




Antarctica New Zealand

Annual Report 2003/2004



They say that good things are worth waiting for, and so it proved to be when I finally made it to Antarctica in late 2003 - on my fifth attempt! And the weather which had thwarted my previous attempts turned it on with brilliant sunshine.

The visit showed me what a truly amazing and precious place the white continent is. Long may it remain the way it has always been – beautiful, pristine and wild.

Dame Silvia Cartwright
Governor General

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Front Cover: Courtesy of Craig Potton

Chairman's Report

New Zealand conducts its affairs in Antarctica within an extremely modest budget supported by a surprisingly small number of people in relation to what is accomplished.

Antarctica New Zealand, a Crown entity with a budget of a little over \$9 million per annum is supported by 27 permanent staff, rising to 60 (including New Zealand Defence Force personnel) over the summer season.

During the past year we deployed a total of 370 people to Antarctica and supported 39 science events and 40 other events. A total of 15



Above: The Board of Antarctica New Zealand with the CEO. From left Bill Mansfield, Maj de Poorter, Wendy Lawson, Kerry McDonald, Francis Small, Paul Hargreaves (Chair), Lou Sanson (CEO)

intercontinental flights were undertaken by the RNZAF in support of our operations in addition to those provided by the United States Air Force.

Antarctica New Zealand is responsible for discharging New Zealand's obligations under the Antarctic Treaty including our commitments under the Environmental Protocol. To this end we actively participate with our international Treaty partners

on management issues affecting the Antarctic continent and in international science forums in tandem with the New Zealand scientific community.

At a strategic level the Antarctica New Zealand Board has been focussed on a number of significant issues during the past year. These include:

- **Science Strategy:** A new science strategy has been approved by the Board, with the objective of providing a framework and direction to New Zealand's investment in Antarctic science. This will be backed up by a review of the New Zealand science outcomes over the past twenty years.

- **Marine Strategy:** New Zealand's strategic interest in the Ross Sea and Southern Ocean and in particular its biodiversity is explicitly recognised in the Government's Statement of Strategic Interest in Antarctica. The Board supports appropriate logistics and science budget bids to enable New Zealand to exercise this commitment.
- **International Polar Year:** Fifty years on from the International Geophysical Year, 2007/2008 will see the International Polar Year (IPY). This is likely to trigger a new wave of scientific initiatives in Antarctica, in the same way that IGY did following the establishment of Scott Base and McMurdo Station all those years ago.
- **IPY Science Initiatives:** Major new scientific initiatives are under consideration by the international Antarctic community in preparation for IPY. The most significant is a circum-Antarctic census of marine life (CircAntCML), promoted by Australia and supported by a number of other countries. This would allow a systematic recording of biodiversity in the waters around Antarctica through a co-ordinated programme of ocean observations. From New Zealand's point of view, the Ross Sea is a highly productive ecosystem and is considered one of the world's seas least modified by human impacts. The Board is committed to seeing New Zealand playing its part in this international endeavour and exploring the earth's oceans to assess and explain changes in their biological diversity and abundance.
- **ANDRILL:** Antarctica New Zealand is project manager for this major international drilling programme on the McMurdo and Ross Ice Shelf involving the United States, Germany, Italy and ourselves, designed to measure global environmental change. This follows on from the earlier Cape Roberts project and involves multi-site drilling. Specialist

equipment is now being built and assembled and is expected to be brought on site in the 2005/2006 season. This is a complex and demanding project that will stretch our resources to the limit. The Board places great importance on its success.

- **Environment:** We are very committed to showing leadership in different aspects of life in Antarctica. A major joint effort has been going into the clean up of the former United States / New Zealand Station at Cape Hallett. In addition, a project investigating improved methods of energy management is being conducted with the assistance of the University of Canterbury.
- **External Relationships:** We continue our close working relationships with our United States colleagues, now stretching back 48 years this coming season. We were delighted by the decision of the Christchurch City Council to recognise the value of the US relationship in their decision to host the 2004/2005 season opening event and to follow up with plans for next year to host an Antarctic festival. Our relationship with our other near neighbours, Italy, located at Mario Zucchelli Station at Terra Nova Bay is also greatly valued. We have established a more active relationship with our Australian neighbours in the past year and are proposing a number of new shared science initiatives with the Australian Antarctic Division in Hobart.
- **Scott Base:** This coming summer will see the assembly of the largest building at Scott Base, the new Hillary Field Centre, which will fill a long awaited deficiency in our operations. At \$4.3 million, this will be the largest single capital project New Zealand has yet committed to on the Ice and will be opened by Sir Edmund Hillary in the 2004/2005 season.

At the end of my first year as Chairman, which has included a major international event on the Antarctic calendar, the combined conference of the Science Committee on Antarctic Research (SCAR) and the Council of Managers of National Antarctic Programmes (COMNAP), it is evident to me that New Zealand makes a very strong contribution nationally and internationally. Our people and leadership are highly respected, our relationships with our international colleagues are excellent and our contributions in these forums greatly valued.



Above: Lou Sanson, Governor General, Dame Silvia Cartwright and Paul Hargreaves in the Dry Valleys

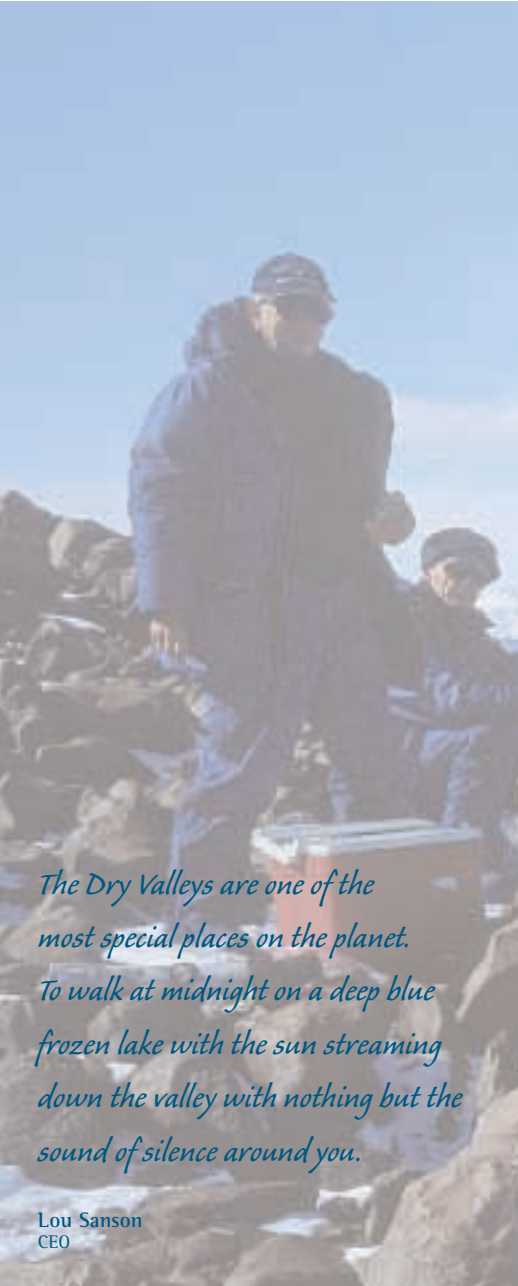
The Board of Antarctica New Zealand is committed to ensuring that this position is maintained. Achieving this means stepping up to international commitments such as those now emerging in the science programme for the International Polar Year.

Our staff have performed outstandingly well during the past year under the vigorous leadership of our Chief Executive, Lou Sanson, and we look forward positively to the challenge of a new Antarctic season.

A handwritten signature in black ink that reads "Paul Hargreaves".

Paul Hargreaves
Chairman





The Dry Valleys are one of the most special places on the planet. To walk at midnight on a deep blue frozen lake with the sun streaming down the valley with nothing but the sound of silence around you.

Lou Sanson
CEO



Dame Silvia Cartwright and Peter Cartwright on Finger Mountain, Taylor Glacier Image Courtesy of Lou Sanson

CEO's Report

Two years into my role as Chief Executive and my passion for Antarctica New Zealand remains as strong as it was on day one.

The legacy of those early explorers, the breathtaking beauty of the world's greatest outdoor art collection, and the ferocity of the elements means Antarctica will always have the x-factor for those of us fortunate enough to work and visit there.

The 2003/2004 season was another demanding year but it's one I feel proud of. We deployed 370 personnel and 371,780 lbs of cargo to the Ice in a record 79 events, and supported science and environmental initiatives as far away as 720 km from Scott Base.

None of this would have been possible however, without the dedication and drive of a small but specialised group of people. It is only through the energy and excellence of Antarctica New Zealand's staff, Board and strategic partners, that these milestones were achieved.

Two real highlights for me this season were the Latitudinal Gradient Project and the Cape Hallett clean-up. After more than four years planning, the Latitudinal Gradient Project (LGP) was finally set up for over two months at Cape Hallett – the largest deep field camp ever supported by Antarctica New Zealand.

Over the next decade, the project will study five sites along the Victoria Land coast in order to increase our understanding of marine and terrestrial ecosystems, and help predict climate change patterns.

The LGP campsite also provided an opportunity for New Zealand and the United States to clean up the former station at Cape Hallett. The New

Zealand team ably assisted by the New Zealand Defence Force, dismantled and packed up a staggering 22 tonnes of debris for removal in the 2004/2005 season.

The site surveys for ANDRILL continued in earnest on the McMurdo ice shelf as did new work on ice-coring, diving programmes, ice-shelf stability and geological survey. Last season also saw a large-scale marine research effort with NIWA's *RV Tangaroa* and the *RV Italica*, which strengthened our relationship with Italy on marine science programmes in the Ross Sea.

A major environmental success was the acceptance by the Antarctic Treaty Consultative Meeting in Cape Town of the Dry Valley's Management Plan. This major milestone is a testament to effective international collaboration and represents many years' work between the United States and New Zealand, and our respective scientific communities. The environmental team has also been active in developing Antarctic-wide State of the Antarctic Environment Reporting.

Antarctica New Zealand has remained active on the international scene at conferences, plenary sessions and Treaty meetings through the leadership of the Ministry of Foreign Affairs and Trade. A particular highlight was the Antarctic Treaty Meeting of Experts which looked at the future impact of tourism in Antarctica and led to the adoption of measures concerning the future management of adventure tourism and activity in Antarctica.



Above: Antarctica and the Southern Ocean are at New Zealand's doorstep RSRSOER:1.3

Back home, we continue to support New Zealand's best possible science and research through our new Antarctic Science Strategy and value the close relationship we enjoy with New Zealand universities and Crown Research Institutes in furthering this effort. Many of these scientific achievements were highlighted at the Annual Antarctica New Zealand Conference, held



*Above: The largest storm in 12 years hit Scott Base in May 2004
Courtesy Scott Base winter over crew*

at Waikato University in April. Dr Peter Barrett's efforts in establishing the Antarctic Research Centre Endowed Development Fund through Victoria University in order to foster quality Antarctic science scholarship, are also to be commended.

In May this year the worst storm in 12 years hit Scott Base. With winds reaching a maximum gust of 180 km/hr, the base and

some outlying structures sustained damage, as did some vehicles. Thanks to the superb efforts of the winter-over crew, temporary repairs were made and a subsequent review confirmed the structural integrity of the base and our existing safety policies and procedures.

Public awareness continues to play a vital role in our ability to educate and inform New Zealanders of the global significance of Antarctica. Yet again there was an impressive season of activity through the artists, education and media programmes.

National Radio's Kim Hill broadcast her show live from Scott Base. TV3, the New Zealand Herald and The Press also gave extensive coverage to Antarctic issues and our invitational artist, painter Grahame Sydney wrote a series of articles for the Sunday Star Times detailing his impressions of Antarctica.

However, in a year of achievement, it is the people, the partnerships and the passion of everyone associated with the New Zealand Antarctic programme that most stands out. The people in our programme both on and off the Ice underpin everything we do.

This past year we have welcomed a number of new staff into the organisation while farewelling those who moved on to new endeavours. Shelly Peebles (Communications Manager) and Dene Robinson (Corporate Services Manager) both fundamental to the success of the 2003/2004 season left to pursue opportunities overseas. Jess McDuff (Office Assistant) and Prue Sullivan (Human Resources Advisor) also made new career moves.

Emma Reid joined the Communications team as Manager, while Anna Howard filled the new role of Information and Communications Co-ordinator. Corporate Services welcomed Peter Smith as Manager, Eve Webb as the Accountant and Melanie Lindroos as the new Human Resources Advisor. Jonathan Leitch was appointed to assist Jim Cowie with building the ANDRILL drill site camp and laboratories ready for transport to Antarctica in January 2005.

I also wish to pay tribute to those partnerships that are so integral to our activities. I greatly appreciate the efforts of the Christchurch City Council in recognising the contribution of the United States, Italian and New Zealand Antarctic programmes to Christchurch City. Our new partnership with the University of Canterbury in researching alternative energy solutions for Antarctica will provide significant assistance to us going forward. Likewise, the Antarctic Visitor's Centre in Christchurch, Kelly Tarlton's Antarctica Encounter and Underwater World, Wigram Air Force Museum, and Te Papa have all continued to foster public interest in Antarctic issues.

Our commitment to preserving the past has also been a focus this year with the restoration of artefacts in the Trans-Antarctic Expedition Hut and the ongoing support of the Antarctic Heritage Trust and their conservation efforts.

We were also delighted to have a visit to Scott Base by the Governor General Dame Silvia Cartwright and her husband Peter Cartwright and senior Defence staff to coincide with the 100 year discovery of the Dry Valleys by Captain Scott. This was an opportunity to recognise the contribution by the New Zealand Defence Force who are critical to the safe and successful deployment of personnel to the Ice each season and to our operations in Antarctica.

Additional efforts by Defence over the summer saw an RNZAF C-130 from 40 Squadron complete an airdrop to the LGP campsite at Cape Hallett, and Defence Force personnel assist with the Cape Hallett clean-up. As always their efforts are highly appreciated by us all.

Antarctica New Zealand's work is only possible because of the excellent co-operation we enjoy with the Italian and United States Antarctic programmes. For example, the significant resources that the LGP gained from the Italian Antarctic Programme underpinned the project's success.

We were all greatly saddened by the loss of Mario Zucchelli, leader of the Italian Antarctic Program, in October 2003. Mario was a huge supporter of the New Zealand Antarctic programme. Given his fifteen-year association with New Zealand, and his work in the construction of Terra Nova (now renamed Mario Zucchelli Station) and Concordia Bases, we wish to acknowledge his significant contribution.

Our long and enduring association with the United States Antarctic Program is also fundamental to everything that we do on the Ice. In

particular I acknowledge the close working relationship with the National Science Foundation, Raytheon Polar Services and the United States Air Force which ensures that our programmes work so well together.

As International Polar Year draws closer, I also wish to acknowledge the Royal Society's Committee on Antarctic Research in selecting the Circum-Antarctic Census on Marine Life as New Zealand's major initiative for IPY. This internationally co-ordinated scientific effort in the Southern Ocean and Ross Sea is likely to be one of the major programmes involving Treaty countries during IPY (2007-2009).

Finally I would like to thank Paul Hargreaves and the Board and staff of Antarctica New Zealand for the support they have given me over the last year. This small but highly skilled team puts considerable effort into making the entire programme happen with the greatest sense of pride for New Zealand's contribution.

While mankind has conquered everywhere else on the planet, Antarctica is the final frontier where the majesty and scientific mystery of this pristine continent still inspires me and every one of us to work for the future of this special place.



Lou Sanson
Chief Executive



Above: Adélie Penguins on an iceberg off Cape Hallett
Mark Hay
anzpc:K402:03/04



A Year of Highlights

July 2003

- Dr Dean Peterson, Science Strategy Manager, chaired the Joint Committee on Antarctic Data Management (JCADM) meeting in Brussels.
- A meeting of the ANDRILL Operating Management Group (AOMG) was held in Brest, France.
- A total of 26 Antarctic Treaty nations were represented at the annual COMNAP/SCALOP combined meeting in Brest, France. Prior to COMNAP a workshop was held by the Antarctic Environmental Officers Network (AEON) and COMNAP's Training Network (TRAINET) where New Zealand presented on environmental training tools.

August 2003

- The first WINFLY (Winter fly in) flights occurred.
- Antarctica New Zealand's two-year science bidding round was announced.
- An International ANDRILL Science Review Panel was convened in Washington DC to review proposed drilling targets.

September 2003

- Pre-Antarctic Training commenced for all those new 2003/2004 season staff deploying to Scott Base.
- The first Mainbody flights occurred.

October 2003

- The science bidding round closed with 37 research proposals received, and 34 finally accepted on the basis of scientific merit and contribution to the draft science strategy.

November 2003

- The LGP camp was established at Cape Hallett.

- Invitational artist Grahame Sydney visited Antarctica where he took numerous photos and gathered material for a major Antarctic series.
- TV3 and the Herald visited Antarctica under the media initiatives programme.
- Radio New Zealand's Kim Hill broadcasted her three-hour show live from Scott Base.
- Invited visitor groups travelled to Scott Base including the Marine Research Strategy Group.

December 2003

- Her Excellency Dame Silvia Cartwright, the Governor General visited Antarctica.
- The first Antarctic NCEA resources were completed in Social Studies and Geography.
- Three students from Waitaki Boys High in Oamaru visited Antarctica under the secondary schools education programme.
- Twenty students and four tutors travelled to Antarctica as part of the Graduate Certificate in Antarctic Studies (GCAS) course.
- The ANDRILL Operating Management Group (AOMG) reconvened in Christchurch to confirm participant contribution levels, the two site scenario, and a one year delay to first drilling.
- An RNZAF C130 from 40 Squadron successfully completed an airdrop to the LGP campsite at Cape Hallett, one of the few times this capability has been used by New Zealand in Antarctica.
- Peter Smith was appointed as the new Antarctica New Zealand Corporate Services Manager.

January 2004

- Fiction writer Laurence Fearnley visited Antarctica under the Artists to Antarctica programme.
- Paul Rodley, a teacher at Christ's College, Christchurch visited Antarctica under the education initiatives programme in order to produce a range of CD ROMs and videos including a virtual tour of Scott Base.
- Patrick Shepherd from Christchurch College of Education visited Antarctica under the education initiatives programme to create music curriculum resources and compositions.

February 2004

- The *RV Tangaroa* and the *RV Italica* conducted survey work out of Terra Nova Bay and along the Northern Victoria Coast as part of the Biodiversity of the Ross Sea (BioRoss) research programme.
- Materials and components for construction and fit out of the Hillary Field Centre were delivered to Scott Base.
- The new Scott Base display was installed at the Antarctic Visitor Attraction in Christchurch.
- Emma Reid was appointed as Antarctica New Zealand's Communications Manager and Anna Howard was appointed to the new role of Information and Communications Co-ordinator.

March 2004

- The APEC Science Minister's conference was held in Christchurch with a formal dinner which included a presentation from Antarctica New Zealand CEO Lou Sanson and a live link to Scott Base.
- The Antarctic Treaty Meeting of Experts on Tourism and Non-Governmental Activities in Antarctica was held in Norway and attended by Antarctica New Zealand's CEO Lou Sanson, Trevor Hughes from MFAT and Elana Geddis from the New Zealand Embassy in New York.
- The season closed with Antarctica New Zealand supporting a record 39 science events for the year.

April 2004

- Antarctica New Zealand hosted its Annual Conference at the University of Waikato attracting over 110 delegates.
- The International Association of Antarctic Tourism Operators (IAATO) met in Christchurch. Antarctica New Zealand hosted a workshop to develop a site inventory and environmental monitoring programme for landing sites in the Ross Sea region.
- Wigram Air Force Museum opened its exhibition *Ice on my Palette* featuring Antarctic Arts Fellows.


- The new LGP website www.lgp.aq was designed and launched bringing together all information about the project on one site.

May 2004

- CEO Lou Sanson and Science Strategy Manager Dr Dean Peterson attended the second Malaysian International Seminar on Antarctica, held in Penang.
- The worst storm in 12 years hit Scott Base on 16 May 2004, damaging buildings and equipment. No one was injured in the storm that barraged the station with winds up to 200 km/h.
- Clothing, images, information and educational material were provided to support Te Papa's *Race to the Pole* exhibition and the educational and events programme accompanying it.
- The Committee for Environmental Protection (CEP) and Antarctic Treaty Consultative Meeting (ATCM) were both held in Cape Town.

