

Sustainable Development Report

NIWA is fully committed to operating in a sustainable manner and working with others to achieve both NIWA's and New Zealand's environmental, economic, and social goals. Many of our core business activities contribute directly to the sustainable development of New Zealand's natural and human resources by providing scientific advice, services, and products. Our mission statement and vision reflect this commitment by stating that we provide a sound scientific basis to help ensure that we use and benefit from our natural resources in a sustainable manner, while providing economic growth.

A growing part of our work is directed at creating new business and job opportunities, in both 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 substantially 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.

In support of our mission and vision, our values include:

- contributing to environmental sustainability by developing and maintaining core capabilities to deliver leading edge science and innovative services focused on the natural environment;
- being socially responsible;

- ensuring that our staff are treated fairly and equitably;
- providing staff with a safe and healthy work environment.

We continue to promote sustainable development through our involvement in the New Zealand Business Council for Sustainable Development, have contributed to the NZBCSD's Sustainable Energy Futures project, and have members on national and international environmental and conservation committees. We also have our own sustainable Business committee, and this year we joined the Sustainable Business Network.

The Crown Research Institutes Act 1992 sets out the principles under which CRIs operate. We are committed to these principles, which include:

- undertaking research for the benefit of New Zealand;
- pursuing excellence in all activities;
- complying with all ethical standards;
- promoting and facilitating the application of research findings and technological developments;
- being a good employer;
- maintaining financial viability.

These principles form the basis of our non-financial performance measures, which are agreed each year with the shareholding ministers as part of our Statement of Corporate Intent (SCI). These measures and performance against targets are reported at the end of this section.

Our science helps to ensure the sustainable development of New Zealand's natural resources

Our core business is providing scientific advice, products, and services that underpin the sustainable development of New Zealand's natural resources. Some examples of how we did this are included below, but the underlying principle of sustainability applies to all our activities.

Sustainable management of marine resources

- We developed a model to assess the general health of coastal and estuarine environments based on the natural variability of seabed communities. The model can be applied to a range of anthropogenic impacts and provides a much better basis for the sustainable management of a healthy environment in coastal and estuarine systems than the conventional assessments based on a limited number of species.
- We participated in working groups assessing fish species and provided information to the Ministry of Fisheries for stock assessments of species including orange roughy, snapper, toothfish, hoki, ling, blue cod, oysters, southern blue whiting, kahawai, southern bluefin tuna, red cod, red gurnard, giant stargazer, and tarakihi.

Sustainable use of freshwater resources

- We made a major breakthrough in providing access to environmental information on New Zealand's freshwater resources. With a click of your mouse, a GIS search tool will give you a raft of catchment-related information (for example, sediment load or catchment mean rainfall and runoff) on any part of any stream in the River Environment Classification network (www.niwascience.co.nz/ncwr/rec). This can be used to predict environmental change in response to changes in other variables.
- Two of our web-based resources are now available for use by environmental managers of freshwater. LakeSPI (lakespi.niwa.co.nz) lets managers search for information on lake condition in about 50 lakes. It has historic and current evaluations, and uses submerged plant characteristics and information on other biota to assess the ecological health of a lake. The latest version of Freshwater Biodata Information System (fbis.niwa.co.nz) has new freshwater plant datasets and tailored queries for resource managers involved in sustainable management.



Sustainable land use

- Changes in the amount of nitrogen entering Lake Taupō under different land-uses can be predicted by a catchment model which has been developed into a simple web-based tool. This can now be done on the dedicated website by selecting parts of the Taupō catchment on a map and entering the new land-use (for example, changing the amount of pasture or entering point sources such as wastewater treatment plants). The model provides advice for environmental managers and a tool to help the public better understand the effects of changing land-use on the sustainable management of land and fresh water (taupo2020.niwa.co.nz).
- Tools to help predict the effects of sediments, nutrients, heavy metals, and pathogens on waterways (streams, lakes, and estuaries) are the aim of a large research programme we started this year. Erosion and dispersion of fine sediments are now monitored in the Raglan/Whaingaroa catchments as part of the study. The information will eventually be used to develop better computer models to help resource managers responsible for sustainable use of these environments. The project also involves close liaison with local communities.

Sustainable management of biodiversity & biosecurity

- Studies on the biodiversity of rocky reefs in and around the Hāheī Marine Reserve on the Coromandel Peninsula showed the effects of terrestrially derived sediments on kelp beds and faunal diversity. The work, backed up by laboratory experiments, has important implications for the sustainable management of marine reserves and catchment activities which might affect reserves.
- Braided rivers are under increasing pressure from water demands for irrigation and hydroelectricity, and managers need to balance these uses with maintaining the rivers as important natural resources. A NIWA study of biodiversity patterns of the Waimakariri River and associated springs and spring creeks highlighted the high biodiversity values of these ecosystems to help managers maintain such a balance.

