

Antarctica New Zealand

New Zealand Antarctic Institute



Annual Report
1999–2000

Vision

Antarctica: refreshing global ecosystems and the human spirit

Mission

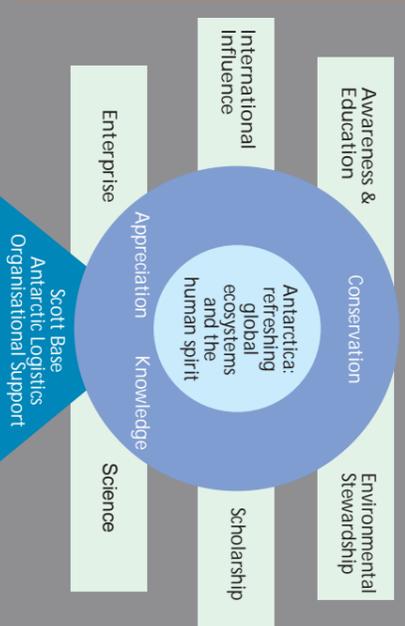
Advancing knowledge, appreciation and conservation, of Antarctica and the Southern Ocean

For the benefit of New Zealand and the world community

Through leadership, partnership and involvement in high quality Antarctic related activities.

Goals

To advance knowledge, appreciation and conservation of Antarctica and the Southern Ocean, and hence meet New Zealand's national interests in the region, requires activities focused on environmental stewardship, science, scholarship, awareness and education, enterprise and international influence. This is based on effective operation of Scott Base and provision of logistics and organisational support services.



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Antarctica New Zealand has enjoyed a highly successful year, with an excellent season on the Ice, continued development of our scientific research activities – including Southern Ocean research, an increased public awareness of our programmes and further consolidation of our environmental monitoring work.

Scott Base remains the anchor of our Antarctic operations, and science remains our key activity. As the highly successful Cape Roberts Drilling Project geared at building our knowledge of climate changes, draws to a close, the science community is looking at several new and exciting research projects of international significance. These projects recognise the importance of Antarctica and the Southern Ocean in global ecosystems. For Antarctica New Zealand, this creates new challenges around the logistics resources and capabilities that will be required.

This year, we have continued to focus on increasing public awareness of Antarctica and the work supported by Antarctica New Zealand with emphasis on our arts, education and media programmes.

Chairman's Report



We have given consideration to the potential impacts of activities beyond the traditional science projects in Antarctica. Tourism is an example. The tourism workshop we successfully hosted towards the end of June is outlined in this annual report.

We continue to work closely with the Ministry of Foreign Affairs and Trade, and the Officials Antarctic Committee, on matters of policy.

The issue of fishing for toothfish in the Southern Ocean and the extensive public interest in the massive iceberg that broke off the Ross Ice Shelf earlier in the year have contributed to highlighting the Antarctic region and its importance to New Zealanders.

The year in review has seen some internal change for Antarctica New Zealand and involved some new appointments to our small and highly specialised team. Costs associated with running and improving our organisation exceeded budget by \$122,000. However, Antarctica New Zealand will continue to operate a balanced budget in the medium term.

We look forward to working with the new government and appreciate the recognition given to the value of our ongoing efforts in Antarctica and the Southern Ocean and the special relationship we share with the American and Italian programmes in the Ross Sea region.

In managing New Zealand's activities on the Ice, Antarctica New Zealand acknowledges the importance of the Antarctic Treaty System in supporting peace and stability in the region. The re-election of our Chief Executive Gillian Wratt as Chairperson of the Committee of Managers of National Antarctic Programmes (COMNAP) for a fourth year is a reflection of Gillian's professionalism and of the good standing we enjoy in the international Antarctic arena. The Board of Antarctica New Zealand is proud of the efforts of our team and the contribution they make to the stewardship of Antarctica for current and future generations.

A handwritten signature in black ink, appearing to read 'Chris Mace'.

Chris Mace
Chairman

The New Zealand Antarctic Institute Act requires that Antarctica New Zealand “develop, manage and execute New Zealand activities in relation to Antarctica and the Southern Ocean”. In fulfilling our statutory responsibilities we have a commitment to the Antarctic as a place that refreshes global ecosystems and the human spirit.

The four years since the establishment of the New Zealand Antarctic Institute have been challenging ones. Redistribution of resources is an essential component of adjusting organisational capabilities within a fixed baseline funding level from the government. Our commitment to reviewing the way we carry out our operations and the key capabilities required in the organisation, has not always been welcomed by our stakeholders, particularly those to whom we provide support in Antarctica. Neither has it always been easy for our staff who have continued to provide a high quality service in the traditional areas of Antarctic support, at the same time as we have extended our work to meet the broad mandate of the NZAI Act.

That we have made significant progress in achieving the NZAI Act mandate, at the same time as supporting more project personnel in Antarctica, is a credit to the professionalism of the Antarctica New Zealand staff.



The Year In Review

This year ends with some major changes to our personnel. I would like to sincerely thank and compliment everyone in the organisation for their contribution to the success of our first four years and acknowledge with gratitude, the efforts of those who have left Antarctica New Zealand this year.

Supporting Antarctic science continues to be where the largest proportion of our resources are applied. This year has seen the completion of field work for the seven nation Cape Roberts Project, led by Antarctica New Zealand. Initially planned to have a two year field programme in 1995/96 and 1996/97 during which time logistics resources available to other projects were expected to be significantly reduced, the field work in fact extended into 1999/2000 and was carried out alongside a number of other large and small projects. The return on the government investment in Antarctic science and operations has been significantly improved since the establishment of Antarctica New Zealand.

The Cape Roberts Project has discovered previously unknown volcanic eruptions, challenged accepted tectonic models and recovered nikau palm pollen in a region of the Antarctic where temperatures currently fall below -40°C during the Antarctic winter.

Innovative science and exciting research results are not restricted to the high profile Cape Roberts Project. National and international projects have continued to expand our understanding of the dynamics of the Southern Ocean and its seasonal ice cover; the bio-diversity, ecology and physiology of Antarctic and Southern Ocean ecosystems; the geology of the region, and the chemistry and physics of the atmosphere. Results have included a better understanding of polar stratospheric cloud formation and chemical destruction of ozone during the early springtime in Antarctica. The understanding of these processes is important for the creation of predictive models of the global ozone shield. For the first time, New Zealand scientists are measuring the physical conditions needed to form platelet-ice, a precursor to sea ice only found near the Ross Ice Shelf region.

This research is vital to our understanding of sea ice formation and destruction – the largest annual mass change on Earth and a key factor in global ocean circulation.

The challenge for Antarctica New Zealand is to facilitate the consolidation of research projects and results into a picture of our knowledge of Antarctica and global ecosystems through the themes of the Antarctic and Southern Ocean strategy. Some exciting new opportunities are developing. There has been increased interest in research in Southern Ocean ecosystems and processes, investigations into latitudinal and climate related variation in ecosystems and bio-diversity, and in follow up from the Cape Roberts Project.

Extending awareness of the importance of Antarctica and the Southern Oceans to New Zealand, culturally, environmentally and scientifically, and presenting the results of our involvement in the region is an important aspect of our activities. The visit to Scott Base of the original 1957 Scott Base wintering team reminded us of the history of New Zealand involvement on the Ice. At the other end of the scale we had our youngest ever visitor to Scott Base with the “What Now?” television crew. The Artists to Antarctica Programme continued with a sculptor and a composer-musician as our 1999/2000 Antarctic Arts Fellows. The dawn of the new millennium provided international coverage of Scott Base from a Reuters team and a journalist from the London Sunday Times positioned at the Base.



Chief Executive Gillian Wratt, describing the Scott Base facilities to US President Bill Clinton on a guided tour of the International Antarctic Centre, with NSF Officer of Polar Programs, Director Dr Karl Erb, when he visited Christchurch in September 1999.



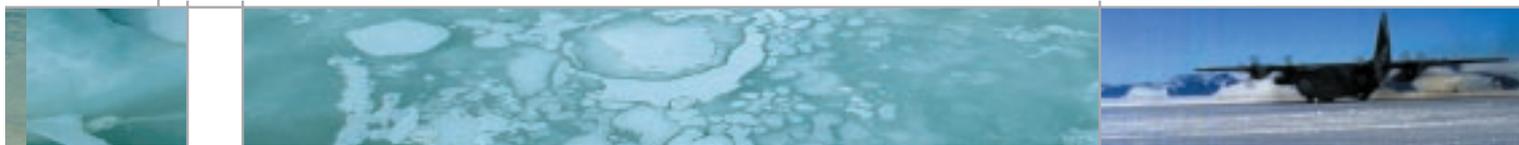
The visit of President Clinton to the International Antarctic Centre and the opportunity to present some of our science projects to him were a highlight of the year. His visit emphasised the contribution that the strong Antarctic co-operation between the United States and New Zealand makes to the bilateral relationship between our two countries.

Millennium promotion by tourist operators created a high level of interest in the Antarctic. We are seeing a broadening of the experiences being sought by visitors catered for by the tourism industry. Antarctica New Zealand is concerned to see the benefits and risks of tourism rigorously debated as input to sound policy development. To this end, we ran a workshop in June on scenarios, benefits and risks of Antarctic tourism. We also continue to consider the broader context of private sector interest and involvement in Antarctica and the Southern Ocean.

Our strategic initiatives in the environmental area continue with the Ross Sea Region State of the Environment Report due for completion in February 2001. We have also continued to review and develop a cost effective environmental monitoring programme, based on a database of New Zealand activities in the Antarctic since 1957. The international dimension of Antarctic environmental management has received significant resourcing with the Antarctica New Zealand Environment Manager, Emma Waterhouse, co-ordinating intersessional work for the international Committee on Environmental Protection (CEP), and chairing the Antarctic Environmental Officers Network (AEON).

On the international front, Antarctica New Zealand has again been active in the Council of Managers of International Antarctic Programs (COMNAP). I have chaired COMNAP for the third year and our Antarctic Support Services Manager Julian Tangaere has been the convenor of a working group on Energy Management. The work of COMNAP is aimed at implementing the spirit of the Antarctic Treaty by encouraging co-operation between national programmes to enhance the effectiveness of our operational and environmental management in Antarctica, and support for international science projects. This can range from co-operative air and ship operations, to interacting with the tourism industry, to discussion on waste handling and energy management systems. The international networks established through COMNAP can also be harnessed for the benefit of New Zealand Antarctic science as seen in the Cape Roberts Project.

Safe, environmentally sound, effective and efficient operations in Antarctica are a critical part of Antarctica New Zealand's activities. We are nearing completion of the work required to upgrade Scott Base facilities to meet appropriate building and environmental standards. The new ablutions block was completed for use in the 1999/2000 season. The new contained fuel tank is now in use and upgrading work on the base fuel distribution system is nearing completion. We have ceased incinerating waste at Scott Base, and are considering options for improved treatment of Scott Base liquid effluent.



Pressures on the RNZAF helicopter fleet in East Timor created a situation where the support requirements for helicopter flying for the 1999/2000 Antarctic season were unable to be met by the New Zealand Defence Forces (NZDF). This necessitated purchase of helicopter support from a commercial provider. Fortunately Helicopters New Zealand were able to provide a Bell 212 helicopter at short notice, giving us excellent support. This was initially funded from Antarctica New Zealand's cash reserves. The impact of this on the ongoing business of the Institute was subsequently recognised by the government and additional Crown funding was provided.

From a financial perspective, Antarctica New Zealand has an operating deficit of \$301,000 for the year ending 30 June 2000. Whilst a significant deficit for this year, we continue to maintain a balanced budget in the medium term. The main reason for the operating deficit was the decision to fund an extra three RNZAF Hercules flights (total 15 flights) into the United States/Italy/New Zealand intercontinental flight pool, to better balance our contribution to, and use of, the Antarctic flight pool. We presented a successful bid into the 2000 Budget process for funding to continue this level of flight support, and for commercial helicopter contracting for the future. Other factors contributing to the deficit were increases in the cost of fuel and one-off restructuring costs.

Our numbers at Scott Base this season were high again, with 5,799 science days and 726 other event days (including education, arts, Antarctic Heritage Trust, TAE/IGY reunion) supported at Scott Base and in the field.

The 1999/2000 year again proved that Antarctica New Zealand has an excellent reputation internationally for its facilitation of Antarctic science, and is well recognised for its initiatives in environmental management. We are a small but compact entity which makes the role of each individual an important one within our organisation. The staff changes taking place will result in different skills being applied to our ongoing work and to the value we offer to our stakeholders. We look forward to continued achievement in the year ahead.

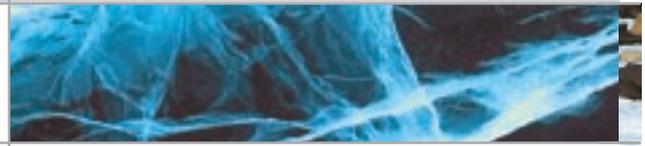
A handwritten signature in black ink, appearing to read 'Gillian Wratt'.

Gillian Wratt
Chief Executive

“Our leadership in Antarctic issues rests on our understanding and attainment of a predictive knowledge of impacts, direct and indirect, on Antarctica and the Southern Ocean.”

(A New Zealand Science Strategy for Antarctica and the Southern Ocean)

Planning and Facilitation of Science



Southern Ocean Workshop

Antarctica New Zealand led a workshop on Southern Ocean research in December 1999. The workshop brought together most of the entities involved in Southern Ocean research including representatives from University of Otago, Ministry of Research, Science and Technology (MoRST), Land Information New Zealand (LINZ), Ministry of Fisheries (MFish), National Institute of Water and Atmospheric Research (NIWA), Institute of Geological and Nuclear Sciences (IGNS), Landcare Research New Zealand Limited (Landcare), Department of Conservation (DOC) and Antarctica New Zealand.

The objectives of the workshop were to define all the projects that are currently running in the Southern Ocean, define the projects planned by the participating agencies and begin to prepare a strategic document for future Southern Ocean research activities.

Southern Ocean Projects/Capabilities

1. NIWA's *RV Tangaroa* Research Vessel – has an ice-strengthened hull and reinforced propeller blades for working in light/moderate sea ice conditions. The *Tangaroa* has worked to 62°S during the Southern Ocean Iron Release Experiment (SOIREE) in 1999 and to 67°S during an Australian/Italian geological survey mission in February 2000.
2. The SOIREE Mission – undertaken last year by NIWA was the first Southern Ocean iron fertilisation experiment.
3. Fisheries Management – New Zealand has played an active role in fisheries management within its EEZ and the Southern Ocean fisheries (toothfish), particularly in the Ross Sea.
4. Sub-Antarctic Island Management – DOC has been active in management of the ecosystems of the sub-Antarctic islands on behalf of New Zealand. There is a wealth of knowledge and expertise regarding life forms and meteorological conditions on the sub-Antarctic islands.

5. Sea Ice Physics Expertise – New Zealand has an excellent programme studying the physics of sea ice developed by scientists from Industrial Research Limited and the University of Otago.

6. Seismic Expertise – IGNS knowledge/experience on seismic and tectonic research, which makes a valuable contribution to marine geologic projects.

7. Hydrographic Knowledge – LINZ has a database of Ross Sea hydrographic work and is producing new charts to ensure the safe navigation of ships in the Ross Dependency.

8. Oceanographic Expertise – NIWA experience in current, tide and wave measurements and analysis. Seafloor mapping in the EEZ is extensive and could be expanded into the Southern Ocean area.

9. Seabird Research – NIWA and DOC have a large amount of knowledge on seabirds in the sub-Antarctics and New Zealand. This knowledge base will be increased over the next few years with Southern Ocean seabird research.

