

### CITY PREPARES FOR PREDICTED RISE IN SEA LEVEL

A predicted half metre rise in sea levels in the next 100 years has prompted a call for development restrictions in coastal and low-lying areas.

Maintenance of existing natural protection systems such as sand dunes, beaches and vegetation should also be implemented or stepped up before costly or irreversible losses occur.

These recommendations are contained in the Study of the Effects of Sea Level Rise for Christchurch by Derek Todd of Tonkin and Taylor Ltd.

In 1995 the International Panel on Climate Change prepared predictions for sea level rise. Its "best estimate" was a rise of  $0.2m \pm 0.15m$  in 50 years and  $0.5m \pm 0.3m$  in 100 years.

To better understand what this might mean for the City's coastline, the Council commissioned the study to obtain a "best guess" of the effects on the coast and adjoining areas including Brooklands Lagoon, the Estuary, rivers and groundwater.

Derek Todd's findings suggest that while

the Waimakariri River stopbanks should provide sufficient protection for sea level rise over the next 100 years, water levels will rise in Brooklands Lagoon, putting an additional 420 ha at risk of inundation by 2100. The tidal gates on the Styx River will need to be upgraded.

The dune system will be subjected to an increased frequency and intensity of coastal storms, requiring greater dune maintenance. However, with the exception of some low areas, the dune system should continue to provide adequate protection from inundation. Sand encroachment may increasingly become a problem in areas where the dunes are strictly confined by Marine Parade.

Water levels in the Estuary will rise putting an additional 80 ha and \$208M of assets at risk from inundation from a 1:100 year tidal event by 2100. Ecosystems along the Estuary margins will suffer from a loss of biodiversity and natural character unless provision to P2 CP





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For further information or submission of articles or illustrations please contact Kerry Everingham, Environmental Promotion Officer Ph: 371 1779 Fax: 371 1789. is made for their landward migration.

Assets at risk from flooding in the lower reaches of the Avon and Heathcote Rivers will increase by an estimated factor of 600 per cent for a 1:100 year tidal event by 2100. The saline interface with freshwater will move upstream causing die-off of plants which are not salt-tolerant.

Due to increased trapping of sand in the tidal delta of the Estuary, less sand will be available to beaches south of the Estuary and coastal erosion may become an increasing problem at Clifton, Sumner and Taylors Mistake. With rising sea levels there is also an increased risk of saltwater intrusion into groundwater.

The challenge now is how to plan for the potential effects of sea level rise, particularly when considering proposals for the development of coastal areas. The report recommends restrictions on new land-use development in areas that may be affected within 100 years and restrictions on infill in areas that have already been developed.

To boost natural protection systems ongoing maintenance programmes such as dune restoration, vegetation control and beach renourishment should be implemented or enhanced now, says the study.

Existing protection structures requiring upgrading after 2050 to maintain the present level of protection include the Heathcote and Styx tidal gates, the Lower Avon stopbanks and protection walls around the Estuary. Before considering longer-term protection options the Council should undertake a cost- benefit analysis of implementing these options against the alternative option of doing nothing and planned retreat, says the study.

#### Jenny Ridgen

**Environmental Scientist** 

### **GROUP MAINTAINS WATCH ON MARINE LIFE**

Protecting this country's coastal and marine life and its habitat is the main aim of Marine Watch Trust New Zealand.

Achieving that ambitious objective can involve anything from rescuing oil-clogged seabirds to monitoring the antics of Dumbo the southern elephant seal.

The Christchurch-based trust is the first volunteer organisation contracted by the Conservation Department to handle day-to-day marine wildlife incidents within New Zealand. So far it has responded to more than 1,100 callouts.

Formed in 1992 Marine Watch now has more than 90 operational members. Co-ordinating them is Jim Lilley whose passion for protecting coastal and marine life rules his life. With his Linwood home as the organisation's base, it seems very fitting that the skeletons of a leopard seal and straptoothed whale sit on his garage roof.

Secure funding from the DOC contract has enabled the trust to develop an



Jim Lilley returns a seal to the water.

administration system linking volunteers, archiving resources and effective networks throughout the country.

