

It's been an extraordinary year

A report from the Chair and Chief Executive

Over the last 12 years, NIWA has developed into a very successful research organisation and commercial consultancy firm, with a reputation for excellent science, excellent services, strong financial performance, and high staff morale. During 2004–05 this tradition continued. We made major advances in many of our core science areas, further enhanced the breadth and quality of our commercial services, established several new productive partnerships, worked efficiently and effectively as a team, and finished the year with the best financial results in NIWA's history.



Chair Sue
Suckling and
Chief Executive
Rick Pridmore.

For the year to 30 June 2005, NIWA achieved a group operating surplus before tax of \$9.7 million, against \$7.0 million in the previous year. Net surplus after tax was \$6.4 million (\$5.3 million in 2003–04). Gross revenue from research, consulting, vessel operations, and all other business activities was \$91.1 million (\$84.6 million in 2003–04). NIWA's after-tax return on average shareholders' equity (of \$47.8 million) was 13.5%. A total of \$2.2 million was allocated to NIWA's ongoing staff profit-share scheme before arriving at the surplus before tax. A dividend of \$15 million was paid to the Crown.

This year's performance was particularly pleasing because it was the first year since 1998 that our research and vessel companies performed strongly at the same time. Over the

last three years we have put considerable effort into increasing the competitiveness of our research and consulting business (NIWA Science) and establishing a stronger financial footing for our vessel company (NIWA Vessel Management). The benefits from these strategic initiatives are now beginning to appear.

Financial summary

	2005 \$'000	2004 \$'000	2003 \$'000	2002 \$'000	2001 \$'000
Total Revenue	91,137	84,631	84,200	81,312	77,113
– Public Good Science	43,729	39,591	39,780	37,869	37,359
– Ministry of Fisheries	16,626	14,602	16,705	16,260	13,701
– Commercial and Other	30,782	30,438	27,715	27,183	26,053
Net profit before tax	9,654	7,036	7,216	7,465	7,328
Net profit after tax	6,434	5,276	4,726	4,730	4,717
Capital expenditure	7,348	8,389	9,064	10,173	8,586
Return on average equity (%)	13.5	10.7	10.6	9.6	8.7

Chair and Chief Executive's report

Strong growth in research and consulting

NIWA Science won seven new grants from the Foundation for Research, Science & Technology this year, which increased total research revenue for the year by \$4.1 million. Five of these grants support four-year research programmes. They will help to develop new air quality standards, create new products based on the incorporation of antifoulant bioactive compounds into plastics, improve natural hazard forecasts and risk assessments, produce new technologies for generating energy from wastewater biomass, and enhance the measurement of greenhouse gases. Research conducted for the Ministry of Fisheries increased by \$2 million this year. We completed stock assessment surveys for a variety of species, including orange roughy, hoki, scampi, oysters, southern blue whiting, and blue cod. We also carried out research on the biodiversity of seamounts, the biosecurity risks associated with vessel hull fouling, the trophic relationships of middle-depth fish on the Chatham Rise, and the spread of selected invasive species.

We produced some stunning science. For example, we used new data-mining tools to produce maps showing where the most diverse fish communities occur around New Zealand, we devised an ingenious method for assessing the health of coastal and estuarine areas, and we created a highly innovative model for resource managers that predicts the likely flow in any New Zealand stream. We developed the first stock assessment model for Antarctic toothfish in the Ross Sea, and we brought into commercial production a novel feed for maintaining the condition of lobsters before they are sent to market. We improved definition of the distribution of potential coastal earthquake sources, and we quantified how the drought risk in New Zealand might change under global warming. Many of these achievements, and more, are detailed later in this Annual Report.

Our seven National Centres continued to blossom. These Centres – which cover Aquatic Biodiversity & Biosecurity, Climate, Climate–Energy Solutions, Coasts & Oceans, Fisheries & Aquaculture, Natural Hazards, and Water Resources – bridge the gap between the creators of science knowledge and the users of science knowledge. They ensure that appropriate tools, services, and information are available to guide decision making and the formulation of policies, to develop new business opportunities, to enhance the performance of existing businesses, to mitigate loss of life and property damage, and to ensure the sustainable use of New Zealand's natural resources. Each Centre is supported by a newsletter and dedicated webpages. The Centres have helped greatly to improve the we plan to improve the range of tools, services, and information to ensure that our science is quickly assimilated and used effectively in achieving New Zealand's economic, social, and environmental goals.