Improving the quality of life in urban and rural areas

- We continued development of an advanced physico-chemical treatment system as an 'add-on' to our Advanced Pond System or to existing oxidation ponds commonly used in New Zealand for wastewater treatment. The new system significantly improves the quality of the discharged water, can remove 90% of phosphorus and similar levels of *E. coli*, and can reduce turbidity levels.
- We began work on a project aimed at protecting New Zealand's clean air – providing the science behind National Environmental Standards for air quality required by local authorities. We are investigating pollution emissions, dispersion modelling, atmospheric chemistry, monitoring networks, health and ecological effects, and pollution mitigation. Ultimately, the programme will provide a scientific basis for the definition of air quality management regions for all New Zealand.

Renewable and alternative energy sources

- Working with local iwi, we designed photovoltaic (direct conversion of solar energy to electricity) and solar hot water systems for two small communities (Waipoua in Northland, Waihi near Taupō), as well as a small microhydro scheme (500W) at Waipoua. Such schemes have enormous potential to provide energy for communities like Waipoua which have no reticulated electricity supply, and we will monitor their technical and economic performance over the next year.
- We have developed a new algorithm to estimate different components of measured solar irradiance at a number of sites. This will enable better nationwide estimates of solar energy for the design of water heating installations and photovoltaic generation.



Renewable energy at Waipoua.



The solar tracker and instrument array measures direct and diffuse solar radiation at Lauder, Central Otago.

Working with Māori

- In collaboration with Wairewa Rūnanga, we are assessing the tuna (eel) stocks of Wairewa (Lake Forsyth). Rūnanga members are involved in all phases of the sampling. Size distribution and stock numbers will be used to help assess sustainable levels for the fishery.
- Te Kūwaha staff are helping four iwi organisations (Ngāti Rārua, Maungaharuru-Tangitū Society Incorporation, Te Rūnanga-o-Te Whānau, and Te Rūnanga-o-Ngāti Whātua) develop strategic research plans to underpin environmental, economic, social, and cultural aspirations identified in their Annual Plans and Environmental Plans.



We operate in a sustainable manner

We are committed to operating in a sustainable manner. That means that we minimise our consumption of natural resources and the impact of our activities on the environment.

We develop financial and non-financial performance measures each year, and include them in our monitoring and reporting framework. These measures are realistic, measurable, cost-effective, aligned with our values and core business, and involve staff. They can be updated to reflect our changing business environment and growth in key sectors. They complement those used by the Crown Company Monitoring and Advisory Unit to monitor our performance, and they were expanded this year to include goals for recycling and reducing paper use. We also introduced new social performance measures. Our Sustainable Development Committee is the focus for sustainable development activities in NIWA, reporting and promoting awareness among staff.

Economically sustainable

Economic sustainability addresses our effect on the economic circumstances of our stakeholders and their economic systems. As a Crown Research Institute, NIWA is required to be financially viable and to undertake research for the benefit of New Zealand.

Highlights this year included:

- NIWA Group exceeded its financial targets;
- record high revenue of \$91 million;
- net surplus, at \$6.4 million, produced a return on average equity of 13.5%; this is well above the weighted average cost of capital of the organisation.

Direct customers

Our direct customers are those who fund our science and research. The Government is our largest customer, but we also conduct research for, and provide advice and information to, many others, ranging from international conglomerates to local commercial fishers and schools. We consider the New Zealand public as our most important customer, although they do not directly contract us.

Total revenue

NIWA Group for the year ended 30 June

2003	\$84,200,000
2004	\$84,631,000
2005	\$91,137,000

To continue to provide the best science for all our customers, we have to grow with the market. The continued increase in our revenue shows the ongoing growth in demand for the science, products, and services we provide.

Suppliers

We aim to be good customers ourselves by supporting our suppliers and subcontractors by paying them in a timely manner in accordance with agreed terms.

Cost of all goods, materials, and services

NIWA Group for the year ended 30 June

2003	\$35,223,000
2004	\$36,153,000
2005	\$38,071,000

Employees

Total payroll and benefits

NIWA Group for the year ended 30 June

2003	\$41,491,000
2004	\$41,864,000
2005	\$43,214,000

Providers of capital

NIWA had interest bearing debt at 30 June 2005 of \$1,700,000 (2004: nil). Changes in economic value to our shareholder are:

Operating surplus before tax

NIWA Group for the year ended 30 June

2003	\$7,216,000
2004	\$7,036,000
2005	\$9,654,000

Return on equity

NIWA Group for the year ended 30 June (net surplus/average shareholders' funds)

2003	10.6%
2004	10.7%
2005	13.5%

Public sector

Most of our research is aimed at addressing issues of relevance to the general public – the sustainability of our society and civilisation.