10. Penguin Research – Landcare, University of Otago and Massey University are involved with penguin research, ranging from cold weather tolerance to population dynamics.

11. The Ocean Drilling Programme (ODP) is a global research programme investigating how the oceans function and influence climate. New Zealand has collaborated with ODP. There is a proposal for ODP drilling in the Ross Sea in the next few years.

12. Seal Research – DOC, Lincoln University, University of Otago and University of Waikato have been involved with seal research in Antarctica and the sub-Antarctic islands.

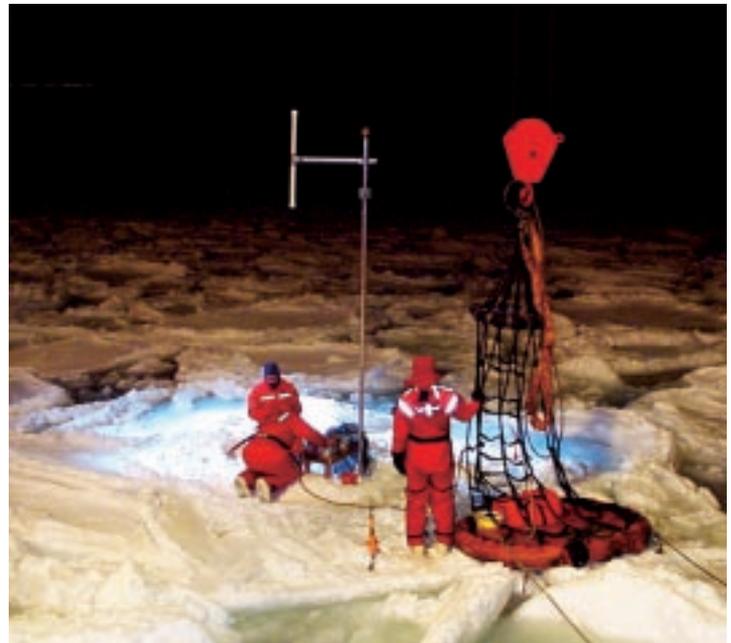
Bio-diversity of the Ross Sea

The government has recently announced a new discretionary fund for bio-diversity research. This includes a proposal written by representatives from Ministry of Fisheries, the Ministry of Foreign Affairs and Trade and Antarctica New Zealand to research the bio-diversity of the Ross Sea.

The research will utilise known survey methodologies to gather baseline information on the bio-diversity of various marine communities in the Ross Sea region. Ongoing study of selected sites will allow assessment of potential changes in bio-diversity to be made.

The goals are to develop a more complete inventory of the bio-diversity present in selected marine communities in the Ross Sea and to facilitate better environmental reporting. A high level of co-ordination between New Zealand government agencies and international research organisations with an interest in the Ross Sea is proposed.

The initial stage of the research will be a desktop review of knowledge already available describing marine bio-diversity in the Ross Sea region. There will be a major research cruise into the Ross Sea scheduled for the fourth year of the proposed five-year study, during the summer of 2003/04.



Researchers take measurements of new ice, referred to as pancake ice, next to the US icebreaker R/V N.B. Palmer. (Photo courtesy T. Haskell)



Antarctic Research

Antarctica New Zealand is part of a new reference group established by the Foundation for Research, Science and Technology (FoRST) to examine the government's investment in Antarctic and Southern Ocean research and make recommendations on future directions of investment for the Public Good Science Fund (PGSF).

The reference group is part of the Foundation's review of the way they do business and was put in place with the direction of the Foresight Process, described in the "Blue Print for Science" document published by the Ministry of Research, Science and Technology (MoRST).

Antarctica New Zealand ran its second "Application for Support" round this season. An Antarctic Research Committee chaired by the Antarctica New Zealand Science Strategy Manager, Dr Dean Peterson reviewed all the science applications for support for the 2000/2001 and/or 2001/2002 seasons. There were 42 applications for support of which 31 were accepted for Antarctic or Southern Ocean research for the following two seasons.

Science Accomplishments and Plans

1. Antarctica as a Global Barometer

This was the biggest season on record for the Cape Roberts Project. The twin scientific goals of the project – glacial history of the East Antarctic ice sheet and the history of the West Antarctic Rift System – have been greatly advanced, with major improvements of chronology from the project. This season 934 metres of core were retrieved from the ocean floor.

The glacial history of the East Antarctic ice sheet has been studied from the 1,500 metres of core representing 16 to 34 million years ago. For the first time it is possible to recognise and date individual advance-retreat cycles of the ice-sheet with a precision only possible in the last few years. The researchers have discovered, for example, cycles 20 million years ago with a frequency of 100,000 years.

Three sections of core from the Cape Roberts Project: The bottom section is sediment dated at 34 million years of age. The centre section is the transition between sediment and Beacon sandstone. The top section is the Beacon sandstone dated at 350 million years of age. The three sections of core were retrieved at a depth of 822 to 825 metres. (Photo courtesy Brian Reid)



This indicates that the Antarctic hemisphere ice sheet millions of years ago responded to cycles of solar radiation in the same way as the northern hemisphere ice sheets of the last million years. The project has also found that the Transantarctic Mountains from 34 to 25 million years ago were covered with cold climate vegetation – tundra and scrubby beech; and 24 million years ago a decline in plant microfossils in the core indicating a significant cooling not previously recognised.

New Zealand's understanding of the history of the West Antarctic Rift System has been changed by the discovery that the oldest layer of sediment is only 34 million years old, not between 100 and 50 million years old as previously thought. This knowledge challenges current thinking on the history and processes along the margin of one of the largest rifts in the world.

The Cape Roberts project has produced approximately 250 publications to date. Importantly, many of these publications have rewritten understanding of the East Antarctic ice sheet and the West Antarctic Rift System. As the last year of funding for Cape Roberts concludes, many more publications will be written and the final clean-up of the Cape will take place.



Ice posts designate sea ice algae study areas. (Photo courtesy K. Ryan)



2. The Southern Ocean

At its maximum extent, Antarctic sea ice covers over 20 million km² of some of the most productive waters in the world. Sea ice is believed to be an extremely important part of the Antarctic and Southern Ocean environment, but to date it is poorly understood. The study of Sea Ice and Southern Ocean Processes is being led by Industrial Research Limited (IRL) along with a consortium of four New Zealand Universities and international collaborators. The intent of the programme is to develop a greater understanding of the Antarctic sea ice and its relationship with the Southern Ocean.

Over the past few years IRL's research has enabled the development of an improved understanding of the physical processes occurring in the amorphous sea ice sheet. An experimental programme was started during 1999 to determine the permeability of sea ice to brine under naturally occurring conditions. This data is important for determining the rate at which nutrients are supplied to sea ice algae, a primary source of food in the pack ice. This data will also help determine the rate of snow ice formation and the processes which control it. This work is vital to determining the response of sea ice extent to Global Warming.

Sea ice hosts a large community of algae, which is released into the food chain when approximately 16 million km² of ice melts each Antarctic summer.

The community of algae grows rapidly during the Antarctic spring, just when the ozone hole occurs over the Antarctic continent, and at a time, when sea ice is most transparent to Ultra Violet-B radiation (UVB). Another group at IRL is investigating the effect of UVB on the sea ice algae.

An innovative method using oxygen micro-electrodes to measure productivity in bottom ice algae in-situ was successfully employed this season. This technique allowed for measurements under different UVB conditions to be taken simultaneously on the same colony of sea ice algae. The concern for the algae is not higher mortality or slower growth, but a genetic selection process to a less nutritious species in the food chain.

3. Life in Extreme Environments

Mats of algae and cyanobacteria are common constituents of inland aquatic systems of Antarctica. Within streams, on moist soils and shallow pools they have been shown to dominate biomass and productivity. A research group from the National Institute of Water and Atmospheric research (NIWA) examined the factors controlling the growth of these dominant biological communities in inland Antarctic habitats. The study sites were Lake Vanda and the ponds of the McMurdo Ice Shelf. Lake and pond habitats differ in many respects, particularly in relation to the stresses imposed by the Antarctic climate. Organisms in the permanently ice covered lakes experience very low summer radiation flux and winter darkness but do not freeze, while those in ponds freeze completely to below -30°C for many months during winter. Studies undertaken this year to determine the uptake and storage of nutrients from the water column will enable the role of mats as sinks of incoming nutrients to be determined.

Work this year at Lake Vanda was designed to measure the relationships between light and mat biomass and productivity. This research will quantify the importance of benthic microbial production in the lakes of the McMurdo dry valleys. The work carried out at Bratina Island concerns shallow water communities and specifically aims to determine how they respond to the extreme conditions of winter. The research group looked at the effects of UV radiation on nitrogen fixation rates. Experiments using oxygen electrodes measured photosynthetic rates of whole mat/sediment cores. Data was also collected for the first estimation of the biomass of bacteria and viruses within the mats. In addition, the opportunity to stay at Bratina Island until mid February gave the opportunity to carry out some unique experiments, and to observe the ponds during the start of the freezing process for the first time.

Understanding the terrestrial bio-diversity in Antarctica is vital for New Zealand's ability to protect the environment of the Ross Sea region. A group from Waikato University, Australia, Germany, Spain and Austria conducted research this past season in Botany Bay to describe the vegetation in the area, study the physiological adaptations of the mosses and establish systems to allow the determination of the active season of members of the vegetation. The length of the "growing" season may determine the bio-diversity and performance of vegetation.

Along with this research two other groups from Waikato University have been studying bio-diversity in the Ross Sea region. The first group used molecular genetics to obtain an understanding of moss species and populations. Preliminary results from this work have shown that two previously identified mosses may be conspecific. The second group looked at diversity in terrestrial invertebrates and microbiology of terrestrial biotopes. An accurate determination of the diversity of terrestrial arthropods and the degree of isolation with and among sites will be completed with the samples taken this season.

4. Human Influences In/On Antarctica

The most dramatic effect of human influence globally is the annual ozone hole over the Antarctic continent each Austral-springtime. This event causes a large increase in biologically-damaging radiation that harm Antarctic ecosystems.

NIWA has a large suite of instruments looking at amounts of ozone, chlorine, bromine and other related species. This data will be compared to model results to improve our predictive capability of the atmosphere's response to global change.

Fuel spills on land in the Antarctic occur mainly near scientific stations where storage and refuelling of aircraft and vehicles can result in spills. As Antarctic soils occur in an environment of low precipitation and severe cold, with unique biological communities, it is difficult to predict the impact of fuel spills on these soils. A group, led by Landcare Research is studying the impacts of fuel spills on the biological, chemical and physical properties of Antarctic soils.

5. Connections between Antarctica and New Zealand

The Transantarctic Mountains form one of the Earth's major rift mountain chains. An understanding of this unique feature can help elucidate our understanding of the evolutionary process of Antarctica from 38 million years ago to the present. IGNS is researching this issue through the use of an array of broadband seismographs placed in the Ross Sea region to investigate the crust and upper mantle movement of the earth.

The break-up of Gondwana, the super-continent, is still poorly understood. The Jurassic and Early Cretaceous periods encompass a critical time for the evolution of Antarctica. A group from the University of Otago spent a year looking into the problem and found that data on old volcanic vents combined with stratigraphic columns and appropriate lithofacies maps provides an initial picture of the scale and evolution of the Coombs Hills in Antarctica.



The Future

The Latitudinal Gradient Project will use an interdisciplinary approach to identify trends based on understanding the responses of key physical and biological process and systems to changing environmental conditions. The Ross Sea region contains a number of environmental (ecological) spectra relating to cold, aridity, solar radiation, UV and light/dark conditions. Some of these systems are unique to the Antarctic. Within the Ross Sea region the Victoria Land mountains and coast contains the most extensive coastal latitudinal gradient in Antarctica, from 71.5°S (Cape Adare) to 86°S at the southern end of the Ross Ice Shelf (14.5° of latitude along a narrow longitudinal band).

Environmental changes over a wide latitudinal range at one point in time can be used to mimic environmental changes at one point in space over a long time span. A latitudinal gradient can therefore be used to study the effects of potential changes in regional climate that may be associated with global change, as well as providing a range of environmental conditions for more fundamental studies.

There are clearly significant advantages to be gained in drawing together New Zealand's expertise in these areas and linking with our international partners in the Ross Sea region. A workshop scheduled for August 2000 will bring together New Zealand's Antarctic scientists to help define our role in an important research direction in Antarctic science.

The Antarctic Geological Drilling (ANDRILL) consortium has been conceived to sample the Antarctic Cenozoic history through stratigraphic drilling. ANDRILL is still in its infancy stage. The broad drilling strategy and work programme for ANDRILL is to be the responsibility of an international board. Dr Peter Barrett will champion the ANDRILL consortium from Victoria University of Wellington.

The strategy is to establish ANDRILL for a 3 – 4 year programme in the Ross Sea region, which has a number of

sites selected to address key paleoclimate goals. After this first phase period the platform can be used to support new consortiums or groups in other regions such as Prydz Bay and the Antarctic Peninsula.

The Southern Ocean is a close neighbour to New Zealand, yet we know very little about it. To rectify this situation, NIWA's research vessel, the *RV — Tangaroa*, is involved in a number of planned cruises in the Southern Ocean over the next few years. A hydrographic survey of three sites, Cape Adare, Possession Islands and Cape Hallett is planned for the 2000/01 season. A bio-diversity research cruise is planned for the 2003/04 season as part of the Bio-diversity of the Ross Sea region proposal accepted by the government in May 2000. The ship will also be involved with the marine research done in conjunction with the Latitudinal Gradient Project.

Lake Vanda in the Dry Valleys of Antarctica.



Research Projects Supported by Antarctica New Zealand in 1999/2000

Sea Ice and Southern Ocean Processes	Industrial Research Ltd
Impact of Fuel Spills on Antarctic Soils	Landcare Research New Zealand Ltd
Molecular Systematics of Antarctic Mosses	University of Waikato
Weddell Seal Mating Systems	University of Waikato
Bio-diversity of Terrestrial Invertebrates and Microbiology of Terrestrial Biotopes	University of Waikato
Automatic Terrestrial Bio-diversity	University of Waikato
Microbial Diversity: Bacteria and Fungi from Soil and Historic Huts	University of Waikato
Ecology of Terrestrial Antarctic Fauna	University of Otago
The Ecology of Microbial Mats in Lake Vanda and the Ponds of Bratina Island	National Institute of Water and Atmospheric Research (NIWA)
Magmatism in the TransAntarctic Mountains	University of Otago
Erio Shear Zone: A Major Tectonic Boundary in South Victoria Land, Antarctica	University of Otago
The Long Transport of Biomass Burning Aerosols: Characterisation of Particulates in the Atmosphere	University of Malaya, Malaysia
Holocene Evolution of the Ross Sea Coast	University of Auckland



Holocene Climate History from Coastal Ice	Victoria University of Wellington
How do Penguins Cope with Cold?	Massey University
Molecular Ecology of the Antarctic Fauna	Massey University
Cardiovascular Physiology of Antarctic Fish	University of Canterbury
Glacial History of the East Antarctic Ice Sheet at Allan Hills	Victoria University of Wellington
Ice Dynamics	University of Canterbury
Antarctic Atmospheric Ionisation and Dynamics	University of Canterbury
Direct Observations of Basal Ice and Substrate Deformation	University of Otago
Geomagnetic Micro-Pulsations and Solar Wind Particle Induced Optical Emissions	University of Newcastle, Australia
Dimensions of Special Incidents	Lincoln University
Antarctic Atmospheric Research	National Institute of Water and Atmospheric Research (NIWA)
Climate Monitoring	National Institute of Water and Atmospheric Research (NIWA)
Transantarctic Mountain Evolution/ Seismic Array	Institute of Geological and Nuclear Sciences (IGNS)
Seismological Observatory	Institute of Geological and Nuclear Sciences (IGNS)
Cosmogenic Nuclides in Earth Science: Validation of Production Systematics	Institute of Geological and Nuclear Sciences (IGNS)
Penguins, Parasites and Phylogenies: a Molecular Analysis of Penguin and Louse Co-evolution	Lincoln University
Adelie Penguin Population Dynamics	Landcare Research New Zealand Ltd
UV-B Effects on Bottom Ice Algae	Industrial Research Ltd
Antarctic Drilling: Cape Roberts Project	Victoria University of Wellington
Antarctic Fish Biology	University of Auckland
Antarctic Ecotoxicology: Effects of Metals on Fish Physiology and Health	University of Auckland

“Antarctica New Zealand recognises the special scientific, wilderness, aesthetic and historic values of the Antarctic environment and is committed to limiting any adverse impacts of the activities it supports.”