June 2004

- The Dry Valleys became the first officially designated Antarctic Specially Managed Area (ASMA) under the *Protocol on Environmental Protection to the Antarctic Treaty*. Thanks to the collaborative efforts of New Zealand and the United States, this vast tract of ice-free land is the first to be formally adopted by the Antarctic Treaty Parties.
- Antarctica New Zealand post-graduate scholarship winners were announced at Antarctica New Zealand's mid-winter function in Christchurch.
- Melanie Lindroos was appointed as the new Human Resources Advisor.



*It is wonderful to be carrying
out Antarctic research that has not
been pursued since the scientific
endeavors of Scott's expeditions
of the early 1900's.*

Mary Sewell
Scientist

Under the sea ice, Brian Grant:anzpcK068:03/04

Science

Antarctica New Zealand's science section supports the Government's role in the Antarctic Treaty System by ensuring that an internationally respected Antarctic scientific programme is developed and carried out each year. This is accomplished through a robust annual science review process; the



co-ordination of large-scale science projects with funding agencies and researchers; and active participation in international conferences and meetings. We also encourage international scientific collaboration particularly in those disciplines where New Zealand has shown or is able to provide international leadership.

In August 2003, a two-year science proposal bidding round was announced with a deadline

of 3 October 2003. Antarctica New Zealand assessed all the applications using the Antarctic Research Committee (ARC), made up of Antarctic researchers and Antarctica New Zealand's Science Strategy Manager, Dr Dean Peterson. An ARC member and two external reviewers then assessed each of the 37 proposals.

The proposals were assessed on the quality of the proposed science, their feasibility, and the contribution the research will make to Antarctic science according to the principles and priorities outlined in the draft science strategy, *New Zealand Science in Antarctica and the Southern Ocean*.

A total of 34 proposals were accepted for support over the next two seasons.

The 2003/2004 Antarctic season also saw success with two large-scale scientific projects, the Latitudinal Gradient Project (LGP) and the Biodiversity of the Ross Sea Programme (BioRoss).

Key achievements

- **Science Supported in Antarctica**

Antarctica New Zealand supported 39 science events for the year. This is the largest number of events ever supported by the organisation, resulting in a season filled with interesting research and results. Scientific highlights include diving research carried out from the *RV Italice* showing iceberg scouring on the sea floor and the regeneration of ecosystems after such a high impact event. A comparison of the terrestrial diversity of lichens from Mt Kyffin (83° S) with those found at Cape Hallett (72° S) showed that diversity does not always decline with increased extreme conditions.

- **The BioRoss Programme**

The Ministry of Fisheries biodiversity programme (BioRoss) and Land Information New Zealand (LINZ) secured the funding needed to produce a 41-day cruise using the NIWA *RV Tangaroa*. The *RV Italice* worked with the *RV Tangaroa* in early February out of Terra Nova Bay and along the Northern Victoria Coast. The areas focused on were Cape Adare, Cape Hallett and the Balleny Islands. The major findings from the cruise relate to significant changes in biodiversity between McMurdo Sound, Terra Nova Bay and Cape Hallett.



Above: Lichen and moss found at the Cape Hallett LGP site
Catherine Beard
anzpc:K024:03/04

Left: Lake Brownworth in the Wright Valley shows high levels of genetic diversity
Craig Potton
anzpc:K394a:00/01



Above: Deployment of a probe to study sea ice formation during the winter science programme.

*Greg Leonard
anzpcK131:02/03*

Right: Sampling for Meroplankton at the Cape Hallett LGP site
*Mary Sewell
anzpc:K018:03/04*

- **ANDRILL Project**

An International ANDRILL Science Review Panel was convened in Washington DC on 22 August 2003. The panel agreed that the Southern McMurdo Sound drill site and the McMurdo Ice Shelf drill site be fully funded. The remaining targets will need more site survey work to advance to a stage suitable for drilling. This preparation work was also supported by the review. The McMurdo Sound ANDRILL Science

Implementation Committee (MASIC) was created to better focus the ANDRILL Science Committee (ASC) on the supported activities related to the two drill sites.

- **The Joint Committee on Antarctic Data Management (JCADM)**

Antarctica New Zealand's Science Strategy Manager, Dr. Dean Peterson convened the Joint Committee on Antarctic Data Management (JCADM) meeting in Brussels in July 2003 as the Chief Officer of JCADM. Dean also presented an update on JCADM to the SCAR/COMNAP Joint Executive in Brest, France. Following the presentation JCADM secured another two years of funding for its activities.

- **Winter Science**

The winter research accomplished by two events this past season was extremely successful for both research groups. The group from the University of Canterbury looked at polar stratospheric cloud formation while the University of Otago group looked at sea ice formation.

- **Antarctic Conference**

Over 110 people attended Antarctica New Zealand's annual Antarctic conference at the University of Waikato. The conference opened with a series of Antarctica New Zealand presentations on operations, science, environment and communications, followed by a day and a half of event presentations and then two half-day workshops on operations planning, and future sites and data distribution for the LGP.

Highlights

Latitudinal Gradient Project (LGP) Begins

Before the season started an LGP Science Steering Committee meeting was held in Hamilton to finalise the project's objectives. Then after more than four years in the planning, LGP finally began at Cape Hallett in November 2003 with Antarctica New Zealand providing the logistical support for the campsite, which hosted 16 New Zealand scientists and six United States scientists.

Antarctica New Zealand worked closely with scientists and officials from Treasury, the Ministry of Fisheries and the Ministry of Foreign Affairs and Trade to create this world-class project looking at Antarctic ecosystems. The LGP studies how marine and terrestrial ecosystems differ from north to south.

This internationally recognised project will study five sites over the next decade along the Victoria Land coast of Antarctica. The information gained will increase our understanding of Antarctic ecosystems and enable us to predict how climate change will affect these ecosystems.



Research will continue at Cape Hallett for two more years, before moving along to other points on the coast. The Victoria Land coastline spans 14 degrees of latitude along a narrow longitudinal band from Cape Adare to the southern end of the Ross Ice Shelf.

The LGP is now officially linked with SCAR's Regional Sensitivity to Climate Change in Antarctic Terrestrial and Limnetic Ecosystems Project (RiSCC) and will be making a significant contribution to their Antarctic data set. For more information, visit the project's website, www.lgp.aq. This site includes the background to the LGP, the collaborative programmes and organisations

involved, a description of the science projects being undertaken, and information on the study sites including maps, imagery, publications and data.

Research Scholarship Winners

The scholarship winners for the 2003/2004 research season were Penelope Clendon from the University of Canterbury (Sir Robin Irvine Scholarship), Patrick Maher from

Lincoln University (New Zealand Post Scholarship) and Angela McGaughran from the University of Waikato (Kelly Tarlton's Antarctic Encounter and

Underwater World Scholarship). All three spent time in Antarctica over the season conducting research.

Doctoral candidate Penelope Clendon focused on the processes that control the production of melt water on the McMurdo Ice Shelf and mapped this using a GIS system. She looked at the thermal properties of debris that covers ice layers and analysed how much energy is available for melting at the debris-ice interface.

Her data will provide information on the mass balance of the McMurdo Ice Shelf, the surface energy balance and melt rates, along with an understanding of the physical environment and controls of the ice shelf. Three seminars and one scientific paper have resulted thus far from Penelope's research in the 2003/2004 season. Penelope will also present her results at the International Symposium on Ice and Water Interactions in Oregon, USA in July 2004.

Patrick Maher, a Doctoral candidate, continued his research into visitor experiences in the Ross Sea region. He worked with people in advance of their visit, during their time on the Ice and then back in New Zealand. The results are intended to aid the development of regulations for tourism and visitors to the Ross Sea region.

Three papers have resulted from the PhD work to date with a further two in press. Patrick presented a paper to the March 2004 Antarctic Treaty Meeting of Experts on Tourism and Non-government Activities in Antarctica.



*Above: Scholarship winner Patrick Maher studied experiences of tourists to Antarctica on the Kapitan Klebnikov during the 2003/04 season.
Patrick Maher
anzpc:K073:03/04*

Left: Map of the LGP sites



Masters student Angela McGaughran investigated the biodiversity of terrestrial invertebrates in the Victoria and Wright Valleys using traditional morphology based taxonomic and molecular approaches. The comparative approach of studying springtails and mites together provided a unique opportunity to examine common processes relevant to Antarctic biota. Springtails are the largest year round terrestrial animal of the region and an important component of the terrestrial ecosystem.

The study aimed to identify biodiversity hotspots in the Dry Valleys and highlight those populations that should have conservation priority to ensure long-term survival. Preliminary results from the St John's Range, Mt Cerberus and Lake Brownworth showing very high levels of genetic diversity suggest that the area is the source of extant populations.



Above: Antarctic Springtail magnified with electron microscope
Brent Sinclair
anzpc:K068:99/00

Right: Antarctic fish, *Trematomus* sp.
Rod Bud, NIWA
anzpc:K081:02/03

Antarctica New Zealand announced the recipients of four postgraduate scholarships of \$10,000 each (plus logistical support for the 2004/05 season) at our mid-winter function in Christchurch in June.

Andrew Clifford of the University of Otago was awarded the Sir Robin Irvine Scholarship for a Masters project, which will investigate the influence of a remnant volcanic crater under the Southern McMurdo Ice Shelf with the use of ground penetrating radar.

Andrew Martin of Victoria University of Wellington received the New Zealand Post Scholarship for his Doctoral work on the role of bacteria on Antarctic sea ice. Andrew will be working with Dr Ken Ryan at Cape Hallett next season.

Esme Robinson of the University of Canterbury received the Kelly Tarlton's Antarctic Encounter and Underwater World Scholarship for her Masters work on the adaptability of Antarctic fish to changes in water temperature. This will be Esme's first season in Antarctica. Esme will be working with Associate Professor Bill Davison near Scott Base.



Erica Hofstee of the University of Waikato was awarded the first Latitudinal Gradient Project Scholarship for her Masters research on the soils and hydrology of the Cape Hallett area. Erica will be working with Dr Megan Balks at Cape Hallett.

The scholarship programme is now in its tenth year having supported 31 students in Antarctic research since its inception. Underpinning our commitment to supporting postgraduate scholarship is the continued support of two long-term sponsors, New Zealand Post and Kelly Tarlton's Antarctic Encounter and Underwater World.

Marine Science Focus

In early 2002, Cabinet issued two Minutes dealing with the Government's Statement of Strategic Interests in Antarctica, and a review of New Zealand's activities in the Ross Sea and Southern Ocean. Both Minutes indicated an increased Government focus on Ross Sea and Southern Ocean research, tourism, and rational utilisation of marine living resources, biosecurity and marine protection.

Over the past five years New Zealand's Southern Ocean marine research has increased from three projects based on fish physiology and human impact studies to over 15 projects. The new projects include research on climate change impact, mitigation of seabird by-catch in long-line fisheries, fish evolution, biology of Antarctic toothfish, increased UV impact studies, biodiversity research and long-term coastal benthic research along the Victoria Land coast.

The increase is as a direct result of the Biodiversity of the Ross Sea Programme (BioRoss) funded by the Ministry of Fisheries (MFish); reallocation of Ministry of Fisheries international fisheries research funding; the continued support of the Foundation for Research, Science and



Technology (FRST) and internal funding commitments from NIWA.

Marine research in the Ross Sea culminated in the 2003/04 season with a joint New Zealand / Italian research voyage using the *RV Tangaroa*

and the *RV Italica* in the Ross Sea. The voyage studied marine biodiversity and completed hydrographic survey work in the Cape Hallett, Cape Adare and Balleny Islands regions.

Funding for this initiative came from the Italian Antarctic Programme, the BioRoss programme of the Ministry of Fisheries and from Land Information New Zealand. In New Zealand, a new stock assessment approach has been

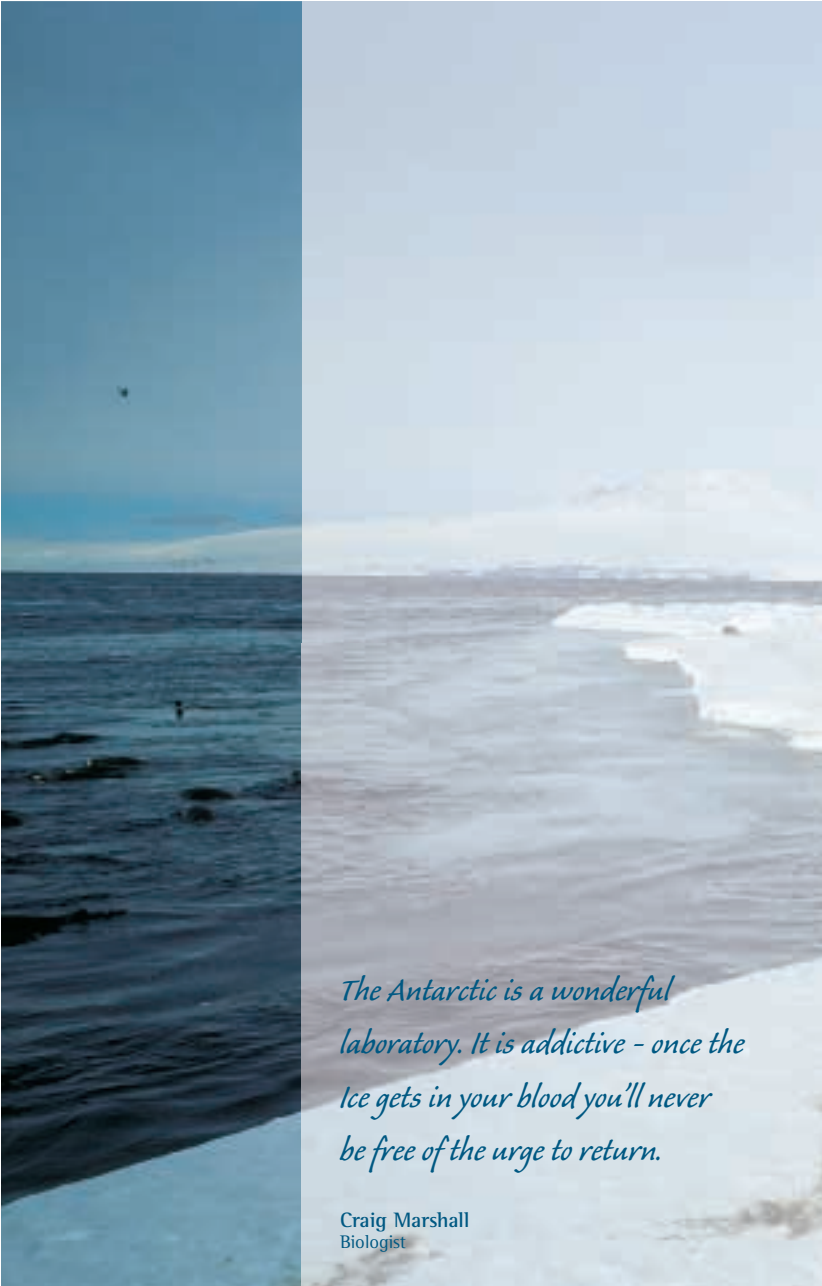
applied to Antarctic toothfish. Three new species of skate have been identified, and the diet of Antarctic toothfish explored in detail as a start to the process of modelling the ecosystem effects of the developing fishery. The Ministry of Fisheries has funded this work.

As a result of the increased activities and interest in the Ross Sea, Antarctica New Zealand is working closely with MFish and FRST to create a "whole of Government" approach to marine research in the Southern Ocean. The three agencies will be going to Government this year to increase the funding for marine science and logistical support.



*Above: Samples of the benthic community were obtained using a grab from the Italica as part of BioRoss
Rod Budd, NIWA
anzpc:K083:03/04*

*Left: Research is looking at the marine biodiversity of the Ross Sea region
Rod Budd, NIWA
anzpc:K081:02/03*



The Antarctic is a wonderful laboratory. It is addictive - once the ice gets in your blood you'll never be free of the urge to return.

Craig Marshall
Biologist



Emperor Penguins at Sea Ice edge, Andris Apse:anzpck414:03/04,27648T

Environment

Antarctica New Zealand is committed to conserving the intrinsic and wilderness values of Antarctica and the Southern Ocean through proactive and responsible stewardship. Environmental leadership is an area that New Zealand advocates strongly on, through the Antarctic Treaty System, with some success. We continue to promote a high level of environmental awareness and commitment among all New Zealand Antarctic programme participants.

Antarctica New Zealand's goals are to develop and maintain high environmental standards and procedures that:

- Minimise New Zealand's environmental footprint in Antarctica, while safeguarding the Antarctic and Southern Ocean environments;
- Are understood, respected and adhered to by all participants in the New Zealand Antarctic programme;
- Support New Zealand's obligations in Antarctica;
- Enable New Zealand to maintain a lead role internationally in Antarctic environmental stewardship.

Our environmental management programme ensures that New Zealand meets its legal obligations nationally and internationally. Specifically New Zealand's



Antarctica (Environmental Protection) Act 1994 as well as the *Protocol on Environmental Protection to the Antarctic Treaty*.

This requires working closely with environmental experts across the Government sector,

particularly with the Ministry for the Environment, the Department of Conservation and the Ministry of Foreign Affairs and Trade. We also work closely with other national Antarctic programmes and in the past year have collaborated with colleagues in Australia, the United States, Italy and the United Kingdom.

Key achievements

- **State of the Antarctic Environment Reporting**

Reporting on the state of the Antarctic environment is a core function of the Antarctic Treaty's Committee for Environmental Protection (CEP). However to date the Committee has made little progress on finding a way to provide this regular "health check" on Antarctica.

Following Antarctica New Zealand's publication of *Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica*, the CEP charged New Zealand and Australia with devising a state of the environment reporting system for Antarctica.

Antarctica New Zealand has worked closely with the Australian Antarctic Division to develop a web-based reporting system that assists the CEP to report to the Treaty Parties on the status and implications of key environmental indicators.

The concept was endorsed by the CEP at its June 2004 meeting in Cape Town. New Zealand and Australia have now been asked to develop the system further and to provide the first state of the Antarctic environment report to the 2005 meeting.



*Above: Environmental Manager Neil Gilbert and Environmental Advisor Rebecca Roper-Gee
Courtesy of Rebecca Roper-Gee*

*Left: Buildings, equipment and rubbish from the old Cape Hallett Station ready to be removed in the 2004/05 season
Dan Mathers
anzpc:K402:03/04*

- **Cape Hallett Clean-up**

Cleaning up abandoned stations in Antarctica is a key requirement of the *Environmental Protocol to the Antarctic Treaty*. Consequently Antarctica



Above: Soil profiling at the site of Cape Hallett Station to check for contaminants

*Megan Balks
anzpc:K123:03/04*

*Right: Mt Newall huts showing wind power and solar panels which reduces reliance on fossil fuels
Courtesy of Rebecca Roper-Gee*

New Zealand has put considerable effort, in partnership with the United States Antarctic Programme, into cleaning up the abandoned United States / New Zealand station at Cape Hallett; an area now designated as an Antarctic Specially Protected Area (ASPA106).

During the 2003/2004 season the New Zealand team began disassembling and packing all remaining buildings and their contents. In all, 22 tonnes of material were staged on the beach for removal during the 2004/2005 summer.

Water and soil samples were also taken to assess hydrocarbon contamination. A New Zealand team will continue removing general

debris from the site this coming season as well as staging equipment for removal of the last remaining structure, a bulk fuel tank in 2005/2006.

- **Target Zero Award**

Antarctica New Zealand was the only government agency to be awarded one of the inaugural Target Zero Merit Awards by Christchurch City Council. The judges were particularly impressed with our



waste management reporting systems as well as our overall environmental management system.

The Target Zero scheme aims to help Christchurch businesses move towards sustainability by improving resource efficiency, minimising waste and reducing risk of harm to the environment.

- **Enviro-Mark Accreditation**

Antarctica New Zealand's environmental management system achieved silver level in the Enviro-Mark accreditation scheme. Enviro-Mark is a way of gathering objective evidence of achievements in health, safety and environmental management. To achieve bronze level, Antarctica New Zealand demonstrated compliance with environmental and health and safety legislation. The silver audit verified our commitment to best practice, as evidenced by our environmental policy and the identification of those aspects of our activities that impact on the environment. Our aim is to achieve gold level accreditation during 2005.