Another essential support base is the dedicated band of volunteers who become involved in the urgent rescue and rehabilitation of marine life – day or night. Trust records show that operational members have been involved in over 250 incidents involving seals, resulting in the capture, treatment and rehabilitation of 115 of them.

Marine Watch has also been involved in 72 strandings, from Parengarenga Harbour in the Far North to Kakanui in the south, saving 524 of the 932 whales and dolphins.

But it is Dumbo the celebrity elephant seal who has posed the biggest single challenge. Dumbo has visited local beaches 12 times over the last five years. This kept 40 members busy for 1,811 hours, responding to 644 call outs to people harrassing Dumbo or Dumbo harrassing people.

Marine Watch was the first group of its type to receive hands-on experience dealing with oiled wildlife after a diesel spill in the Botanic Gardens in March 1996. When the vessel Don Juan sank near Stewart Island in October

1998, the group was call in to set up a rehabilitation centre for wildlife.

The trust has also been at the forefront of annual Christchurch Clean Up the World campaigns targeting our rivers, beaches and harbour. A machete, mannequin, photocopiers, keys and wallets are just some of the items plucked out of the Avon River in the clean up.

To Jim, removing rubbish from our rivers

is part of Marine Watch's brief. "What ends up in the river often ends in the sea. That can end up in a 1am call out."

As well as a very hands-on role rescuing marine life, he says the trust also has an important research role, collating information on both living and dead whales, dolphins, seals and birds.

Jim and other members are intent on educating people on the need to protect our environment and to increase New Zealanders' understanding of the value of marine life to this country.

Jennie Hamilton

### ALICE, 6, HAS EYE FOR DETAIL

Six-year-old Alice Wilson was so intent on adding the correct finishing touches to her drawing of the Cathedral of the Blessed Sacrament that she urged her mother to take her back to the Barbadoes Street landmark for another look.

She was one of dozens of Christchurch children who entered the Heritage Week art competition sponsored by the City Council and the Christchurch Star. Alice received a highly



Alice, Cameron and Charlotte Wilson

commended for her efforts. She chose the Cathedral "because it's beautiful and I like the green colour," she said, referring to the dome and doors.

Alice's eight-year-old brother Cameron won the six to 10 year section with his painting of the Durham Street Methodist Mission Church. He particularly liked the iron hinges of the sturdy timber doors of the old stone church. Sister Charlotte, aged 4, opted for a water colour of the Forsyth Barr building in Armagh St and was placed second in the three to five year section.

Entrants were asked to draw their favourite Christchurch building old or new. Two children at Cotswald School were reminded how quickly some of our buildings disappear. The school's administration block drawn by Jonathan Marsh, aged 11, and Deborah Moore, aged 10, just a few months ago has been demolished. Their drawings are now a treasured record.

Judges were treated to a range of interesting perspectives of one building when seven pupils at St Anne's School drew the High Step Shoe Store in Ferry Rd. Threeyear-old Kate Potts' winning picture of the Scarborough clock tower started out as a swimming

pool. Judges were charmed by the little clock pasted at the top of the brightly coloured picture.

In the 11 to 15 age group two pencil sketches were particularly outstanding. Alice Canton, 12, were awarded first prize for her drawing of the Peterborough Centre while Nicola Congdon, 15, was placed second for her picture of the Old Stone House.

Senior heritage planner Jenny May, who was one of the three judges, said she was impressed with the care, thought and attention to detail that had gone into compositions. All entries were displayed in Lady Isaac's environmental education caravan at the new art gallery site during Heritage Week. Jennie Hamilton

## **DESIGN GUIDE FOR HIGHER DENSITY HOUSING**

Well-designed housing developments are not only more saleable but improve the appearance of a neighbourhood.

A new City Council design guide New housing in Living 3 Zones is intended to provide landowners, designers and developers with a checklist when proposing a new housing development in a Living 3 zone a medium density residential environment – in the City.