(from the Antarctica New Zealand Environmental Policy 1999)

Environmental Stewardship

Peter Cleary, Scott Base Operations Manager, and USAP environmental staff inspect the site of the Lake Vida Dry Valley drill hole. Although scientific drilling ceased at the site in the 1980s there are ongoing concerns about impact. Other sites of past activities will be identified in the Ross Sea Region State of the Environment Report



Ross Sea Region State of the Environment Report

Good progress has been achieved in the last year, on the Ross Sea region State of the Environment Report. Environmental Manager, Emma Waterhouse, is project managing the report that aims to summarise what we know about the Ross Sea region of Antarctica, what activities may be impacting on the environment and how any issues or problems identified can be addressed now and in the future. The report should provide a valuable resource for future management, with relevance to the scientific community, educationalists, the general public, policy makers and tour operators in the Ross Sea region. The report is expected to be available in February 2001 in both hard copy and web-based formats.

A team of 20 authoritative writers has been working on drafting up sections of the report on a wide range of subjects including tourism, science and support activities, the state of the ice-free areas of the region, the marine environment and regional air quality. All the lead authors are New Zealanders with each section also being reviewed by international scientists and experts including those from the USA, Italy, Germany, Australia and the UK.

As final drafts become available, the project manager and editor will have the challenging task of integrating texts, eliminating overlaps, filling any gaps and pulling the report together into a coherent whole. Already, the value of the texts and information provided by the authors is becoming obvious as a clear picture of the health of the region's ecosystems emerges. There are however, clear indications of where there is little or no information about whole communities and environments, often in places where human activities are already occurring or predicted to grow in the future.

Environmental Performance

Every year, Antarctica New Zealand is required to report on its environmental performance over the past season in accordance with the requirements of the Antarctica (Environmental Protection) Act. The report is provided to the independent Environmental Assessment & Review Panel (EARP) for review and is compiled using the end of season reports from each science and non-science event that we support. This reporting provides one way of assessing how effective environmental management procedures are, and identifies the level of compliance with environmental impact assessments and authorisations.

In November 1999, members of EARP visited Scott Base and adjacent field sites to carry out their own inspections first hand. The panel visited Cape Roberts, Botany Bay, Cape Royds, Cape Barne, Cape Evans and Hut Point. They reported very favourably on what they saw, noting that there were “no major environmental issues apparent.”

Antarctica New Zealand’s own records and observations confirm these views. We have documented a very good environmental record for the season. Selected indicators of the pressure on the environment from New Zealand’s activities are used including the most visited sites, flora and fauna sampling levels and numbers of incidents reported. The top three most visited sites (in terms of numbers of people) during the season were Cape Evans, Cape Bird and Arrival Heights (excluding Scott Base and Cape Roberts). This season also saw a decrease in the levels of sampling of flora and fauna. Despite this, concerns were raised about the potential for cumulative impacts on plant and animal communities at some of the more heavily used sites.



Large Marine Protected Area Proposed at Balleny Islands

Antarctica New Zealand has been working closely with the Ministry of Foreign Affairs and Trade to develop a proposal for a protected area that would include all of the Balleny Islands and a large marine area surrounding them. If accepted by the Antarctic Treaty nations, the area will be the biggest marine reserve in the Antarctic within which all taking of marine animals will be prohibited.

The Balleny Islands are a significant oasis of land in the Southern Ocean, located to the north of Cape Adare in Northern Victoria Land. The islands exhibit the greatest bio-diversity of any site in the Ross Sea region, are a significant bird breeding site and include the only location of the Chinstrap Penguin on this side of Antarctica. Offshore, the area offers a full range of marine communities to a depth of 2000m. It is likely that as yet undiscovered species of fish and other marine organisms are represented within the proposed 50 nautical mile area boundaries which encompass a significant proportion of the foraging range of the bird species which nest on the islands.

The draft proposal is progressing through the Antarctic Treaty System and is currently being examined by various CCAMLR working groups.

Environmental Manager, Emma Waterhouse, collects water samples at Lake Vanda in the McMurdo Dry Valleys. Monitoring work has been carried out near the site of the old Vanda Station, following its removal in 1995, demonstrating Antarctica New Zealand’s ongoing commitment to limiting impact at the site.

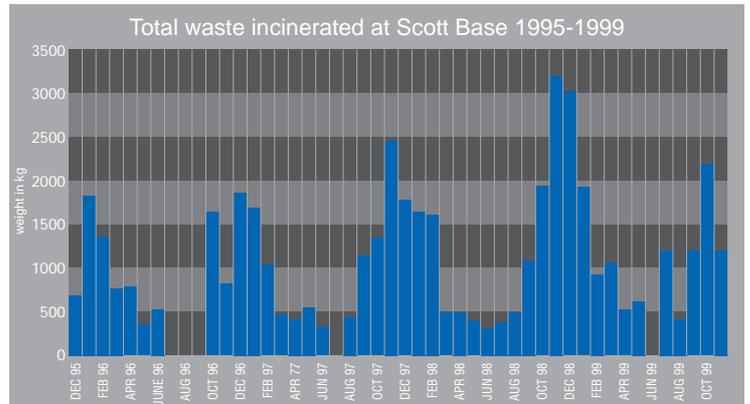


Monitoring Workshop Focused on the Future

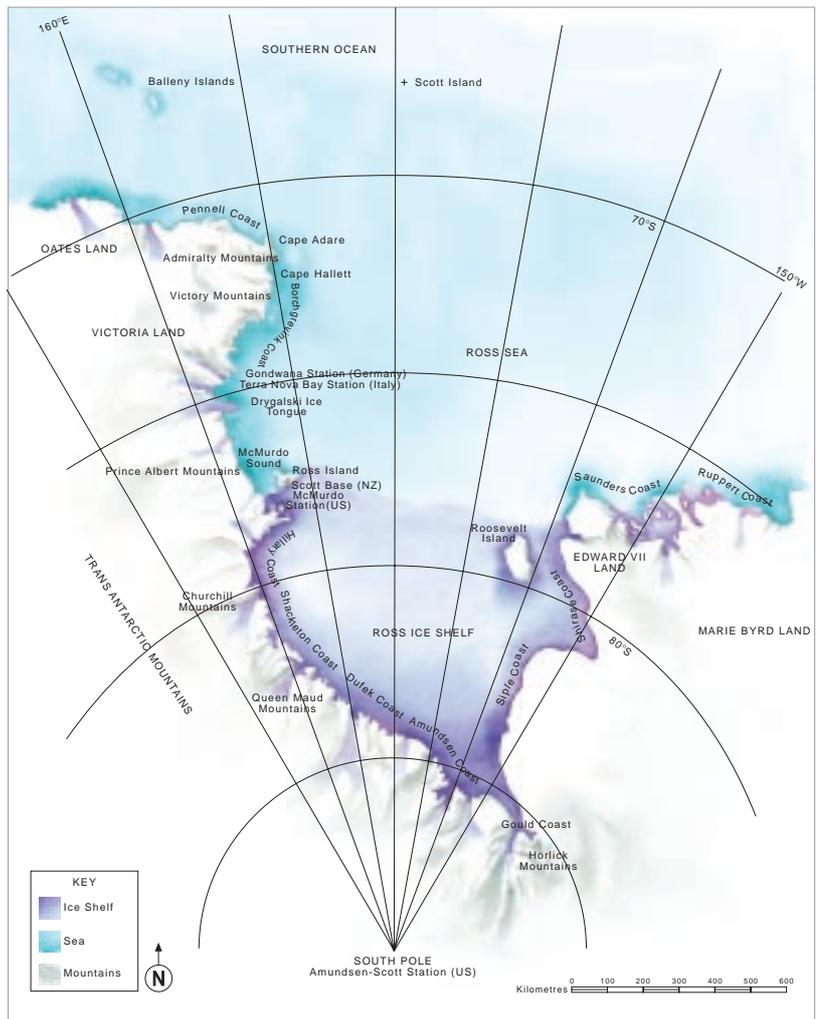
Over 20 scientists and other experts met in Christchurch in May 1999 to discuss Antarctica New Zealand's current environmental monitoring activities and to look at future monitoring initiatives. Current monitoring is site or activity specific and includes work at Scott Base, selected high use field sites and historic sites and protected areas. Aspects of liquid waste disposal, solid waste management, fuel handling, aircraft and vehicle operations are also included.

Future development of the programme is likely to include:

- development of Scott Base monitoring to include greater consideration of the marine and air environments;
- a review of contaminated sites monitoring e.g. at Scott Base;
- site specific monitoring programmes for heavily used sites e.g. Cape Bird, Cape Royds, Cape Evans;
- monitoring of pathogens in receiving waters off Scott Base; and
- discussions with NSF on opportunities for integration and co-ordination with US monitoring activities.



Monitoring of environmental pressures— Antarctica New Zealand has been utilising record keeping on energy use, waste generation and other 'pressure indicators' as part of the Environmental Monitoring Programme. Waste streams were recorded and are illustrated above for years prior to incineration at Scott Base ceasing in December 1999. Ongoing monitoring will help us to better understand and reduce waste.



The Ross Sea region of Antarctica is the focus for the State of the Environment report and other Antarctica New Zealand environmental initiatives.

End to Incineration at Scott Base

Antarctica New Zealand ceased all use of the Scott Base incinerator at the end of 1999 thereby eliminating one of the potentially more significant impacts on air quality in the area. All waste, including human waste from the field, food waste, paper, plastic and wood will now be returned to New Zealand in shipping containers at the end of each season. With the end to incineration, the focus will turn to improving waste minimisation practice at Scott Base.



Scott Base Sewage Discharge Studies

Auckland University Masters Student, Grant Redvers spent a second summer drilling holes in the sea ice in front of Scott Base to gain water samples as part of his study into the impacts of the sewage discharge. Results of the work have been incorporated into a thesis dissertation that is being used to help determine the best approach to the future management of sewage at the base.

Ross Sea Region Environmental Strategy Launched

An Environmental Strategy for the Ross Sea region was launched at Te Papa in September 1999. The strategy signals New Zealand's approach to environmental management in the region, setting out specific actions required for managing marine living resources, environmental compliance, protected area planning and environmental monitoring.

Cape Roberts Project Praised

Following a visit to the Cape Roberts Project Camp and Drill site in November 1999, members of EARP, New Zealand's independent environmental assessment panel, noted that there appears to have been remarkably positive acceptance of the Comprehensive Environmental Evaluation (CEE) written for the project. As a consequence of this and careful planning and operations, the panel noted that the Cape Roberts Project has probably had less impact on the environment than predicted in the CEE.



“In going to Antarctica, you are going to whatever you yourself were in the first place. You are journeying inwards as well as in space. Antarctica puts you in your place, in all sorts of ways”

(from Antarctic Arts Fellow Bill Manhire, Antarctic Tourism Workshop, Christchurch June 2000.)

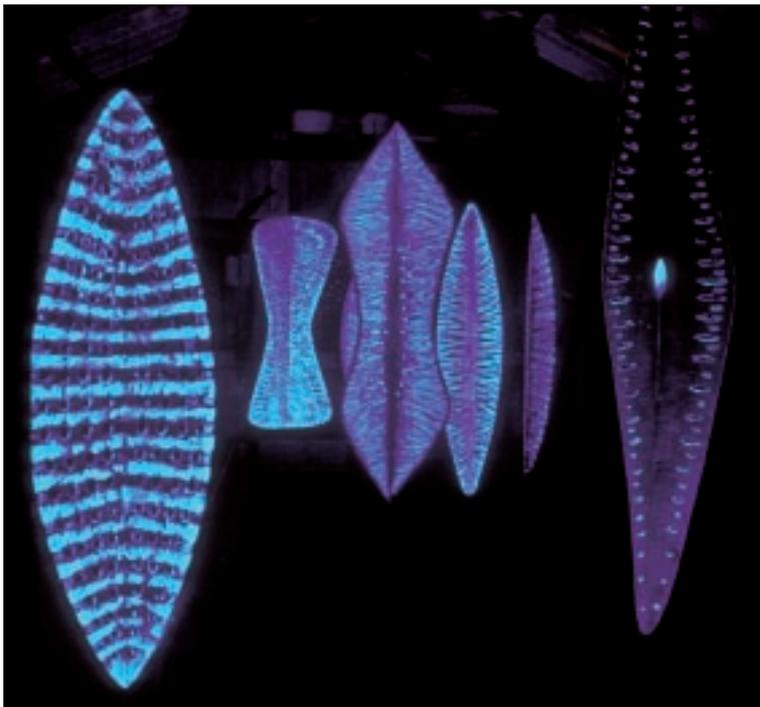


Public Awareness and Education

Artists to Antarctica

The Artists to Antarctica Programme is one of our most successful aspects of public awareness, giving people who may never personally experience the Antarctic, the opportunity to explore its pristine beauty and dynamic icescape through the creative skills of New Zealand's artists.

Antarctica New Zealand hosted a successful function in Christchurch, A Celebration of Antarctic Art and Writing, in October 1999. This function brought together all of the past participants as well as the successful artists for the 1999/2000 season – Auckland sculptor Virginia King and Christchurch musician/composer Chris Cree Brown. As a result of the function, several artists collaborated to produce different works and exhibitions including Southern Convergence which featured artworks by Margaret Elliot and Nigel Brown, short stories by Margaret Mahy and poetry by Bill Manhire and Chris Orsman.



Diatom sculptures from Antarctic Heart – work in progress by Virginia King.
(Photo courtesy Virginia King)

Virginia King and Chris Cree Brown were in Antarctica for eight days. They are presently working on individual projects which are due for public viewing towards the end of 2000. Virginia King's first exhibition will be in Auckland and she is collaborating with Chris Cree Brown on an installation that has musical accompaniment.

A more vigorous promotional campaign for our 2000/2001 Artists to Antarctica Programme resulted in 26 applications being received – more than double the previous season's number. The increased level of interest together with the profile the artists and the Institute have received from the programme, encouraged the decision to announce the new artists as Antarctic Arts Fellows. The recipients for the 2000/2001 season will be Wellington ceramics artist Raewyn Atkinson and dance choreographer Bronwyn Judge from Oamaru.

Previous recipients of the programme have been very active this year with individual exhibitions, speaking tours, lectures and further published works. The degree to which all the artists have promoted the Antarctic through their art prompted us to establish an Antarctic Artists Alumni which will provide a forum for the artists to maintain contact, and keep Antarctica New Zealand informed as to their creative work.

Facilitation of Antarctic Education and Information Provision

The University of Canterbury based Certificate in Antarctic Studies Course was run in conjunction with Antarctica New Zealand, with the Antarctic field component timed for late December. Staff from Antarctica New Zealand participated in development of the course schedule, and provided lectures and research information. Participants in the course included graduates from New Zealand, the United Kingdom and Australia.