In fulfilling our research and consulting commitments, NIWA staff gave more than 700 presentations, published more than 450 refereed scientific papers, wrote more than 600 client reports, contributed to 194 media releases, and serviced more than 11 000 requests for information. An additional 150 000 requests for information were serviced by users interacting directly with our electronic database pages. Our website had more than 19 million pages viewed.

Our relationships, both nationally and internationally, have also grown in number and strength. In a collaborative effort with the University of Washington and Scripps Institution of Oceanography we deployed more than 200 Argo floats to monitor changes in global climate. We carried out fisheries acoustic surveys with the Irish Marine Institute in the North Atlantic and the British Antarctic Survey in the South Atlantic. We ran eight training programmes for Pacific Island states on hydrology, climatology, water quality monitoring, and stream ecosystem health.



Pete Hodgson, as Minister of Research, Science & Technology, launches the National Centre for Coasts & Oceans.

Chair and Chief Executive's report

Our work with government departments has helped develop important national databases for biodiversity and biosecurity information, predict the spread of undesirable pests and diseases, understand the effects of climate variability on the economy, and create novel habitat and environmental classification systems for improved resource management. Through active and positive relationships with regional and local authorities, we have been able to help plan how their communities will grow and make best use of their land, water, and climate. We have improved natural hazard forecasts, and we are working with civil defence and emergency management groups to improve community response to natural hazards.

Our work with the energy sector has helped to assess new initiatives, identify and quantify sources of renewable energy, and introduce appropriate technology to remote communities. In collaboration with the primary production sector, we helped quantify the abundance of selected fish stocks, determined where best to put new aquaculture farms, brought new finfish species into commercial production, identified the best sites to plant selected crops, and helped find ways to optimise dairy production whilst minimising environmental concerns.

The tide turns for our vessels

We have had similar success with our vessel company. After two years of declining use of our research vessels *Tangaroa* and *Kaharoa*, the tide has finally turned. NIWA Vessel Management is now on a stronger financial footing as a result of two government initiatives to support the use of *Tangaroa*. Firstly, the Foundation for Research, Science & Technology received an additional \$1.7 million per year to enable it to pay the full market rate to hire *Tangaroa* for oceanographic research. Secondly, Ocean Survey 20/20, a 15-year project funded through Land Information New Zealand to provide new knowledge of the nation's seafloor and ocean resources, will purchase \$3.4 million of *Tangaroa* time each year for the next seven years.



Ministers Pete Hodgson and Steve Maharey with Sue and Rick at the launch of the Ocean Survey 20/20.

We also made good progress in securing third-party charters for our vessels. These included site surveys by *Tangaroa* for the oil and gas industry, and the use of *Kaharoa* to deploy profiling floats across the Pacific as part of the international Argo programme. Third-party charters made up more than 30% of the revenue earned by NIWA Vessel Management, and helped ensure that the vessels were well used this year – *Tangaroa* for 300 days and *Kaharoa* for 204.

Commercialisation – a growing range of products

Another strategic initiative which has begun to bear fruit is the generation of new revenue by selling products and services that are not tightly linked to staff time.

Over the last three years NIWA has moved from being a company that thought about the commercialisation of aquaculture products and bioactive compounds to one that is actively doing so. Since the establishment of NIWA Natural Solutions in February 2004 a rigorous stage-gate commercialisation process has been put in place, an assessment of our intellectual property has been made, governance and management frameworks for spin-off companies have been developed, and commercial targets have been set for existing businesses selling juvenile salmon, paua, and kingfish for ongrowing by industry. We have also identified how we can help transform the seafood and marine natural product sectors in New Zealand, rather than just assist them through fee-for-service contracts. Our research in aquaculture and bioactive compounds has been integrated with the aim of producing a range of value-added products for each species we bring into aquaculture. We developed strong partnerships with industry and other research providers to help achieve this goal. During 2005–06 we plan to invest significantly in the commercialisation of aquaculture products and bioactive compounds, and we look forward to forming more partnerships with industry.



Juvenile kingfish.