After the final level of accreditation, Antarctica New Zealand will be prepared for international certifications such as ISO14001.

- **Energy efficiency and use of renewable sources is becoming an increasing focus for Antarctica New Zealand.**

In December 2003 Professor Pat Bodger (Head of the Department of Electrical and Computer Engineering, University of Canterbury and Director of the Electric Power Engineering Centre) visited Scott Base and key field sites to identify areas in which the College of Engineering could provide solutions through research projects. Field trials will be undertaken in 2004/05.

Highlights

- **Dry Valleys Designated an Antarctic Specially Managed Area**

In June 2004, the Dry Valleys became the first officially designated Antarctic Specially Managed Area (ASMA) under the *Protocol on Environmental Protection to the Antarctic Treaty*. Thanks to the collaborative efforts of New Zealand and the United States, this vast tract of ice-free land is the first to be formally adopted by the Antarctic Treaty Parties. This is a significant achievement.

Antarctica New Zealand worked closely with the US National Science Foundation to develop the first draft of the management plan for the



Specially Managed Area. This was then submitted to the Antarctic Treaty's Committee for Environmental Protection in Madrid in June 2003.

Following further refinement of the management plan it was formally adopted by the Twenty Seventh meeting of the Antarctic Treaty Consultative Meeting in Cape Town in June 2004.

The ASMA provides a plan for managing human activities in the Dry Valleys and ensuring the protection of scientific, wilderness, ecological, educational and aesthetic values. It also includes guidelines for conducting scientific research and tourism. The management plan identifies numerous special features throughout the Dry Valleys and requires minimum sampling and research activities at or near these sites.

The Dry Valleys ASMA covers 15,000 km² of the Dry Valleys including the Taylor and Wright Valleys. Just 0.3% of the Antarctic continent is ice-free. These ice-free valleys contain cold desert soils millions of years old, unusual biological communities, special geological features, minerals and spectacular scenery.

- **Environmental Officer Exchange Visit**

During the 2003/2004 austral summer season, Antarctica New Zealand was invited by the British Antarctic Survey (BAS) to audit their abandoned bases clean-up programme along the Antarctic Peninsula. Antarctica New Zealand's Environmental Advisor, Rebecca Roper-Gee joined the six week clean-up cruise aboard the *RRS Ernest Shackleton* and observed BAS' removal of Base O, Danco Island and Base J, Prospect Point as well as a general clean up at a designated historic site on Deception Island.



Rebecca's visit included a high level exchange of information on environmental management issues, as well as a detailed audit report of the BAS clean-up programme. It is hoped there will be a reciprocal visit by the BAS Environmental Officer to New Zealand and Scott Base in 2005/2006.



Above: Environmental Advisor Rebecca Roper-Gee audited the BAS station clean up programme on the Antarctic Peninsula Courtesy of Rebecca Roper-Gee

Left: Environmental Advisor Rebecca Roper-Gee collecting litter as part of the BAS station clean up programme Courtesy of Rebecca Roper-Gee

Far Left: The McMurdo Dry Valleys were designated as an Antarctic Specially Managed Area. Andris Apse anzpcK414:03/04



*The combination of science, people
and the stunning environment is
what makes research in Antarctica
such a special experience.*

John Cockrem
Scientist

Lake Vanda, Wright Valley, Andris Apse:anzpcK414:03/04,27684T

International Representation

Antarctica New Zealand contributes to New Zealand's position as an influential Antarctic nation by developing, managing and executing a high quality Antarctic programme.

We also make a significant contribution to the international Antarctic community through active involvement in international forums and by supporting New Zealand's efforts in the Antarctic Treaty System including full participation as a consultative party to the Treaty.



Antarctica New Zealand encourages collaborative efforts

with scientists worldwide to ensure that New Zealand's Antarctic science contributes substantially to the world store of knowledge on Antarctica and the Southern Ocean.

New Zealand also puts high priority on maintaining high standards of environmental stewardship and encouraging and facilitating international commitment to the conservation of Antarctica's intrinsic values.

Logistically, Antarctica New Zealand is respected for our ability to project manage complex international collaborations such as the ANDRILL project.

Key achievements

Antarctic Treaty System Contribution

- Antarctic Treaty Consultative Meeting

The Antarctic Treaty Consultative Meeting (ATCM) is an annual opportunity for consultative parties to exchange information on issues related to Antarctica. Parties then make recommendations to their Governments on measures to promote the principles and aims of the Antarctic Treaty.

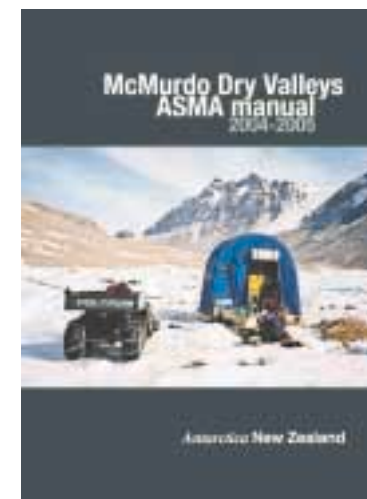
Concurrently, the Committee on Environmental Protection (CEP) meets to address issues related to environmental protection, including monitoring and reporting and remediation activities.

This year both the ATCM and CEP meetings were held in Cape Town (May 2004). One initiative discussed was Antarctic wide state of the environment reporting where New Zealand is working with Australia on developing appropriate reporting systems.

A significant achievement at the ATCM was the formal adoption of the McMurdo Dry Valleys Antarctic Specially Managed Area (ASMA2). The special status for the Dry Valleys was the result of a joint proposal by New Zealand and the United States, including a comprehensive management plan.

- Environmental Domains Analysis

An update on an environmental domains analysis being undertaken by Landcare Research was tabled at the CEP meeting in Cape Town in May 2004. Using data from the Dry Valleys to test the analysis tool, this pilot project provides a way of classifying land environments in Antarctica. It provides a



Above: The McMurdo Dry Valleys ASMA was formally adopted at the ATCM in May 2004

Left: The New Zealand delegation to the Antarctic Treaty Consultative Meeting in Cape Town May 2004.
From left: Alexandra Grace (MFAT), Rosemary Peterson (MFAT), Don McKay (MFAT, Delegation Leader), Alice Revell (MFAT), Lou Sanson (Antarctica New Zealand), Trevor Hughes (MFAT), Harry Keys (DOC)

framework for designating protected and managed sites and will assist in managing protected areas. The CEP endorsed this initiative and supported further work from New Zealand in this area.

- **Council of Managers of National Antarctic Programmes Meeting (COMNAP)**

A total of 26 Antarctic Treaty countries were represented at the annual COMNAP meeting in Brest, France in July 2003. The COMNAP meeting was combined with the meeting of the Standing Committee on Antarctic Logistics and Operations (SCALOP). The French Polar Institute hosted the meeting,



*Above: The flags of the twelve original Antarctic Treaty signatory nations fly at McMurdo Station
Mark Mitchell
anzpck310:03/04*

*Right: Malaysian scientists studied the polar eclipse from Arrival Heights
Mark Mitchell
anzpck310:03/04*

which included a range of symposiums, working groups and plenary sessions.

A focus for COMNAP was the development of a set of voluntary practice guidelines for use by National Antarctic Programmes to assist in the design of environmental monitoring programmes.

New Zealand agreed to lead further work on the draft guidelines and facilitate a meeting in

Germany before the guidelines are presented to the Antarctic Environmental Officer's Network (AEON) and COMNAP executive committee.

- **Standing Committee on Antarctic Logistics and Operations Symposium (SCALOP)**

A SCALOP logistics symposium was held in Brest in July 2003. The major discussion focused around the development of the guidelines on a Framework for Emergency Response and Contingency Planning. The guidelines were adopted by SCALOP for submission to the 2004 Antarctic Treaty Consultative Meeting.

- **Joint Committee on Antarctic Data Management (JCADM)**

The Joint Committee on Antarctic Data Management (JCADM) met in Brussels in June 2003. Antarctica New Zealand's Science Strategy Manager Dr Dean Peterson chaired JCADM. JCADM has grown over the past year from 16 to 26 country representatives. A total of 18 countries were represented at the meeting. The meeting provided updates on activities over the past year, offered expertise to new members on data management issues and created a task plan for each National Antarctic Data Centre (NADC) and JCADM for the future.

Other International Involvement

- **Malaysian International Seminar on Antarctic Research**

CEO Lou Sanson and Science Strategy Manager Dr Dean Peterson represented Antarctica New Zealand at the second Malaysian International Seminar on Antarctica, held in Penang in May, which was attended by former Prime Minister Mahathir. The seminar discussed Malaysia's role in Antarctic research and the possible establishment of a Malaysian research station on the continent. Lou Sanson presented a session about the New Zealand Antarctic Programme, while Dean Peterson gave an invited talk on climate change and the Antarctic.



- **Tourism Conference**

The International Association of Antarctic Tourism Operators (IAATO) held its general meeting in Christchurch in April 2004. Antarctica New Zealand hosted a workshop to develop a site inventory and environmental monitoring programme for landing sites in the Ross Sea region. New Zealand tabled the results of this workshop in a paper to the CEP meeting in May 2004.

Highlights

- **Antarctic Treaty Meeting of Experts on Tourism and Non-Governmental Activities in Antarctica**

Antarctica New Zealand CEO Lou Sanson, along with Trevor Hughes (MFAT) and Elana Geddis (New Zealand Embassy, New York) attended the Antarctic Treaty Meeting of Experts on Tourism and Non-Governmental Activities in Antarctica in Norway in March 2004. The meeting was attended by representatives from Antarctic Treaty Parties and Treaty System groups along with relevant non-government associations including The International Association of Antarctic Tour Operators (IAATO) and The World Conservation Union (IUCN).

Issues included concern over the increasing size of tour ships with the possible impacts of landing over 500 passengers at a time in Antarctica, and the consequences of extreme adventure activities proceeding without adequate search and rescue (SAR) cover and insurance. Australian adventurer, Jon Johanson's solo flight was put forward as a case study by New Zealand and the United States to illustrate issues around adventure tourism.

Following presentations and papers from the United Kingdom, the United States and New Zealand, the meeting agreed that all private expeditions should have insurance or SAR cover, either through legislation or as a permit condition. This was tabled and the measure adopted at the Antarctic Treaty Consultative Meeting in June 2004.



*Above: Scott Base, Antarctica
Mark Mitchell
anzpcK310:03/04*



*Away from the rest of your world,
surrounded by cold, white and black,
you discover yourself, not just as an
artist but as a human being.*

Patrick Shepherd
Education and Arts Fellow

Barne Glacier, Andris Apse:anzpcK414:03/04,27614T

Public Awareness and Education

Antarctica New Zealand runs a public awareness programme to increase knowledge of Antarctica and the Southern Ocean, and ensure New Zealand's obligations under the Antarctic Treaty System are understood.

Our work builds on the scientific and historic interest in New Zealand's activities in the Ross Sea region through publications, on-line information, educational material, lectures, exhibitions, displays and public events.

We also provide opportunities for media, artists, education and invited visitor groups to visit Antarctica in order to raise awareness of Antarctic issues.

Key achievements

- **Media Initiatives Programme**

Antarctica New Zealand had another very successful season with extensive media coverage across television, print and radio.

TV3 reporter Sharon Ferguson went to the Ice under our media initiatives programme where she gathered news and documentary footage on Antarctica New Zealand and key events personnel. This included material for two 20/20 features: one on the people who work at Scott Base and another



on our invitational artist Grahame Sydney. She also filed a series of prime time features for 3 News including stories on ANDRILL, penguin research and Christmas at Scott Base.

Extensive print coverage was generated in both the New Zealand Herald and The Press. The Herald sent their environmental reporter Simon Collins and photographer Mark Mitchell

south. Together they produced a record 29 articles along with several stunning photo essays.

John Henzell, a reporter from The Press travelled to Antarctica as a tutor for the Graduate Certificate in Antarctic Studies Course (GCAS). He filed a daily diary from the Ice and generated further articles upon his return to New Zealand.

Other media highlights included the Kim Hill show broadcast live from Scott Base, and the series of features that artist Grahame Sydney wrote for the Sunday Star Times.

- **Artists to Antarctica Programme**

Fiction writer Laurence Fearnley was chosen as the 2003/2004 Antarctic Arts Fellow and spent two weeks in Antarctica researching material for her novel which is set in and around Scott Base and at Cape Royds. The Artists to Antarctica Programme is now in its eighth year having supported 18 Antarctic Arts Fellows. Antarctica New Zealand acknowledges and thanks Creative New Zealand for their continued support and partnership in this programme.

- **Invitational Artist**

Prominent South Island painter Grahame Sydney was Antarctica New Zealand's invitational artist for 2003/2004. Grahame is best known for his magnificent landscapes of Central Otago, many of which hang in public and private collections in New Zealand and abroad. He visited Antarctica for three weeks in November 2003 where he took numerous photos and gathered material for a major Antarctic series. Grahame also wrote a series of articles detailing his experiences on the Ice and his first impressions of this vast landscape.



Above: NZ Herald photographer Mark Mitchell produced photo essays as part of the media programme Mark Mitchell anzpcK310:03/04

Left: Invitational Artist Grahame Sydney in Antarctica Courtesy of G. Sydney

- **Secondary Schools Programme**

Three students from Waitaki Boys High School in Oamaru travelled to Antarctica in December 2003. They gathered information on the historic



Above: *The Italica* in pack ice near Cape Hallett in support of BioRoss which was discussed by the Ross Sea marine strategy group. Rod Budd, NIWA anzpc:K083:03/04

Left: Jonathan White's painting of the Interior Of Shackleton's Hut At Cape Royds, Ross Island, Antarctica featured in *Ice on my Palette* Courtesy of Jonathan White

huts and the heroic era explorers in order to create an Oamaru Antarctic Heritage Trail. The selected students were also finalists in the Scott Memorial Speech Competition, which recognises the strong connections between Oamaru and Antarctica, most notably with Antarctic explorer Robert Scott visiting Oamaru on his way South. Subsequently the message telling of Scott's death was sent from Oamaru.

- **Graduate Certificate in Antarctic Studies (GCAS)**

Support for the Graduate Certificate in Antarctic Studies (GCAS) continued. In addition to providing logistics support to the 20 students and four tutors who visited Antarctica in December 2003, Antarctica New Zealand staff members also gave their time as lecturers, Board members, advisors and project supervisors.

- **Invited Visitors**

Three invited visitor groups were hosted at Scott Base during the season. The aim of the invited visitors programme is to create ambassadors for Antarctica across the government, business and science sectors.

The first group, a Ross Sea marine strategy group comprised senior research scientists, heads of marine and conservation agencies and the Prime Minister's Chief of Staff. They visited key scientific sites in November 2003, where they investigated potential courses of action for New Zealand relating to marine research and marine ecosystem protection.

The second group of invited visitors comprised the Chief Executive of Te Papa Museum, the Chief Executive for the Ministry of Economic Development, the Chief Executive of the Christchurch City Council, the Secretary to the Treasury, and the Group Manager Portfolio Management from the Foundation for Research, Science and Technology. They also visited Antarctica in November 2003. The Governor General, the Secretary of Defence, the Chief of General Staff, and the Chief of Air Staff formed the third group. They visited Scott Base in December 2003.

- **Ice on My Palette**

Information and artworks were supplied to *Ice on My Palette*, an exhibition of Antarctic art celebrating the longstanding relationship between the Royal New Zealand Air Force (RNZAF) and Antarctica New Zealand. The exhibition at the Wigram Air Force Museum in Christchurch, included works by RNZAF



official artist Maurice Conly as well as works by Antarctic Arts Fellows Austen Deans, Jonathan White, Raewyn Atkinson, Margaret Mahy and Fieke Neuman. An education programme accompanied the exhibition, drawing on the resources generated by Rebecca Thompson and Mark James who visited

Antarctica through our education and media initiatives programmes. The RNZAF has been an integral part of the New Zealand Antarctic programme since its beginning in 1956.

- **Scott Base Display**

The redevelopment of the Antarctica New Zealand / Scott Base display area within the Antarctic Visitor Attraction in Christchurch was completed and installed in time for the APEC Science Minister's meeting in February 2004. It continues to attract significantly greater visitor interest than the previous display, which had not been updated since it was installed in 1992.

- **TAE/IGY Hut Project Update**

Clothing artefacts dating back to 1956 were returned to New Zealand last season for professional conservation including construction of display mannequins. The completed mannequins and stabilised clothing were then returned to the TAE/IGY Hut in November 2003. A cabinet was designed and built for the Radio Room, which will display communications artefacts.

- **National Quilt Symposium**

Antarctica New Zealand sponsored an Antarctic quilt challenge at the national symposium held in Christchurch in September 2003. The quilts were exhibited at the Christchurch Convention Centre and the International Antarctic Centre,



where over 9000 people viewed them. Internationally respected quilter Robyn Parkinson donated her quilt titled *Sacrifice* to Antarctica New Zealand while multi award winning quilter Clare Plug won the challenge.

Highlights

- **Kim Hill Live from Antarctica**

Radio New Zealand's Kim Hill ran her Saturday Morning show live from Scott Base on 22 November 2003. During her three-hour show, Kim interviewed a wide range of staff and event personnel including Antarctica New Zealand's CEO Lou Sanson, Graham Blick from Land Information New Zealand (LINZ), seal researcher Kathryn Wheatley, Wing Commander Scott Arrell (RNZAF), John Cockrem, a penguin researcher, Gan Gonnar Winther from the Norwegian Polar Institute and photographer Andris Apse who was also working at Scott Base.



Above: Kim Hill interviewing photographer Andris Apse live from Scott Base
Mark Mitchell
anzpc:K310:03/04

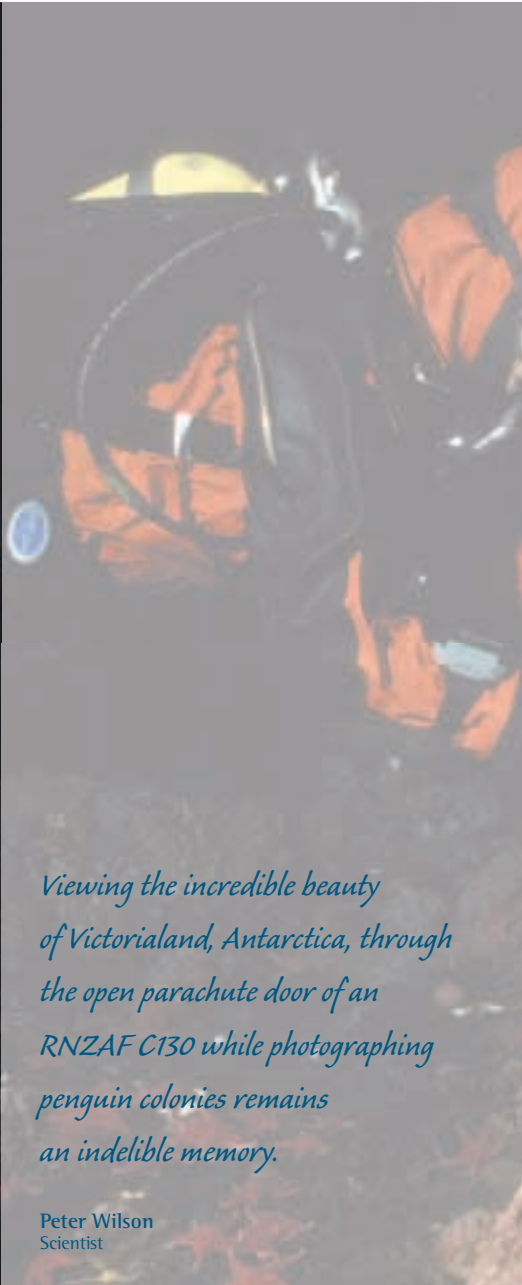
- **NCEA Resources Developed**

A major education highlight was the completion of the first Antarctic NCEA resources in December 2003. These resource exemplars are linked to the New Zealand Qualifications Framework, and include assessment tasks and classroom activities.

Ice Bound is a Year 12 Social Studies unit that investigates New Zealand's ongoing role in Antarctica with a focus on current management issues and Antarctic values. The tourism unit links to the Year 12 Geography syllabus and explores the issue of Antarctica as a tourist destination. It examines the impacts, future trends and management options from an environmental protection framework.