As a commercial entity, we also contribute by paying tax. Taxes paid in other countries were minimal.

Taxes paid

NIWA Group for the year ended 30 June

2003	\$3,297,000
2004	\$1,506,000
2005	\$3,000,000

The economic challenges next year include:

- continuing to meet NIWA's economic targets in the face of increasing competition, increasing resource costs, and reduced funding in some areas;
- continuing to find new investment and growth opportunities that add value to our organisation and our services;
- maintaining our profitability and continuing to produce acceptable returns to our shareholders balanced against the increasing costs to retain the best scientists in an increasingly tight labour market and increasing operating costs;
- turning our research outcomes into new products, services, and industries for New Zealand.



Environmentally sustainable

Environmental sustainability identifies the need to meet customer needs while maintaining the environment in at least its present state, thereby ensuring that future generations receive the same benefits. We acknowledge this responsibility and act accordingly to minimise the impact of our activities on the environment.

Our environmental policy recognises that we need to conduct all our activities to a high standard of environmental awareness by complying with relevant legislation, taking all practical steps to minimise any impact, having contingency plans for accidental spills, minimising waste production and the consumption of resources, and striving to improve our environmental performance.

Highlights this year included:

- increased use of recycling facilities;
- targets for the amount of recycling and waste disposal were exceeded;
- greater staff awareness and involvement in minimising the impacts of NIWA's activities;
- no incidents of non-compliance with discharge regulations.

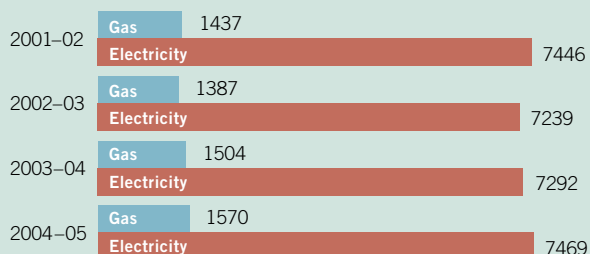
Resource use

We are a foundation member of the Energy Wise Government Programme, which is administered by the Energy Efficiency and Conservation Authority (EECA). We use energy efficiently in all our premises, plant, and equipment wherever it is cost-effective.

NIWA Science carried out energy audits at the larger sites in 2002 and established baselines for energy use. We aim to reduce electricity use without compromising our service levels, productivity, or staff comfort. We investigate all potential energy saving initiatives, including:

- increasing staff awareness through staff meetings, email, and newsletters;
- changing heating water practices and reducing heat loss (Lauder);
- investigating alternative energy sources, such as solar power (Christchurch), and new reticulation systems to conserve energy and water (Bream Bay).

Energy use* (kWh) per fulltime staff equivalent



*Next year we will develop a measure that can be related to productivity.

Despite our energy efficiency initiatives, use increased this year. We will investigate initiatives to reduce it to at least 2003-04 levels. The electricity use for 2003-04 and 2004-05 excludes the new site at Bream Bay and the upgrade to the supercomputer at Greta Point. The goal to reduce energy use was set before these facilities were established and, although we are working on reducing the energy demand there, it is not appropriate to include those sites in baseline

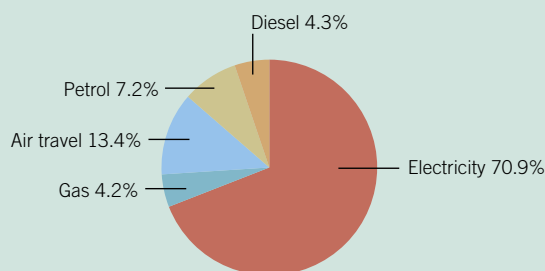
comparisons. Bream Bay is NIWA's newest facility, specialising in large-scale aquaculture production, and it accounted for 20% of the total electricity use at NIWA in 2004-05. A water reticulation system at Bream Bay is being designed and built to conserve water and save energy. This system will reheat water for abalone production. The supercomputer upgrade accounted for 12% of the total electricity use.

2004-05 Target	2004-05 Performance	2005-06 Target
To achieve at least a 15% saving per fulltime staff equivalent in electricity and gas use (from the baseline for 2001-02) over the 5-year period to 30 June 2007.	Electricity and gas use increased by 1.8% compared with 2001-02.	Reduce electricity and gas use by at least 5% by June 2006 (from the baseline for 2001-02).