Chair and Chief Executive's report

We also made major advances in the delivery of products and services related to environmental forecasting and real-time data assimilation. There is little doubt that environmental science has now come of age and is ready to offer a new range of products and services that are quite distinct from those of the last 25 years. This new age of environmental forecasting and real-time data assimilation will become the principal means of delivering benefits from research for most large environmental science organisations over the next ten years. It will add a whole new dimension to the economic performance and risk management of businesses, increase the scope, accuracy, and communication of natural hazard forecasts, guide efficient and effective use of resources, enhance protection of the environment, and improve the health and safety of individuals. What separates this scientific thrust from past endeavours is the technology involved. To deliver products and services in this new age will require a high-performance computing facility (such as our Cray T3E), world-class environmental models, a sophisticated electronic data storage and retrieval system, real-time monitoring networks, interactive decision support tools, and compatible communications based on internet and wireless technologies. All these technologies now exist within NIWA.

We made significant progress in establishing Unidata, our instrument manufacturing subsidiary, as a global market provider of environmental monitoring equipment and associated technologies. We improved its core products, developed effective partnerships and distributor networks in Australia, Europe, the USA, and Canada, and commissioned new leading-edge technology. Joint projects between Unidata and NIWA Science have extended our environmental monitoring services into Asia.

We have also made good progress in the development of EcoConnect, which was formed in September 2004 with the UK Met Office to deliver environmental forecasts, first in New Zealand and eventually in the United Kingdom and the rest of Europe. This year we focused on developing the appropriate infrastructure to run EcoConnect. Most of the company's processes will be automated – from weather forecasts to the electronic delivery of environmental forecasts, emergency warnings, and real-time data – so this task was immense and required (and will continue to require) extensive linking of hardware and software between the UK Met Office and NIWA. It is important that we continue to build on this progress in 2005–06 so that EcoConnect can go 'live' during the year.

The outlook for 2005–06

As a result of the strategic initiatives undertaken over the last three years, NIWA has become a much more robust company. We are no longer an organisation that just sells staff and vessel time and bears all commercial risks. We have created new opportunities to sell a diverse range of products and services, and we are increasingly promoting ourselves, sharing risks, and leading new sector initiatives with others (for example, our 80% shareholding in Unidata and our 50% shareholding in EcoConnect). This year we established appropriate governance and management frameworks to ensure that all entities within the NIWA Group develop efficiently and effectively. The emphasis in 2005–06 will be on driving all businesses harder to achieve both our financial goals and the continued transformation of NIWA. It is important that NIWA maintains its excellent science, strong market focus, and leadership role in all relevant sectors.



Tangaroa in dry dock after hull scraping and repainting.

Chair and Chief Executive's report

Major strategic initiatives for 2005–06 include:

- strengthening governance and management frameworks, relationships, and skills to ensure that all entities in the NIWA Group continue to develop efficiently and effectively;
- increasing the revenue and effectiveness of our research and consulting businesses (NIWA Science, NIWA Australia, NIWA USA);
- building a more secure client base for our vessel company (NIWA Vessel Management);
- establishing NIWA Natural Solutions as an important vehicle in the commercialisation of products (particularly with early-stage investors);
- strengthening the manufacturing capability and product range of Unidata to enhance NIWA's position in environmental monitoring and the development of real-time decision support tools;
- establishing EcoConnect as a highly reputable environmental forecasting service in Australasia, the United Kingdom, and the rest of Europe.



The first of the Unidata Newslines.

Taking care of our greatest assets

The initiatives outlined above will have a significant impact on the way we structure activities within the NIWA Group and on staff perceptions of NIWA as an employer. It is essential that we achieve change without hurting staff morale, dampening innovation, or reducing our strong work ethic. Key staff issues across the NIWA Group include the need to reward staff well, recruitment and retention, and maintenance of critical mass. Many of our core science areas have lost considerable research time over the last six years, and maintaining these capabilities (and associated morale and productivity) is an increasing challenge. The Capability Fund (allocated by the Ministry of Research, Science & Technology) plays an important role in maintaining and fostering essential research capabilities and in developing new opportunities for growth. Without the Capability Fund we would struggle to be an innovative research and

development company, and synergies between the different entities of the NIWA Group would largely end.