The resources were devised by Jane Abbiss and Murray Fastier from the Christchurch College of Education and are available on the Antarctica New Zealand website. www.antarcticanz.govt.nz

Left: Viewpoint 1 and Viewpoint 2
by Clare Plug – winner of the
Antarctic quilt challenge
Courtesy of Clare Plug



Viewing the incredible beauty of Victorialand, Antarctica, through the open parachute door of an RNZAF C130 while photographing penguin colonies remains an indelible memory.

Peter Wilson
Scientist



Divers taking samples for marine biodiversity study, Rod Budd, NIWA anzpcK081:02/03

Operations

Antarctica New Zealand operates in a high risk, high intensity, and high cost environment. The success of the New Zealand Antarctic programme relies upon a logistics system that delivers support when and where it is needed.



The Operations Group is a team of specialists who co-ordinate the support of all

programme participants in Antarctica. Our role is to ensure a safe, efficient and flexible logistic support capability, which supports initiatives in science, environmental stewardship and public awareness.

Operations in Antarctica are characterised by small inventory holdings, unreliable and intermittent transport links, high cost specialised equipment, and short time frames to carry out high value work. Supply chain costs are relatively high, and the implications of disruption to transport are significant.

Our goals are to promote continuous service improvement, with appropriate risk management processes, to minimise our environmental impact, and to be as efficient with resources as possible.



The four principal roles of the Operations Group are:

- Logistics; incorporating procurement, passenger and cargo movement by all modes of transport, warehousing and inventory management.
- Field support; including clothing, equipment, specialised vehicles and training for living and working in the Antarctic environment.
- Engineering; encompassing the provision of appropriate buildings, vehicles, and other infrastructure to support Antarctic work.
- Project management; comprising the detailed planning, risk management and resourcing of both large and small-scale activities, from four person tented field parties to multi-year multinational research projects.



Key achievements

Logistics

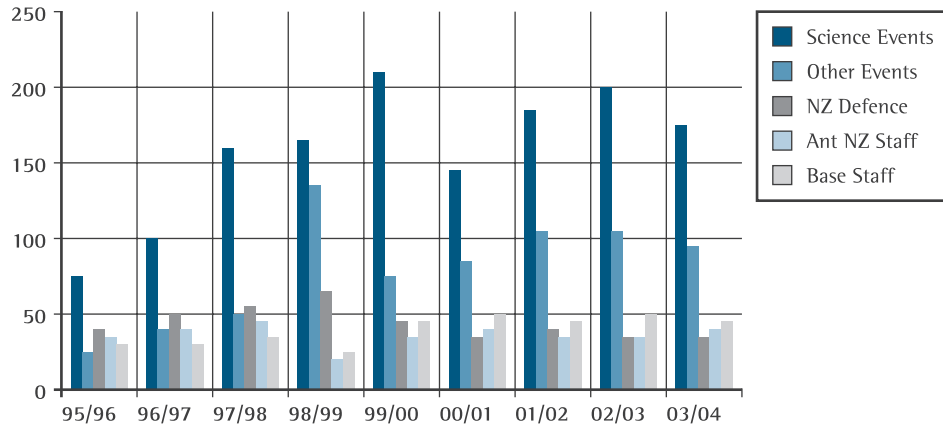
The Operations Group successfully completed delivery of the 2003/2004 Antarctic season. Major achievements include the deployment of 370 personnel to the ice for science, education, environmental, public awareness and support activities. Major logistics capabilities employed included 310 helicopter flight hours, 67 Twin Otter flight hours and 15 RNZAF C-130 flights between Christchurch and Ross Island which moved 371,780 lbs of cargo, along with United States Coast Guard Icebreaker support. Fieldwork took place in the local environs of McMurdo Sound out to 720km from Scott Base. From a health and safety perspective with no serious injuries or loss or damage to equipment, yet again another excellent season was achieved.

*Above: Completed foundations for the Hillary Field Centre
Murray Mitchell
anzpcK425:03/04*

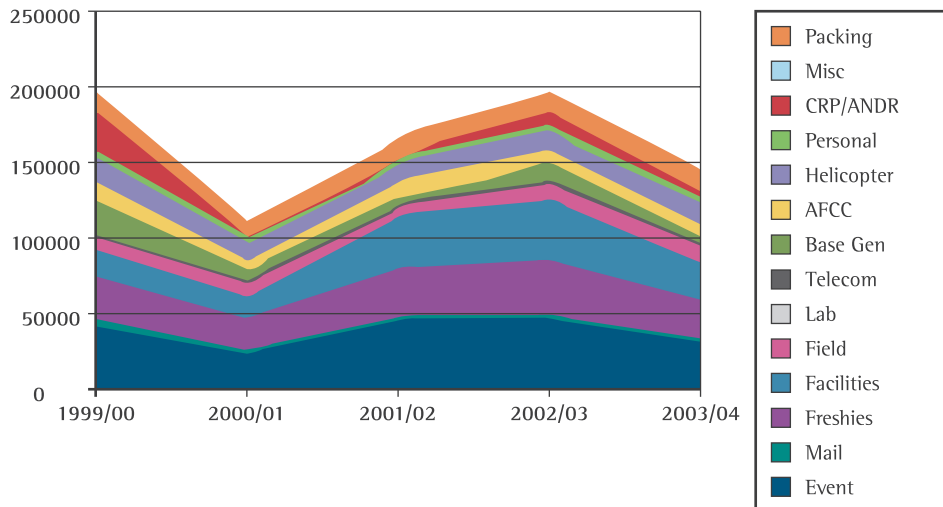
*Left: RNZAF Hercules on the ice runway
Mark James, RNZAF
anzpcK230:03/04*

*Bottom Left: This scientific camp at White Island was supported by Antarctica New Zealand.
Courtesy of R. Roper-Gee*

Personnel to Antarctica



Air Cargo (lbs)



- **Field Support**

The Latitudinal Gradient Project (LGP) completed its first season in the northern Ross Sea at Cape Hallett, after more than 4 years of planning. This is the largest deep field camp ever supported by Antarctica New Zealand and was very successful, based on the feedback received from scientists. LGP support included significant resources negotiated with the Italian Antarctic Programme as part of the joint logistics arrangements. The New Zealand Defence Force also completed the first ever airdrop of supplies by the RNZAF in Antarctica in support of LGP.

- **Engineering and Facilities Development**

The first phase of the Hillary Field Centre project was completed, with the construction of the platform and foundations for the building. This project necessitated the single largest shipping requirement ever undertaken for the programme in conjunction with the United States Antarctic Programme.

In a departure from previous projects, a private contractor has been engaged to build the external structure of the Field Centre. Leigh's Construction, a Christchurch based company, will have a team of nine at Scott Base during the 2004/2005 summer season erecting structural steel and cladding.

Once the outer shell is complete, Antarctica New Zealand staff will fit out the interior over the 2005 winter, with a projected completion date of August 2005. The task of shifting the stores from other buildings and containers into the Field Centre will then commence, so that the facility is fully operational and ready to start a new season in October 2005.

Once operating, a demolition programme will start to remove a number of old storage facilities around the base, making the base much more energy efficient.

The existing hangar will then be reconfigured internally for use as a vehicle storage area in winter, and potentially a helicopter hangar in summer.

- **Project Management**

The Cape Hallett clean-up project was an outstanding success with 22 tonnes of debris and demolished building materials staged for removal in the 2004/2005 season. The New Zealand Defence Force team deployed to Cape Hallett made a significant contribution along with the Antarctica New Zealand staff on site.

Highlights

- **Storm Hits Scott Base**

The worst storm in 12 years hit Scott Base on 16 May 2004, damaging buildings and equipment. No one was injured in the storm that barraged the



station with winds up to 200 km/h. However the first priority of Scott Base Manager Dan Mathers was to ensure everyone's safety.

The fierce winds blew over containers and blasted the hangar door

in. Several windows were broken in vehicles and roofing iron was torn off. The station's ten winter staff began work clearing and repairing the damage almost immediately.

Due to the loss of the hangar door, the first task was to clear all the snow that had accumulated within the hangar. This took the winter-over staff nearly two weeks in -20 degrees C temperatures and 24 hour darkness, clearing snow from every shelf and corner of the building, some of it up to six feet deep.

The roller door also had to be rebuilt and has now been reinstalled, returning the interior of the building back to normal. What was left of the damaged section of roof has been removed, and all the exposed edges of the remaining roofing iron have been strengthened and temporarily held down. New roofing materials will arrive to restore the roof during the 2004/2005 season.

- **RNZAF Airdrop in Antarctica**

In December 2003 an RNZAF C-130 from 40 Squadron successfully completed an airdrop to the LGP camp site at Cape Hallett, one of the few times this capability has been used by New Zealand in Antarctica. The purpose of the drop was to re-supply the camp at Cape Hallett and to deploy bulky and heavy items to be used for the clean-up effort later in the season.

The professionalism of 40 Squadron was once again demonstrated with the loads landing very close to the drop zone marker, and this proved to be a significantly more efficient way of delivering these items than by Twin Otter aircraft.



*Top: RNZAF airdrop of supplies for the LGP camp
Gus McAllister/Rachel Brown
anzpc:K414:03/04*

*Above: Reflection of RNZAF Hercules while completing the airdrop to the LGP campsite
Mark James, RNZAF
anzpc:K230:03/04*

*Left: Vehicles had windows blown in during the May 2004 storm
Courtesy of Scott Base winter over crew*



*Even after more than 20 trips to the
ice - it's still a buzz (and a privilege)
to be able to work there*

Dr Steve Wood
Scientist

Craig Potton K394a:00/01

ANDRILL

Antarctic DRILLing (ANDRILL) is a multinational project between New Zealand, USA, Germany and Italy. The project aims to improve understanding of Antarctica's role in Cenozoic (65 million years ago to present) global environmental change, through stratigraphic drilling of marginal sedimentary basins in the McMurdo Sound area. Through analysis of the sediment cores, scientists hope to better understand Antarctica's climatic, volcanic and tectonic history.

Antarctica New Zealand is the Project Operator for ANDRILL with overall responsibility for managing and facilitating the operational and logistics support required for the drilling process.

A geophysical survey programme begun in 2001 continued in the 2003/2004 season to identify and document the extent of sedimentary basins and to correlate the planned drilling targets to existing drillcores from previous drilling projects such as the Cape Roberts Project. Two drill sites in McMurdo Sound have been selected and drilling is due to commence in the 2006/2007 summer season. Once the cores are recovered significant scientific work will begin to integrate existing and new geological information into climate, ocean, glaciological and tectonic models to help better understand the influence of Antarctica on global environmental change.

Key Achievements

- **Two ANDRILL Drill Sites Confirmed**

The ANDRILL Science Committee (ASC) had proposed to drill four sites in the McMurdo Sound area in the first phase of drilling. An ANDRILL International Science Review Panel met in August 2003 and recommended that two of the four sites be proceeded with. They are the McMurdo Ice Shelf (MIS - near Williams Field) and Southern McMurdo Sound (SMS - South East of Butter

Point) sites. The ANDRILL Operations Management Group (AOMG) confirmed their support of the two sites - to be known as the ANDRILL McMurdo Sound Portfolio - at a meeting in December 2003. The plan is to drill MIS in summer season 2006/2007 and SMS in 2007/2008. The International Review Panel

also encouraged the ASC to continue investigating further drill sites of high scientific promise and carry out site survey work to determine the best locations.

- **McMurdo-ANDRILL Science Implementation Committee (MASIC) Established**

National Antarctic science programme managers have established the McMurdo-ANDRILL Science Implementation Committee (MASIC) that will ensure that the goals of the two approved sites are achieved, and reported, and that the recovered cores are properly stored and managed. MASIC is also tasked with ensuring that each contributing country's scientific involvement in ANDRILL approximates the proportion of their funding commitment to the operations and logistics budget. MASIC comprises two representatives from each country who are responsible to their respective national Antarctic science programme managers.

- **Panel to Develop Scientific Measurements Protocol**

The ANDRILL Science Committee has created an ANDRILL Scientific Measurements Panel (ASMP) who have responsibility for determining how recovered core will be handled and archived for future scientific study. Chaired by Dr Rich Jarrard of the University of Utah the panel will also provide advice on data handling, storage and distribution.



*Above: The K001 seismic survey campsite in support of the ANDRILL project
Courtesy Andrew Clifford*



Above: The ANDRILL Seismic Survey Team (Event K001W) with the Governor General at the ANDRILL seismic survey site in McMurdo Sound.
Courtesy Lou Sanson:03/04

- **ANDRILL Operations Management Group (AOMG) Meeting**

The AOMG met twice in 2003 - in Brest, France in July and in Christchurch, New Zealand in December. The main outcomes of these meetings were:

- Agreement to delay the first drill season by one year, to austral summer 2006/2007, primarily because development of the drill system required more time than originally thought.
- Project partners agreed that they would contribute to operations-logistics in the following proportions: USA - 50%; New Zealand - 25%; Italy - 18.5% and Germany 6.5%.
- AOMG agreed with the recommendation of the International Science Review Panel to support just two drill sites, MIS and SMS, in the first phase of drilling. This phase is to be known as the McMurdo Sound portfolio so as to distinguish it from probable later portfolios in other areas of Antarctica.
- To approve the purchase of an UDR-1200 drill rig from UDR Ltd, Brisbane Australia, at a cost of approximately \$A1 million.

Highlights

Project Management

During the 2003/2004 reporting period Antarctica New Zealand's main focus as Project Operator has been in three main areas: drill system development; evaluation of the Cape Roberts Project (CRP) equipment, leading to either refurbishment or replacement; and formalising the administrative and financial aspects of the project.

- **Drill System Development.** The new Drill System will have seven major components, the main one being the drill rig. The priorities for Jim Cowie, Project Manager, Alex Pyne, Drilling Science Coordinator (Victoria University Wellington) and Webster Drilling Ltd (Wellington) have been to plan and prioritise drill system development and then to research the international drill market and select the best rig for ANDRILL. An Australian built UDR-1200 drill rig was selected and an order placed in January 2004. The new drilling system is designed to recover high percentages of hard and soft sediment core from depths of 1000m below the sea floor with a potential drilling rate 2-3 times faster than the CRP. Delivery of the drill rig is expected in October November 2004.
- **Utilisation of CRP Equipment.** In February 2004 most of the remaining CRP equipment still stored at Scott Base was shipped back to Christchurch either for disposal or refurbishment. The Main Camp container units will be refurbished for ANDRILL (in 2005) while a new Drill Site Camp and Laboratory complex will be built at Antarctica New Zealand and for shipping in January 2005. Jonathan Leitch, a veteran Scott Base engineer has been contracted to do this work.
- **ANDRILL Administration and Finance.** ANDRILL is proving to be a more complex project, both operationally and scientifically, to administer and fund than CRP. Bedding down the administrative and financial aspects of the Project has been occupying much of the Project Manager's time. Support and specialist help from the CEO and staff of Antarctica New Zealand has been important in making progress. The partners to the Project aim to sign an ANDRILL Record Of Understanding (RoU) at the next AOMG meeting.



Courtesy Craig Potton



*Antarctica is perpetually fresh,
challenging, and exhilarating.
The grandeur of life and the
incessant struggle for survival is
starkly apparent, making the study
of wildlife here a biologist's dream.*

Murray Potter
Scientist



Antarctica - it IS a life changing experience, even if you try to fool yourself that it won't be...

Debs Martin
GCAS Antarctic Scholarship Winner

Victoria Glacier, Dry Valleys, Andris Apse:anzpck414:03/04,27633T

Corporate Activities

Antarctica New Zealand was established under *The New Zealand Antarctic Institute Act 1996* and is the Crown Entity responsible for developing, managing and administering New Zealand's activities in Antarctica and the Southern Ocean, particularly the Ross Sea region.

Under the *Public Finance Act 1989*, Antarctica New Zealand reports to the Minister of Foreign Affairs and Trade. This occurs through an annual Statement of Intent, four-monthly Statements of Service Performance and an Annual Report. We negotiate a separate Purchase Agreement with the Minister which provides the basis for the Minister's agreement to provide funding.

Corporate activities are focused on delivering service excellence to our clients, the majority being the internal work groups within Antarctica New Zealand.

Key achievements

- **Risk Management**

Antarctica New Zealand operates in a high-risk physical environment. Remoteness and potentially extreme weather conditions are inherent in all the work we do within the Ross Sea Region. Risk management is the



responsibility of all people working with Antarctica New Zealand and is integrated into all procedures, standards, work plans and business plans. It is not treated as a stand-alone process.

The monthly operating review system; health and safety system; specific business reviews and six monthly compliance reviews are Antarctica New Zealand's primary mechanisms to identify, mitigate and manage risk.

In May 2004 our risk management procedures were put to the test when a stronger than usual winter storm occurred while two people were away from Scott Base in field accommodation. This storm was the worst since 1992 and produced the highest wind speed at Scott Base since 1973. A subsequent review of the event confirmed that existing policies and procedures were appropriate and had been fully complied with. Otherwise, 2003/2004 was another safe season with no major accidents or incidents reported.

- **Human Resources and Organisational Development**

People are the key to Antarctica New Zealand's success both to date and in the future. This includes permanent staff; fixed term and contract staff; seconded staff from the New Zealand Defence Force and our many strategic partners in Government, the science community and other national Antarctic programmes.

- **Investors in People**

Improving performance requires a planned approach to setting and communicating organisational goals and developing people to meet those goals. The Investors in People standard provides a benchmark for Antarctica New Zealand's organisational development strategies.



Above: Summer staff at Scott Base flag pole December 2003. Mark James RNZAF anzpc:K230:03/04

Left: The storm in May tested health and safety procedures Courtesy Scott Base winter over crew



Above: Antarctica New Zealand staff attending the leadership training programme
anzpc:A400:04

Over the last 12 months a number of projects aligned to the Investors in People standard were initiated by Antarctica New Zealand to improve the quality of business planning, operating reviews and staff development processes.

In August 2004 an independent assessment gauged the effectiveness of the changes so far. It confirmed that Antarctica New Zealand is well along the way to accreditation. Areas for improvement have been included in the organisational development plan for the coming year.

- **Organisational Sustainability and Capability**

A series of capability building initiatives are also underway which complement our Investors in People project. Initial work is focused on developing a systems-based leadership and accountability model for the organisation. Following a leadership training programme, work is underway on building a common set of aspirational values to guide us towards achieving our organisational vision.

Financial

Antarctica New Zealand's operating surplus for the year ending 30 June 2004 was \$1 million, largely due to the inclusion of Antarctica New Zealand's share of the ANDRILL joint venture. The surplus due to ANDRILL of \$0.7 million arises from dedicated Government funding of \$0.8 million for the year, less Antarctica New Zealand's share of operating expenditure of \$67,000. Joint venture funding is mainly being applied to capital expenditure, which will start depreciating once drilling commences in 2006/2007.

- **Revenue**

Total income for the year of \$9.7 million is \$0.7 million higher than forecast, due to additional Government funding being provided to the ANDRILL joint venture; higher than anticipated interest income (as a result of the timing of cash flows during the year); and other income (mainly one-off items and cost recoveries).

- **Operating Costs**

Total operating expenditure for the year of \$8.7 million is in line with budget.

- **Capital Expenditure**

Fixed asset additions of \$3.9 million include \$3.3 million costs for the new Field Centre at Scott Base, which is scheduled for completion in October 2005. In addition, the ownership of the buildings at Scott Base and land at Christchurch airport (used for high frequency radio transmission to Antarctica) were transferred from the Treasury to Antarctica New Zealand at a net book value of \$3.5 million on 1 March 2004.

- **Reserves**

During the year fixed asset additions funded by the Government, together with the operating surplus for the year, increased closing reserves to \$16 million. Included in closing reserves is the financial surplus on the ANDRILL joint venture of \$1.3 million (\$0.7 million from the current year), which will be carried forward to meet Antarctica New Zealand's share of future ANDRILL expenditure.

- **Information Management**

The Information Management Systems (IMS) project, which was rolled out last year in the Christchurch office, was successfully implemented at Scott

Base during the 2003/2004 summer season. All Scott Base staff received training in core purchasing and inventory modules prior to deployment to Antarctica.

A cargo tracking system was successfully designed and implemented during the year and is already providing efficiencies in tracing the location and status of items destined for Scott Base.

Communication links between Christchurch and Scott Base were further improved during the year with the introduction of frame-relay technology.