Too many examples exist of insensitive housing developments, sometimes referred to as chilly bin houses or six packs, says author and urban designer Janet Reeves. They are characterised by high featureless walls, large expanses of asphalt and little greenery.

Part one of the guide looks at site selection and designing the layout of the housing development in relation to its context. Part two deals with the design of buildings while Part three considers outdoor space surrounding the buildings.

According to the guide's summary, the most successful schemes amalgamate sites, face the street, conceal cars and respect neighbours. Details such as fence design and planting can enhance new developments.

Imaginative design is not merely a matter of complying with the rules. The basic objective of any design should be to produce a development that looks good and works well for all parties. Adjustments can be made, if necessary, to enable the proposal to comply with the rules, or else a resource consent can be sought.

> Janet Reeves says it is a good idea for developers to discuss proposals at an early stage with City planners and urban

designers. Solutions can then be agreed before detailed plans are drawn.

# THE NATURAL STEP TO MANAGING OUR RUBBISH

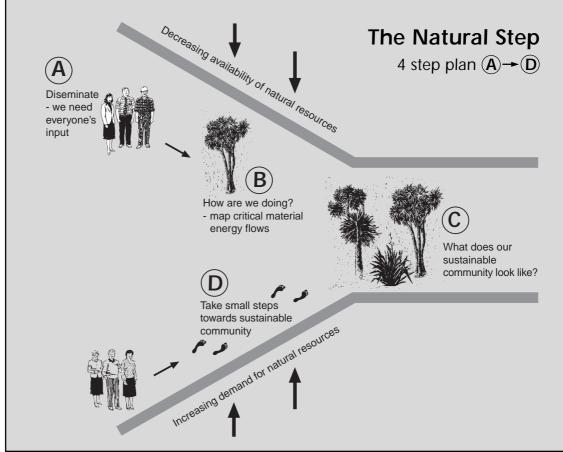
Achieving zero solid waste to landfill by 2020 should be a natural step for Christchurch.

The City Council has agreed to adopt the holistic Natural Step framework to guide an assessment of the sustainability of activities in the City, starting with management of solid waste. Once the framework is piloted in the Waste Management Unit it will, if successful, be extended to the rest of the Council's operations.

Adoption of the Natural Step as an overall framework to build on existing initiatives already underway could improve the long-term sustainability of Christchurch as a city, according to Solid Waste Engineer Eric Park.

The Council is preparing a joint application, together with the Open Polytech of New Zealand, Landcare Research Ltd and others to the waste include weekly green crate recycling collections from the kerbside, provision of reuse recovery areas at the City Council's three refuse stations where residents can drop off recyclable and reusable items free of charge, the Council's compost plant and a commercial waste reduction programme. The Recovered Materials Foundation diverted 12,650 tonnes of domestic waste for either reuse or recycling from May 1998 to the end of June 1999 including:

- 7 million glass bottles and jars
- 5 million aluminium cans
- 3 million tin cans
- 7.5 million plastic soft drink bottles
- 4.5 million plastic milk bottles.



These conditions can be used as a compass by individuals, families, companies,

Sustainable Management Fund

to obtain funding for

a pilot introduction of the Natural Step

Framework in New

Swedish medical

doctor and cancer

Henrik Robert, the Natural Step is based on four conditions

for sustainability:

reduce mining and use of fossil fuels;

eliminate hazardous

substances produced by society; protect

ecosystems; and efficient use of resources to save

waste and meet human needs.

biodiversity

money,

by

Karl-

and

reduce

Zealand.

Developed

researcher

cities and nations working towards a common goal. The Natural Step has described society's predicament - decreasing natural resources yet increasing demand for those resources - as a funnel, shown in the diagram.

Improving sustainability involves four steps:

- share the Natural Step framework to get everyone working together with the same goal;
- analyse current activities in relation to the four system conditions. Map critical flows of raw materials and energy;
- develop a common long-term goal;
- take small steps from where you are to achieving that goal.

The holistic framework can be used to align initiatives to achieve long-term financial, environmental and social sustainability of Christchurch as a City, says Eric Park.