In addition to auditing our use of electricity and gas, we gathered information on our use of motor vehicles, hire of taxis, and air travel to enable an assessment of the equivalent greenhouse gas emissions produced by our activities. We estimated that the consumption of fossil fuels to support our activities emitted 2983 t of carbon dioxide in the year ending 30 June 2002, 3030 t in 2003, and 3373 t in 2004, and 4039 t in 2005 (using the New Zealand Business Council for Sustainable Development protocol). The increase in 2005 was expected, and was due to the installation of the supercomputer at Greta Point and the full use of the facilities at Bream Bay. The use of motor vehicles, hire of taxis, and air travel are essential to enable us to carry out our business. While we will continue to minimise travel where possible, our use of these resources is likely to increase in future as our business continues to grow. However, we will attempt to balance this through energy savings and other initiatives.

Electricity is a significant resource used by NIWA. This year it accounted for 70% of the total carbon dioxide emissions. Our major resource use was:

Resource use %



Based on fulltime staff equivalents (578), carbon dioxide emissions increased from 5.06 t in 2003-04 to 6.99 t in 2004-05. The main reason for this was the increased air travel and electricity use at Greta Point and Bream Bay. We are considering:

- installing video conferencing facilities at major NIWA sites in an effort to reduce air travel;
- purchasing hybrid vehicles in an effort to reduce the use of petrol and diesel by our vehicles;
- investing in energy efficient systems and building management systems to conserve energy.

sustainable development



CO₂ gas emissions (t) per full-time staff equivalent



The Inventory of New Zealand's Greenhouse Gas Emissions (www.niwascience.co.nz/ncces/ghge) and the Residential Carbon Dioxide Calculator (www.niwascience.co.nz/ncces/co2calc) are both active on the NIWA website. The latter tool enables individuals to estimate their contribution to carbon dioxide emissions.

2004–05 Target	2004–05 Performance	2005–06 Target
NIWA's total annual contribution to greenhouse gas emissions based on full time staff numbers does not increase above the baseline for 2001–02.	The equivalent emission of carbon dioxide was 7%* higher than 2001–02 (* excludes the new developments).	NIWA's total annual contribution to greenhouse gas emissions does not increase above the baseline for 2001–02.

NIWA Vessels

NIWA Vessels manages two large research vessels – *Tangaroa* (deepwater) and *Kaharoa* (coastal and inshore). Both vessels operate on diesel fuel, and the equivalent carbon dioxide emissions were:

Year ending 30 June 2002	6682 t (12.7 t per sea-day)
Year ending 30 June 2003	6091 t (12.5 t per sea-day)
Year ending 30 June 2004	5522 t (11.7 t per sea-day)
Year ending 30 June 2005	6954 t (13.3 t per sea-day)

2005–06 Target

To reduce the carbon dioxide emissions by *Tangaroa* and *Kaharoa*, based on tonnes of fuel per sea-day by reducing vessel speed when practical.

Fuel consumption increased substantially in 2004–05 because several voyages required all-day steaming.

We ensure that emissions from diesel fuel are minimised by continually reviewing work schedules and updating servicing and maintenance plans. Both vessels are classified with Det Norske Veritas (DNV), an internationally recognised classification society, and both are maintained in accordance with the society's rules. These require the vessels to comply with stringent, planned maintenance routines and high levels of operational practice.

NIWA Vessels carries out underwater hull scrubbing of *Tangaroa* and *Kaharoa* about every 9 months to improve fuel consumption. Fuel consumption was also considerably reduced (by as much as 28% at times) by *Tangaroa* reducing normal cruising speed from 12 to 10 knots.



Every 6 months the vessels are inspected for introduced species, such as *Undaria*, and are cleaned. This is also done before they enter areas where *Undaria* and other noxious plants have not been recorded, such as Antarctica. A waste separation station has also been established on *Tangaroa* for recycling glass, paper, cardboard, cans, and plastics.

Waste management and recycling

We are continually evolving our waste management and recycling strategies, including providing recycling facilities in all offices and at each site, and increasing awareness of the need to reduce waste and increase recycling. There were no incidents of non-compliance with discharge regulations. The waste management and recycling facilities for NIWA's vessels follow those of the International Ship Management Plan.

Our four main sites (Auckland, Hamilton, Wellington, and Christchurch) accounted for 26 544 kg of recycled paper (56 kg per FTE) and 64 980 kg (137 kg per FTE) of solid waste in 2004–05. The goal set in 2003–04 was to increase recycling of paper and reduce solid waste by at least 10% over the next 5 years (based on the number of full time staff). We met this target this year, but it is important that we improve on this.

2004–05 Target	2004–05 Performance	2005–06 Target
To achieve at least a 10% increase in recycling of paper and reduce solid waste by 10% per fulltime staff equivalent (from the baseline for 2003–04) over the 5-year period to 30 June 2009.	The increase in recycling of paper was 23% compared with 2003–04 and there was a decrease of 11% in solid waste.	To maintain and where possible increase the recycling of paper, glass, and plastic and to reduce solid waste production.