The course was run through Continuing Education Department of the University of Canterbury. Following the set up of Gateway Antarctica, the University of Canterbury's centre for Antarctic studies and research, the course will be run from the new centre from the 2000/2001 season. Antarctica New Zealand has an active role in the advisory panel and board of Gateway Antarctica.

A representative from Te Papa (Wellington) visited Antarctica this season. This visit resulted in ongoing development of a major Antarctic exhibition planned for 2002.



Antarctica New Zealand formalised its education programme, Education Initiatives in Antarctica with pamphlets sent to educational institutions and organisations. Resulting from this was an 83% increase in education applications.

After assessment, successful applicants for the 2000/2001 season were Burnside High School (Christchurch), Kelly Tarltons Antarctic Encounter (Auckland), Canterbury Museum (Christchurch), Auckland War Memorial Museum (Auckland), International Antarctic Centre Visitors Centre (Christchurch), and Southland Museum (Invercargill).

Bibliography

Antarctica New Zealand has compiled a bibliography of Antarctic publications by New Zealand supported event personnel. *The New Zealand Antarctic Bibliography 1956 – 1999* includes referred articles and books generated from scientists, artists and writers, media, universities, governmental reports and theses. The bibliography is available on Antarctica New Zealand's WebSite. (<http://www.antarcticanz.govt.nz>)

Antarctica New Zealand WebSite

Our education and information outreach was significantly enhanced in February when our redesigned and redeveloped WebSite went online. The WebSite enables rapid dissemination of information about issues and projects initiated and/or facilitated by Antarctica New Zealand to a global public. The site provides education resources at all levels of education as well as information for event personnel and people with an interest in Antarctica.

Media Initiatives in Antarctica

The media programme has been running for a number of years to promote public awareness of Antarctica. This year a formal programme was developed entitled Media Initiatives in Antarctica. This programme called for proposals from professionals from all aspects of media. Establishment of this formal programme resulted in a 63% increase in applications from media interested in profiling Antarctica through a range of mediums including, print, television, film and documentary makers.

What Now?

The television children's programme "What Now?" visited the Ice to film a programme showing what life and Christmas was like at Scott Base. Tom Hern, the fourteen-year-old presenter of the programme is the youngest person to travel to Antarctica under New Zealand's Antarctic events programme. The "What Now?" crew also filmed footage for a longer two hour special, which aired in April. This stimulating, educational and humorous set of programmes featured at the International Science Festival in Dunedin later in the year.

The Millennium

Millennium celebrations at Scott Base were seen live throughout the world thanks to the Reuters crew and a journalist from the London Sunday Times based at Scott Base. They filmed the New Zealand celebrations, which were joined by American visitors from the nearby McMurdo Station.

Special Events

TAE/IGY Reunion

Eleven members of the original 1957/58 Trans Antarctic Expedition/International Geophysical Year team returned to Scott Base and enjoyed three days of reminiscing, visiting old haunts, and recounting their earlier adventures to the accompanying media crews and Scott Base personnel. The visit culminated in a special dinner held in the last remaining building built by the expedition members.

With print, radio and television in attendance, several articles, interviews and documentaries went to air as a result giving the veterans a high community profile while at the same time giving the work they did in science investigations and the building of Scott Base the public accolade it deserved.



Veterans of the TAE/IGY year who visited Antarctica in January 1999. Pictured from left: John Claydon, Bernie Gunn, Neil Sanford, Wally Tarr, Warren Guy, Jim Bates (kneeling), Bill Cranfield, Peter McDonald, Richard Brooke, Vern Gerard, Murray Ellis

Scott Base Manager, Peter Brookman lays a wreath on behalf of New Zealand at the base of the cross which marks the place where Flight TE901 crashed into Mt Erebus on 29th November 1979.



Flight TE901 Remembered

A small sombre team of Scott Base staff accompanied by a United States Antarctic Programme chaplain flew by helicopter up to Mount Erebus to the memorial cross, one kilometre from the site where Flight TE901 went down twenty years earlier.

On the beautiful clear Antarctic day, a service was held during which a wreath of blue and gold silk flowers was laid at the base of the cross on behalf of the people of New Zealand. Scott Base Manager Peter Brookman read a special message from the government. It was a moving experience captured on video by the Scott Base Operations Manager.

A second commemorative service was held at Scott Base, where people from Scott Base and the neighbouring McMurdo Station gathered to remember the tragedy and listen while remembrance messages from families were read. Footage of commemoration activities was shown to television audiences both nationally and internationally.

Antarctica New Zealand has produced a special commemorative book in which to keep the many messages that were sent to us from recovery team members and families of the passengers and crew who died on 29 November 1979. An archival copy of the book will be kept at Scott Base and the original messages bound into a volume were deposited at National Archives, Christchurch. The volumes will only be available to close relatives of those who died and the people who contributed to the volumes. This moratorium will be in place for fifty years.

“We cannot build a barrier around the Antarctic and keep tourists or the science community out. The Antarctic Treaty grants us all freedom of access to Antarctica. With that freedom comes a responsibility which we all share.”

(Denise Landau: Antarctic Tourism Workshop, Christchurch, June 2000)

Private Sector Activities



Antarctic Tourism Workshop

During the year, Antarctica New Zealand was approached on several occasions by tour operators interested in exploring the feasibility of establishing new tourist operations to the Antarctic. It became clear that Antarctica New Zealand and the Ministry of Foreign Affairs and Trade needed to have a more defined stance on tourism in the Antarctic than is currently in place.

As a first step towards determining whether a specific policy on Antarctic tourism is required, Antarctica New Zealand hosted a workshop in June at which 75 participants debated and discussed scenarios, risks and benefits of Antarctic tourism.

The workshop was officially opened by the Minister of Tourism, The Hon Mark Burton and the day started with a formal debate, on whether the existing Environmental Impact Assessment procedures and market forces are enough to manage tourism. It was followed by a presentation on tourism scenarios past and future by Denise Landau of IAATO. Two speakers addressed the workshop on tourism risks. Dr Maj de Poorter, (IUCN) explored environmental risks, and Erick Chiang (NSF) examined operational risks. A further two speakers talked about tourism benefits: New Zealand poet Bill Manhire and Peter Winder from the New Zealand Tourism Board.

The workshop, while not arriving at any definitive conclusions, was specific on issues that still need to be addressed, particularly environmental concerns such as the need for research on the cumulative impacts of increased tourism.

Denise Landau, Executive Secretary of IAATO, addressing the Antarctica New Zealand tourism workshop.



	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
Terra Nova Station	100	0	239	140	309	715	586	803
McMurdo Station	406	738	361	245	221	278	287	668
Cape Evans, Ross Island	346	60	235	773	529	779	724	552
Cape Adare	298	106	358	0	547	263	197	317
Cape Hallett	86	2	34	133	347	228	178	317
Cape Royds, Ross Island	203	60	235	441	393	725	701	299
Taylor Valley (Canada Glacier)	106	114	356	247	0	217	199	211
Scott Base	381	102	361	245	221	258	230	158

The Ross Sea region receives between 800 – 1,000 tourist visits each year. The top eight sites and visitor numbers for last eight seasons are detailed in the table. Source: IAATO.



Financial benefits, the expansion of views in the ways to deal with future issues in the Antarctic, the benefit of global diplomacy and the notion that the Antarctic could become the benchmark for eco-tourism internationally were also presented. The potential for increased ship-based, airborne, land-based and adventure tourism were discussed in detail.

The proceedings of the workshop will be part of the Antarctic Officials Committee discussions as to the need and direction for an Antarctic tourism policy.

Tourism Activity in the Ross Sea Region

The level of Ross Sea tourism has remained largely static in recent years with the 1999/2000 season seeing around 800 visitors travel to the region on organised tourist cruises. This lack of change was despite an overall increase of 5000 tourists to Antarctica in 1999/2000, the majority visiting the Peninsula aboard cruise ships. Just over 1000 people were flown to the Antarctic by independent operators running airborne ventures.

In the Ross Sea, the historic huts continued to be popular landing sites as well as the attraction of visiting working Antarctic bases at Terra Nova Bay, McMurdo Station and Scott Base. Other sites visited included Cape Hallett, the Taylor Valley, Cape Bird and Possession Islands.

New Zealand continued to place government representatives on all ships visiting the region who report on environmental compliance and provide passengers with information about New Zealand's Antarctic activities.

Sponsorship Programme

Sponsorships of \$10,000 each, from Kelly Tarlton's Underwater World and Antarctic Encounter and New Zealand Post continued this year, enabling two more post-graduate science students to benefit from the generous support provided by these two companies. In addition, a third post-graduate student was granted the \$10,000 Sir Robin Irvine Scholarship. All three scholarships are administered by Antarctica New Zealand.

While sponsorship for students is an important aspect of our private sector engagement, Antarctica New Zealand is also seeking partners for wider science and environmental projects that will continue to enhance the internationalisation of Antarctic projects. To this end, we invited US entrepreneur Dr Richard Steckel to visit Scott Base in December 1999, to become familiar with the work of Antarctica New Zealand and to give us the benefit of his international experience in identifying areas where partnerships may be developed with private sector interests. This work is ongoing.

“New Zealand is a small country and Antarctica New Zealand is a small organisation, but we can and do influence the future of this special part of the world.”

(Gillian Wratt, Antarctica New Zealand Chief Executive)

International Representation



Council of Managers of National Antarctic Programmes (COMNAP)

The CEO of Antarctica New Zealand, Gillian Wratt, has again chaired the 29 nation Council of Managers of National Antarctic Programmes (COMNAP). COMNAP puts into effect the co-operative principles of the Antarctic Treaty. Its objectives are:

To enhance the conduct of scientific research, operational effectiveness, safety and environmental stewardship in Antarctica and the effectiveness of national Antarctic programmes.

These are addressed by encouraging and facilitating international co-operation between Antarctic programmes including:

- facilitating the exchange of information, views and experience;
- establishing and maintaining reference materials such as manuals and operational guidelines;
- examining, discussing and seeking possible solutions to common operational problems;
- facilitating international cooperation in the planning and support of Antarctic science;
- interacting with and providing advice to the Scientific Committee on Antarctic Research (SCAR) and other organisations with related interests; and
- reporting to the Antarctic Treaty Consultative Meetings (ATCM) on operational matters and responding to requests for information advice.

Over the past year COMNAP has provided input to the Antarctic Treaty Specialists meeting on Antarctic shipping guidelines, reviewed oil spill guidelines and provided guidelines for members on responding to spills of other hazardous chemicals, conducted an energy management survey of its members, and provided a forum for co-operation in air and ship operations, environmental management, and supporting international science projects.

The Antarctic Environmental Officers network (AEON) led by the Antarctica New Zealand environmental manager, Emma Waterhouse, operates under the umbrella of COMNAP. It provides advice to COMNAP, and through COMNAP to Antarctic Treaty Meetings. An Environmental Monitoring Handbook providing standard techniques for monitoring in Antarctica has been developed by AEON and published by COMNAP in May 2000.



Antarctic Specially Protected Areas

The Antarctic Treaty Committee on Environmental Protection at its last meeting in May 1999 (CEP II), identified the Protected Area Management System as needing intersessional work. A contact group of twenty-two countries led by the Antarctica New Zealand Environmental Manager, Emma Waterhouse, has prepared recommendations for CEP III on:

- implementation of the protected areas framework including processes for proposing, revising and monitoring protected areas;
- application of risk, quality and feasibility concepts to the selection of protected areas; and
- the need for further elaboration of an Antarctic conservation strategy.

The work and recommendations of the intersessional contact group will be considered by CEP III in September 2000.

International Scientific Collaboration

Antarctica and the Southern Ocean provide a unique pristine laboratory for studying global environmental change. The Antarctic Treaty System also provides a unique opportunity for international research collaboration and presentation of research results to the international community.

In the past year Antarctica New Zealand has been instrumental in organising a joint COMNAP/SCAR forum on international science projects to be held during the 2000, SCAR and COMNAP meetings in Japan. The forum will include presentations on projects involving most of the 27 countries that are consultative parties to the Antarctic Treaty, and covering:

- ocean, sub-glacial and ice drilling for climate and tectonic history;
- ecosystems and climate variation;
- global ocean processes and the Southern Ocean; and
- detection of neutrinos within the polar ice cap.

Antarctica New Zealand also encourages international participation in New Zealand led science projects. More than 50% of the science projects we supported in 1999/2000 included overseas researchers.

“Our role is to ensure an efficient and flexible logistic support capability, which is appropriately resourced to achieve our organisational vision, supporting initiatives in science, education and environmental stewardship.”

(Julian Tangaere, Antarctica New Zealand Operations Manager)

Operations



Logistics

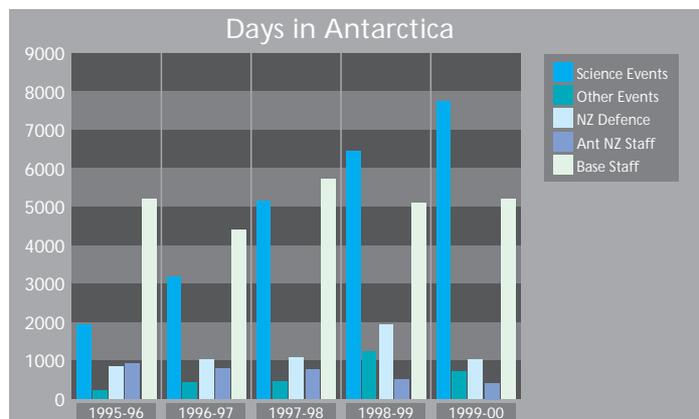
The 1999-2000 Antarctic season was again characterised by very high activity levels at Scott Base and in the McMurdo Sound region. Whilst total numbers of personnel and person days in Antarctica decreased slightly from the 1998-1999 season, more science, public information and education activities were supported.

Concurrent with supporting a large field season, Antarctica New Zealand continued to enhance the quality of the infrastructure at Scott Base, to improve living and working conditions, health and safety, and minimise environmental impacts.

The third and final drilling season at Cape Roberts remained the single largest science project supported. In close co-operation with our international partners, especially the US and Italy, the drilling season was an outstanding success in terms of core recovered, the health and safety record and environmental compliance.

The co-operation between national programmes exemplified by the Cape Roberts Project flows through into every activity carried out by New Zealand in the Ross Sea Region. Significant effort in planning and coordination of activities occurs between the New Zealand, United States and Italian programmes, to ensure the joint logistics pool operated out of Christchurch works as efficiently as possible. Some of the major logistic inputs this year included:

- 15 RNZAF C130 Hercules flights between Christchurch and McMurdo;
- 313 Helicopter hours in support of US and NZ events, including 112 hours towards the Cape Roberts Project;
- 199000lbs of air freight to Scott Base; and
- 263397lbs of sea freight.



Person days spent in Antarctica by activity type.

Performance Measures

All events supported in Antarctica are requested to rate the quality of service delivery received, including a score on a scale of 10 with 10 being the highest grade. Satisfaction with service quality remains high.

In addition, environmental compliance and health and safety are important measures of performance in the unique operating environment of Antarctica. The implementation of the Environmental Management System, and initiatives to improve sewage disposal and eliminate incineration are enhancing Antarctica New Zealand's environmental performance, which is independently assessed by the Environmental Assessment and Review Panel.

Once again there were no accidents leading to fatalities or serious injuries to personnel, or major losses of equipment, although an RNZAF helicopter was taken out of service for repairs after an in-flight emergency. Ongoing risk assessment of activities and the identification of hazards through a "no fault" incident reporting system are important elements in maintaining a low rate of accidents.