Highlights

Our People

Mike Mahon, the IT and Science Administrator, has been supporting the New Zealand Antarctic programme's technology systems for a number of years. Initially he started as a contract computer engineer when the network



consisted of just two Apple Macintosh computers and a laser printer. Now the computer network extends to Scott Base and comprises seven servers, over fifty work stations and various scientific experiments.

Mike first wintered in 1993, then again in 1997 as the science technician and winter manager. Back then, emails and data were transmitted several times a day back to New Zealand via dial-up modems. Now, a full time satellite data

link connects Scott Base to the rest of the world at speeds of up to 128 Kbps. This enables staff and event personnel to access email, web-based resources and send scientific data anywhere in the world.

Mike was appointed to his current role at the end of the 1997 season. With over 1200 days "on Ice" under his belt, Mike has also been one of the summer base managers and a Government ship representative. Management of the science technicians and long term experiments at Scott Base and Arrival Heights are an additional part of his role.

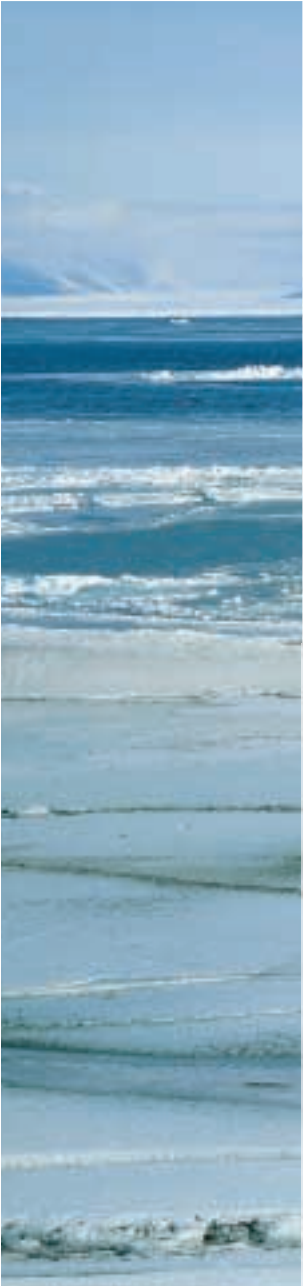
For Mel Lindroos, Antarctica New Zealand's recently appointed Human Resources Advisor, the induction of new employees into the organisation is a key part of her role. A major induction initiative each year is the Pre-Antarctic Training Course (PATC) for the 50 or so new Scott Base staff prior to their deployment to Antarctica for the coming season. Also included in our induction processes are those external personnel who are a vital part of our team on the Ice, such as the New Zealand Defence Force and key suppliers who spend the summer season helping maintain Scott Base.

The quality of the induction process is a key contributing factor to the success of a staff member's employment with Antarctica New Zealand. Feedback from PATC participants and the high rate of returnees each year are testimony of the success of the induction programme.



*Above: The New Zealand Fire Service provides training to Scott Base staff as part of PATC
John McCombe
anzpc: A401:03/04*

*Left: Mike Mahon – IT and Science Administrator for Antarctica New Zealand
Courtesy M. Mahon*



Politically, legally, scientifically and environmentally, Antarctica has to be one of the most fascinating and absorbing regions on the planet.

Neil Gilbert
Environmental Manager, Antarctica New Zealand

Ross Island, McMurdo Sound from Cape Royds, Andris Apse:anzpcK414:03/04,27618T

Statement of Objectives and Service Performance for the year ended 30 June 2004

Performance Achieved Against Agreed Measures, Standards and Costs for all Outputs

The overall requirement of Antarctica New Zealand is to deliver Foreign Affairs and Trade Non-Departmental Output Class 01 Antarctic Research and Support:

Description

Advice on, and the development, management and execution of New Zealand activities in respect of Antarctica and the Southern Ocean, in particular the Ross Dependency.

The outputs purchased include:

- Ensuring an effective New Zealand presence in the Ross Dependency through the safe, effective operation of Scott Base, and an efficient and flexible logistic support capability, which is appropriately resourced to support New Zealand's objectives in Antarctica, including supporting initiatives in science, education, public awareness and environmental stewardship.
- Planning, co-ordination, facilitation and logistic support for an international quality science programme based on a long-term strategic plan for New Zealand science in Antarctica and the Southern Ocean, in particular the Ross Dependency.
- Environmental stewardship for New Zealand activities Antarctic-wide and, in particular, in the Ross Dependency and the Ross Sea region, including state of the environment reporting and management and monitoring of environmental impacts and associated logistical support.
- Public awareness of Antarctica and the Southern Ocean, including publications and events aimed at public awareness, and logistics support for associated visits to Antarctica.
- Selection process, logistics programme, and audit that supports quality education programmes. Encouraging analysis, debate and scholarship related to Antarctic and Southern Ocean issues.
- Proactively seeking to ensure that private sector activity in Antarctica is fully consistent with Government objectives in the region.

- International representation in respect of scientific and other programme level New Zealand activities in Antarctica and the Southern Ocean.
- Providing input into the development of New Zealand Antarctic policy.

Quantity, Quality and Timeliness

- Outputs will be delivered in accordance with the priorities and policy directions established by the Government.
- Outputs will be delivered by agreed target dates and as specified in the Purchase Agreement between the Minister and the New Zealand Antarctic Institute (NZAI).
- At least 80% of affected parties will rate as very good or better the consultation processes and final standard of NZAI's policy advice, planning and support services, rules and procedures, publications and international representation.

Quantitative Benchmarks

Performance Measures	Performance Standards	
	2003/2004 (estimated)	2003/2004 (actual)
Number of person-days in the Antarctic supported for science activities	at least 6,500 days	7,211 days
Number of person-days in the Antarctic supported for non-science activities	at least 1,000 days	1,754 days

1.1 Operational Presence in Antarctica

Purchase Agreement Outcomes

- Effective management of Scott Base and the capability to support science, environmental, public awareness and education projects in the field throughout the Ross Dependency.
- Support of Antarctic Heritage Trust (AHT) historic huts conservation project.
- Scott Base and all events operated within established risk management framework.

Costs

Full year estimate: \$7,835,217

Expenditure: \$7,330,038

Activity	Performance Measures	Achievement
<p>Scott Base Management Operation of Scott Base as a support facility for science and other approved activities.</p>	<p>Year-round resident New Zealand Government Representative.</p> <p>Accommodation capacity for 85 personnel, including catering, storage and ablution facilities.</p> <p>An all terrain vehicle fleet replaced in accordance with the approved capital plan.</p> <p>Fixed and rotary wing air support.</p> <p>Appropriate laboratories, offices, and other work areas, with user requirements defined by client groups.</p>	<p>Year round representation has been provided, through designation of a resident Scott Base Manager.</p> <p>Provided. The maximum population at Scott Base during the 2003/2004 season was 85. Ten personnel are presently wintering over.</p> <p>Provided. Two vehicles sustained storm damage during the winter and will be out of service until replacement parts are sent at WINFLY in August 2004.</p> <p>Provided through the joint New Zealand/United States logistics pool. New Zealand's contribution of fifteen C-130 flights between Christchurch and Ross Island was completed on 19 December 2003. Rotary wing support to field parties commenced 10 November and was completed 30 January 2004.</p> <p>Laboratory and office spaces at Scott Base and Arrival Heights were fully operational throughout the reporting period. Field laboratories based in sled mounted relocatable buildings were provided during summer.</p> <p>The Arrival Heights laboratory sustained two broken windows during a major storm in May. No experiments were affected.</p>



1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
<p>Capture opportunities to enhance efficiency and accountability through procedural/system reviews.</p>	<p>Telecommunication capabilities, including phone, data, and radio. Low power phone and data coverage to include field sites where economic and technically feasible.</p>	<p>Telephone, fax and data services between New Zealand and Antarctica were fully operational throughout the year. Very high frequency radio networks were established for the Season by 10 October 2003. High frequency radio service for deep field events commenced 31 October 2003 and was supplemented for the first time this year with Iridium satellite telephones.</p>
	<p>Implementation of the 10 year capital plan and a further 10 year capital forecast.</p>	<p>On-going. The major focus during the year was the heated field store – see below. Other capital improvements include re-routing sewer main, fire protection upgrades and routine replacement of plant and machinery.</p>
	<p>Initiation of project to build new heated field store.</p>	<p>Site preparation and foundations were completed in February 2004. All materials have been transported to Scott Base for resumption of construction in October 2004.</p>
	<p>Upgraded preventative maintenance system (emphasis on fire control).</p>	<p>During the year research was undertaken into the preventative maintenance systems operated by other Antarctic programmes. This information will be used to inform development work in the next year.</p>
	<p>Arrival Heights facility redevelopment.</p>	<p>Deferred until FY 2004/2005 to allow completion of the heated field store.</p>
	<p>Environmental Management System compliance.</p>	<p>Nine Corrective Actions were raised in the Environmental Management System over the 2003/2004 season. These related to fuel spills (3), an accidental sewage release, unpermitted entries to protected areas (3) and collection of rocks without approvals (2). Field audits were conducted on eight field events, and overall compliance was high. A total of fifteen variances from Preliminary Environmental Evaluations (PEE) were identified for the reporting period. Most were minor or related to poor reporting. Two related</p>

1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
<p>Risk Management Provide a safe working environment in Antarctica to enhance personnel health and safety, environmental compliance, and protect assets.</p> <p>Logistics Capability Logistics and supply support for approved New Zealand activities in the Ross Sea region and Southern Ocean.</p>	<p>Computerised inventory and purchasing systems implemented in accordance with the Information Management System (IMS) project.</p> <p>Review of operational procedure documentation annually.</p> <p>Review of recruitment and personnel selection and conditions of service annually.</p> <p>Bi-annual statutory compliance reviews, and annual review of risk management procedures.</p> <p>Annual review of Risk Management Strategy.</p> <p>Annual risk assessment and management plan for all events in Antarctica.</p> <p>All staff and event personnel understand and participate in established risk management processes.</p> <p>Fifteen C130 flights as a contribution to the joint logistics pool (airlift and sealift) between Christchurch and Ross Island operated pursuant to the existing New Zealand/United States Government to Government arrangement.</p>	<p>to animal ethics which were considered sufficiently serious for follow up with the Event Principle Investigators. More stringent checks on ethics approvals are planned for the 2004/2005 season.</p> <p>Inventory and purchase requisition systems have been implemented.</p> <p>Review of publications and procedures was completed in August 2004 in readiness for the start of the 2004/2005 Season.</p> <p>Review of Scott Base recruitment was completed in August 2004 following completion of 2004/2005 Season selection process.</p> <p>Completed on schedule for the six month periods to September 2003 and March 2004.</p> <p>Completed.</p> <p>Completed for the 2003/2004 season. No risk issues affected events that were not identified in the management plan.</p> <p>Risk management processes were taught at pre-deployment training in Christchurch, and again at Scott Base on deployment.</p> <p>Provided – no incidents to report.</p>

1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
Field operating support in the Ross Sea region.	Efficient movement of passengers to and from Antarctica, including provision of clothing, and medical screening to required standards.	Provided – no incidents to report.
	Efficient movement of all cargo requirements including hazardous materials in accordance with pertinent regulations.	Provided – no incidents to report.
	Effective management of the New Zealand/United States/ Italian logistics pool with international parties.	<p>US and Italian resources have assisted with the deployment of personnel and equipment to Cape Hallett for the Latitudinal Gradient Project (LGP). Numerous other co-operative efforts in both science and support areas have taken place with both programmes.</p> <p>Meetings have already taken place with the US and Italian programmes to co-ordinate collaborative work for the forthcoming season.</p>
	Programme for research and development in new field equipment.	In progress. A competitive tender process for a five year clothing supply contract is now planned for FY 2004/2005.
	Field food, clothing and field equipment appropriate to the environment to be worked in.	Provided. Storm damage to the storage hangar at Scott Base in May has delayed preparation of field equipment for the start of the 2004/2005 season and additional staff will be sent to Scott Base at WINFLY in August to assist.
	Reliable field communications including VHF and HF radio, and satellite phone.	Provided. Iridium satellite phones were successfully brought into service during the year to improve the reliability of deep field communications.
Search and rescue support including joint operations with other national programmes.	New Zealand/United States joint exercises of both the command and control structure, and field Search and Rescue (SAR) teams took place during the year. This joint training with the US continued over the winter period with an Antarctica New Zealand employee acting as joint SAR team leader.	



1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
	<p>Specialised training both in New Zealand and Antarctica, including fire fighting, field training, diving operations, handling of hazardous materials, and small boat operations.</p>	<p>Specialised training for staff occurred pre-season in Christchurch and Antarctica. Fire-fighting and hazardous materials response training was carried out jointly with the US in Antarctica.</p> <p>Specialised training for the 2004/2005 season is being reviewed for content and applicability following feedback received from last year's staff.</p>
Historic huts conservation.	<p>Safe deployment and recovery of field events to required locations.</p> <p>Agreed level of logistics support to Antarctic Heritage Trust (AHT) to achieve hut conservation.</p> <p>Represent Antarctica New Zealand on the Board and Executive Committee of the AHT.</p>	<p>Completed. No incidents to report.</p> <p>One visit by the AHT took place during the 2003/2004 season.</p> <p>All AHT Executive Committee meetings have been attended by an Antarctica New Zealand representative.</p>
Co-ordination of total logistics support to authorised science and non-science events, throughout the Ross Sea region.	Review event requirements and develop/implement a supportable logistics plan.	Completed for the 2003/2004 season.
Effective delivery of support services to meet user requirements, in an effective manner to conserve organisational resources.	Operate within budget, and meet reasonable user requirements as measured in event debrief scores of seven or better.	Completed within budget. Event debrief scores averaged 9 out of 10 for service delivery satisfaction.
<p>Infrastructure Development</p> <p>Construction of a combined warm store and field support centre.</p>	Within budget (approx \$3.5 million). Facility operational October 2005.	Following an independent review of the original design process, subsequent revisions to the construction design, and a competitive tender process, the original budget was increased to a maximum of \$4.7 million. Construction is progressing according to plan and within revised budget.
Construction of a replacement Arrival Heights laboratory.	Within budget (approx \$180,000). Facility operational January 2005.	Deferred 12 months to allow completion of the heated field store.

1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
Wet laboratory extension.	Within budget (approx \$150,000). Facility operational October 2004.	Deferred pending a decision on participation with the McMurdo Sound Long Term Ecological Research (LTER) project with the US.
Fire protection enhancements.	Within budget (approx \$640,000). Commissioned October 2007.	Work in progress.
High frequency radio replacements.	Within budget (approx \$325,000). Procurement completed June 2005.	Work in progress.
Crater Hill radio equipment building replacement.	Within budget (approx \$175,000). Facility operational March 2004.	Deferred 12 months to allow completion of the heated field store.
<p>ANDRILL Project As Project Operator provide a project management function, responsible for planning, budget, on ice operations and environmental oversight, on behalf of project members (New Zealand, United States, Italy, Germany).</p>	<p>Project Record of Understanding signed July 2003.</p> <p>Project plan and budget finalised July 2003.</p> <p>First drill season 2005/2006.</p>	<p>Agreement was not reached on a Record of Understanding at the ANDRILL Operations Management Group (AOMG) meeting at Brest in July 2003 or the AOMG meeting in Christchurch in December 2003.</p> <p>Further discussion took place at the AOMG meeting in Bremen July 2004, and the revised document is now scheduled for signature in October 2004.</p> <p>In late August 2003 the ANDRILL International Science Review Panel met in Washington and recommended the first phase of the programme be reduced to a two-site project.</p> <p>The Project plan and budget was revised and tabled at the last AOMG meeting in July 2004. These documents form part of the Record of Understanding for signature in October 2004.</p> <p>A one year delay has been caused by the inability to deliver the new drill rig in time for the January 2005 resupply vessel.</p>

1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
Management of drilling research, equipment development and implementation.	Drill rig development Memorandum of Understanding signed March 2003, releasing funds for drill rig development over the 2003/2004 financial year.	The Drill System Memorandum of Understanding was signed by New Zealand, the United States and Germany. Funding contributions were received in full from New Zealand (US\$264,000) and Germany (US\$200,000). US\$721,000 of the total US\$1 million committed by the United States has been received during the 2003/2004 financial year. Confirmation of Italian involvement, including a contribution to drill system development, will require a revision to the Memorandum of Understanding to be drafted to formalise their involvement.
<p>Latitudinal Gradient Project (LGP) Procure and deploy an operational field camp for two seasons, including vehicles, to Cape Hallett, to support 15 scientists.</p>	Drill rig completed and ready for shipping to Antarctica January 2005.	The timeline as originally envisaged has not been able to be met due to the late release of the German and US money, and the inability of the manufacturer to deliver within the necessary timeframe. Air transport of the system has been confirmed as too expensive and would require modification of the drill rig. As a result the first drill season has been delayed one year.
<p>Quality and Environmental Management Systems Work will continue to enhance service delivery, environmental compliance, occupational safety and health, and information accessibility.</p>	Camp deployed no later than 15 November 2003. Scientists supported through until January 2004.	All science parties and Cape Hallett remediation teams successfully supported, with the camp packed up and stored for the winter on site in February 2004.
	Compliance with the Antarctica (Environmental Protection) Act, and the Occupational Safety and Health Act.	Nine Corrective Actions were raised in the Environmental Management System over the 2003/2004 season. Field audits were conducted on eight field events, and overall compliance was high. Compliance throughout the reporting period with health and safety legislation.
	Meeting the requirements of the Environmental Management System consistent with the AS/NZ ISO 14001:1996.	Requirements met fully.

1.1 Operational Presence in Antarctica *continued*

Activity	Performance Measures	Achievement
Ensure the integrity of planning information by implementing the event planning, preventative maintenance and other relevant components of the IMS project.	Meet the implementation deadlines in accordance with the IMS project.	Inventory and requisition modules are operational. Preventative maintenance and event planning modules are under development.
<p>Surveying, Mapping, Charts and Hydrography Input to LINZ priorities for mapping, hydrography and geodesy work in the Ross Dependency.</p>	Science, operational and safety priorities for mapping, hydrography and geodesy work are provided to LINZ.	Co-ordination with LINZ is ongoing. Mapping, hydrography and geodesy priorities have been passed as required.



1.2 Science

Purchase Agreement Outcomes

- New Zealand Antarctic science makes a significant contribution to the world store of scientific Antarctic and Southern Ocean knowledge, in particular, an increased understanding of Antarctic ecosystems and predicting effects of global change.
- International profile through increased quality science and collaborations with international partners and SCAR programmes.
- Research in and related to Antarctica is recognised as a valuable part of New Zealand's science investment by MoRST, FRST and research providers, with the total Antarctic science funding amount above its current level.
- New Zealand is the lead country for at least one large-scale international project.