Paper use

Paper is the most significant area of waste for NIWA and we have developed strategies to reduce its use.

2004–05 Target	2004–05 Performance	2005–06 Target
To reduce the use of paper by 10% over the next 5 years compared with the base in 2003–04.	There was a reduction from 14.6 (FTE: 586) to 11.1 (FTE: 578) reams of paper per FTE, which is a reduction of 24% compared with 2003–04.	Continue to reduce the use of paper and not exceed the 2004–05 use.

Key environmental challenges next year include:

- minimising waste as the company grows and becomes more involved in product sales;
- maintaining and enhancing staff awareness of the need to conserve energy and develop alternatives;
- continuing investment in energy saving infrastructure and equipment (for example, video conferencing and hybrid cars) while meeting the heavy demand for capital equipment;
- reducing energy consumption (energy audits should be repeated at all major sites) while the business continues to grow.

Our social and cultural responsibilities

Social responsibility starts with the well-being of our biggest asset – our staff. We are committed to providing competitive salaries, enhancing professional and career development, promoting work-life balance, investing in new capital equipment, providing overseas travel opportunities, and providing a safe workplace.

Highlights this year included:

- establishing a working party to investigate and recommend career development pathways for technical staff;
- increasing staff benefits;
- targeting initiatives for work-life balance;
- providing career and personal development opportunities after discussions with staff and developing formal succession plans;
- reducing annual leave balances, so that only 15 staff had more than 30 days leave at 1 December 2004;
- providing access to more than 60 different training courses for staff;
- maintaining a high workplace safety record and secondary level in the ACC Partnership Programme;
- increasing involvement with iwi in both research and sustainable development projects;
- running training courses for a range of users, continuing sponsorship of science fairs, and continuing the association with the very successful and high profile Kelly Tarlton's Underwater World.

How we help our staff

Benefits

We successfully renegotiated the collective agreement with the PSA, and in the process enhanced many of the benefits. We improved the level of allowances, widened our unique training leave to include personal development and participation in community events such as organised sporting or cultural activities and helping with school trips. We improved the long service leave provisions and increased the health care subsidy available to PSA members by 50% as well as providing better access to benefits. We also made a commitment to further investigate practices in relation to retirement.

All permanent staff benefit from:

- a subsidised superannuation scheme;
- an annual review of remuneration;
- a profit share scheme;
- competitive salaries;
- sick leave and bereavement leave as necessary;
- a 6 week ex gratia payment after returning from maternity leave;
- Capability Fund support for sabbaticals, technical training awards, postdoctoral grants, and overseas travel.

These benefits reflect our strong commitment to treating our staff fairly and equitably.

We have an excellent working relationship with the PSA, and the PSA Partnership Forum enhances the sharing of information on key issues affecting staff. Membership of the PSA is voluntary, and 54% of staff are members.

Rewarding staff

We need to retain and recruit top staff to maintain our excellent reputation for innovative, leading edge science, and high quality products and services. In addition to the financial benefits and the other benefits listed above, we invest in leading edge scientific equipment and fund overseas travel to maintain international reputations and opportunities.

Our performance remuneration system acknowledges the range, depth, and type of skills our staff have. We also have a profit-share scheme, which allows for a proportion of the after-tax operating surplus to be distributed to all staff.

Our average remuneration for most levels meets or exceeds the market median, based on the Hay Survey of Pure and Applied Research. We aim to ensure it remains ahead of the market across all levels, within financial constraints.

Staff development

After the review of scientific and administrative workloads and the redistribution of responsibilities in 2003–04, we held a series of staff development workshops to identify and develop critical skills and to help with career development and prospects. The most successful of these workshops was the commercial skills module, which focused on client management and selling services. Workshops on communication, staff management, and project management were also held for appropriate staff, and staff attended a range of courses identified for personal development. More than 60 different courses were available, and 465 training sessions were completed.

Employee well-being and work-life balance

We are committed to promoting an appropriate level of work-life balance. Staff are encouraged to make the most of the non-financial benefits. We ran briefing sessions on our subsidised superannuation scheme, provided workplace training on stress and stress management, and funded retirement planning seminars for interested staff and their partners. In addition, we support crèche facilities at our largest site in Wellington, and maintain a flexible policy with regard to work hours and leave. We also included personal development and support of school events in the training leave programme.



We encourage participation in community events (and directly sponsor some staff), such as the running relay around Lake Taupō, the Lake Taupō bike relay, and the Auckland Marathon.

Parents Alistair Dunn (left) and Owen Anderson with Rose Dunn, Elliott Allen, and Nina Anderson (obscured) at the Greta Point crèche.