Event Debriefs

Total Responses 88

Rating	Responses	Percentage
10/10	29	33.0%
9/10	39	44.3%
8/10	15	17.0%
7/10	3	3.5%
6/10	1	1.1%
5/10	1	1.1%

Satisfaction with support services provided by Antarctica New Zealand. (Percentages have been rounded.)

Infrastructure Enhancement

Improvements to Scott Base facilities continued this season. The new ablutions building was commissioned providing extra shower and toilet facilities and a new laundry with drying room. Scott Base now meets New Zealand Building Code requirements for ablutions facilities to match the Base population.

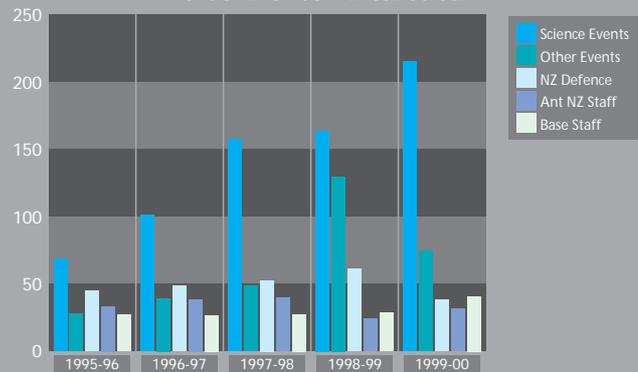
The fuel storage and reticulation system upgrade continues with double containment of all fuel products to be achieved by the end of 2000. Fire safety has been enhanced with the commissioning of a Very Early Smoke Detection (VESDA) system along with other passive fire protection measures. The rebuild of the Base generator sets has been completed, and the sewer outfall has been redesigned to meet the requirements of the Antarctica (Environmental Protection) Act. The Base incinerator has been decommissioned and all waste is now segregated and returned to New Zealand for disposal. Future initiatives include a sewage treatment plant, heated bulk store, a field preparation area, and refurbishment of some existing facilities.

Outsourcing Review

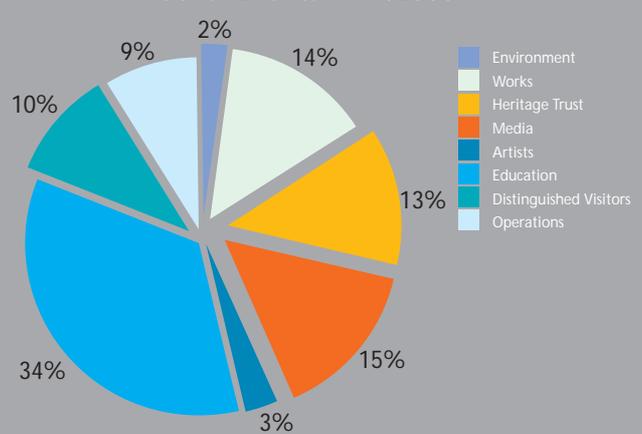
The outsourcing review which commenced in 1998, was concluded in March 2000 with a decision by the Board not to proceed. However a number of processes were identified as having potential to enhance efficiency as a result of the outsourcing review.

These include planned preventative maintenance systems, inventory management, and purchasing. New systems will be evaluated for implementation over the next twelve months.

Personnel to Antarctica



Other Events 1999/2000



Personnel deployed to Antarctica, by activity.

CHRISTCHURCH STAFF

Gillian Wratt, *Chief Executive*
Vivienne Allan, *Communications and Marketing Manager*
Kevin Foyle, *Finance Manager*
Dean Peterson, *Science Strategy Manager*
Julian Tangaere, *Support Services Manager*
Emma Waterhouse, *Environmental Manager*
Steve Andrews, *Assistant Accountant*
Patsy Bass, *Executive Assistant (from May 2000)*
Helen Boerlage, *Purchasing Officer*
Peter Brookman, *Facilities Manager*
Natalie Cadenhead, *Information Services Specialist*
Pat Clarke, *Seamstress*
Peter Cleary, *Antarctic Support Co-ordinator*
Jim Cowie, *Cape Roberts Project Manager*
Rebecca Gee, *Environmental Assistant*
Erin Hird, *Personnel/creditors Administrator*
Mike Mahon, *Science and IT Support*
Donna Palmer, *Receptionist*
Jenny Prier, *Personnel/creditors Administrator*
Ron Rogers, *Engineering Support Co-ordinator*
Heather Smith, *Executive Assistant (until March 2000)*
Robert Stewart, *Movements Officer, cargo*
Carl Stoneman, *Movements Officer, clothing*
Paul Woodgate, *Movements Controller*

ORGANISATIONS REPRESENTED IN ANTARCTICA NEW ZEALAND'S 1999/2000 ANTARCTIC EVENTS

New Zealand and International Organisations supported in Antarctica

Antarctic Heritage Trust
Armed Forces Canteen Council
ConnecTel Ltd
Department of Conservation
Institute of Geological and Nuclear Sciences
Industrial Research Ltd
Land and Soil Consultancy
Landcare Research New Zealand Ltd
Lincoln University
London Sunday Times
Massey University
Ministry of Foreign Affairs and Trade
Museum of New Zealand (Te Papa Tongarewa)
Natural History New Zealand Ltd
National Institute of Water and Atmospheric Research
New Zealand Defence Force - Army, Navy, RNZAF, RNZN, 40 Squadron
New Zealand Fire Service
Radio New Zealand
Reuters (New Zealand and International)
Serco (NZ)



SCOTT BASE STAFF

Winter-over Staff

Jonathan Leitch, *Winter Manager, Base Engineer*
Chris Bray, *Chef*
Scott Iremonger, *Mechanic*
Steve Spicer, *Electrician*
David Palmer, *Carpenter*
Ewan Paterson, *Field Support*
Keith Roberts, *Telecom Technician (Telecom New Zealand)*
Jan Stratford, *Domestic*
Kim Thomas, *Science Technician*

Summer Staff

Dean Arthur, *Field training Instructor*
Rod Bowler, *Communications Operator (NZDF)*
Steve Brown, *Carpenter*
Andrew Dickson, *Chef*
Chris Duurentijdt, *Cargo Handler (NZDF)*
Catherine Flanagan, *Domestic (until November 1999)*
Sean Flanagan, *Science technician and IT support*
Ross Hickey, *Field Training Instructor*
Sharyn Holt, *Scott Base Services Manager (NZDF)*
Steve Kino, *Communications Instructor (NZDF)*
Kevin Nicholas, *Field Training Instructor*
Jodi Pearson, *Communications Operator (NZDF)*
Stefan Preddy, *Communications Operator (NZDF)*
Annette Roberts, *Domestic (from November 1999)*
Daniel Smale, *NIWA Science Technician*
Shaun Smith, *Canteen Manager (AFCC)*
Robert Spice, *Communications Operator (NZDF)*
Clare Sprosen, *Domestic*
Matthew Stock, *Communications Operator (NZDF)*
Peter TeNahu, *Plant operator (NZDF)*
Hamish Wilson, *Plant Operator (NZDF)*

Television New Zealand
The Christchurch Press
The Foundation for Research, Science and Technology (FoRST)
University of Auckland
University of Canterbury
University of Otago
University of Waikato
Victoria University of Wellington

International Collaborations

Australian Antarctic Programme - Australia
Australian National University - Australia
British Antarctic Survey - UK
Canadian Government
Complutense University - Spain
Free University of Brussels - Belgium
Italian Antarctic Programme - Italy
Macquarie University - Australia
Maxim Consultancy Services Pty Ltd - Australia
United States Department of Agriculture - National Resource and Conservation Service - USA
University of Amsterdam - The Netherlands
University College, London - UK
University of Constance - Germany
University of Denmark - Denmark
University of Gent - Belgium
University of Kiel - Germany
University of Madrid - Spain
University of Malay - Malaysia
University of Minnesota - USA
University of Munster - Germany
University of Newcastle - Australia
University of Queensland - Australia
University of Salzburg - Austria
University of Tasmania - Australia
University of Western Ontario - Canada
University of Laval - Canada

STATEMENT OF OBJECTIVES AND SERVICE PERFORMANCE

year ended 30 June 2000



Description

The outputs purchased by the Minister responsible for the NZAI Act from Antarctica New Zealand under the output class description “Development management and implementation of Antarctic Activities” in the 1999/2000 Purchase Agreement were:

- planning and facilitation of science;
- environmental stewardship;
- public awareness and education;
- facilitation of private sector activities; and
- international representation.

Quality, quantity, timeliness

Outputs will be delivered in accordance with the priorities and policy directions established by the government.

Required outputs were delivered in accordance with 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.

Outputs were delivered as detailed under each sub-output area.

Key stakeholder satisfaction with the timeliness and quality of Antarctica New Zealand activities and services

A survey is currently being designed to assess stakeholder satisfaction. Event debrief scores illustrate a high level of satisfaction with support for Antarctic activities, with 94% of scores of 8 or above, out of 10.

Policy contributions and advice to MFAT and the Officials Antarctic Committee will:

- meet timelines set by MFAT and the OAC;
- be proactive, highlighting emerging issues where appropriate;
- include consideration of all relevant available information;
- include consideration of relevant scientific, technical and operational aspects;
- include relevant consideration of alternatives and associated costs, benefits and risks;
- incorporate appropriate consultation with affected parties; and
- maintain confidentiality of Government information, including documents, communications and other material, including information from Antarctic Treaty Consultative Meetings not otherwise public.

Policy contributions and advice have been provided to MFAT and the OAC in a timely manner to meet the quality criteria outlined in the Purchase Agreement.

Antarctica New Zealand takes a proactive approach to its policy advice role. In the 1999/2000 year we have published the New Zealand Environmental Strategy for the Ross Sea Region, which provides a scientific, technical and operationally based strategic environmental framework for New Zealand activities in the region. This was developed in consultation with MFAT and members of the OAC. We have also provided comment to MFAT on emerging issues and the need for a Southern Ocean strategy, and for a New Zealand Antarctic tourism policy. A summary of potential scenarios, risks and benefits of Antarctic tourism is now being developed from the outcomes of an Antarctic Tourism workshop run by Antarctica New Zealand in June 2000.

Briefing papers that included comment on key policy areas were provided to the new Government.

Facilities and capabilities in the Ross Dependency will provide the capability to support up to 400 people over the summer season effectively and safely, to meet reasonable user requirements as measured in event debrief scores of seven or better.

- Operation of Scott Base as a support facility for science and other approved activities, including provision of:
 - a year-round resident New Zealand Government Representative
 - an all terrain vehicle fleet
 - fixed and rotary wing air support
 - laboratories and other work areas
 - telecommunication capabilities, including phone, data and radio
 - accommodation capacity for 86 personnel, including catering, storage and ablution facilities
 - management of the Scott Base asset on behalf of the Crown
- Logistics and supply support for approved New Zealand activities in the Ross Dependency and Southern Ocean, including provision of:
 - 15 flights as a contribution to the joint logistics pool (airlift and sealift) between Christchurch and Ross Island operated pursuant to the existing Government to Government arrangement
 - freight forwarding and warehouse facilities
 - efficient movement of all cargo requirements, including hazardous materials in accordance with pertinent regulations
 - accurate assessments of cargo dimensions and weight
- Field operating support in the Ross Dependency, including provision of:
 - transport support both ground and air
 - field food, clothing and camping equipment
 - radio communications
 - search and rescue support
 - specialised training
 - safe deployment and recovery of field events to required locations

Facilities and capabilities were provided to support 403 people, with 86 of 88 debrief scores of seven or better. Government representation, facilities, logistics support and field capabilities were all provided as listed in the Purchase Agreement.

Quantitative Benchmarks

	99/2000 Estimated	99/2000 Actual
Person days supported for science activities	4,500	5,799
Person days supported for non-science activities	700	726
Estimated expenditure	\$5,825,700 (ex GST)	
Actual expenditure	\$6,352,376 (ex GST)	

From left:

Dr Clive Howard-Williams, Christchurch regional manager of the National Institute of Water and Atmospheric Research

Mr Christopher Mace (seated), Chairman of Antarctica New Zealand Board and Company Director

Dr Ron Heath, Assistant Vice-Chancellor (Sciences) at Otago University

Mr Bill Mansfield, international legal consultant, barrister

Dr Bas Walker, Chief Executive of the Environmental Risk Management Authority

Mrs Sue Suckling, Company Director

The Board of Antarctica New Zealand



1.1 PLANNING AND FACILITATION OF SCIENCE

Description –

Planning, co-ordinating, facilitation and logistic support for an international quality science programme based on a long-term strategic plan for New Zealand science in Antarctica, the Southern Ocean and the Ross Dependency.

Purchase Agreement Outcomes –

- NZ Antarctic science makes a significant contribution to understanding of Antarctic ecosystems and global change.
- Increased international profile through high quality science and collaborations with international partners.
- Research in and related to Antarctica is recognised as a valuable part of NZ's science investment by MoRST, the Foundation and research providers, with PGSF and University funding at least maintained at its current level.

Activity	Performance Measures	Progress as at 30 June 2000						
<p>Implementing the science strategy Management of a bidding round for Antarctic and Southern Ocean science projects for Ant NZ support.</p> <p>Further scoping scientific developments and operational capabilities in relation to an extended geographical and temporal range.</p> <p>Presenting the results of Antarctic science projects against the science strategy themes.</p>	<p>Research events are selected for the 2000/2001 season by November 1999 using a review committee in conjunction with the Foundation, and show alignment to Ant NZ's 1998 science strategy.</p> <p>Scoping study on research projects that need winter transport capability by June 2000, including participation in an NSF workshop scheduled for September 1999.</p> <p>Facilitation of a Southern Ocean research workshop with attendance by MFish, NIWA, DOC, LINZ, the Navy, other appropriate research organisations and selected international partners by December 1999, and development of potential collaborative Southern Ocean projects consistent with NZ's policy, including support for CCAMLR.</p> <p>Mobile base plan completed by June 2000 to provide the capability to support approved projects and science directions over the next 3 – 5 years.</p> <p>A new international latitudinal gradient study discussion document written by September 1999 with involvement across a range of science disciplines.</p> <p>The Ant NZ Annual Report includes contribution of science using the five strategy themes; creation of information sheets relating to the themes; updates to the Ant NZ website.</p>	<p>Achieved- 33 proposals were selected from the 42 applications, with good representation over the 5 science strategy themes.</p> <p>Achieved- A list of potential winter projects and research ideas was prepared in consultation with the science community and Ant NZ participated in an NSF workshop. The final report for the September workshop will be published by NSF August 2000.</p> <p>Achieved- A Southern Ocean workshop was held in Christchurch to begin a process of co-ordination of interests and activities. This meeting was attended by representatives from MoRST, MFish, DOC, LINZ, NIWA, IGNS, Landcare, and Otago University. A range of potential collaborative projects are identified in the workshop report. A need for a New Zealand Southern Ocean Strategy was concluded from the workshop. A Southern Ocean Bio-diversity proposal arising from the workshop has been funded at \$3.0million over the next 5 years, with a Southern Ocean voyage scheduled for the 2003/04 season. MFISH and Ant NZ are scheduling a Bio-diversity Workshop later this year.</p> <p>Achieved- Work has been completed on the mobile base concept. This preliminary work was used in the Antarctic science support Budget funding bid. The detailed design is starting to be put together beginning with a list of needs for the Latitudinal Gradient Project.</p> <p>Achieved- A discussion document has been written. A workshop is scheduled for 15 – 16 August 2000. There will be one US Scientist representing the long term Ecological Research site and approx. 30 New Zealand scientists. There is also Italian and Australian interest in this project.</p> <p>Achieved- The science section of Ant NZ Annual Report was written around the science strategy themes. Information sheets pertaining to the five science themes are on the website.</p> <table border="1" data-bbox="887 1525 1465 1597"> <tr> <td>Cost</td> <td>Estimate</td> <td>\$84,588</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$112,990</td> </tr> </table>	Cost	Estimate	\$84,588		Actual	\$112,990
Cost	Estimate	\$84,588						
	Actual	\$112,990						