Costs

Full year estimate: \$319,232

Expenditure: \$320,195

Activity	Performance Measures	Achievement
<p>Science Management and Facilitation Provide strategic direction and planning for New Zealand Antarctic and Southern Ocean science.</p>	<p>Develop a 3-5 year science plan, in consultation with funders, providers and users, which will direct research proposals for the 2003-2004 bidding round.</p> <p>Publish a new Antarctic and Southern Ocean Science Strategy document (2003-2008) in November 2003.</p> <p>Publish a Southern Ocean Strategy (2003-2008) in June 2004.</p> <p>Conduct an independent review of New Zealand Antarctic science looking at the last 5 years.</p>	<p>The science plan was made available in August 2003 for use in the 2003-2004 bidding round and subsequently incorporated into the published Science Strategy (see below).</p> <p>The final draft was finished in March 2004 and published in August 2004.</p> <p>This document has been put on hold pending the outcome from the OAC sub-committee on Southern Ocean Strategy.</p> <p>Work has commenced to gather background data on science publications and other outputs. A questionnaire is being created to present to all scientists involved over the past 20 years and a Chair for the review panel has been selected. Because of the extended scope of work for the project and the limited availability of key personnel, the review is now forecast to be completed by June 2005.</p>
<p>Manage a process for the 2004-2005 to 2006-2007 Antarctic Seasons "Application for Support" round for Antarctic and Southern Ocean science, and initial selection of acceptable projects using the Antarctic Research Committee.</p>	<p>Create Letters of Agreement and Memorandums of Understanding with individuals and institutes of science providers for the 3 year period of support.</p>	<p>Antarctic Support Agreements were sent out to all science providers at the beginning of the season for the 2003/2004 summer. Notification of science review approval for future seasons was sent to science providers in December 2003 and February 2004. A new Antarctic Support Agreement has been drafted and will be sent out in September 2004 for the 2004/2005 season.</p>

1.2 Science *continued*

Activity	Performance Measures	Achievement
	Successful completion of the application for support selection process by February 2004.	A total of 37 proposals were received and reviewed by national and international researchers. The Antarctica New Zealand Board have agreed to the Antarctic Research Committee recommendations to support 34 of the proposals for the 2004/2005 season.
Provision of logistic support to science projects in Antarctica.	All approved science projects are appropriately supported in Antarctica to achieve project goals.	The events scheduled to take place in Antarctica have all been supported appropriately.
Provision of technical scientific support and facilities for science in Antarctica.	Provision of science technician, computing and science support facilities meets event requirements as indicated by event debrief scores within cost constraints.	Provided. Event debrief scores for Scott Base services and facilities of 95% fully satisfied and 5% mostly satisfied were received.
Reporting Science		
Publish information on New Zealand Antarctic and Ross Sea region science.	Co-ordinate the bi-annual science publication presenting highlights of Antarctic research events supported by Antarctica New Zealand, next in 2004.	The science publication is being incorporated into the Annual Report this coming year.
	Annual Report includes contribution of science using the five science strategy themes.	The science section of the Annual Report presents the research under the five original science themes.
	The website has up to date scientific information relating to past findings and future directions.	The science section of the website has been updated and includes a number of links to science websites at Universities and Crown Research Institutes around New Zealand.
	Maintain the National Antarctic Data Centre with current data from science events.	The Antarctic Master Directory has been updated with over 100 New Zealand meta data files. New Zealand now has the fourth largest number of files in the international repository for Antarctic science information.
	Maintain a running bibliography on New Zealand's Antarctic publications.	The New Zealand Antarctic Bibliography was updated in August. The bibliography is now linked to the United States Cold Regions Bibliography maintained by the Library of Congress in Washington DC.

1.2 Science *continued*

Activity	Performance Measures	Achievement
<p data-bbox="297 336 808 392">Public education and awareness of recent scientific events and findings.</p> <p data-bbox="297 659 450 683">Science Funding</p> <p data-bbox="297 691 819 746">Continued advocacy for Antarctic science to ensure funding availability for high quality research.</p>	<p data-bbox="907 336 1424 392">Co-ordination of an annual Antarctic conference in March/April 2004.</p> <p data-bbox="907 432 1435 456">All science events are given an opportunity for media profile.</p> <p data-bbox="907 528 1435 584">Lecture on Antarctic science for public education events and Gateway Antarctica graduate certificate course.</p> <p data-bbox="907 687 1424 743">Play an active role in Antarctic research priority setting by the Foundation for Research, Science & Technology (FRST).</p> <p data-bbox="907 847 1368 903">Maintain links with appropriate funding and research agencies.</p> <p data-bbox="907 1007 1413 1062">Attract interest in Antarctic research from science sector(s) not traditionally involved.</p> <p data-bbox="907 1198 1402 1254">Be an active member of the Royal Society Committee on Antarctic Science (RSCAS).</p> <p data-bbox="907 1326 1413 1382">Facilitate an agreement with Treasury and the science funders on co-ordination of science and logistics funding.</p>	<p data-bbox="1518 336 2007 392">The Antarctic conference was held at Waikato University from 13-15 April with over 120 attendees.</p> <p data-bbox="1518 432 2029 488">Science exposure opportunities through print, TV and radio presentations were provided all through the season.</p> <p data-bbox="1518 528 2040 647">The Science Strategy Manager has given three lectures to audiences at the Antarctic Visitor Attraction and two lectures on the Graduate Certificate Course. The Science Advisor has given special lectures to the Antarctic course on Glaciology.</p> <p data-bbox="1518 687 2040 807">The Science Strategy Manager has been working closely with FRST to draft a target outcome within one of the Ecosystem portfolios funded by FRST. This is the first target outcome focused on Antarctic research.</p> <p data-bbox="1518 847 2040 967">Meetings with FRST, MoRST and Royal Society personnel are held on a monthly basis by the Science Strategy Manager. Dr John Smart from FRST was one of the Invited Visitors taken to Antarctica this season.</p> <p data-bbox="1518 1007 2040 1158">The University of Canterbury has approached the Science Strategy Manager about Antarctic research in the medical sciences. The Science Strategy Manager encouraged their interest and they plan to submit a proposal in October 2004 for support.</p> <p data-bbox="1518 1198 2018 1286">The Science Strategy Manager is now a direct member of RSCAS and interacts regularly with Clive Howard-Williams (RSCAS President).</p> <p data-bbox="1518 1326 2040 1445">A memorandum of understanding has been drafted between FRST and Antarctica New Zealand. This will be used as a template for future agreements with the other funding agencies.</p>

1.3 Environmental Stewardship

Purchase Agreement Outcomes

- Antarctica New Zealand activities, including implementation of actions from the New Zealand Environmental Strategy for the Ross Sea Region, demonstrate leadership in Antarctic environmental management and are adopted nationally and internationally.
- ATCM development of environmental indicators building on the *Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica*.

Costs

Full year estimate: \$283,899

Expenditure: \$238,412

Activity	Performance Measures	Achievement
<p>Implementing Environmental Management Strategy Ongoing implementation of Antarctica New Zealand Environmental Management Strategy.</p>	<p>Antarctica New Zealand Environmental Management Strategy reviewed and republished and implementation of key initiatives commenced.</p>	<p>Environmental Management Strategy endorsed by the Board (December 2003). Implementation of key initiatives has commenced.</p>
<p>Continued upgrade of Scott Base and field waste management systems.</p>	<p>Alternatives for field human waste and grey water handling and disposal identified. Opportunities for tracking and minimising key waste streams identified.</p>	<p>Waste handling (in particular field waste) was reviewed during the 2003/2004 season as part of a joint venture with the University of Canterbury's Engineering Department. Opportunities for pilot waste management projects will be explored for the 2004/2005 season.</p>
<p>Improved energy efficiency (Scott Base / field operations).</p>	<p>Plan to reduce dependency on fossil fuels.</p>	<p>An energy efficiency review of Scott Base and field events was undertaken during the 2003/2004 season as part of a joint venture with the University of Canterbury's Engineering Department. Pilot "energy efficiency" projects will be implemented at Cape Bird and Cape Hallett during the 2004/2005 season.</p>
<p>Environmental Performance and Compliance Ensuring compliance with Antarctica (Environmental Protection) Act by persons involved in Antarctica New Zealand managed activities.</p>	<p>Antarctica New Zealand Environmental Management System (EMS) consistent with AS/NZ ISO14001:1996. EnviroMark accreditation achieved.</p>	<p>The Environmental Management System achieved bronze and silver accreditation under Landcare's EnviroMark accreditation scheme (September 2003). Gold accreditation will be the next goal. To this end an audit of Scott Base is planned during the 2004/2005 season.</p>



1.3 Environmental Stewardship *continued*

Activity	Performance Measures	Achievement
	<p>Environmental impact assessment (EIA) and permitting processes are completed for all Antarctica New Zealand supported activities.</p> <p>Environmental authorisations detailing specific activities are issued to all events according to Antarctica New Zealand permits.</p> <p>End of season environmental performance report demonstrates that activities supported by Antarctica New Zealand in Antarctica comply with the Antarctica (Environmental Protection) Act, and effectively follow-up for non-compliance.</p>	<p>Completed in full for the 2003/2004 season. Initial Environmental Evaluation's (IEEs) prepared for the heated field store construction and LGP camp at Cape Hallett. Preliminary Environmental Evaluation (PEE) process for all other activities completed to expected deadlines.</p> <p>Completed to expected deadlines for the 2003/2004 season.</p> <p>Achieved for 2002/2003 season. Compliance checks to selected field events undertaken during the 2003/2004 season. Environmental Performance Report slightly delayed, but to be prepared by September 2004.</p>
<p>Providing environmental management advice and oversight for large scale science projects in the Ross Sea region for which Antarctica New Zealand is project manager.</p>	<p>Preparation of the final Comprehensive Environmental Evaluation (CEE) for the ANDRILL project through the Antarctic Treaty's Committee for Environmental Protection (CEP) process.</p> <p>Provision of advice on the preparation of environmental impact assessment for the LGP.</p>	<p>ANDRILL CEE to be finalised following further field investigations during the 2004/2005 season. Final CEE delayed until 2005 following substantive changes to the nature and timing of the ANDRILL project.</p> <p>Achieved. IEE for the LGP camp completed to expected deadlines.</p>
<p>Ongoing implementation of Antarctica New Zealand environmental monitoring programme.</p>	<p>Monitoring of agreed indicators carried out in the 2003/2004 season, contributing to the assessment of environmental performance of Antarctica New Zealand managed activities. Development of stage 2 indicators subject to funding.</p> <p>Environmental audits reported back to event leaders.</p> <p>End of season environmental performance report includes reporting on agreed indicators.</p>	<p>Monitoring programme completed for the 2003/2004 summer and will be subject to further review ahead of the 2004/2005 season.</p> <p>Achieved for 2002/2003 and 2003/2004.</p> <p>Achieved for 2002/2003. 2003/2004 Performance Report slightly delayed, but to be completed by September 2004.</p>

1.3 Environmental Stewardship *continued*

Activity	Performance Measure	Achievement
Compliance monitoring of activities (as feasible) in relation to non-Antarctica New Zealand managed activities in the Ross Dependency which come under the Antarctica (Environmental Protection) Act.	Reports on relevant monitoring and compliance activities provided to MFAT.	Achieved for 2002/2003. 2003/2004 Performance Report slightly delayed, but to be completed by September 2004.
<p>Ross Sea Region State of the Environment Report (RSR-SOER)</p> <p>Follow-up to the publication of <i>Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica</i>.</p>	<p>Co-ordination of training for the New Zealand Representatives programme for four vessels in the Ross Dependency and provision of equipment and logistics support as required.</p> <p>Action plans developed for specific regional environmental initiatives identified as priorities following the 'Next Steps' workshop and Sydney (2003) workshop including future state of the environment reporting in the Ross Sea region.</p>	<p>Successful training workshop held 23 October 2003 for all 2003/2004 New Zealand representatives.</p> <p>Ongoing. Additional Government funding received in the 2004/05 budget will enable state of the environment reporting work to be given a high priority. At the international level, the Antarctic Treaty's Committee for Environmental Protection endorsed the concept of a web-based reporting system and asked New Zealand and Australia jointly to lead further development of the system.</p>
<p>Cape Hallett Clean-Up Project</p> <p>Ongoing co-ordination with United States Antarctic Programme (USAP) towards clean-up and remediation at Cape Hallett.</p>	<p>Lead Environmental Impact Assessment (EIA) process for clean-up activities.</p> <p>Investigate cost effective New Zealand contributions such as personnel, waste disposal options, camp support facilities.</p> <p>Utilise relevant New Zealand science expertise for input to clean-up and monitoring plans.</p>	<p>IEE in preparation. United States comments on the draft awaited. Expected completion date September 2004.</p> <p>Ongoing. Waste disposal options being pursued. During 2003/2004 a New Zealand team demolished all buildings and staged 22 tonnes of rubbish for collection / removal during 2004/2005.</p> <p>Ongoing. Scientific advice actively sought over contaminated ground remediation and penguin re-establishment.</p>
Initial clean-up work at Cape Hallett	Co-ordinate with LGP to maximise logistical efficiency.	Achieved. Successful use of the LGP camp for clean-up activities between 15 December 2003 and 11 January 2004.



1.3 Environmental Stewardship *continued*

Activity	Performance Measure	Achievement
<p>Protected Areas Five-yearly reviews of protected area management plans.</p> <p>Provision of input and advice on the ongoing development of a protected area proposal for the Balleny Islands.</p> <p>Development of an Antarctic Specially Managed Area (ASMA) for the McMurdo Dry Valleys.</p> <p>Provision of Expert Advice Provision of high quality expert advice on EIAs for government and non government activities and other significant environmental issues as requested to Ministry of Foreign Affairs and Trade (MFAT) and Environmental Assessment Review Panel (EARP).</p>	<p>Begin dismantling and safe storage of buildings for removal.</p> <p>Initiate collection of debris across the site.</p> <p>Five-year reviews continuing for Canada Glacier and Cape Evans, and the initiation of reviews for Cape Royds, Hut Point and Cape Adare.</p> <p>Participation in the Balleny Islands sub-group.</p> <p>Input and advice contribute to the further development of the Balleny Islands protected area proposal.</p> <p>Draft Dry Valleys ASMA management plan progressed through CEP process.</p> <p>Expert advice:</p> <ul style="list-style-type: none"> • meets timelines; • is proactive, highlighting emerging issues where appropriate; • includes consideration of all relevant available information; • includes consideration of relevant scientific, technical and operational aspects. 	<p>Achieved in full.</p> <p>Achieved to great effect during the 2003/2004 season.</p> <p>Reviews initiated according to plan. Feedback from selected reviewers awaited.</p> <p>Ongoing. Environmental Manager attended meetings of the Officials Antarctic Committee's (OAC) Balleny Islands sub-group as required.</p> <p>Ongoing. Environmental Manager attended meetings of the OAC's Balleny Islands sub-group as required.</p> <p>The Dry Valleys ASMA management plan was adopted by the Treaty Parties at ATCM XXVII (Cape Town, June 2004). Implementation will include publication of a Dry Valley's ASMA handbook and training video.</p> <p>Ongoing. Including advice provided to MFAT as requested, on tourism, oil spill contingency planning, and heritage issues.</p>

1.4 Public Awareness

Purchase Agreement Outcomes

- Public awareness of the global significance of Antarctica and the Southern Ocean, to create a constituency of interest and knowledge that encourages and underpins a continuing strong national involvement in the Ross Sea region, and international representation to encourage compliance and understanding of the Antarctic Treaty System.
- Raising New Zealanders appreciation of how Antarctica contributes to global ecosystems as a global barometer and from this the need for conservation worldwide.

Costs

Full year estimate: \$162,580

Expenditure: \$370,149

Activity	Performance Measures	Achievement
<p>Public Awareness Grow and develop the Artists to Antarctica programme.</p> <p>Improve general public awareness and understanding of the Antarctic environment, and New Zealand involvement in Antarctica and the Southern Ocean.</p>	<p>Implement the visit of three Antarctic arts fellows to Antarctica in the 2003/2004 season. Work with local and national galleries to support and promote past, present and future arts fellows.</p> <p>Maintain adequate protection and security for Antarctic art collection.</p> <p>Provide specific opportunities for media visits to Antarctica including film and documentary makers, mainstream news reporters and specialist reporters.</p> <p>Provide opportunities for key influencers and decision-makers to visit Antarctica through the Distinguished Visitor (DV) programme and highlight their visit by the inclusion of media where appropriate.</p>	<p>Successful visits occurred during the 2003/2004 season with coverage still being generated. Recent exhibitions and talks by Dee Copland, Anne Noble, Grahame Sydney and Phil Dadson have all been supported.</p> <p>The Antarctic Arts Fellow Patrick Shepherd has been selected as the profiled composer for the 2005 Schools Music Festival.</p> <p>The artists' application round has been completed for the 2004/2005 season with five new artists selected.</p> <p>Maintained. An updated valuation of the collection has been completed.</p> <p>Successful media visits occurred during the 2003/2004 season with coverage still being generated.</p> <p>The application round for the 2004/2005 season has been completed. Negotiation continues with invited media.</p> <p>The Governor General Dame Silvia Cartwright visited Scott Base in December 2003 accompanied by senior defence force staff. In November 2003, a marine issues group comprising representatives from the Department Of Conservation, GNS, Ministry of Fisheries, Ministry of Foreign Affairs and Trade and NIWA visited Antarctica to investigate issues of strategic interest to New Zealand in the Ross Sea region.</p>



1.5 Education

Purchase Agreement Outcomes

- Public commitment to conservation of intrinsic and wilderness values of Antarctica and the Southern Ocean.
- Credibility and awareness of science.
- Increased academic involvement in Antarctic research.
- Contribution to New Zealand's national identity and significance of Antarctica New Zealand's role in Antarctica.

Costs

Full year estimate: \$63,049

Expenditure: \$69,407

Activity	Performance Measures	Achievement
<p>Facilitation of Antarctic Education Encourage the provision of high quality education about New Zealand's Antarctic interests and activities.</p>	<p>Review of last five years' education programme and establish ongoing audit of education programme outcomes.</p> <p>Produce a 5-year education strategy to prioritise logistics support to education outputs.</p> <p>Organise educators from identified New Zealand museums, galleries and other similar institutions to gain a better understanding of Antarctica through education and/or a familiarisation visit to Antarctica.</p> <p>Select a secondary school group to visit Antarctica and facilitate the visit.</p> <p>Encourage tertiary education institutions to develop appropriate Antarctica curricula as part of school programmes.</p>	<p>The education programme review was presented and approved by the Board of Antarctica New Zealand in February 2004.</p> <p>Education strategy was presented and approved by the Board of Antarctica New Zealand in February 2004.</p> <p>Education staff from two institutions with a significant Antarctic component were sent to Antarctica for a familiarisation visit.</p> <p>Waitaki Boys High School had a successful visit to Antarctica and are working on the Oamaru Heritage Trail as part of their agreed output. The Trail is scheduled to open late 2004.</p> <p>The education application round for the 2004/2005 has been replaced with a Project K pilot programme as per the new Education Strategy.</p> <p>Patrick Shepherd from the Christchurch College of Education is working on resources and compositions for the primary and secondary music and arts curriculum. Information was</p>

1.5 Education *continued*

Activity	Performance Measures	Achievement
<p>Scholarship Support the development of Gateway Antarctica at University of Canterbury as a premier institution in Antarctic studies.</p>	<p>Facilitate a collaborative approach towards educational opportunities between identified educators from Italy and New Zealand, Australia and the United States.</p> <p>Active membership on the Board of the University of Canterbury's Antarctic Studies Centre – Gateway Antarctica.</p> <p>Antarctica New Zealand staff involved in lecturing to University of Canterbury's Graduate Certificate in Antarctic Studies (GCAS) course, and support for Scott Base field trip.</p> <p>Encourage Gateway Antarctica to take a leadership role in developing national initiatives involving other universities.</p>	<p>supplied to an Alpha series educational outreach booklet on Antarctica's role in climate change.</p> <p>The ANDRILL Education and Science Outreach Panel (AESOP) group was established to focus on educational aspects of the ANDRILL project.</p> <p>Ongoing.</p> <p>The 2003/2004 GCAS lecture series and field trip to Antarctica completed to plan.</p> <p>Gateway Antarctica's purpose includes being a focal point and catalyst for collaborative research and learning. Significant progress has been made in developing greater cohesion in Antarctic research and education between all universities.</p>
<p>Support the continuing development of interest in Antarctic scholarship at New Zealand universities.</p>	<p>Support and encourage the development of Antarctic courses and studies at other New Zealand universities.</p> <p>Encourage the development of research opportunities and fellowship opportunities at universities.</p>	<p>Ongoing encouragement of other universities to be actively involved in the GCAS course as a national certificate.</p> <p>Four Antarctic post-graduate scholarships have been awarded for the 2004/2005 season. Antarctica New Zealand has also supported a new initiative by the University of Victoria to establish a scholarship scheme.</p>

1.6 Private Sector Activities

Purchase Agreement Outcomes

- New Zealand private sector activity in Antarctica is fully consistent with Government objectives in the region.
- Establishment of Antarctic Foundation.

Costs

Full year estimate: \$79,479

Expenditure: \$115,075

Activity	Performance Measures	Achievement
<p>Private Sector Involvement in Antarctica-related Activities Antarctic Foundation establishment and implementation.</p>	<p>Development of a strategic plan for the Antarctic Foundation.</p> <p>Establishment of three (3) scholarships.</p>	<p>Review of progress to date completed and presented to the Board of Antarctica New Zealand who determined not to proceed with the establishment of a separate Foundation at the present time.</p> <p>Not progressed as the Foundation was put into abeyance by the Board.</p>

1.7 International Representation

Purchase Agreement Outcomes

- Enhanced New Zealand profile and influence in the international management of Antarctica and the Southern Ocean, evidenced by Antarctica New Zealand scientific, technical and environmental support to New Zealand delegations to: Antarctic Treaty Consultative Meeting (ATCM), Committee on Environmental Protection (CEP) and Council of Managers of National Antarctic Programmes (COMNAP) etc.
- New Zealand contribution to Antarctic and global environmental knowledge bases is enhanced by Antarctica New Zealand activities.
- Antarctica New Zealand activities stimulate enhanced international commitment to conservation of Antarctica.
- Foreign collaboration, research and scholarship in Antarctic activities through New Zealand is encouraged as a result of Antarctica New Zealand initiatives.