Health and safety

We rigorously promote safe working practices and procedures for all operations. We have comprehensive health and safety systems which aim to minimise risk, monitor and manage known hazards, and ensure that staff are adequately trained, informed, and protected. The success of this practice is shown by our continued acceptance at secondary level in the ACC partnership programme in recognition of safety management practices and systems.

Our employee participation system played a pivotal role in the development and monitoring of these systems. The National Health and Safety Committee, a body of employee and union representatives, met regularly to facilitate communication between staff and management and to implement safety solutions.

Work-related incidents increased from 76 to 90. Although the total number of incidents increased, we identified potential hazards, reviewed areas such as driver fatigue, and put remedial actions in place where appropriate. There were four lost-time accidents, two of which required significant recovery times and gradual return to work plans. As a result, there were 157.6 equivalent full days lost to injury, which corresponds to less than 0.1% of total work days per year for science staff. More than 300 staff received specialised safety-related training during the year.



Staff composition

Staffing levels have remained fairly constant over the last two years. There have been new positions in key growth areas, such as aquaculture and biosecurity, and the figures now include all subsidiaries. Turnover increased from 7.7% to 9.6%, which partly reflects the greater opportunities for staff movement as the labour market tightened towards the end of 2004 and the beginning of 2005.

Age profile (%) by 10 year age groups for NIWA and its subsidiaries

Category	<20	20-29	30-39	40-49	50+
Research teams	0.0	10.8	28.8	30.2	30.2
Research support	0.0	0.0	15.9	29.5	54.5
General support	1.0	17.8	21.8	26.7	32.7
Marketing & promotion	0.0	0.0	20.0	40.0	40.0
Executive/Management	0.0	0.0	8.3	41.7	50.0
Total	0.2	10.6	25.9	30.1	33.2

How we help others

Working with Māori

We are committed to building strong relationships with Māori through the continued development of collaborative research partnerships at 'flaxroots' level with iwi, hapū, and Māori organisations. Our Māori Research and Development Unit, Te Kūwaha, focuses on research that underpins Māori aspirations for business development and sustainable resource management. A new area of collaboration between Te Kūwaha scientists and iwi is the development of strategic research plans – a novel way of prioritising the research aspirations of iwi, hapū, and Māori organisations. Our Māori researchers and scientists specialise in the core areas of climate and energy, freshwater, marine, and aquaculture research.

A key aim for Te Kūwaha is to improve all staff interactions with iwi partners, based on 'tikanga tangata' and 'kawa atua', thus making NIWA an attractive place for Māori researchers to work. Te Kūwaha now comprises a General Manager and 16 key Māori scientists and technicians. We have daily interactions with iwi, and currently have 78 iwi relationships, are involved with 19 interested parties, have 15 letters of understanding, 18 draft proposals, and 9 signed memorandums of understanding. The latest MOU signed was with Te Ohu Kai Moana, which advanced the development of marine and freshwater research collaboration between the two organisations.

Te Kūwaha has engaged in several hui and wānanga with their iwi research partners, users, and stakeholders. Particular highlights include second stage discussions with Tainui hapū at Whaingaroa investigating an acceptable model of treating wastewater from a Māori perspective, and the weather and climate wānanga involving 15 kaumātua from Te Whānau-ā-Apanui, held at Te Wānanga a Awaniārangi at Whakatāne.

Contributing to education and training

We contribute substantially to education that advances science, particularly in our core areas of marine and freshwater resources and atmospheric and climate science. We do this through targeted sponsorship initiatives for schools, joint research and teaching ventures with universities, and training courses for the public. We sponsor a number of education activities including:

- the regional school science and technology fairs in Auckland, Waikato, Bay of Plenty, Wellington, and Nelson;
- assisting with the sponsorship of several other science fairs;
- the national 'Realise the Dream' event.

The 'NIWA Discovery Room' at Kelly Tarlton's Underwater World is aimed at school pupils and attracts some 42 000 each year.





The field inspection in Otukikino Reserve, Christchurch, as part of one of our freshwater biodiversity and biosecurity training courses.

We have strong links with New Zealand universities. Our postgraduate Centres of Excellence at the Universities of Canterbury and Otago, and the Institute of Aquatic and Atmospheric Sciences at the University of Auckland, form the core of this collaboration, and our staff supervised 55 postgraduates this year. In a new initiative with Victoria University of Wellington, we are negotiating to lease space to the university to jointly develop areas of mutual interest. We continued our very successful public training courses; these range from environmental monitoring and aquaculture to biodiversity, and there are 14 such courses scheduled for 2005–06. We also funded 11 postdoctoral fellowships in core areas.



Terry Hume (centre, in shorts) discusses the morphology of Wainui Beach during a 2-day coastal hazards course.

Maintaining a high regard for animal welfare

We use fish in environmental research to help us understand the ecological requirements of indigenous species, to help us assess the impacts of proposed developments on the health of the environment, and to assess and develop species for aquaculture.