Activity	Performance Measures	Progress as at 30 June 2000
<p>International sciences linkages Malaysian Antarctic science collaboration with NZ.</p> <p>Facilitation of NZ/Australian collaboration in Antarctic and Southern Ocean science.</p> <p>Continued collaboration with the US and Italy in the McMurdo Sound area.</p> <p>Identification of opportunities for attracting appropriate new, well funded international Antarctic research to NZ</p>	Provide support as agreed with the Malaysian Academy of Sciences.	<p>Achieved- A Malaysia science project was supported at Scott Base in October 1999. A workshop on the Malaysian Antarctic Science programme was held in Kuala Lumpur in May 2000. The countries represented at the meeting were Malaysia, Australia, Japan, NZ and US. During the Malaysian visit, the SSM met with the NZ/Malaysian Joint Committee for scientific and technical co-operation counterpart, Dr B G Yeoh of SIRIM.</p> <p>Achieved- There were a total of 14 proposals, with Australian collaborators of the 42 received for the next two seasons. Work is continuing on possible collaboration with the Australian programme on Southern Ocean activities.</p> <p>Achieved- Logistics and scientific collaboration continues with USA and Italy, both through the joint logistics pool, and specific co-operation such as NSF's Crary Lab use by a number of New Zealand researchers, the Cape Roberts Project and participation of NZ researchers at the Italian Terra Nova Bay station. The Science Strategy Manager met with 3 NSF programme managers regarding collaborations with the US next season at NSF headquarters in Washington DC. Meetings are planned with Italian and US Programmes during the COMNAP meetings in July 2000.</p> <p>Achieved- A scoping study has been drafted. New collaboration opportunities are being pursued with Sweden and Canada.</p>
	New collaborative projects are identified in Southern Ocean and Antarctic research by June 2000.	<p>Cost Estimate \$18,126 Actual \$12,506</p>
	Scientific and logistics collaboration and sharing of facilities with Italy and USA and positive and productive relations maintained.	
	A scoping study completed by 31 December 1999 identifies key potential new opportunities and associated risks	
<p>Technical support for science Provision of technical scientific support and facilities for science in Antarctica.</p>	Provision of science technician, computing and science support facilities meets event requirements as indicated by event debrief scores within cost constraints.	<p>Achieved- Support provided by Ant NZ Science and IT position and Scott Base technician, and lab facilities at Scott Base. The new NIWA technician has helped reduce the workload on the science technician, with an increase in the amount of Ant NZ technician time that is available for support of other science events.</p>
		<p>Cost Estimate \$101,409 Actual \$153,828</p>
<p>Contribution to policy development Provision of advice on national Antarctic science policy issues to MFAT, other appropriate Government agencies (eg MoRST, FRST, Marsden Fund, Universities) and the OAC.</p>	Policy contributions and advice to MFAT and the OAC meet the policy advice criteria outlined above.	<p>Achieved- AntNZ is represented on the FRST reference committee for Antarctic research and provided advice on the membership of the committee. A report from the meeting was presented to the FRST board. The committee was pleased by the breadth of research covered in Antarctica research.</p>
		<p>Cost Estimate \$18,126 Actual \$14,734</p>
<p>Logistic support for science Provision of logistic support to science projects in Antarctica.</p>	All approved science projects are appropriately supported in Antarctica to achieve project goals. A safe, sustainable operating environment is maintained and ongoing safety review and analysis conducted, including provision of appropriate safety training to personnel operating in Antarctica. Safety, timeliness and efficiency of support delivered is reflected in event post deployment reports, and by a safe operating environment	<p>Achieved- All planned events were supported this season. Science and logistics reports indicate that support provided was of a high standard and allowed events to achieve their goals. All support staff completed specialised training in NZ, and the field component in Antarctica. Those event personnel requiring field training received it at Scott Base prior to deployment. Safety of operations remained at a high level, with no fatalities, serious injuries or loss of equipment.</p>
		<p>Cost Estimate \$3,949,728 Actual \$4,530,905</p>
<p>Cape Roberts Project Provision of logistics support for the Cape Roberts Project.</p>	Successful recovery of core from the drilling project.	<p>Achieved- The project set a new Antarctic record for the deepest rock core drilling in Antarctica. The depth was over 939 metres.</p>
		<p>Cost Estimate \$246,396 Actual \$376,306</p>

		Estimate	Actual
Costs (excl GST)	Direct Costs	\$184,798	\$536,321
	Logistics Costs	\$3,489,041	\$3,624,099
	Overhead	\$744,534	\$1,040,849
	Total:	\$4,418,373	\$5,201,269

1.2 ENVIRONMENTAL STEWARDSHIP

Description – Environmental Stewardship for New Zealand activities in the Ross Dependency, including the state of the environment report and management and monitoring of environmental impacts; and associated support.								
Purchase Agreement Outcomes – <ul style="list-style-type: none"> • Ant NZ 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. • The development of the Ross Sea Region State of the Environment Report provides the platform for the development of a regional process for reporting on the environment and a basis for management of human activities in the region. 								
Activity	Performance Measures	Progress as at 30 June 2000						
Implementing environmental management strategy Ant NZ Environmental Management System implementation. Continued upgrading of Scott Base waste management systems. Environmental monitoring programme.	Ant NZ Environmental Management System completed and operational, and is consistent with AS/NZS ISO 14001:1996.	Achieved- The Environmental Management System became operational on 1 October 1999. The manual was completed at the same time, consistent with ISO 14001.						
	Incineration of waste ceases at Scott Base by 31 December 1999 and a decision made on sewage treatment by 30 June 2000 consistent with Antarctic best practice.	Achieved- Waste incineration at Scott Base ceased on 31 December 1999 and all waste (except human waste and greywater) is now returned to New Zealand for disposal. Decision in principal made to treat Scott Base sewage discharge. Investigations underway to review existing information, legislative requirements and treatment options, for system installation.						
	Stage 1 of monitoring programme for Ant NZ activities implemented during the 1999/2000 summer season to provide an indication of environmental performance, including major impacts.	Achieved- Stage 1 monitoring programme implemented at Scott Base and selected field sites, including advanced record keeping, sewage impacts monitoring, photo-monitoring and soil sampling of contaminated sites. Technical monitoring workshop held on 29 May to review results from 1999/2000 and to identify areas for further development.						
		<table border="0"> <tr> <td>Cost</td> <td>Estimate</td> <td>\$52,741</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$59,838</td> </tr> </table>	Cost	Estimate	\$52,741		Actual	\$59,838
Cost	Estimate	\$52,741						
	Actual	\$59,838						
Project managing the Ross Sea Region State of the Environment Report Project management of the Ross Sea Region State of the Environment Report	First draft of the Ross Sea Region State of the Environment Report produced by 30 June 2000, is internationally peer reviewed and meets project terms of reference as agreed with MFAT and the OAC oversight committee.	Achieved- Advanced drafts (2nd and often 3rd) of “science” and “pressures” chapters (the bulk of the report) completed and in peer review process which includes NZ and overseas scientists and experts. Half of the science chapter drafts have been revised following peer review. Introductory and conclusion chapters will be drafted once revised drafts of the major parts of the report are completed. Graphics and design work has commenced, including the development of maps, figures and illustrations.						
		Consultation carried out with the science community, government agencies, experts and NGOs, including an open workshop on 4 May in Wellington. The Oversight Group for the project has met regularly throughout the year and has been updated on progress. Quarterly progress reports have been provided to the Head, APU, MFAT.						
		<table border="0"> <tr> <td>Cost</td> <td>Estimate</td> <td>\$59,474</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$21,055</td> </tr> </table>	Cost	Estimate	\$59,474		Actual	\$21,055
Cost	Estimate	\$59,474						
	Actual	\$21,055						
Protected area management and development Revision of the management plan for the Cape Bird protected area. Support for and advice on, a draft management plan for the proposed Balleny Islands protected area to MFAT. Initiate consultations with the USA concerning development of specially managed areas for Hut Point and the Dry Valleys.	Draft management plan for Cape Bird protected area completed by 1 March 2000, receives SCAR and CEP endorsement and is adopted by the 2000 ATCM.	On track- Draft management plan for New College Valley, Cape Bird has been revised in light of comment from expert SCAR group (GOSEAC) and with further input from the science community following site visits in 1999/2000. The 2000 SCAR (July) and ATCM (September) meetings are to be held outside the reporting period, so that the plan has yet to be considered in these forums.						
	Support and advice contribute to the successful designation of a Balleny Islands protected area and international acceptance of the concept.	Achieved- Coordinated the process for revision of the proposed Balleny Island SPA draft management plan, including addressing comments from SCAR and CCAMLR expert groups. Provided advice and support to MFAT and the New Zealand delegate to CCAMLR expert group. Draft proposal yet to be considered by the ATCM or CCAMLR (both meetings fall outside the reporting period).						
	US engaged in initial consultation.	Achieved- Initial discussion with the US regarding the Dry Valleys Management Plan has led to agreement to develop an ASMA and to the establishment of a joint NZ/US project with involvement from Ant NZ, scientists in both countries and NSF. Agreement on drafting responsibilities for the Hut Point Management Plan with the US. Draft sections of the Plan developed for exchange and discussion.						
		<table border="0"> <tr> <td>Cost</td> <td>Estimate</td> <td>\$22,069</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$7,890</td> </tr> </table>	Cost	Estimate	\$22,069		Actual	\$7,890
Cost	Estimate	\$22,069						
	Actual	\$7,890						

Activity	Performance Measures	Progress as at 30 June 2000				
<p>Provision of expert advice to EARP Provision of high quality expert advice on NZ environmental impact assessments (EIAs) and other significant environmental issues as requested to EARP.</p>	<p>Expert advice to the Environmental Assessment and Review Panel (EARP):</p> <ul style="list-style-type: none"> • meets timelines set by EARP; • 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- Ongoing advice provided to EARP throughout the year, including on the 2000/01 science proposal environmental impact assessments, end of season reports for tourism, Ant NZ supported events, and the EPICA Ice Coring Project draft CEE. Regular updates on current environmental issues or incidents provided to the Chair of EARP throughout the year.</p>				
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$19,201</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$9,832</td> </tr> </table>	Cost	Estimate	\$19,201	
Cost	Estimate	\$19,201				
	Actual	\$9,832				
<p>Logistics support for environmental stewardship Provision of logistics support as required for environmental stewardship activities.</p> <p>Clothing and training support for NZ representatives on tour vessels.</p>	<p>Environmental stewardship projects are supported in Antarctica to achieve project goals. Safety, timeliness and efficiency of support delivered is reflected in event post-deployment reports.</p> <p>Government representatives adequately supported.</p>	<p>Achieved- Visits to Scott Base by the Environmental Manager and the EARP supported by Ant NZ, including provision of clothing, equipment and helicopter/land transport. EARP visit report identified no major issues.</p> <p>Achieved- Provided training and debrief venue for tour ship representatives programme. Organised training programme and compiled representative's handbook. Provided background information, clothing and equipment to all representatives.</p>				
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$36,211</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$81,829</td> </tr> </table>	Cost	Estimate	\$36,211	
Cost	Estimate	\$36,211				
	Actual	\$81,829				
<p>Contribution to policy development Provision of advice on national Antarctic environmental policy issues to MFAT and the OAC.</p>	<p>Policy contributions and advice to MFAT and the OAC meet the policy advice criteria outlined above.</p>	<p>Achieved - Attended OAC meetings as appropriate, to discuss environmental initiatives, including Balleny Island proposal and CEP work items.</p>				
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$9,601</td> </tr> <tr> <td></td> <td>Actual</td> <td>-</td> </tr> </table>	Cost	Estimate	\$9,601	
Cost	Estimate	\$9,601				
	Actual	-				
<p>Ensuring environmental compliance Environmental Impact Assessment for Ant NZ supported activities.</p> <p>Ensuring compliance with Antarctica (Environmental Protection) Act by persons involved in Ant NZ managed activities.</p> <p>Monitoring and participating in compliance activities as feasible in relation to non-Ant NZ managed activities in the Ross Dependency which come under the Antarctica (Environmental Protection) Act.</p>	<p>All activities supported by Ant NZ in Antarctica complete EIAs and comply with the Antarctica (Environmental Protection) Act.</p> <p>As above</p> <p>MFAT satisfaction with Ant NZ's participation.</p>	<p>Achieved- All science and non-science events completed an EIA which was approved by the Minister on the recommendation of EARP. End of season report presented to EARP for review. No significant issues raised in this report on the EARP report of their visit to Scott Base vicinity.</p> <p>As above</p> <p>Achieved- Liaison carried out with USAP regarding monitoring of numbers to the historic huts (tourist and programme personnel). Provided input to the training of representatives for our ships. No other relevant activities observed.</p>				
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$86,280</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$61,507</td> </tr> </table>	Cost	Estimate	\$86,280	
Cost	Estimate	\$86,280				
	Actual	\$61,507				

		Estimate	Actual
Costs (excl GST)	Direct Costs	\$163,016	\$128,104
	Logistics Costs	\$23,672	\$65,467
	Overhead	\$98,889	\$48,380
	Total:	\$285,577	\$241,951

1.3 PUBLIC AWARENESS AND EDUCATION

Description –

Public awareness and education in relation to Antarctica and the Southern Ocean, including publications and events aimed at public awareness, encouragement of education in schools and logistics support for associated visits to Antarctica

Purchase Agreement Outcomes –

- Public awareness of the global significance of Antarctica and the Southern Ocean, to create a constituency of interest that encourages and underpins a continuing strong national involvement in the Ross Dependency, and international influence to encourage compliance with the Antarctic Treaty System.
- Information required for knowledge and leadership in Antarctic operations and affairs is easily accessible to the Antarctic community.