Costs

Full year estimate: \$229,990

Expenditure: \$279,571

Activity	Performance Measures	Achievement
<p>International Forums / Antarctic Treaty Consultative Meeting (ATCM)</p> <p>Contribute to MFAT and OAC consideration of ATCM issues, the New Zealand ATCM/CEP delegation, and a positive New Zealand profile in the Antarctic Treaty System.</p>	<p>Expert advice provided within the New Zealand delegation throughout the year.</p> <p>Chief Executive and Environmental Manager members of the New Zealand delegation to ATCM XXVII and CEP VII.</p> <p>Act as the New Zealand contact point for intersessional CEP work on Ross Sea region and Peninsula Antarctic Specially Protected Area plan reviews.</p> <p>Input into the review of Annex II of the Protocol.</p> <p>Input into CEP intersessional work on state of the Antarctic environment reporting system.</p>	<p>Ongoing. Environmental Team and Chief Executive attended meetings of the CEP delegation as required. Environmental Manager and Environmental and Policy Officer lead separate intersessional contact groups of the CEP.</p> <p>CEO attended CEP VII and ATCM XXVII (Cape Town, June 2004). Major achievements: state of environment monitoring, tourism measures, and aircraft guidelines.</p> <p>Achieved. Input provided to intersessional contact groups as required.</p> <p>Achieved. A revised version of Annex II now passed to the ATCM.</p> <p>Trial web-based state of the environment reporting system endorsed by the Treaty's Committee for Environmental Protection at the Cape Town meeting in 2004. New Zealand and Australia tasked with jointly leading further development of the system.</p>

1.7 International Representation *continued*

Activity	Performance Measures	Achievement
<p>Contribution to the New Zealand influence in the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR).</p> <p>Contribute to the development of Antarctic tourism policies and procedures internationally.</p>	<p>Present New Zealand ATCM/CEP papers on ANDRILL CEE.</p> <p>In consultation with MFAT prepare “Exchange of Information” document in the format outlined in Resolution 6 (2001) to meet obligations of the Antarctic Treaty (Article II(1) and VII(5)) and Resolution VIII(6), and ensure the document is accessible from the central information exchange website.</p> <p>Continue to assist in the development of a more strategic/ long-term approach to New Zealand ATCM positions, in particular for the CEP; including further development of a CEP strategy, and Cabinet decisions on New Zealand’s strategic interests.</p> <p>Work with MFAT to better present the outcomes of the ATCM and associated meetings to interested New Zealand agencies.</p> <p>Provide environmental and scientific advice to the New Zealand CCAMLR delegation throughout the year.</p> <p>Consider the CCAMLR meeting agendas (including the scientific committee) and decide on the priority for Antarctica New Zealand participation in CCAMLR and associated meetings.</p> <p>Represent New Zealand at the annual IAATO meeting, and support, as appropriate, the proposed IAATO meeting in Christchurch in 2004.</p>	<p>Draft CEE presented at CEP VI. Final version delayed until 2005 following substantive changes to the nature and timing of the ANDRILL project.</p> <p>Completed for the 2003/2004 reporting period.</p> <p>Further discussion with MFAT required.</p> <p>Briefings and expert advice provided at OAC meetings as required.</p> <p>Advice provided as and when required.</p> <p>No participation at the 2003 CCAMLR meeting.</p> <p>Ongoing. IAATO meeting held in Christchurch, 26-30 April 2004. Antarctica New Zealand ran a Ross Sea Tourism Site Inventory Workshop as part of the meeting. Antarctica New Zealand will lead further development of the Ross Sea site inventory concept.</p>

1.7 International Representation *continued*

Activity	Performance Measures	Achievement
<p>International Operational, Environmental and Scientific Influence</p> <p>Influence in international operational developments through the Council of Managers of National Antarctic Programmes (COMNAP) and its sub-groups.</p>	<p>Chief Executive and Operations Manager attendance at COMNAP annual meeting in July 2003.</p> <p>Establishment of COMNAP Energy Management Network and Chair Network Steering Group at July 2003 meeting.</p> <p>Prepare a report for COMNAP on its annual meeting for circulation to Antarctic Treaty parties and for public availability (subject to COMNAP meeting agreement).</p>	<p>Completed. Report tabled with Board of Antarctica New Zealand and MFAT.</p> <p>Completed. The Operations Manager stood down as Chair after five years.</p> <p>Completed.</p>
<p>Participation in the Antarctic Environmental Officers Network (AEON).</p>	<p>Active participation in the AEON steering group.</p> <p>Co-ordinate AEON work on the analysis and comparison of IEE's for different activities. Participate in the AEON TRAINET inaugural working group.</p>	<p>Chief Executive is Chair of COMNAP Environmental Co-ordination Group and has regular contact in setting strategic directions of AEON.</p> <p>Ongoing assistance provided in drafting the IEE paper, now completed. Environmental Manager attended a training workshop in Brest (July 2003).</p>
<p>Pursue possibilities for international profile/influence from the Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica.</p>	<p>Confirm with other ATCM parties procedures for Antarctic-wide state of the environment reporting, and identify and follow up other opportunities for contribution to the Antarctic-wide SOER process.</p>	<p>Ongoing. Environmental Manager led the CEP intersessional contact group on developing a continent-wide state of the Antarctic environment reporting system.</p>
<p>Continue to increase international connections in Antarctic science.</p>	<p>Continue to develop ANDRILL and LGP co-operation opportunities with United States, Italy, Germany, and the United Kingdom; and provide operations management for the projects subject to international science and logistics funding and acceptance of the New Zealand operations proposal.</p>	<p>Achieved throughout the 2003/2004 reporting period.</p>
	<p>Continue support for Malaysian Antarctic scientific interests, subject to guidance by MFAT and consistency of Malaysian approach with Antarctic Treaty principles.</p>	<p>Ongoing. The Chief Executive and the Science Strategy Manager attended an Antarctic Conference held in Penang in May 2004.</p>

1.7 International Representation *continued*

Activity	Performance Measures	Achievement
	<p data-bbox="907 336 1417 392">Explore opportunities for increased scientific collaboration with Australia.</p> <p data-bbox="907 467 1370 523">Contribute to New Zealand representation within the Scientific Committee on Antarctic Research.</p> <p data-bbox="907 563 1375 619">Active participation in international scientific forums/ conferences.</p>	<p data-bbox="1514 336 2047 424">Letter of Understanding to be signed between the Australian Antarctic Division and Antarctica New Zealand in September 2004.</p> <p data-bbox="1514 467 1928 491">Two meetings held during the reporting period.</p> <p data-bbox="1514 563 1984 619">New Zealand actively participated at SCAR in Bremen, Germany, and the RiSCC workshop at Rennes, France.</p>

1.8 Policy Advice

Purchase Agreement Outcomes

- Increased New Zealand influence on Antarctic policy and issues relating to Antarctica and the Southern Ocean.
- New Zealand Antarctic and Southern Ocean policy incorporates sound operational, scientific, environmental principles.
- A robust policy framework for Antarctica New Zealand activities in Antarctica and the Southern Ocean within OAC framework.

Costs

Full year estimate: \$31,159

Expenditure: \$30,736

Activity	Performance Measures	Achievement
<p>Policy Advice</p> <p>Contribute Antarctica New Zealand expertise to MFAT policy development.</p>	<p>Raise appropriate Antarctica New Zealand policy issues and concerns with the Minister and MFAT.</p>	<p>Ross Sea maritime contingency planning work in preparation. Work in progress on tourism policy, including contingency planning, search and rescue, and insurance.</p>
<p>Assist MFAT in seeking OAC consideration and development of a New Zealand policy on bioprospecting, tourism, and historic site conservation in Antarctica.</p>	<p>Technical advice and input to draft policy papers and an active involvement in OAC meetings.</p>	<p>Ongoing. Technical and expert advice provided as necessary.</p>
<p>Provision of advice on national Antarctic environmental policy issues to MFAT and the OAC.</p>	<p>Present discussion document(s) to seek OAC input to the revision of the New Zealand Environmental Strategy for the Ross Sea region.</p>	<p>Ongoing. Environmental Manager leading the OAC sub-group tasked with developing the New Zealand Environmental Strategy.</p>
<p>Provision of advice to OAC departments and research organisations on Ross Sea region marine conservation and management, including research priorities.</p>	<p>Policy contributions and advice meet the policy advice criteria outlined in Output 1.3.</p>	<p>Ongoing. Advice provided to expected deadlines.</p>
<p>Provide advice to other Government policy development/ forums.</p>	<p>Policy contributions and advice meet the policy advice criteria outlined in Output 1.3.</p>	<p>Ongoing. Advice provided to expected deadlines.</p>
	<p>Continued technical and operational expert representation on the Officials Committee on Geospatial Information and the New Zealand Geographic Board, and other related policy development forum.</p>	<p>Ongoing. Advice provided to expected deadlines.</p>

Output Cost Estimates (Excluding GST)

	Actual	Full Year Estimate
Operational Presence in Antarctica	\$7,330,038	\$7,835,217
Science	\$320,195	\$319,232
Environmental Stewardship	\$238,412	\$283,899
Public Awareness	\$370,149	\$162,580
Education	\$69,407	\$63,049
Private Sector Activities	\$115,075	\$79,479
International Representation	\$279,571	\$229,990
Policy Advice	\$30,736	\$31,159
Total	\$8,753,583	\$9,004,605



Scott Base, Antarctica, Mark Mitchell:anzpcK310:03/04



*The most indelible impression
from my visit to Antarctica was of
Scott Base as our frontier town,
our little cabin in the woods*

Barrie Cook
GCAS Student



*I love polar tents. Even after five days
confinement in a ferocious blizzard
with no hope of rescue. They focus
your mind. You can plan.*

Peter Wilson
Scientist

McMurdo Dry Valleys, Paul Rogers:anzpck401:03/04

Financial Statements for the year ended 30 June 2004

Statement of Accounting Policies for the year ended 30 June 2004

Reporting Entity

Antarctica New Zealand is the trading name of the New Zealand Antarctic Institute, a Crown Entity established by the New Zealand Antarctic Institute Act 1996.

The financial statements have been prepared in accordance with The Public Finance Act 1989 as amended.

Measurement Base

The measurement base adopted is that of historical cost.

Accounting Policies

The following particular accounting policies which materially affect the measurement of financial performance, financial position, and cash flows have been established and consistently applied.

(a) Budget Figures

The budget figures are those approved by the Board at the beginning of the financial year.

The budget figures have been prepared in accordance with generally accepted accounting practice and are consistent with the accounting policies adopted by the Board for the preparation of the financial statements.

(b) Revenue Recognition

Antarctica New Zealand derives revenue through the provision of outputs to the Crown, for services to third parties and income from its investments. Such revenue is recognised when earned and is reported in the Statement of Financial Performance in the period to which it relates.

(c) Leases

Antarctica New Zealand has not contracted for any lease that would be classified as a finance lease. Operating lease payments where the lessors effectively retain substantially all the risks and benefits of ownership of lease items are charged as expenses in the periods to which they relate.

(d) Property, Plant and Equipment

All owned items of property, plant and equipment are initially recorded at cost, and except for land and the art collection, depreciated. Initial cost includes the purchase consideration, or fair value in the case of a donated asset, and those costs directly attributable in bringing the asset to the location and condition necessary for its intended use.

The art collection is recorded at market value as at 9 September 1999, this is deemed to be cost. Subsequent additions to the collection are recorded at market valuation on the date of acquisition.

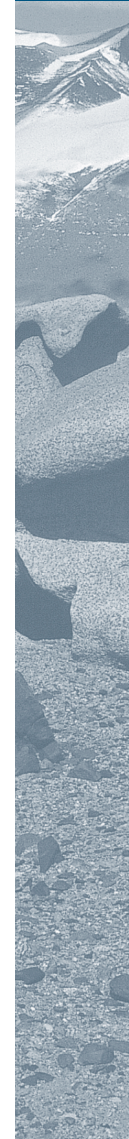
Capital work in progress is not depreciated. The total cost of a capital project is transferred to the relevant asset class on its completion and then depreciated.

(e) Depreciation

Depreciation is calculated using the straight-line method to allocate the cost of an asset over its estimated useful life.

The estimated useful lives of property, plant and equipment are as follows:

Buildings	40 years
Clothing	10 years
Communications Equipment	5-7 years
Computer Hardware and Software	2-7 years
Leasehold Improvements	10-15 years
Library Collection	20 years
Office Equipment	3-5 years
Office Furniture	3-5 years
Plant and Machinery	10 years
Scott Base Fit Out	20 years
Tents	10 years
Vehicles - Christchurch	7 years
Vehicles - Scott Base	10 years



(f) Employee Entitlements

Provision is made in respect of Antarctica New Zealand's liability for annual leave and long service leave.

Annual leave and long service leave have been calculated on an actual entitlement basis at current rates of pay or the appropriate historical rate whichever is the highest.

(g) Accounts Receivable

Accounts receivable are stated at their estimated net realisable value.

(h) Goods and Services Tax

The figures stated in these financial statements are GST exclusive, except for accounts receivable and accounts payable which are stated GST inclusive.

(i) Income Tax

Antarctica New Zealand is a public authority for the purposes of income tax legislation and is exempt from income tax.

(j) Financial Instruments

Antarctica New Zealand is party to financial instruments as part of its normal operations. These financial instruments include bank accounts, short-term bank deposits, accounts receivable, accounts payable and forward foreign exchange contracts.

Antarctica New Zealand enters into forward foreign exchange contracts to hedge currency transactions. Any exposure to gains or losses on these contracts is generally offset by a related loss or gain on the item being hedged.

Revenues and expenses in relation to all financial instruments are recognized in the Statement of Financial Performance.

All financial instruments other than forward foreign exchange contracts are recognised in the Statement of Financial Position.

(k) Joint Venture

The financial statements include Antarctica New Zealand's 25% share in the Antarctic Drilling Project - ANDRILL. Antarctica New Zealand's share of the assets, liabilities, revenues and expenses of ANDRILL have been incorporated in to the financial statements on a line-by-line basis using the proportionate method.

Changes in Accounting Policies

There have been no changes in accounting policies during the year. All policies have been applied on a basis consistent with those used in previous years.

Statement of Financial Performance for the year ended 30 June 2004

	Note	2004 Budget \$000	2004 Actual \$000	2003 Actual \$000
Revenue				
Crown Revenue	1	8,407	8,807	8,259
Interest Income		183	308	166
Other Income		422	616	623
		9,012	9,731	9,048
Expenditure				
Operating Expenses	2	8,137	7,794	7,125
Depreciation	5	868	960	808
		9,005	8,754	7,933
Net Operating Surplus	3a	7	977	1,115

Statement of Movements in Equity for the year ended 30 June 2004

	Note	2004 Budget \$000	2004 Actual \$000	2003 Actual \$000
Taxpayers Funds at 1 July		7,651	7,651	6,216
Net Operating Surplus/(Deficit) for the year		7	977	1,115
Total Recognised Revenue and Expenses		7	977	1,115
Crown Capital Contribution		3,937	7,429	320
Taxpayers' Funds at 30 June	3a	11,595	16,057	7,651

Statement of Financial Position as at 30 June 2004

	Note	2004 Budget \$000	2004 Actual \$000	2003 Actual \$000
Taxpayers' Funds				
Taxpayers' Funds	3a	11,595	16,057	7,048
ANDRILL Project Management Reserve	3b	-	-	603
Total Taxpayers' Funds		11,595	16,057	7,651
Represented by:				
Current Assets				
Cash and Short Term Deposits		2,083	4,120	2,757
Accounts Receivable and Prepayments	4	96	956	262
Total Current Assets		2,179	5,076	3,019
Non Current Assets				
Property, Plant and Equipment	5	10,749	11,806	5,367
Total Non Current Assets		10,749	11,806	5,367
Current Liabilities				
Accounts Payable and Accruals	6	1,181	680	579
Employee Entitlements	7	152	145	156
Total Liabilities		1,333	825	735
Net Assets		11,595	16,057	7,651

Statement of Cash Flows for the year ended 30 June 2004

	Note	2004 Budget \$000	2004 Actual \$000	2003 Actual \$000
Cash Flows from Operating Activities				
Cash was provided from:				
Receipts from the Crown		8,407	8,807	8,259
Receipts from Customers		595	594	642
Interest Received		176	310	162
Total Receipts		9,178	9,711	9,063
Cash was applied to:				
Payments to Suppliers		(4,989)	(5,685)	(4,425)
Payments to Employees		(2,604)	(2,713)	(2,607)
GST (Net)		54	22	(5)
Total Payments		(7,539)	(8,376)	(7,037)
Net Cash Inflow/(Outflow) from Operating Activities	8	1,639	1,335	2,026
Cash Flows from Investing Activities				
Cash was provided from:				
Sale of Property, Plant and Equipment		-	4	26
Cash was applied to:				
Purchases of Property, Plant and Equipment		(6,250)	(3,913)	(1,812)
Net Cash Inflow/(Outflow) from Investing Activities		(6,250)	(3,909)	(1,786)

Statement of Cash Flows for the year ended 30 June 2004 *continued*

	Note	2004 Budget \$000	2004 Actual \$000	2003 Actual \$000
Cash Flows From Financing Activities				
Cash was provided from:				
Crown Capital Contribution		3,937	3,937	320
Net Cash Inflow/(Outflow) from Financing Activities		3,937	3,937	320
Net Increase/(Decrease) in Cash Held		(674)	1,363	560
Add Opening Cash and Deposits		2,757	2,757	2,197
Closing Cash and Deposits		2,083	4,120	2,757

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004

Note 1 Crown Revenue

Crown revenue includes \$800,000 (2003 - \$652,000) funding for Antarctica New Zealand's share of the Antarctic Drilling project, ANDRILL. See Note 3b.

Note 2 Operating Expenses

Remuneration of Auditor
 - Audit Fee
 - Other Services
 Directors' Remuneration
 Rental and Operating Lease Costs
 Bad Debts Written Off
 Changes in Provision for Doubtful Debts
 Salaries and Wages
 Other Administrative and Operating Expenses

2004 Actual
\$0002003 Actual
\$000

	19	15
	-	-
	72	60
	382	422
	1	1
	(1)	-
	2,655	2,337
	4,666	4,290
Total Operating Expenses	7,794	7,125

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 *continued*

Note 3a	Taxpayer Funds	2004 Actual \$000	2003 Actual \$000
	Opening Balance	7,048	6,216
	Net Surplus for the year	977	1,115
	Crown Capital Contribution	7,429	320
	Transfer from/(to) ANDRILL Project Management Reserve	603	(603)
	Closing Balance	16,057	7,048

On 1 July 2002 the Crown made a capital contribution of \$320,000 to fund the establishment of a research field camp to support the logistical requirements of the Latitudinal Gradient Project.

On 1 July 2003 the Crown made a capital contribution of \$3.9 million to fund the construction of a new heated Field Store at Scott Base.

On 1 March 2004 the Crown transferred the remaining Scott Base buildings not already owned by Antarctica New Zealand plus an area of land at Christchurch Airport used for high frequency radio transmission to Antarctica, to Antarctica New Zealand at a net book value of \$3.5 million.

Note 3b	ANDRILL Project Management Reserve	2004 Actual \$000	2003 Actual \$000
	Opening Balance	603	-
	Transfer (to)/from Taxpayers' Funds	(603)	603
	Closing Balance	-	603

In 2003 the \$603,000 reserve reflects the balance of Crown funding provided to Antarctica New Zealand for the ANDRILL project but not transferred to the joint venture.

In 2004 all outstanding Crown funding provided for the ANDRILL project has been transferred to the joint venture.