We are committed to providing a safe and healthy working environment that enhances professional and career development, promotes a healthy work-life balance, rewards staff within the financial constraints of the company, and promotes innovation and excellence in scientific research, commercial services, product development, and the commercialisation of intellectual property.



Safety at sea training.

Chair and Chief Executive's report

We have an excellent working relationship with the Public Services Association (PSA), and the PSA Partnership Forum is a well-established process for sharing information with the union on key issues affecting staff. We negotiated new Collective Employment Agreements for NIWA Science and NIWA Vessel Management. We developed succession, recruitment, and training plans for all core capability areas. In collaboration with the PSA we reviewed career pathways for technical staff. We reduced the number of administrative or leadership roles performed by any one individual, to ease stress and allow greater focus on research and consulting activities. We ran training modules to improve the skills of individuals managing, mentoring, and assessing staff. We revised the Project Management System to improve internal reporting, better meet client needs, provide more high-quality information, better identify risks, and improve the management and protection of our intellectual property.

We are also committed to operating in a sustainable manner. We take sustainable development reporting seriously, and we are a member of the New Zealand Business Council for Sustainable Development. Many of our core business activities contribute directly to the sustainable development of New Zealand's natural and human resources by providing scientific advice, products, and services. A growing component of our work is directed at creating new business and job opportunities, both in the main city centres and in rural areas. We take particular care to minimise the impact of our activities on the environment, and to ensure that individuals and communities potentially affected by our actions are well informed and consulted about how we plan to proceed. We support extensive interactions with non-government organisations and community groups, and we contribute significantly to the education of primary, secondary, and tertiary students. We also provide information and training for local and central government agencies and the wider public. Internationally, we represent New Zealand at a vast array of scientific meetings and inter-government forums. This year we made good progress in reducing energy use, promoting recycling and waste reduction, investigating alternative transport options, promoting teleconferencing, and conserving water. This information and more is included in the 'Sustainable Development' section of this Annual Report. Once again, this section was verified by independent experts.

In closing, we thank our Board, staff, collaborators, and stakeholders for their valuable contributions throughout the year. Together, we have brought great benefit to New Zealand.



Sue Suckling
Chair



Rick Pridmore
Chief Executive

A brief history of NIWA

NIWA (the National Institute of Water & Atmospheric Research Ltd) is a Crown Research Institute. It was incorporated as a company on 1 July 1992. Ownership is held equally between two shareholding Ministers appointed by the New Zealand Government (the Crown). NIWA is New Zealand's leading provider of atmospheric and aquatic research and associated products and services. NIWA's diverse range of activities and skills benefit New Zealand by fostering economic growth, enhancing human well-being, and ensuring the sustainable use and development of our natural resources.

The diagram shows the evolution of the NIWA Group which now consists of the parent company (NIWA Science) and six subsidiaries.

NIWA Science employs about 600 staff spread across 15 sites. The main campuses are in Auckland, Hamilton, Wellington, Nelson, Christchurch, and Lauder. Revenue is generated principally from fully contested Government research contracts and consultancy services to a diverse array of clients.

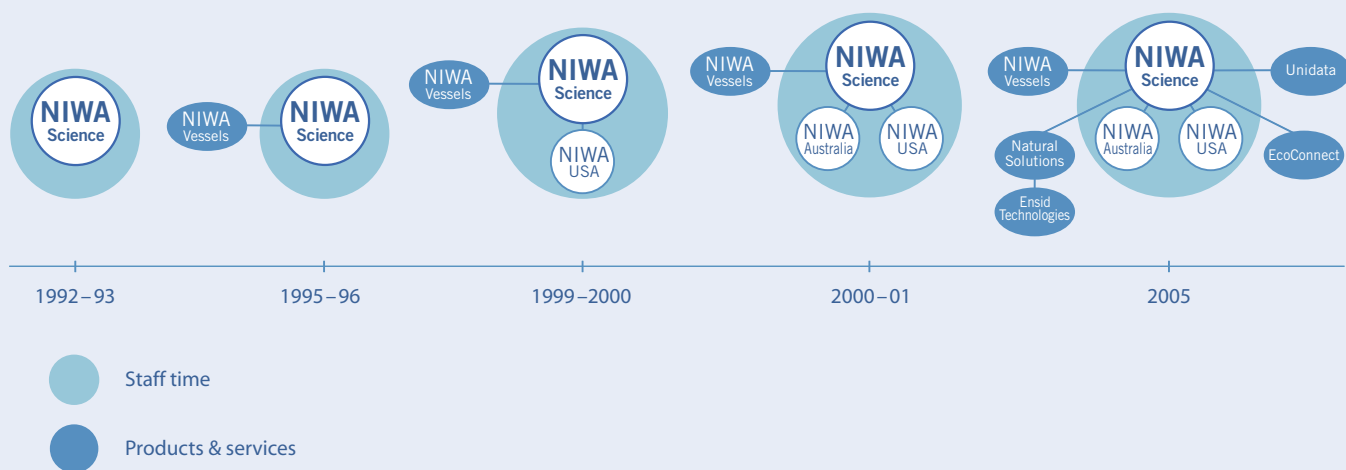
NIWA Vessel Management Ltd, NIWA Australia Pty Ltd, NIWA USA (with registered not-for-profit and commercial entities), and NIWA Natural Solutions Ltd are all wholly owned by NIWA.