Our Animal Ethics Committee ensures that all our animal-based research is conducted in accordance with the Animal Welfare Act (1999) and NIWA's Code of Ethical Conduct for the Use of Live Animals in Research, which has ministerial approval as required under the Act. We report our use of animals annually to the Ministry of Agriculture and Forestry.

Our code of ethical conduct permits the use of animals only when the committee considers that the benefits of the research outweigh the suffering imposed on the animals. We use only the minimum number of animals needed to produce statistically sound results. The total number and the range of species (mainly fish) depends entirely on funded projects, so use varies from year to year.

In compliance with the provisions of the Act, we developed a new code this year to replace the code which expired in December 2004. MAF approved the new code on 7 October 2004.

New social performance measures adopted

Five new social performance measures were developed this year, and they will be added to our reporting framework. They were the number of staff receiving internal and external training, the percentage of staff that have personal development plans, the number of job opportunities created in main city centres and rural areas, and the number of financial and non-financial benefits received by staff.

This year we created 28 new positions in key growth areas such as aquaculture, energy, and monitoring. Twelve of these were in small cities and rural areas such as Bream Bay, Northland (8 positions).



Michelle Harvey in the algal culture room at Bream Bay.

Key social challenges for next year include:

- further improving work-life balance, and maintaining or improving morale in the face of reduced funding in some areas;
- continuing to provide staff with a healthy work environment, and maintaining our excellent health and safety record;
- the recruitment and retention of top staff in key areas;
- maintaining competitive salaries and conditions;
- keeping our profile high through training courses and education and involvement with Māori, while meeting competing demands on projects, funding, and staff time.

Performance against Statement of Corporate Intent on page 58.



Performance against Statement of Corporate Intent (for NIWA Group)

Financial Performance Measures	2004-05 Actual	2004-05 Target	2003-04 Actual
Revenue (\$millions)	91.1	86.9	84.6
Current ratio	1.0	0.8	1.4
Quick ratio	1.3	0.9	1.8
Return on equity (%)	13.5	6.7	10.7
Return on assets (%)	13.4	7.7	9.8
EBIT margin (%)	10.2	5.8	8.0

Non-Financial Performance Measures

Staff composition (including subsidiaries)

Number of staff	2004-05 Actual	2004-05 Target	2003-04 Actual
Research teams (including postdocs)	437	433	438
Research support	44	47	47
General support	101	92	96
Marketing and promotion	5	7	7
Management	24	22	24
Staff turnover (%)	9.6	8	7.7
% male:female	73:27		72:28

Good employer

Lost time injuries (% of work days)	0.1	<0.1	<0.005
Days lost to injury (NIWA Science)	157		38

Research output*

Papers in international, externally refereed journals	347	280	307
Papers in local, internally, or editor-refereed journals	127	180	183
Conference papers and other presentations	781	800	724
Research monographs and books	88	70	82
Popular books	0	2	1
Client reports	606	500	510

Application and promotion of science

Value of consultancies to NZ users (\$millions)	24	25	27
Achievements of technology transfer objectives in FRST contracts (%)	95	95	99
Number of training courses	13		
Number of joint ventures	2		
Value of TBG and Technet contracts (\$thousands)	759	800	440
Requests serviced for information from NIWA's nationally significant public good databases			10 664
• National Climate Database**	8500	9000	
• Water Resources Archive	1120	800	
• NZ Freshwater Fish Database	1452	1200	
Magazine and newspaper feature articles plus TV and radio interviews	194	230	248
Number of patents or licensed products owned	6		4

* Measured for a calendar year.

** The National Climate Database is now a web-based fully automated system. The numbers reported are for the 70 external subscribers who regularly access the database and do not include the 6000 data requests from internal NIWA users.

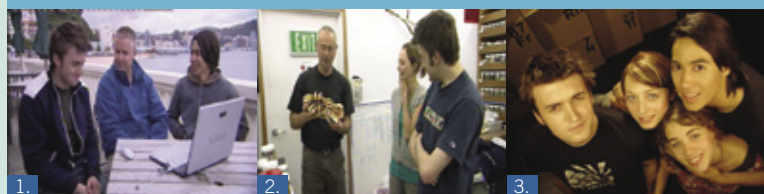
Qtv is here

NIWA staff, CEO Rick Pridmore in particular, were heavily involved in developing Project Q with OliverGiles Productions, from the initial conceptualisation, through a myriad of funding and sponsorship manoeuvres, and finally to the filming and review. A dynamic, new multimedia series designed to engage young people's interest in the world of science, Q first screened on TV One on 21 September 2005.