Activity	Performance Measures	Progress as at 30 June 2000						
<p>Facilitation of Antarctic education Facilitation of high quality education opportunities in relation to Antarctica and the Southern Ocean and NZ's interests in the region.</p> <p>As above</p> <p>Provision of information on Antarctic education resources</p>	<p>Active participation in the continued development of the Canterbury University Certificate of Antarctic Studies as a CUAP approved graduate certificate, including provision of logistics support for the Scott Base field trip, lecturing to the course, representation on the Board of Studies; and encouragement of the development and presentation of other Antarctic courses at NZ Universities.</p> <p>Active support for Antarctic education initiatives of other institutions, including the International Antarctic Centre Visitor Centre – Scott Base digital diary, CRP display, Hagglands tour and Kelly Tarlton's Underwater World sponsorship of Antarctic science study award, Antarctic display redevelopment.</p> <p>Continued maintenance of Antarctic education resource database and incorporation into the Ant NZ WebSite.</p>	<p>Achieved- Hosted the Certificate course to the IAC, several Ant NZ staff have provided lectures and input to projects, field trip supported at Scott Base, and continued Ant NZ representation on the Board of Antarctic Studies.</p> <p>Achieved- Provided support and information on the IAC Visitor Centre's new Cape Roberts Project display, and continued to provide the Scott Base digital diary.</p> <p>Supported the visit of the Exhibitions Co-ordinator from Te Papa to Scott Base to support the incorporation of an Antarctic dimension into a display at Te Papa next year.</p> <p>Kelly Tarlton's Underwater World study award sponsorship continued.</p> <p>Donated selected manuscripts to the Canterbury Museum.</p> <p>Approved representation from Kelly Tarlton's Underwater World, Auckland Museum, IAC Visitor Centre and Southland Museum to visit the Antarctic next season for ongoing development of Antarctic display material.</p> <p>Approved visit of 4 Burnside High School students to Scott Base in January 2001 to undertake a living history project of the TAE/IGY Hut.</p> <p>Achieved- Education resource database completed and publicly available via Ant NZ WebSite.</p> <p>WebSite updated to provide news and information for schools, other educational institutions and the general public.</p> <table border="1" data-bbox="906 1279 1449 1335"> <tr> <td>Cost</td> <td>Estimate</td> <td>\$127,089</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$27,845</td> </tr> </table>	Cost	Estimate	\$127,089		Actual	\$27,845
Cost	Estimate	\$127,089						
	Actual	\$27,845						
<p>Enhancing public awareness of Antarctica and the Southern Ocean Artists to Antarctica Programme.</p>	<p>Two prominent NZ artists are selected and supported to visit Antarctica, and produce art work that receives significant public coverage.</p>	<p>Achieved- Chris Cree-Brown, composer-musician and Virginia King, sculptor went to Antarctica in early-November 1999. Both artists are now working on their projects. They plan solo and joint exhibitions.</p> <p>A "Celebration of Antarctic Art and Writing" was held in October involving current and former artists .</p> <p>More than double the number of applicants have been received for the 2000/2001 season compared with 1999/2000 and two well known NZ artists; ceramics artist Raewyn Atkinson from Wellington, and dancer/choreographer, Bronwyn Judge from Oamaru, have been selected.</p> <p>Craig Potton, photographer from Nelson will spend 3 weeks in the Dry Valleys in preparation for a book which is being produced in collaboration with a US writer.</p>						

Activity	Performance Measures	Progress as at 30 June 2000						
<p>Enhancing public awareness of Antarctica and the Southern Ocean cont. Media programme.</p> <p>Millennium coverage</p> <p>TAE visit</p>	<p>Media coverage of Antarctica and the Southern Ocean through selection and support of a portfolio of events aimed to increase public awareness in NZ and internationally in a way which underpins NZ's commitment to the Antarctic Treaty System and does not pressure logistics unduly.</p>	<p>Achieved- Natural History NZ have produced two new films "Katabatic" and "Iceberg: a result of visits to Antarctica. They went to Scott Base again in late October to film for a National Geographic television series.</p> <p>The "What Now?" children's television team went to Scott Base in November to film for their Christmas Special and also shot footage for a February show. Other media interest has included coverage about the Cape Roberts project, Mt Erebus air disaster commemoration, artists programme and artists function, launch of the environment strategy for the Ross Sea region and the visit to Scott Base by the TAE/IGY veterans.</p> <p>A leather-bound book of more than 100 memories from relatives of those who died in TE901 in 1979 has been prepared and will be kept at SB. A copy will be kept in the National Archives, with a 50 year moretorium: available to close relatives only.</p> <p>Media coverage of Ant NZ and NZ activities in Antarctica also achieved through coverage of two large icebergs carving off the Ross Ice Shelf.</p> <p>Media visits confirmed for the 2000/01 season include, Te Wero film production team from Auckland, who will film a documentary series for NZ and overseas viewing, 4 Journalists from Evening Post, Radio NZ, RNZAF and one freelance.</p>						
	<p>Inclusion of Antarctica and the Southern Ocean in NZ Millennium events, and facilitation of broad media access to events.</p>	<p>Achieved- A Reuters team and a journalist from the London Sunday Times went to Scott Base to cover the start of the new millennium. Footage was seen on CNN worldwide and on TVNZ.</p> <p>The book "A Day in the Life of NZ" for 1 January 2000 includes photographs taken at Scott Base.</p>						
	<p>TAE visit co-ordinated and supported during 1999/2000.</p>	<p>Achieved- TAE/IGY visit was very successful with an accompanying media team that provided daily reports, documentation and several feature articles. Eleven veterans were flown to Antarctica and were hosted by Scott Base staff with support from the Christchurch office.</p> <p>Ant NZ is chairing an "A" Hut project team to develop a management plan. Former TAE/IGY members have been invited to contribute and participate.</p>						
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$50,835</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$57,497</td> </tr> </table>	Cost	Estimate	\$50,835		Actual	\$57,497
Cost	Estimate	\$50,835						
	Actual	\$57,497						
<p>Information provision Provision of accessibility to information required for knowledge and leadership in Antarctic operations and affairs.</p>	<p>An enhanced Ant NZ WebSite which provides a comprehensive range of information related to NZ interests in Antarctica and the Southern Ocean by September 1999.</p> <p>A cost effective National Antarctic Data Centre which provides a directory to NZ Antarctic data sources by June 2000.</p>	<p>Achieved- WebSite on-line and averaging 42,000 hits per week.</p> <p>Achieved- NADC being further developed for improved on-line access</p>						
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$50,835</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$86,270</td> </tr> </table>	Cost	Estimate	\$50,835		Actual	\$86,270
	Cost	Estimate	\$50,835					
	Actual	\$86,270						
<p>Logistic support for public awareness Provision of logistics support to public awareness and education projects in Antarctica.</p>	<p>All approved public awareness projects are appropriately supported in Antarctica to achieve project goals. Safety, timeliness and efficiency of support delivered is reflected in event post-deployment reports.</p>	<p>Achieved- Artists, media and education projects all supported for the 1999/2000 season to achieve project goals. Post-deployment reports identify issues with one event, which have been followed up.</p>						
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$594,107</td> </tr> <tr> <td></td> <td>Actual</td> <td>\$662,302</td> </tr> </table>	Cost	Estimate	\$594,107		Actual	\$662,302
Cost	Estimate	\$594,107						
	Actual	\$662,302						
<p>Contribution to policy development Provision of advice on national Antarctic policy issues to MFAT and the OAC.</p>	<p>Policy contributions and advice to MFAT and the OAC meet the policy advice criteria outlined above.</p>	<p>Achieved- Preparation of post-election briefing papers for incoming Ministers.</p>						
		<table> <tr> <td>Cost</td> <td>Estimate</td> <td>\$25,418</td> </tr> <tr> <td></td> <td>Actual</td> <td>-</td> </tr> </table>	Cost	Estimate	\$25,418		Actual	-
Cost	Estimate	\$25,418						
	Actual	-						

		Estimate	Actual
Costs (excl GST)	Direct Costs	\$215,958	\$137,297
	Logistics Costs	\$504,774	\$529,872
	Overhead	\$127,552	\$166,745
	Total:	\$848,284	\$833,914

1.4 FACILITATION OF PRIVATE SECTOR ACTIVITIES

Description –

Facilitating involvement of private sector in Antarctica that is consistent with Government objectives in the region.

Purchase Agreement Outcomes –

- The involvement of the private sector in Antarctica occurs within a planned and managed framework and enhances conservation, appreciation and knowledge of the region.
- Demonstrate leadership in the Antarctic community internationally in relation to the establishment of a framework for increased private sector involvement.

Activity	Performance Measures	Progress as at 30 June 2000
Facilitation of private sector activities Sponsorship strategy. Input to development of tourism policy. Fishing industry environmental stewardship visit to Scott Base.	A sponsorship/earned income strategy is developed that is sensitive to and consistent with Government objectives. Paper giving consideration to opportunities and risks of Antarctic tourism is referred to Government as input to policy development. The visit by New Zealand fishing industry representatives with interests in Southern Ocean fishing to Scott Base reinforces New Zealand environmental stewardship objectives.	Under Action- First draft of sponsorship strategy developed and reviewed in liaison with Dr Richard Steckel, US earned income specialist. Under Action- Ant NZ hosted an Antarctic Tourism Workshop in Christchurch on 23 June. It was opened by the Minister of Tourism, Hon. Mark Burton. 75 participants included representatives from NSO's, independent tour operators, CRIs, Universities, Government Departments and private sector interests. The Workshop examined scenarios, risks and benefits of tourism. Proceedings and a summary paper for the OAC are being drafted. Removed from Purchase Agreement due to funding constraints related to helicopter support (see September 1999 Quarterly Report).
		Cost Estimate \$56,751 Actual \$16,207
		Contribution to policy development Provision of advice on national Antarctic policy issues in relation to private sector activities to MFAT and the OAC.
		Achieved- Ant NZ advised the OAC of the proposal to hold an Antarctic Tourism workshop and invited MFAT and DOC involvement on the planning committee as OAC representation.
		Cost Estimate \$41,049 Actual \$4,078

		Estimate	Actual
Costs (excl GST)	Direct Costs	\$51,873	\$16,229
	Logistics Costs	\$22,279	-
	Overhead	\$23,648	\$4,056
	Total:	\$97,800	\$20,285

1.5 INTERNATIONAL REPRESENTATION

Description – International representation in respect of scientific and other programme-level New Zealand activities in Antarctica and the southern Ocean							
Purchase Agreement Outcomes –							
<ul style="list-style-type: none"> New Zealand profile and influence in the international management of Antarctica and the Southern Ocean, evidenced by New Zealand initiatives that Ant NZ has contributed to featuring in ATCM, CEP and COMPNAP etc. activities, and receiving international acknowledgment. 							
Activity	Performance Measures	Progress as at 30 June 2000					
<p>International operational influence Encouragement of international operational collaboration that enhances international practices, policies and decision-making.</p> <p>Facilitation of international Antarctic environmental management forums and initiatives.</p>	<p>Chairing of the Council of Managers of National Antarctic Programmes (COMNAP) activities to include: Provision of expert advice to the ATCM on operational liability issues, environmental monitoring, and information exchange. Revision of oil spill guidelines. Handbook on environmental monitoring enhanced international networks (eg AEON, INFONET). Review of renewable energy options. Review of COMNAP member activities/co-operation/interests in air operations, shipping operations, tourism developments, education and training, environmental management, and emergency response and contingency planning.</p> <p>CEP intersessional work on protected areas is chaired by Environmental Manager and meets the terms of reference set by the CEP, and is consistent with NZ policy.</p> <p>The Antarctic Environmental Officers Network (AEON) workshop on EIA and environmental monitoring is organised and meets workshop objectives, and is consistent with NZ policy.</p>	<p>Achieved- The CEO has continued to chair COMNAP. There has been no ATCM in 1999/2000, but a draft paper on environmental monitoring has been prepared for presenting to the CEP and work continues on liability and information exchange for an expected 2001 ATCM. Oil spill guidelines reviewed. Environmental Monitoring handbook published and on COMNAP website. AEON has continued to be active, convened by the AntNZ Environmental Manager. INFONET and TRAINET work programmes developed at COMNAP meeting in September 1999. All COMNAP members surveyed on energy management in preparation for discussions at July 2000 COMNAP meeting. COMNAP working/co-ordinating groups on air operations, ship operations, tourism, education and training, environmental management and emergency response and contingency planning, met at September 1999 COMNAP meeting and reviewed tasking. Agenda developed for July 2000 meeting.</p>					
		<p>Achieved- Environmental Manager has co-ordinated CEP intersessional work on protected areas on the three parts of the terms of reference set. 22 contact points involved in the work to produce three working papers for consideration by the CEP in September. Liaison with the NZ CEP delegation throughout the process to ensure consistency and input from a NZ policy perspective.</p> <p>Achieved- AEON Workshop held in Goa, India in September 1999 with participants from 10 countries, as well as other experts. Workshop report and recommendations presented and accepted by the COMNAP ECG and Plenary meetings.</p>					
<p>Cost</p> <table border="1"> <tr> <td>Estimate</td> <td>\$70,266</td> </tr> <tr> <td>Actual</td> <td>\$46,472</td> </tr> </table>		Estimate	\$70,266	Actual	\$46,472		
Estimate	\$70,266						
Actual	\$46,472						
<p>Antarctic Treaty Consultative Meeting (ATCM) Contribution to NZ ATCM work and delegation.</p>	<p>Active participation in the ATCM and associated meetings and intersessional work to support NZ's policy goals at the ATCM, including through - Vice chair of the CEP. Convening intersessional work on Antarctic Protected Area guidelines. Active participation in NZ work for the ATCM, including: Support for the adoption and implementation of the management plan for the proposed Balleny Islands Antarctic Specially Protected Area, including contribution to drafting. Reporting on CRP environmental management. Suggestions on reconfiguring the work of the ATCM.</p>	<p>Achieved- The CEO continued as CEP vice-chair following re-appointment in May 1999. Intersessional work on Protected Area guidelines convened as outlined above.</p> <p>Achieved- Co-ordinated the review process for the proposed Balleny Island specially protected area, including advocating for the proposal amongst the NZ and international Antarctic communities. Report for CEP/ATCM on CRP environmental management not completed as meeting is not until September 2000. Verbal comment provided to MFAT re. ATCM meeting configuration.</p>					
		<p>Cost</p> <table border="1"> <tr> <td>Estimate</td> <td>\$70,266</td> </tr> <tr> <td>Actual</td> <td>\$8,485</td> </tr> </table>		Estimate	\$70,266	Actual	\$8,485
Estimate	\$70,266						
Actual	\$8,485						
<p>Contribution to policy development Provision of advice on national Antarctic policy issues in relation to international representation to MFAT and the OAC.</p>	<p>Policy contributions and advice to MFAT and the OAC meet the policy advice criteria outlined above.</p>	<p>Achieved- Advice has focused in particular on the Balleny Island SPA, and Ant NZ participation in ATCM delegation meetings.</p>					
		<p>Cost</p> <table border="1"> <tr> <td>Estimate</td> <td>\$35,134</td> </tr> <tr> <td>Actual</td> <td>–</td> </tr> </table>		Estimate	\$35,134	Actual	–
Estimate	\$35,134						
Actual	–						

		Estimate	Actual
Costs (excl GST)	Direct Costs	\$138,403	\$43,968
	Overhead	\$37,263	\$10,989
	Total:	\$175,666	\$54,957

OUTPUT COSTS

	Actual	Estimate
Planning and Facilitation of Science		
Implementing the Science Strategy	112,990	84,588
International Science Linkages	12,506	18,126
Technical Support for Science	153,828	101,409
Contribution to Policy Development	14,734	18,126
Logistic Support for Science	4,530,905	3,949,728
Cape Roberts Project	376,306	246,396
	5,201,269	4,418,373
Environmental Stewardship		
Implementing Environmental Management Strategy	59,838	52,741
Project Managing the Ross Sea Region State of the Environment Report	21,055	59,474
Protected Area Management and Development	7,890	22,069
Provision of Expert Advice to EARP	9,832	19,201
Logistics Support for Environmental Stewardship	81,829	36,211
Contribution to Policy Development	–	9,601
Ensuring Environmental Compliance	61,507	86,280
	241,951	285,577
Public Awareness and Education		
Facilitation of Antarctic Education	27,845	127,089
Enhancing Public Awareness of Antarctica and the Southern Ocean	57,497	50,835
Information Provision	86,270	50,835
Logistic Support for Public Awareness	662,302	594,107
Contribution to Policy Development	–	25,418
	833,914	848,284
Facilitation of Private Sector Activities		
Facilitation of Private Sector Activities	16,207	56,751
Contribution to Policy Development	4,078	41,049
	20,285	97,800
International Representation		
International Operation Influence	46,472	70,266
Antarctic Treaty Consultative Meeting	8,485	70,266
Contribution to Policy Development	–	35,134
	54,957	175,666
Total Output Costs	\$6,352,376	\$5,825,700

FINANCIAL STATEMENTS

year ended 30 June 2000



Statement of Accounting Policies for the year ended 30 June 200

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 and reporting of results, financial position, and cash flows is based on historical cost with the exception of clothing and the library collection.