NIWA Vessel Management Ltd owns and operates two research vessels (*Tangaroa* and *Kaharoa*) and employs about 40 staff. The companies in Australia and the USA provide similar services to NIWA Science, but are more targeted to the specific needs of those countries. NIWA Natural Solutions Ltd assists in the commercialisation of products and technologies developed by NIWA. It currently oversees three aquaculture businesses, and is a part-owner (50%) of Ensid Technologies Ltd, which develops and sells food-safe electronic tags.

Unidata Pty Ltd is an instrument manufacturing company in Perth, Australia, which specialises in the creation and manufacture of new technologies for environmental monitoring and real-time decision support networks. NIWA owns 80% of the shares in Unidata Pty Ltd. This company complements a similar service provided by NIWA Science in New Zealand.

EcoConnect Ltd, our newest subsidiary, is a joint venture company with the United Kingdom Met Office. NIWA holds 50% of the shares. Whilst still in the development phase, this company has been established to deliver real-time environmental forecasts in Australasia, the United Kingdom, and the rest of Europe.

NIWA's evolution



NIWA's mission

NIWA is a Crown Research Institute which helps the Government achieve its environmental, economic, and social goals.

We do this through our great science, great services, and great staff.

Our mission

NIWA is an internationally respected research organisation dedicated to creating and delivering innovative and unrivalled science-based services and products that enable people and businesses to make best use of the natural environment and its living resources, and derive benefit from them in a sustainable manner.

Our vision

NIWA will fulfil its mission by:

- maintaining and enhancing our national and international reputations for excellence in marine, freshwater, and atmospheric science;
- providing a sound scientific basis for the sustainable management and development of natural resources;
- producing new products and services to enhance environmental management, improve business performance, and increase public safety;
- ensuring optimal value is obtained from all species harvested from, or reared in, marine and fresh water;
- developing and commercialising new products to boost economic growth;
- securing a diverse portfolio of clients and partnerships to broaden our source of revenue, increase our awareness of new commercial opportunities, and minimise the Crown's ownership risks;
- operating with financial efficiency to ensure that we generate the cash flow needed to develop our business and provide an appropriate return on shareholders' funds.

This vision is consistent with the Crown Research Institutes Act 1992, which requires all Crown Research Institutes to conduct scientific research for the benefit of New Zealand and to be financially viable.

Our values

In support of our mission and vision statements we are committed to:

- promoting creativity, innovation, and teamwork;
- ensuring our core science areas are appropriately staffed and supplied with sufficient equipment and resources to conduct leading-edge science and deliver innovative and unrivalled products and services;
- maintaining a culture which is adaptable and seeks opportunities;
- being recognised for our integrity, skill, and professionalism in conducting all aspects of the company's business;
- attracting, retaining, and rewarding high quality staff;
- providing a safe and healthy working environment;
- ensuring that all staff are treated in a fair and equitable manner and that their work and private lives are appropriately balanced;
- taking social responsibility and valuing our environment;
- encouraging stakeholder participation in the setting of our research and business strategies;
- working collaboratively with other organisations and people to form partnerships that add value to our research, intellectual property, products, and services;
- honouring the principles of the Treaty of Waitangi.

The following sections illustrate the contributions our great science, great services, and great staff made in 2004–05.