Four young people with a passion for finding out for themselves what makes the real world tick explore aspects of a 'big science' theme with New Zealanders whose job it is to help find sustainable solutions to the global issues confronting us. Whether it's checking out the conservation issues behind the extinction of the moa, journeying to the depths of undersea volcanoes, or investigating the threat of tsunamis, the Q team happily share their fears, phobias and fascinations with us and ask the questions that kids are really interested in – 'Is a dolphin faster than a jet-ski, Is bottled water any different from tap water, Can animals be gay?'

Project Q is a joint venture between OliverGiles Productions Limited, the Sir Peter Blake Trust, TVNZ, NIWA, the CRIs, Transpower, The Vodafone Foundation, and the Ministry of Education, with strategic partners Oktober Interactive and the Royal Society of NZ. It encompasses a 13-part television series, an interactive website, and a suite of learning tools for teachers and students, including the Q Careers series on DVD, which features the Q team promoting careers in science to their peers.

www.qteam.co.nz



1. NIWA's Doug Ramsay and the team discuss the tsunami threat, while
2. Ashley Rowden introduces some of the marvels of NIWA's marine biology collection.
3. The Q team: Barnaby, Chelsie, Tess, and Paora.

VERIFICATION STATEMENT

Scope and Methodology

URS New Zealand (URS) has carried out an independent audit of the National Institute of Water and Atmospheric Research (NIWA) Sustainable Development Report 2005 – a section of the Annual Report 2005 – to provide to readers assurance on the accuracy of the report content and feedback on the appropriateness and completeness of reporting.

The audit methodology draws on the AA1000 Assurance Standard (March 2003) – an international standard developed to guide the assurance of public reporting on social, economic and environmental performance. The audit was designed to investigate whether NIWA has provided adequate evidence to support the information contained in the report and to assess how well the AA1000 principles of Completeness, Materiality and Responsiveness are applied.

The audit methodology was to:

- Review the draft Sustainable Development Report 2005 – to identify statements of fact/claims and data requiring verification.
- Assess Sustainability Context and main issues.
- Conduct interviews with key personnel at the NIWA Auckland and Wellington offices.
- Sight documented information, computer and hard-copy files, data sources and data.
- Identify errors or weakness in data, provide feedback to NIWA and verify the final report.

The full contents of the report were investigated.

Independence

There is no aspect of the relationship between URS and NIWA that has influenced the independent nature of these verification findings. URS has collaborated with NIWA on hydrological investigations and other projects.

Findings

On the basis of the described audit methodology, URS verifies that the content of the NIWA Sustainable Development Report 2005 provides an accurate description of the company's environmental, social and economic performance.

DISCLAIMER

It is important to note that the veracity of the information summarised in the Report is dependant upon the uniformity, consistency and thoroughness of site/operational staff reporting all relevant matters. While the report Verification Process allowed URS to develop a good appreciation of NIWA's sustainability issues and site specific initiatives, URS did not and can not determine precisely the uniformity, consistency and thoroughness of reporting. URS has prepared this Statement for the use of NIWA in accordance with the usual care and thoroughness of the consulting profession. The opinions provided are based on generally accepted practices and standards at the time they were prepared. No other warranty, expressed or implied, is made as to the professional advice included in this Statement. To the extent permitted by law, URS excludes all liability that may arise from professional advice contained in this Statement. This Statement must be read in conjunction with the supporting documents prepared by URS. No responsibility is accepted for use of any part or all of this Statement in any other context or for any other purpose or by third parties. No third party is entitled to rely on any matter contained in this Statement without URS's prior consent in writing. Neither URS's name nor the material submitted in this Statement may be included in any prospectus or use in offering or representations in connection with the sale of securities or participation interest without URS's prior consent in writing. URS owes no duty of performance to any party other than our contracted client.

Comments/Recommendations

Based on our review NIWA has covered the key performance areas of health and safety, being a good employer, minimising environmental impact, financial outcomes and community contribution in a transparent and open manner.

NIWA's commitment to improving the sustainability of its internal operations was evident throughout the verification process with good discussion on trends and the development of new social measures.

Changes to the report format have added value to this year's report providing greater reader accessibility. Overall this year's report marks a notable progression in reporting on NIWA's internal sustainability performance from last year.

NIWA needs to be sure that its data are comparative year on year and that any changes in calculations and data parameters are highlighted, e.g., changing parameters for CO₂ emissions calculation. In some cases better explanation of reported data would be helpful to readers.

As noted last year improved management systems and processes for the collection of data would help to ensure consistent reporting and the process of verification.

It was clear throughout the verification process that NIWA is committed to achieving a transparent and comprehensive report relevant to their stakeholders. We commend NIWA on their continued commitment to sustainability reporting and look forward to future reports reflecting improved performance.

URS New Zealand Limited
09 September 2005



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