Successful local programmes already in place to reduce solid

Residents and contractors can drop garden waste at green waste recovery areas for composting. Compost generated from the 30,000 tonnes of green waste each year is sold to both retail and wholesale customers. The Council also promotes hot heap home composting and worm composting.

Target Zero and Green retail waste minimisation programmes have been implemented to help businesses reduce waste. These initiatives encourage businesses to focus on reducing waste at source by making efficient use of raw materials, energy and water. The results are not only good for the environment but impact positively on the businesses' bottom line.

With these successful initiatives in place, Christchurch is already well on the way to implementing core objectives of the Natural Step Framework, says Eric Park.

#### Jennie Hamilton

## **CULTIVATING WORM FARMS**

When it comes to recycling food scraps, Ray Wright reckons worms have the inside running.

Not only are his wormeries built entirely from recycled materials, but industrious tiger worms will devour as

many buckets of food scraps as you throw on them. The result is worm-filled compost to enrich any garden.

Ray became interested in worm farming during an organic gardening course at Christchurch Polytech in 1996, when he read about a wormery in a text book. After setting up and refining his own worm farm on Banks Peninsula, he now sells \$10 starter packs containing organic horse manure, tiger composting worms and simple instructions on how to build your own worm farm.

"Wormeries work very well with minimal interference and benefit my garden and my organic diet," says Ray. "It saves me using the rubbish bag as a way of disposing of all the kitchen scraps. What a waste that would be."

To build a worm farm Ray says you need three telephone books ( two yellow pages and one directory) a piece of currugated iron, a plastic container, three or four tyres, a tight fitting lid and 35 Saturday newspapers.

Half a large bucket of food scraps generated in Ray's house each week feeds three wormeries. Each farm gets



about 10 litres of scraps every three weeks. Once a month he empties the bottom tyre of one of the farms and distributes the compost and worms on the garden or adds it to more mature compost heaps. The empty tyre is placed back on top ready for more scraps.

Ray also grows bumper tomato and courgette crops by feeding them leachate or worm rum gathered from the farms and diluting it eight parts to one with water.

Wormeries are easy to maintain. Worms like to be kept damp and in the dark, and warm in winter and cold in summer. Put the farm close to the kitchen door, for convenience, and the worms will happily devour all your food scraps.

For more information on worm farms or to obtain a starter pack phone Ray at Jasmine Cottage (03) 325 1137.

Jennie Hamilton

### A STEP IN THE RIGHT DIRECTION



A pedestrian strategy is being developed by the City Council to increase numbers of people walking, both as a way of getting around and for health and recreation. The Council caters for pedestrian needs in many ways - footpaths, lighting, pedestrian areas, parks, walkways - but there is presently no co-ordination of pedestrian provision and no defined process to achieve the Council's goal of being a pedestrian-friendly city.

The draft strategy (submission document) is available for community input between 1 November 1999 and 17 December 1999. Views of the wider Christchurch community are being sought to ensure the strategy will cover the needs of residents.

The Council is seeking answers to the following key questions:

• How easy is it to move around Christchurch as a pedestrian?

- Are there any barriers to moving around the City as a pedestrian?
- What facilities and improvements would make it easier to move around Christchurch as a pedestrian?
- How can more people be encouraged to walk around the City?
- How should pedestrian needs and facilities be balanced with the needs of other road users?
- What provision or facilities are needed for schools and other institutions for pedestrian safety and access?
- How should information on pedestrian rights and responsibilities be publicised?

Copies of the submission document are available for viewing at libraries and service centres. To obtain your own copy please contact Stephanie Styles, Christchurch City Council, phone 371 1292, fax 371 1789 or www.ccc.govt.nz.

# CLEAN WATER AND AIR MAIN ENVIRONMENTAL CONCERNS IN SURVEY

Long-term supply of clean drinking water is the key environmental concern of Christchurch residents, according to this year's annual survey of residents commissioned by the City Council.

Air quality was the second main issue followed by sewage, traffic and the loss of natural areas and habitats.