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) Revenue Recognition

Revenue is recognised when earned and is reported in the Statement of Financial Performance in the period to which it relates.

(b) 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.

(c) Fixed Assets

Expenditure incurred on fixed assets is capitalised where such expenditure will increase or enhance the future benefits provided by the assets. Expenditure incurred to maintain future benefit is expensed in the period incurred.

Fixed assets are valued at cost, adjusted for additions and disposals, less accumulated depreciation to date, except for the following two categories:

(i) Library Collection

Rare books are recorded at market value as at 30 June 1997 as determined by the Institute's librarian using published specialist price lists. This is deemed to be cost.

Other books provided by the Crown are valued at depreciated replacement cost as at 30 June 1997. This is deemed to be cost. Deemed cost is adjusted for subsequent additions, disposals and accumulated depreciation.

Periodicals and other materials are expensed at time of purchase.

(ii) Clothing

Clothing is valued at depreciated replacement cost as at 30 June 1997. This is deemed to be cost. Deemed cost is adjusted for subsequent additions, disposals and accumulated depreciation.

(d) Depreciation

Depreciation is provided at rates estimated to write off the cost of the assets over their estimated useful lives. Depreciation is not charged on rare books. All other assets are depreciated on a straight line basis with the following exceptions:

(i) computer hardware and software and communications equipment are depreciated on an accelerated basis reflecting the diminution in value as a result of rapid technological change.

(ii) leasehold improvements are depreciated over the life of the improvement or the life of the lease which ever is shorter.

The useful lives of major classes of assets have been estimated as follows:

Buildings	10 years
Communications Equipment	5-7 years
Computer Hardware and Software	3-4 years
Scott Base Fit Out	20 years
Leasehold Improvements	15 years
Office Equipment	5 years
Office Furniture	5 years
Plant and Machinery	10 years
Vehicles	5 years
Clothing	10 years
Library Collection (excluding rare books)	20 years

(e) Employee Entitlements

Provision is made in respect of liabilities for annual leave, long service leave, contribution leave and retirement leave.

Calculation of the entitlement for annual leave is based on current rates of pay or the appropriate historical rate whichever is the highest.

Long service leave, contribution leave and retirement leave are calculated on an actuarial basis.

(f) Receivables

Receivables are stated at their estimated realisable value.

(g) Goods and Services Tax

The Financial Statements have been prepared exclusive of goods and services tax (GST) with the exception of receivables and payables, which are stated GST inclusive.

(h) Income Tax

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

(i) Financial Instruments

Antarctica New Zealand is party to financial instruments as part of its normal operations. These financial instruments include bank accounts, short term deposits, receivables and payables. All financial instruments are recognised in the Statement of Financial Position and all revenues and expenses in relation to financial instruments are recognised in the Statement of Financial Performance.

(j) Foreign Currency

Transactions in foreign currencies are converted at the New Zealand rate of exchange ruling on the date of the transaction. Monetary assets and liabilities are converted to New Zealand dollars at the exchange rate ruling at balance date and any exchange gains or losses are taken to the Statement of Financial Performance.

Changes in Accounting Policies

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

Antarctica New Zealand

Statement of Financial Performance for the year ended 30 June 2000

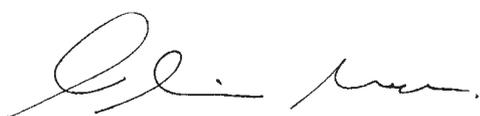
	Note	2000 Budget \$000	2000 Actual \$000	1999 Actual \$000
Revenue		5,647	6,052	5,633
Expenses		5,826	6,353	5,631
Operating surplus/(deficit)	1	(179)	(301)	2
Net Surplus/Deficit attributable to Taxpayers		(179)	(301)	2

Statement of Movements in Equity for the year ended 30 June 2000

	Note	2000 Budget \$000	2000 Actual \$000	1999 Actual \$000
Taxpayers funds at start of period		5,903	6,057	6,055
Net surplus/(deficit) for the period		(179)	(301)	2
Total Recognised Revenues and Expenses for the Period		(179)	(301)	2
Taxpayers funds as at 30 June 2000		5,724	5,756	6,057

Statement of Financial Position as at 30 June 2000

	Note	2000 Budget \$000	2000 Actual \$000	1999 Actual \$000
TAXPAYERS FUNDS				
Taxpayers Funds		5,724	5,756	6,057
Total taxpayers funds		5,724	5,756	6,057
Represented by:				
CURRENT ASSETS				
Cash and Short Term Deposits		1,621	3,159	2,341
Receivable and Prepayments	2	69	100	211
Total Current Assets		1,690	3,259	2,552
NON CURRENT ASSETS				
Fixed Assets	3	4,531	3,917	4,090
Total Non Current Assets		4,531	3,917	4,090
CURRENT LIABILITIES				
Payables and Accruals	4	327	1,279	439
Employee Entitlements	5	170	141	146
Total Liabilities		497	1,420	585
NET ASSETS		5,724	5,756	6,057



C Mace
Chairperson
13 October 2000



G Wratt
Chief Executive Officer
13 October 2000

Antarctica New Zealand

Statement of Cash Flows for the Year ended 30 June 2000

	Note	2000 Budget \$000	2000 Actual \$000	1999 Actual \$000
CASH FLOWS FROM OPERATING ACTIVITIES				
Cash was provided from:				
Receipts from Crown		5,214	5,495	5,274
Receipts from Customers		333	466	231
Interest Received		75	163	147
Total Receipts		5,622	6,124	5,652
Cash was applied to:				
Payments to Suppliers		(3,091)	(2,647)	(3,352)
Payments to Employees		(1,902)	(2,125)	(2,010)
GST (net)		18	(2)	(17)
Total Payments		(4,975)	(4,774)	(5,379)
Net Cash inflow/(outflow) from Operating Activities	6	647	1,350	273
CASH FLOWS FROM INVESTING ACTIVITIES				
Cash was provided from:				
Sale of Fixed Assets		0	18	0
Cash was applied to:				
Purchases of Fixed Assets		(1,204)	(550)	(844)
Net Cash inflow/(outflow) from Investing Activities		(1,204)	(532)	(844)
CASH FLOWS FROM FINANCING ACTIVITIES				
Cash was provided from:				
Capital contribution		0	0	0
Cash was applied to:				
Payment of Crown liability		0	0	0
Net Cash inflow/(outflow) from Financing Activities		0	0	0
Net Increase (Decrease) in Cash Held		(557)	818	(571)
Add Opening cash and short term deposits		2,178	2,341	2,912
Closing cash and deposits		1,621	3,159	2,341

Actual receipts from Crown includes \$50,000 administered on an agency basis for the Ross Sea Region State of the Environment Report. At year end Antarctica New Zealand had \$45,000 of these funds on hand and included in cash and short term deposits.

Statement of Commitments as at 30 June 2000

	2000 Actual \$000	1999 Actual \$000
Capital Commitments	0	0
Operating Commitments	1,502	1,922
Total Commitments	1,502	1,922
Term Classification of Commitment		
Less than one year	417	421
One to two years	257	417
Two to five	772	772
Over five years	56	312
	1,502	1,922

Statement of Contingent Liabilities as at 30 June 2000

There were no material contingent liabilities as at balance date (1999 - Nil).

Antarctica New Zealand

Notes to and Forming part of the Financial Statements for the year ended 30 June 2000

Note 1 Operating Surplus (deficit)

	2000 Actual \$000	1999 Actual \$000
After Charging		
Remuneration of Auditor		
- Audit Fee	14	14
- Other Services	1	3
Depreciation	709	720
Directors' Remuneration	49	42
Interest Expense	0	0
Rental and Operating Lease Costs	418	420
Bad Debts Written Off	0	0
Changes in Provision for Doubtful Debts	6	0
Assets written off	44	12
Restructuring Costs	193	0
After Crediting		
Interest Income	157	155

Note 2 Receivables and Prepayments

	2000 Actual \$000	1999 Actual \$000
Trade Debtors	82	174
Term Deposit Interest	18	24
Provision for Doubtful Debts	(6)	0
Net Trade Debtors	<u>94</u>	<u>198</u>
Prepayments	<u>6</u>	<u>13</u>
Total Receivables and Prepayments	<u>100</u>	<u>211</u>

Note 3 Fixed Assets

2000	Cost \$000	Accumulated Depreciation \$000	Book Value \$000
Buildings Scott Base	638	(131)	507
Leasehold Improvements	134	(57)	77
Communications Equipment	467	(392)	75
Plant and Machinery	1,479	(608)	871
Vehicles	333	(127)	206
Computer Hardware and Software	397	(281)	116
Scott Base Fit out	2,298	(923)	1,375
Office Furniture	21	(14)	7
Office Equipment	38	(30)	8
Clothing	270	(216)	54
Library Collection	135	(32)	103
Work in Progress	518	0	518
	<u>6,728</u>	<u>(2,811)</u>	<u>3,917</u>
1999	Cost \$000	Accumulated Depreciation \$000	Book Value \$000
Buildings Scott Base	280	(88)	192
Leasehold Improvements	132	(42)	90
Communications Equipment	466	(322)	144
Plant and Machinery	1,365	(448)	917
Vehicles	183	(74)	109
Computer Hardware and Software	325	(212)	113
Scott Base Fit out	2,293	(695)	1,598
Office Furniture	19	(10)	9
Office Equipment	33	(23)	10
Clothing	275	(164)	111
Library Collection	135	(25)	110
Work in Progress	687	0	687
	<u>6,193</u>	<u>(2,103)</u>	<u>4,090</u>

Work in progress represents items of capital expenditure that are not operational as at balance date.

Buildings are recorded at cost, less accumulated depreciation, which in the Directors' opinion is an indication of fair value.

In addition to rare and current books, Antarctica New Zealand has a resource of periodicals, maps, slides, photographs, films and microfiche located at Antarctica New Zealand and at University of Canterbury. These items are expensed at time of purchase. Microfiche is physically held on loan from the US National Science Foundation.

Antarctica New Zealand

Note 4 Payables and Accruals

	2000 Actual \$000	1999 Actual \$000
Trade Creditors and Accruals	129	205
Accrued Payroll	167	55
Directors Fees	0	11
Fuel	98	78
NZDF charges	775	0
Other	110	90
	<u>1,279</u>	<u>439</u>

Note 5 Employee Entitlements

	2000 Actual \$000	1999 Actual \$000
Long Service Leave	7	13
Annual Leave	127	119
Retirement Leave	7	14
	<u>141</u>	<u>146</u>

Note 6 Reconciliation of Net Surplus to Net Cash Flow from Operating Activities

	2000 Actual \$000	1999 Actual \$000
Net Operating Surplus/(Deficit)	(301)	2
Add/(Less) Non-Cash Items		
Depreciation	709	720
Assets written off	44	12
	<u>753</u>	<u>732</u>
Total Non-Cash Items	753	732
Add/(Less) Movements in Working Capital		
(Increase)/Decrease in receivables and prepayments	87	(106)
Increase/(Decrease) in provisions	0	25
Increase/(Decrease) in payables and accruals	811	(380)
	<u>898</u>	<u>(461)</u>
Working Capital Movements - Net	898	(461)
Net Cash Flow from Operating Activities	<u>1,350</u>	<u>273</u>

Note 7 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 8 Related Party Transactions

Antarctica New Zealand is a Crown entity responsible to the Crown. All transactions with other Crown entities, Government departments and State Owned Entities are carried out on an arms length basis.

The Crown has granted a license to Antarctica New Zealand in respect of the Scott Base facility. The initial term of this license is five years from 1 July 1996.

Note 9 Financial Instruments

(A) Nature of activities and management policies with respect to financial instruments

Antarctica New Zealand

- 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 currency risks associated with fuel purchases.

Antarctica New Zealand puts in place forward foreign exchange contracts to match anticipated purchases with budgeted costs for the period for which information is known.

There were no outstanding foreign exchange instruments as 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

Antarctica New Zealand has no significant exposure to interest rate risk on its financial instruments.

(B) Fair Values

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

Note 10 Segmental Reporting

Antarctica New Zealand operates primarily in the scientific research industry in New Zealand and Antarctica.

Note 11 Remuneration of Employees

Remuneration band	No of employees
\$110,000 - \$120,000	1
\$120,001 - \$130,000	1

Performance indicators

	2000 Budget	2000 Actual	1999 Actual
Operating Results			
Revenue \$000	5,647	6,052	5,633
Surplus/(Deficit) \$000	(179)	(301)	2
Current Ratio	3.40	2.30	4.36
Working Capital	1,193	1,839	1,967
Ratio Personnel Expenses:			
Total Expenses	34.32%	34.82%	36.02%

Statement of Responsibility

In the financial year ended 30 June 2000, the Board and management of Antarctica New Zealand were responsible for:

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

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



C Mace
Chairperson
13 October 2000



G Wratt
Chief Executive Officer
13 October 2000

TO THE READERS OF THE FINANCIAL STATEMENTS OF
THE NEW ZEALAND ANTARCTIC INSTITUTE
FOR THE YEAR ENDED 30 JUNE 2000

We have audited the financial statements on pages 26 to 43. The financial statements provide information about the past financial and service performance of the New Zealand Antarctic Institute and its financial position as at 30 June 2000. This information is stated in accordance with the accounting policies set out on page 38.

Responsibilities of the Board

The Public Finance Act 1989 requires the Board to prepare financial statements in accordance with generally accepted accounting practice which fairly reflect the financial position of the New Zealand Antarctic Institute as at 30 June 2000, the results of its operations and cash flows and the service performance achievements for the year ended 30 June 2000.

Auditor's responsibilities

Section 43(1) of the Public Finance Act 1989 requires the Audit Office to audit the financial statements presented by the New Zealand Antarctic Institute. It is the responsibility of the Audit Office to express an independent opinion on the financial statements and report its opinion to you.

The Controller and Auditor-General has appointed K J Boddy, of Audit New Zealand, to undertake the audit.

Basis of opinion

An audit includes examining, on a test basis, evidence relevant to the amounts and disclosures in the financial statements. It also includes assessing:

- the significant estimates and judgements made by the Board in the preparation of the financial statements; and
- whether the accounting policies are appropriate to the New Zealand Antarctic Institute's circumstances, consistently applied and adequately disclosed.

We conducted our audit in accordance with generally accepted auditing standards, including the Auditing Standards issued by the Institute of Chartered Accountants of New Zealand. We planned and performed our audit so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the

financial statements are free from material misstatements, whether caused by fraud or error. In forming our opinion, we also evaluated the overall adequacy of the presentation of information in the financial statements.

We performed a taxation compliance service for the New Zealand Antarctic Institute. Other than this assignment and in our capacity as auditor acting on behalf of the Controller and Auditor-General, we have no relationship with or interests in the New Zealand Antarctic Institute.

Unqualified opinion

We have obtained all the information and explanations we have required.

In our opinion the financial statements of the New Zealand Antarctic Institute on pages 26 to 43:

- comply with generally accepted accounting practice; and
- fairly reflect:
 - the financial position as at 30 June 2000;
 - the results of its operations and cash flows for the year ended on that date; and
 - the service performance achievements in relation to the performance targets and other measures adopted for the year ended on that date.

Our audit was completed on 16 October 2000 and our unqualified opinion is expressed as at that date.



K J Boddy
Audit New Zealand
On behalf of the Controller and Auditor-General
Christchurch, New Zealand