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 *continued*

		2004 Actual		2003 Actual	
		\$000		\$000	
Note 4	Accounts Receivable and Prepayments				
	Trade Debtors		280		244
	Owing by Joint Venture Parties (refer Note 9)		663		-
	Term Deposit Interest		11		13
	Prepayments		2		5
	Total Accounts Receivable and Prepayments		956		262
Note 5	Property, Plant and Equipment	Accumulated Cost	Depreciation	Book Value	Depreciation Expense
	2004	\$000	\$000	\$000	\$000
	Buildings Scott Base	4,439	(413)	4,026	119
	Land	230	-	230	-
	Leasehold Improvements	170	(122)	48	17
	Communications Equipment	618	(520)	98	25
	Plant and Machinery	1,131	(471)	660	116
	Vehicles	2,559	(1,445)	1,114	265
	Computer Hardware and Software	1,246	(689)	557	191
	Scott Base Fit Out	2,848	(1,679)	1,169	175
	Office Furniture	85	(43)	42	11
	Office Equipment	82	(48)	34	6
	Clothing	324	(311)	13	13
	Tents	214	(19)	195	15
	Library Collection	135	(55)	80	7
	Art Collection	87	-	87	-
	Work in Progress	3,453	-	3,453	-
	Total Property, Plant and Equipment 2004	17,621	(5,815)	11,806	960

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 *continued*

Note		Accumulated Cost \$000	Depreciation \$000	Book Value \$000	Depreciation Expense \$000
Note 5 <i>continued</i>	Property, Plant and Equipment 2003				
	Buildings Scott Base	1,136	(293)	843	62
	Land	-	-	-	-
	Leasehold Improvements	154	(105)	49	17
	Communications Equipment	573	(494)	79	15
	Plant and Machinery	977	(358)	619	144
	Vehicles	2,459	(1,191)	1,268	205
	Computer Hardware and Software	1,079	(515)	564	126
	Scott Base Fit out	2,848	(1,504)	1,344	191
	Office Furniture	68	(31)	37	8
	Office Equipment	52	(42)	10	4
	Clothing	310	(297)	13	26
	Tents	53	(03)	50	3
	Library Collection	135	(48)	87	7
	Art Collection	62	-	62	-
	Work in Progress	342	-	342	-
	Total Property, Plant and Equipment 2003	10,248	(4,881)	5,367	808
Note 6	Accounts Payable and Accruals		2004 Actual \$000	2003 Actual \$000	
	Trade Creditors		539	262	
	Accruals		136	317	
	Accrued Directors' Fees		5	-	
	Total Accounts Payable and Accruals		680	579	
Note 7	Employee Entitlements		2004 Actual \$000	2003 Actual \$000	
	Long Service Leave		8	7	
	Annual Leave		137	149	
	Total Employee Entitlements		145	156	

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 *continued*

Note		2004 Actual \$000	2003 Actual \$000
8	Reconciliation of Net Surplus to Net Cash Flow from Operating Activities		
	Net Operating Surplus	977	1,115
	Add/(Less) Non-Cash Items		
	Depreciation	960	808
	Loss/(Gain) on Sale of Assets	2	(26)
	Total Non-Cash Items	962	782
	Add/(Less) Movements in Working Capital		
	(Increase)/Decrease in Accounts Receivable and Prepayments	(694)	49
	Increase/(Decrease) in Accounts Payable and Accruals	90	80
	Working Capital Movements - Net	(604)	129
	Net Cash Flow from Operating Activities	1,335	2,026
		2004 Actual \$000	2003 Actual \$000
9	Interest in Joint Venture		
	Included in the Financial Statements are the following items that represent Antarctica New Zealand's 25% interest in the assets and liabilities of the Antarctic drilling project - ANDRILL:		
	Current Assets		
	Cash and Short Term Deposits	623	-
	Owing by Joint Venture Parties	663	-
	Total Current Assets	1,286	-
	Non Current Assets		
	Property, Plant, and Equipment	116	-
	Total Non Current Assets	116	-
	Current Liabilities		
	Accounts Payable and Accruals	(30)	-
	Total Liabilities	(30)	-
	Net Assets	1,372	-

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 <i>continued</i>		2004 Actual \$000	2003 Actual \$000
Note 9 <i>continued</i>	Revenue	7	-
	Expenditure	(74)	-
	Operating Surplus	(67)	-

The Financial Statements of the ANDRILL joint venture are unaudited.

Note 10 Post Balance Date Events

No post balance date events have come to the attention of Antarctica New Zealand that are of a material nature as to require adjustment of the amounts contained in the financial statements or separate note disclosure.

Note 11 Related Party Transactions

Antarctica New Zealand is a wholly owned entity of the Crown. The Government influences the roles of Antarctica New Zealand as well as being its major source of revenue.

All transactions entered into with Government Departments, Crown Entities and State Owned Enterprises are conducted at arm's length on normal business terms. Antarctica New Zealand also transacts with other overseas Government agencies in order to operate cost-effectively in Antarctica. These transactions are not considered related party transactions.

Material related party transactions for the period 1 July 2003 to 30 June 2004.

During the year Antarctica New Zealand purchased the following services at arm's length on normal commercial terms:

- Computer hardware, software and support services at a cost of \$49,000 from Datacom Group Ltd. Paul Hargreaves is a Director of Datacom Group Ltd.
- Electricity supply and services at a cost of \$31,000 from Meridian Energy Limited. Francis Small is the Chairman and a Director of Meridian Energy Limited.

- Engineering parts and equipment at a cost of \$60,000 from Gough, Gough & Hamer Ltd. Kerry McDonald is a Director of Gough, Gough & Hamer Ltd.
- Building supplies at a cost of \$3,000 from Carters. Kerry McDonald is a director of Carter Holt Harvey.
- Training, development and advisory services at a cost of \$72,000 from Advanced Dynamics NZ Ltd. Kerry McDonald is the Chairman and a Director and Bill Mansfield is a Director of Advanced Dynamics NZ Ltd.

During the year Antarctica New Zealand provided logistical support to the following events at arm's length on normal commercial terms and subject to due review and approval:

- Event K053 Ice Shelf Sensitivity and Change at a net fully allocated cost of \$258,000 to the University of Canterbury. Wendy Lawson is the Principal Investigator for Event K053.
- Event K200 Graduate Certificate in Antarctic Studies at a net fully allocated cost of \$406,000 to Gateway Antarctica, a research unit within the University of Canterbury. Wendy Lawson is the Chair and Lou Sanson a member of the Gateway Antarctica Advisory Board.

During the year Antarctica New Zealand conducted banking business at arm's length on normal commercial terms with the Bank of New Zealand Ltd. Kerry McDonald is the Chairman and a Director of Bank of New Zealand Ltd.

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 *continued*

Note 12 Financial Instruments

(A) Nature of activities and management policies with respect to financial instruments**1) Foreign Exchange Risk**

Antarctica New Zealand undertakes transactions denominated in foreign currencies. As a result of these activities exposures in foreign currencies arise. It is the policy of Antarctica New Zealand to hedge significant foreign currency risks and it uses forward and spot foreign exchange contracts to manage this exposure. There are no forward foreign exchange transactions outstanding at balance date.

2) Credit Risk

In the normal course of business Antarctica New Zealand incurs credit risk from trade debtors and financial institutions. There are no significant concentrations of credit risk from trade creditors and exposures to them are monitored on a regular basis.

Antarctica New Zealand places its cash and short term investments with high quality financial institutions which limits the amount of credit exposure. No collateral or security to support financial instruments is required due to the quality of the financial institutions dealt with.

3) Interest Rate Risk

Interest rate risk is the risk that Antarctica New Zealand's return on the funds it has invested will fluctuate due to changes in market interest rates. All investments are held on a short term basis, thus minimising any interest rate risk.

(B) Fair Values

The estimated fair values of Antarctica New Zealand's financial assets and liabilities are as disclosed in the Financial Statements.

Note 13 Segmental Reporting

Antarctica New Zealand operates in New Zealand and Antarctica to primarily support scientific research in Antarctica and the Southern Ocean.

Note 14 Capital and Operating Commitments

Capital Commitments - in respect of Antarctica New Zealand
Capital Commitments - in respect of the ANDRILL joint venture

Total Capital Commitments

Operating Lease Commitments

Non-cancellable operating lease rentals are payable as follows:

Less than one year

One to two years

Two to five years

Over five years

Total Operating Lease Commitments

	2004 Actual \$000	2003 Actual \$000
	740	173
	210	-
	<hr/>	<hr/>
	950	173
	276	422
	276	418
	612	544
	-	-
	<hr/>	<hr/>
	1,164	1,384

Notes To and Forming Part of the Financial Statements for the year ended 30 June 2004 *continued*Note 15 **Contingent Assets and Liabilities**

Antarctica New Zealand and the Crown have a liability for site restoration costs at Scott Base should New Zealand withdraw from the Antarctic programme. Other than this item there are no other contingent assets or liabilities that Antarctica New Zealand is aware of. (2003 Nil)

Note 16 **Employees' Remuneration**

During the year the following number of employees received remuneration of \$100,000 or more:

Remuneration band	2004 Actual No of employees	2003 Actual No of employees
\$100,000-\$109,999	1	
\$110,000-\$119,999		1
\$120,000-\$129,999	1	
\$130,000-\$139,999		
\$140,000-\$149,999		1*
\$150,000-\$159,999	1*	

* The Chief Executive's remuneration is in the \$150,000 - \$159,999 band (2003: \$140,000 - \$149,999)

Note 17 **Directors Remuneration**

Board members earned the following fees during the year:

Board Member	2004 Actual \$000	2003 Actual \$000
Mr Paul Hargreaves (Chairman)	\$22,000	\$10,000
Dr Wendy Lawson	\$10,000	\$10,000
Mr Bill Mansfield	\$10,000	\$10,000
Mr Kerry McDonald	\$10,000	-
Dr Maj de Poorter	\$10,000	\$10,000
Dr Francis Small	\$10,000	\$10,000
Mr Chris Mace	-	\$10,000

Statement of Responsibility for the year ended 30 June 2004

The Board and Management of Antarctica New Zealand were responsible for:

- * the preparation of the financial statements and the judgements used therein, and
- * establishing and maintaining a system of internal control designed to provide reasonable assurance as to the integrity and reliability of financial reporting.

In the opinion of the Board and Management, the financial statements for the financial year fairly reflect the financial position and operations of Antarctica New Zealand.



P M Hargreaves
Chairperson
28 October 2004



L Sanson
Chief Executive Officer
28 October 2004

Audit Report



To the readers of the New Zealand Antarctic Institute's Financial Statements for the year ended 30 June 2004

The Auditor-General is the auditor of the New Zealand Antarctic Institute (Antarctica New Zealand). The Auditor-General has appointed me, Scott Tobin, using the staff and resources of Audit New Zealand, to carry out the audit of the financial statements of Antarctica New Zealand, on his behalf, for the year ended 30 June 2004.

Unqualified opinion

In our opinion the financial statements of Antarctica New Zealand on pages 41 to 82:

- comply with generally accepted accounting practice in New Zealand; and
- fairly reflect:

- Antarctica New Zealand's financial position as at 30 June 2004;
- the results of its operations and cash flows for the year ended on that date; and
- its service performance achievements measured against the performance targets adopted for the year ended on that date.

The audit was completed on 28 October 2004, and is the date at which our opinion is expressed. The basis of the opinion is explained below. In addition, we outline the responsibilities of the Board and the Auditor, and explain our independence.

Basis of opinion

We carried out the audit in accordance with the Auditor-General's Auditing Standards, which incorporate the New Zealand Auditing Standards.

We planned and performed our audit to obtain all the information and explanations we considered necessary in order to obtain reasonable assurance that the financial statements did not have material mis-statements, whether caused by fraud or error.

Material mis-statements are differences or omissions of amounts and disclosures that would affect a reader's overall understanding of the financial statements. If we had found material mis-statements that were not corrected, we would have referred to them in the opinion.

Our audit involved performing procedures to test the information presented in the financial statements. We assessed the results of those procedures in forming our opinion.

Audit procedures generally include:

- determining whether significant financial and management controls are working and can be relied on to produce complete and accurate data;
- verifying samples of transactions and account balances;
- performing analyses to identify anomalies in the reported data;
- reviewing significant estimates and judgements made by the Board;
- confirming year-end balances;
- determining whether accounting policies are appropriate and consistently applied; and
- determining whether all financial statement disclosures are adequate.

We did not examine every transaction, nor do we guarantee complete accuracy of the financial statements.

We evaluated the overall adequacy of the presentation of information in the financial statements. We obtained all the information and explanations we required to support the opinion above.

Responsibilities of the Board and the Auditor

The Board is responsible for preparing financial statements in accordance with generally accepted accounting practice in New Zealand. Those financial statements must fairly reflect the financial position of Antarctica New Zealand as at 30 June 2004. They must also fairly reflect the results of its operations and cash flows and service performance achievements for the year ended on that date. The Board's responsibilities arise from the Public Finance Act 1989.

We are responsible for expressing an independent opinion on the financial statements and reporting that opinion to you. This responsibility arises from section 15 of the Public Audit Act 2001 and section 43(1) of the Public Finance Act 1989.

Independence

When carrying out the audit we followed the independence requirements of the Auditor-General, which incorporate the independence requirements of the Institute of Chartered Accountants of New Zealand.

Other than the audit, we have no relationship with or interests in Antarctica New Zealand.

S M Tobin
Audit New Zealand
On behalf of the Auditor-General
Christchurch, New Zealand

Acronyms

AAD	Australian Antarctic Division	IUCN	World Conservation Union
AAF	Antarctic Arts Fellow	JCADM	Joint Committee on Antarctic Data Management
AEON	Antarctic Environmental Officers Network	LGP	Latitudinal Gradient Project
AESOP	ANDRILL Education and Science Outreach Panel	LINZ	Land Information New Zealand
ANDRILL	Antarctic Drilling Project	LR	Landcare Research
AOMG	ANDRILL Operations Management Group	LTER	Long Term Ecological Research
APEC	Asia-Pacific Economic Cooperation	MASIC	McMurdo Sound ANDRILL Science Implementation Committee
ARC	Antarctic Research Committee	MED	Ministry of Economic Development
ASC	ANDRILL Science Committee	MFAT	Ministry of Foreign Affairs and Trade
ASMA	Antarctic Specially Managed Area	MFE	Ministry for the Environment
ASMA2	McMurdo Dry Valleys Antarctic Specially Managed Area	MFish	Ministry of Fisheries
ASMP	ANDRILL Scientific Measurements Panel	MIS	McMurdo Ice Shelf
ASPA	Antarctic Specially Protected Area	NADC	National Antarctic Data Centre
ASRP	ANDRILL Science Review Panel	NCEA	National Certificate of Educational Achievement
ATCM	Antarctic Treaty Consultative Meeting	NIWA	National Institute of Water and Atmospheric Research
ATCP	Antarctic Treaty Consultative Parties	NGO	Non-Governmental Organisation
ATS	Antarctic Treaty System	NPI	Norwegian Polar Institute
BAS	British Antarctic Survey	NSF	National Science Foundation
BioRoss	Biodiversity of the Ross Sea Project	OAC	Officials Antarctic Committee
CCAMLR	Convention for the Conservation of Marine Living Resources	PATC	Pre-Antarctic Training Course
CEE	Comprehensive Environmental Evaluation	PEE	Preliminary Environmental Evaluation
CEP	Committee for Environmental Protection	RiSCC	Regional Sensitivity to Climate Change in Antarctic Terrestrial and Limnetic Ecosystems Project
COMNAP	Council of Managers of National Antarctic Programmes	RNZAF	Royal New Zealand Air Force
CRP	Cape Roberts Project	RoU	Record of Understanding
DOC	Department of Conservation	RSCAS	Royal Society Committee on Antarctic Science
DV	Distinguished Visitor	SAR	Search and Rescue
EARP	Environmental Assessment Review Panel	SCALOP	Standing Committee on Antarctic Logistics and Operations Symposium
EIA	Environmental Impact Assessment	SCAR	Scientific Committee on Antarctic Research
FRST	Foundation of Research, Science and Technology	SMS	Southern McMurdo Sound
GCAS	Graduate Certificate in Antarctic Studies	SOER	State of Environment Reporting
IAATO	International Association of Antarctic Tourism Operators	TAE	Trans Antarctic Expedition
IAP	Italian Antarctic Programme	USAP	United States Antarctic Programme
IEE	Initial Environmental Evaluation	USNSF	United States National Science Foundation
IGY	International Geophysical Year	WINFLY	Winter Fly-in
IMS	Information Management System		
IMS	International Polar Year		
IT	Information Technology		

Antarctica New Zealand Staff - 2003/2004 Season

Christchurch Staff

Lou Sanson	Chief Executive
Michelle Jones	Executive Assistant
Peter Smith	Corporate Services Manager
Eve Webb	Accountant
Jeanette Tamakehu	Accounts Clerk
Prue Sullivan	HR Advisor
Melanie Lindroos	HR Advisor (from June 2004)
Alison Whitaker	Receptionist
Jess McDuff	Office Assistant
Mike Mahon	IT and Science Administrator
Dean Peterson	Science Strategy Manager
Shulamit Gordon	Science Advisor
Neil Gilbert	Environmental Manager
Rebecca Roper-Gee	Environmental and Policy Officer
Miranda Huston	Science and Environmental Support
Julian Tangaere	Operations Manager
Paul Woodgate	Movements Controller
Peter Cleary	Operations Planner
Keith Springer	Programme Support Manager
Kevin Rigarslsford	Maintenance and Field Engineer
Rob Stewart	Movements Officer (Cargo)
Kevin Leech	Movements Officer (Clothing)
Jim Cowie	ANDRILL Project Manager
Johno Leitch	ANDRILL Project Assistant
Michael Nottage	Inventory/Purchasing Controller
Peter Brookman	Facilities Engineer
Emma Reid	Communications Manager
Natalie Cadenhead	Information Services Specialist
Anna Howard	Information Communications Co-ordinator

Scott Base Staff

Julian Tangaere	Scott Base Manager	
Peter Brookman	Scott Base Manager	
Jamie Plowman	Science Technician	Winter over
Jane Weatherill	Canteen Manager	

Keith Roberts	Telecom Technician	Winter over
Keith Springer	Programme Support Manager	
John Roberts	Programme Support Co-ordinator	
Danny Higgins	Field Support Officer	
Ewan Paterson	Field Support Assistant and winter Field Support Officer	Winter over
Peter Girvan	Communications Operator	
Kirsten Keene	Communications Operator	
Juanita Milne	Communications Operator	
Sarah Malshinger	Communications Operator	
Paul Rogers	Field Training Instructor	
Aaron Halstead	Field Training Instructor	
Kem Johnson	Field Training Instructor	
Rob McBrearty	Field Training Instructor	
Hilary Cave	Field Training Instructor	
Rachel Brown	LGP Camp Manager/Field Safety	
Gus McAllister	LGP Camp Mechanic	
Glenn Burt	Base Services Manager	
Barbara Rennie	Domestic and First Aider	Winter over
Anna Harrison	Domestic	
Sharon Mackie	Domestic	
Victoria Woods	Domestic	
Dan Hook	Storeperson	
Dan Young	Cargo handler	
Trudi Munro	Chef	
Donna Wightman	Chef	Winter over
Dan Mathers	Winter Base Manager, Engineering Supervisor, and Carpenter	Winter over
Mark Hay	Engineering Supervisor and engineer	Winter over
Dave Mitchell	Engineer	Winter over
Chris Knight	Mechanic	Winter over
Toby Griffith-Jones	Mechanic	
Brad Keegan	Plant Operator	
Sam Mill	Plant Operator	
Brad Eyre	Electrician	Winter over
Glen Downie	Carpenter	

Directory

Directors	Mr P M Hargreaves (Chairman) Dr Maj De Poorter Dr Wendy Lawson Mr Kerry McDonald Mr Bill Mansfield Dr Francis Small
Chief Executive Officer	Mr Lou Sanson
Corporate Office	International Antarctic Centre 38 Orchard Road Private Bag 4745 Christchurch New Zealand Phone: +64 3 358 0200 Fax: +64 3 358 0211 Website: www.antarcticanz.govt.nz
Auditors	Audit New Zealand
Solicitors	Chapman Tripp
Bankers	Westpac Banking Corporation





Dry Valleys, Andris Apse: anzpcK414:03/04

Antarctica, where nothing there is what it first seems – night can be day, you climb up to the South Pole, it is very dry, 'time' can be frozen, once it was temperate, - a completely magical upside down world where one is forced to cast aside all preconceptions and begin anew.

Clare Plug
Winner of the Antarctic Quilt Challenge



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