Several of these concerns were also highlighted in a recent Canterbury Dialogues survey, which identified air quality and transportation as the main issues affecting quality of life in the region. Issues associated with water also rated relatively highly.

In the latest survey of residents conducted in March

and April, most respondents (57 per cent) supported the City and Regional Council's policy to phase out the use of open fires in City homes. Twenty nine per cent opposed the policy. The main reason for opposition was the expensive price of electricity and the perception that other sources contribute to the pollution problem in the City.

Just over half (56 per cent) of respondents believed that the grant Council makes available to householders wishing to install some alternative heating was about right. Thirty six per cent suggested that it was too low or much too low. Only 5 per cent considered the grant was too high.

#### General attitude to living in Christchurch

Overall, residents continue to be satisfied with Christchurch as a place to live, work and spend spare time. Ninety three per cent of survey respondents indicated that they were satisfied or very satisfied with the City and only 2 per cent indicated any level of dissatisfaction.

#### **Urban Growth**

The survey asked whether respondents support various options to find space for the 30,000 extra people expected to be living in the City by 2016. There was strong support for both encouraging growth in existing neighbouring towns and outward expansion. Respondents were fairly equally divided in relation to the options for further development within the existing city boundaries.

Of those who supported the option for growth within the Christchurch, most (57 per cent) preferred this to be evenly spread across the City, while 26 per cent wanted growth concentrated in the City

Centre.

#### Local Developments

Fifty four per cent of respondents were aware of new residential building, alterations, extensions or developments in their local area during the past 12 months. Of this group, 50 per cent felt the changes had made their area better or much better compared with 15 per cent who thought changes had made their area worse or much worse. A growing proportion of respondents (35 per cent) indicated that the changes had made no difference

The majority of those who were aware of local developments approved of what had been built (79 per cent) although 17 per cent felt there were examples of developments in their area that should not have been allowed. Their criticisms related to the following; badly designed development, design not appropriate to area, specific developments, small section sizes, building height, proximity to boundary, housing density,

> loss of gardens/trees, inappropriate infill housing, lack of consultation with neighbours (re building), subdivision on hillsides, removal of character homes.

#### **City-wide Developments**

Most respondents (56 per cent) thought that new developments throughout the City during the last year had made Christchurch a better or much better place to live. Only 10 per cent believed new developments had made living in the City worse or much worse.

The level of approval declined in 1999, however this has been partially offset by an increase in those who believe that new development has made no difference to the City.

#### Corinne Macintyre

Senior Planner, Information and Monitoring

### Table 1. Most Important Environmental Issues 1999

FRANK SAL	Number of Reponses	Percent of Responses	Percent of Respondents
Long term supply of clean drinking water	481	21.5	63.4
Air quality	337	15.1	44.4
Treating and disposing of sewage from Christchurch	250	11.2	32.9
Increasing traffic around the City	193	8.6	25.4
Losing natural areas and habitats	133	5.9	17.5
The quality of streams and waterways	120	5.4	15.8
Enough parks/playgrounds/recreation areas	116	5.2	15.3
The overall appearance of the City	107	4.8	14.1
Historic buildings	102	4.6	13.4
The City's beaches	81	3.6	10.7
The City expanding onto the Port Hills	78	3.5	10.3
Future landfills for refuse from Christchurch	63	2.8	8.3
Putting several houses on same section	58	2.6	7.6
The City expanding into rural land	48	- 2.1	6.3
Reducing importance of the City Centre	30	1.3	4.0
More big suburban shopping centres	24	1.1	3.2
More people living closer together	18	0.8	2.4
Total	2239	100.0	K
Total Respondents	759		No.

Note: Residents were asked to choose, from a list of environmental issues, three areas which were most important to them.



### NO 11 IN OUR "STILL STANDING" HERITAGE BUILDING SERIES

### **GRAND OLD LADY OF THE THEATRE WORLD**

Revamped and elegant, the Theatre Royal was a fitting venue for the opening of this year's Carter Group Heritage Week and the Hagley/Ferrymead Community Board Heritage Awards.

