduction in natural increase, population ageing and also relatively low migration from other parts of the country and overseas.

Since 1996, the greatest population increases in the city have occurred in the northern suburbs and Ferrymead. Growth in these areas has been due to housing development around the

city fringe. In contrast, resident populations have declined in the inner-city areas of Phillipstown and St Albans West. There have also been significant losses of residents in the Templeton area unit due to the closure of the Templeton Hospital.

The number of residents in the Central City increased by 10% from 6,596 to 7,266 between 1996 and 2001. The majority of this growth occurred in the Avon Loop and Cathedral Square area units.

Population growth has occurred within all of the districts around Christchurch City. Waimakariri District had the greatest growth with 14.1%, followed by Selwyn at 10.2% and Banks Peninsula District at 3.3%. This has resulted in the population in the three districts increasing from 64,710 to 72,048 in the five years to 2001. The combined population of the neighbouring districts is likely to reach 90,000 by 2021.

Fleur Thorpe
Research Assistant

HIGH-TECH BUSINESS LOOKS TO PRESERVE THE PAST

The local branch of high-tech multi-national organisation, Ricoh, has recently renovated an old inner city warehouse, believed to date from the 1930s, for use as its new headquarters. Although not a listed heritage building, the warehouse at 187 Montreal Street is of historical significance due to its association with the Williamson Construction Company.

Ricoh's decision to renovate the warehouse reflects the company's strong environmental ethic that is part of its management philosophy world wide. Ricoh is currently working with the Christchurch City Council and other organisations to benefit the environment. This has involved setting Council photocopiers to double-siding to reduce paper usage, and collecting and recycling all of the Council's used toner cartridges.

Ricoh's resource conservation extends to its business sites. The company had 'sustainability' in mind when instead of building from scratch, it took up the challenge of adaptive and innovative re-use of this existing structure.

The designer of Ricoh's new premises, David Evans of Auckland's Hauraki Design, tapped into the building's potential, taking advantage of the height, and raw, exposed original materials of brick, concrete and timber. He added modern elements such as glazing and steel beams to create an invigorating juxtaposition of old and new. Evidence of the more recent history of the warehouse, in the form of writing in chalk on the brick walls, has also been retained as a playful feature of the showroom. Christchurch Branch Manager Matt Woolston enjoys pointing out these visible layers of history and telling the story of the building to customers.

It is thought the large warehouse originally provided storage and served as a work yard for the W. Williamson Construction Co. Ltd, which conducted business on this site from 1934. William Henry Williamson's office, a small yet grand building with a strong classical façade, still stands next door on Montreal Street, complete with the company's name in brass lettering. Members of the City Council's Heritage Team are currently researching this building, and there is a strong possibility it may be added to the list of protected heritage buildings in the City Plan.

Williamson's father and grandfather were builders and William carried on the tradition, gaining his first building contract when he was an apprentice carpenter aged only 17. Williamson went on to build

hydro-electric stations, freezing works in Kaiapoi and throughout the country, as well as hospitals, bridges, hotels and theatres, including the Avon in Christchurch. He was responsible for the construction of the Edmonds Factory in Ferry Road (now demolished) and the Nurses' Memorial Chapel in Riccarton Avenue, which he described as the finest building he ever built.

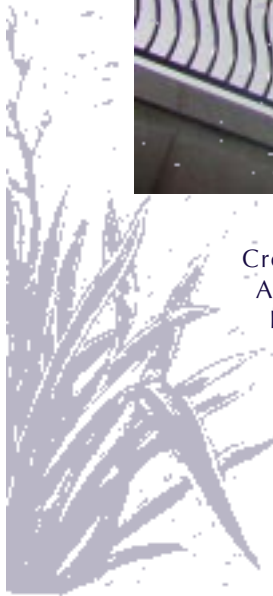
The science block at the University of Canterbury and the South Pacific Hotel in Auckland were among some of Williamson's last major contracts. He died in Christchurch in December 1971, leaving son Peter to carry on the business until the 1980s.

Ricoh's recent renovations have brought this forgotten heritage building to light. The company's independent and successful efforts to save, refit and re-use this heritage building are to be commended, and provide a challenge for other local organisations to follow.

Amanda Ross
Assistant Heritage Planner



DRAMATIC BRIDGE SCULPTURES MARK ENTRY TO WETLANDS



Cross the new Anzac Drive Bridge spanning the Avon and you know you're entering wetland country. The evocative clusters of steel spikes on

towering columns introduce the upcoming flaxes and make their own powerful artistic statement.

Feedback on the four-lane bridge near New Brighton Road has been extremely positive, according to designer Lloyd Greenfield. He too is pleased at the outcome. Not only was the bridge to signify a gateway to Travis, it was important to get the roads, pathways, cycleways and the river flowing together. It meets both objectives.

User-friendly underpasses for pedestrians and cyclists posed special challenges. "Due to head room requirements we had to lay the underpasses well below high tide but keep the walls as low as possible to maximise light and openness and minimise stranger danger. This

compromise means that the underpasses will be inundated occasionally," Lloyd Greenfield said. An innovative jointing and sealing system maintains water tightness for the normal high tides.

When construction started with the driving of the pier frame support caissons ancient totara logs blocked progress. The timber was eventually smashed but vibration from this work set off ground liquefaction that led to lateral spreading of the riverbanks and pushed the top of the caissons in towards the river.

The bridge is designed to cope with liquefaction but the lateral spreading caused by the vibration during construction was a new problem for the engineers. To overcome this the tops of the pile caissons were increased in diameter to make up for the offset.

Two pier frames that support the bridge deck are unusual in that they are made from precast elements bolted together using innovative steel knee joints.

With all its impressive elements the bridge itself has become a feature of Anzac Drive, the latest link in Christchurch's urban ring road expressway system.

A GREEN LIST

Healthy Oceans

Without a healthy ocean, the life-supporting system of earth would be seriously endangered. The more we learn about the oceans, the more we realise the need to act responsibly to help preserve them. That is why we should celebrate World Oceans Day on 8 June. One way to do your bit is to inform yourself by reading these books from the Christchurch City Libraries

The blue planet : a natural history of the oceans by Andrew Byatt (551.4 BYA)

The great book of the sea : a complete guide to marine life by Francesco Guerrini (591.77 GUE)

Life in the sea by Marty Snyderman (598.77 SNY)

The living ocean : understanding and protecting marine biodiversity by Boyce Thorne-Miller (577.7 THO)

The living sea : a photographic exploration of life in the sea by Linda Pitkin (591.77 PIT)

Ocean's end : travels through endangered seas by Colin Woodard (363.7394 WOO)

Oceans : life in the deep by Beverly McMillan (577.7 MCM)

The restless sea : exploring the world beneath the waves by Robert Kunzig (551.46 KUN)

The rising seas by Martin Ince (551.45 INC)

Sea change : a message of the oceans by Sylvia Alice Earle (333.916 EAR)



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