Those who have worked so hard to preserve and enhance this grand old theatre were acknowledged with a certificate in the good caretaker section of the heritage awards. The theatre was also a runner up in the Built Environment section of the City Council's 1999 Environmental Awards.

The Theatre Royal remains one of the country's finest surviving live theatres, Senior Heritage Planner Jenny May told the awards ceremony last month. "It owes its survival to the refusal of Christchurch lovers of both theatre and heritage buildings to allow the site on which it stands to be developed. Most importantly it owes its survival to the dedication of the Theatre Royal Trust and Friends of the Theatre Royal," she said.

Recent improvements include the enlarging and refurbishing of the circle foyer and the relocation of amenities and offices.

A major earthquake and fire protection programme is expected to be completed next year, 20 years after the theatre was purchased by the Trust.

The theatre's history is as colourful as the entertainment presented there: vaudeville theatre, early moving pictures, wrestling, drama productions, ballet dancing and concerts. Public attachment to the



Only the dome, famous for its Italianate painting by Christchurch artist William Williams of scenes from A Midsummer Night's Dream remained.

Support pillars were removed and the circle and gallery cantilevered to give clear sight lines. An elegantly proportioned 3 metre wide marble staircase rose to the dress circle, replacing the old wooden staircase.

Little change occurred for the next 40 years. However in 1975, the owner J C Williamson Theatres, began scaling down activities after almost 100 years in show business promotion. The historic theatre's future looked bleak.

Supporters of the theatre rallied to save the building and the newly-formed Friends of the Christchurch Theatre Royal attracted widespread support from city leaders, companies, the Historic Places Trust and many individuals. Finally, in 1980, the Theatre Royal Trust committed itself to the purchase and restoration of the theatre.

Administered by the Theatre Royal Foundation, the daily running of the building is now in the hands of a Board of

Management, with fundraising and v o I u n t a r y contributions from Friends of the Theatre Royal and other benefactors.

The Theatre Royal, with its grand interior and excellent acoustics, continues to attract bookings for shows like Rush which performed there this month. It looks set to provide many more years of entertainment.

building stems partly from fond memories of past stars and shows.

The existing Theatre Royal is in fact the third Theatre Royal in Gloucester Street. Christchurch's first theatre, the Canterbury Music Hall, was built in 1861 and renamed the Theatre Royal five years later. In 1876 the building was replaced by one designed by Alfred Simpson.

Designed in the Edwardian Baroque style by the Luttrell Brothers, the third version was a sturdy red brick building with Oamaru stone dressings. It opened in 1908 with a performance of Blue Moon.

With its traditional horseshoe-shaped dress circle and gallery and fibrous plaster decoration or walls and dome, the theatre was described as "the most modern and comfortable South of the Line".

Twenty years later the Royal underwent major changes so movies could be screened. In just 14 weeks the contractors rebuilt the interior, according to the theatre brochure. Major Hagley/Ferrymead Community Board Heritage Award winners were:

#### **Retention Award**

Craig and Suzanne Porter – 8 Ely Street.

#### **Conservation and Restoration Award**

Peter Croft and Kate Borret - Mother Hubbards, Main Road, Redcliffs.

#### Star Award

The Peterborough – Robert Brown and Stewart Ross Architects

#### Children's Award

Cathedral Grammar

#### Good Caretaker Award

Robyn Kilty, 11 Hanmer St.

Pam Wilson of the NZ Historic Places Trust received Councillor Anna Crighton's personal award for services to heritage.

Jennie Hamilton

# EGERIA WATER WEED ALERT

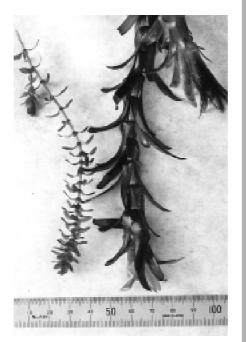
Waterway users are being asked to help prevent the spread of egeria, a potentially costly river weed. Originally from South America, the plant was recently spotted in the Avon River for the first time by the operator of a Council weed harvester machine.

If the weed becomes established in the river it is likely to spread and become widely distributed in the Canterbury area. The cost of maintaining waterways and lakes would be substantial and the biodiversity of our aquatic ecosystems would be reduced. Egeria also interferes with recreational uses such as rowing.

To minimise these financial and environmental costs, the Christchurch City Council is attempting to eradicate egeria before it becomes fully established. NIWA divers have carried out a survey to locate all egeria plants growing in the river and contractors have been suction dredging the stretch of river where the weed was found.

The public can help by ensuring that boats are cleaned so fragments of plant are not spread. So far, egeria seems to be restricted to the stretch of the Avon River from the upstream end of Porritt Park downstream to Avondale Bridge.

Egeria is now widespread in North Island streams, rivers and lakes. Its prolific growth makes it a significant weed in New Zealand's water systems because it crowds out other species and the volume of plant material produced also raises water levels. In hydro lakes it has to be regularly controlled to prevent it from interfering with inlet pipes.



The plant looks quite similar to the common Canadian pond weed or oxygen weed but it is much larger. The dark green leaves are about 4 cm long and mostly come off the stems in groups of four or five. The photo compares the smaller Canadian pondweed with egeria.

Christchurch City Council and Canterbury Regional Council staff have been keeping a particular look out for egeria to ensure that any other infestations are located as soon as possible. If you think you know of any egeria plants in Canterbury, please contact a Biosecurity Officer at Canterbury Regional Council.

Kate McCombs

## **ENVIRONMENTAL AWARDS 1999**

Riccarton Bush or Putaringamotu, one of our City's greatest natural treasures, has received this year's City Council Environmental Award in the natural environment section.

Councillor Anna Crighton, Chair of the Environmental Committee, presented the award to Charles Deans, representing the Riccarton Bush Trust. The award ceremony was held in the newly refurbished Bellamy's wing of the Canterbury Provincial Buildings last month.

Runners up in this section were the University of Canterbury grounds and the Ilam Homestead Grounds.

The Summit Road Society received the award for services to the

environment. It was presented to John Jameson, grandson of Harry Ell, whose vision and drive early this century led to the building of the Summit Road.

Runners up were the New Brighton Pier and Foreshore Society and Email Appliances.

The built environment award went to the BroadOaks subdivision on the former Coronation Hospital site. Significant trees and vegetation have been preserved and the design of roads, retaining walls and planting carefully integrated.

Runners up were the Theatre Royal, Excelsior Hotel and University of Canterbury.

# A GREEN LIST

#### Biodiversity

International Day for Biodiversity is on 29 December. The convention is an international agreement encouraging countries to work together to conserve, sustainably use, and equitably share the benefits from biodiversity through action, research, policy, education and laws.

Long before the word 'biodiversity' evolved, the poet Milton was inspired to write about Earth's riches:

'Wherefore did Nature pour her bounties forth With such a full and unwithdrawing hand, Covering the earth with odours, fruits and flocks, Thronging the seas with spawn innumerable.'

The following books on biodiversity are available from the Canterbury Public Library:

**Conservation and biodiversity** by Andrew Dobson (333.95 DOB)

The biophilia hypothesis by Stephen R Kellert (179.1 BIO)

The diversity of life by Edward Osborne Wilson (333.95 WIL)

The end of evolution by Peter Ward (576.84 WAR)

The diversity of living organisims by R S K Barnes (editor) (570.1 DIV)

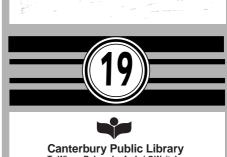
The living ocean : understanding and protecting marine biodiversity by Boyce Thorne-Miller (577.7 THO)

The seed savers' handbook for Australia and New Zealand by Michel and Jude Fanton (635.0421 FAN)

The sixth extinction by Richard Leakey (576.84 LEA)

The spice of life by Chris Howes (333.95 HOW)

The work of nature : how the diversity of life sustains us by Yvonne Baskin (333.72 BAS)



Te Whare Pukapuka Aa Iwi OWaitaha User Education and Training Team