

**Half Yearly Report  
for the 6 months ended  
31 December 2004**

**National Institute of Water & Atmospheric Research Ltd  
and Subsidiaries**

**NIWA Library**

**- 1 MAR 2005**

PO Box 14-901  
Wellington NZ

## **Half Yearly Report For the 6 months ended 31 December 2004**

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### **Financial Results**

NIWA Group has made an operating surplus before taxation of \$2.3 million against a budgeted surplus of \$0.3 million for the 6 months ended 31 December 2004. Performance for the period has been better than expected due to good progress on contracts with the Foundation for Research, Science & Technology, a strong commercial workload, and a culture that encourages 'cost conscious' behaviour. Significant commercial revenue still has to be secured during the second half of the year to achieve budget.

\$2.6 million has been utilised on the acquisition of property, plant, and equipment, against a capital expenditure budget of \$3.3 million for the 6 months to 31 December 2004.

The closing cash position on 31 December 2004 was \$7.3 million. A dividend of \$7.5 million has been declared and will be paid in early January 2005.

The Board at this stage sees no reason to revise the budget forecast for the 2004–05 year.

### **Governance and Management**

A new governance and management framework has been implemented to ensure all entities within the NIWA Group develop well. Each subsidiary within the NIWA Group has a new Board consisting of two directors from the NIWA Board, the NIWA Chief Executive Officer, and one to two other individuals (who bring additional skills). The latter individuals are either members of the NIWA Executive or are independent directors with relevant skills and experience. Subsidiaries with external shareholders (i.e., Unidata Pty Ltd and EcoConnect Ltd) have, in addition, one to two directors representing the interests of these shareholders on the Board. Each subsidiary is led by a General Manager who is responsible for all management, operational, and reporting functions. All General Managers report to the NIWA Chief Executive Officer. Each subsidiary is expected to meet the same standards of business planning, operation, and reporting that are expected of the parent company. All business plans developed by the subsidiaries must be approved by the NIWA Board and included in the NIWA Business Plan (which must be approved by shareholding Ministers) before they may be implemented. Deviations from accepted business plans must be approved by the NIWA Board (who will consult with shareholding Ministers as appropriate).

### **Collective Employment Agreement**

A new Collective Employment Agreement has been signed with the Public Service Association. This agreement will remain in force until 1 July 2006.

### **Animal Ethics**

The Ministry of Agriculture & Forestry has approved the 'NIWA code of ethical conduct for the use of animals in experiments'. This code will remain in force until 31 December 2009.

### **Contracted Obligations**

NIWA is on target to meet all its public good science, fisheries research, and commercial consulting obligations. Some notable achievements are described below.

## **National Centres**

The commercial consulting services of NIWA are marketed through seven National Centres – Climate, Aquatic Biodiversity & Biosecurity, Water Resources, Natural Hazards, Climate-Energy Solutions, Fisheries & Aquaculture, and Coasts & Oceans. The Centres have helped to improve the quality and scope of our services, better target client needs, and enhance access to our skills. Each Centre routinely produces a newsletter that is sent to existing and potential clients. The look, content, and distribution of these newsletters have recently been revised to improve our market image, brand, and reach. Each newsletter is now produced every 2 months (previously quarterly), with the exception of *The Climate Update*, which is produced monthly. Production schedules have been arranged so that half the newsletters are produced one month and the other half the next. Each month all existing and potential clients are sent a package of that month's newsletters. The package has reduced mailing cost, increased awareness of all NIWA does, improved our brand, and simplified how we interact with our clients. The new production schedule has also been linked with internal reporting, which ensures information prepared for monthly reports is efficiently utilised in our newsletters, Board reports, and reports to shareholding Ministers.

The seventh National Centre was launched on 27 November 2004. The National Centre for Coasts & Oceans focuses on the marine environment, both its development and sustainability. The first newsletter for the Centre was published in November, and the Centre has already proved effective in focusing our services and improving interactions with our clients/stakeholders.

## **Fisheries**

Blue cod are a very important commercial and recreational fishing resource in New Zealand, but the time it takes for these fish to grow to maturity is uncertain. Accurate growth information is essential if the blue cod fishery is to be managed well. A recent study by NIWA has shown that blue cod take longer to mature than originally thought. This finding has important implications for rates of replacement after fishing and suggests that the sustainability of current fishing management practices needs reviewing.

A recently completed analysis using NIWA's CASAL stock assessment software has indicated that the current size of the Foveaux Strait oyster population is about 20% of its size before fishing began. The analysis suggests that future stock status will be influenced far more by disease mortality than the current catch levels.

NIWA has developed the first stock assessment model for Antarctic toothfish in the Ross Sea. The model was presented at a meeting of the Convention on the Conservation of Antarctic Marine Living Resources, where it was well received.

Science reviews have been completed for the Australian Fisheries Management Authority Research Committee. These reviews assessed a wide range of projects in major Australian fisheries. We have also been requested to provide stock assessment experts for seven reviews in 2005 of groundfish species on the west coast of the USA.

## **Aquaculture**

A pilot-scale oyster production plant has been developed at our Bream Bay Aquaculture Park. The system has been filled with broodstock which began spawning in late November.

Recent work by NIWA has shown that ultra violet (UV) radiation can have direct effects on fish growing in clear water. Some UV radiation is required for healthy growth, but too much inhibits growth. This work has important implications for the aquaculture industry. New Zealand King Salmon Ltd has used data from NIWA's UV atlas to link high levels of UV exposure during particular years to higher fish mortality and impaired health. They have now requested hourly clear and estimated cloudy-sky UV radiation calculations for Blenheim for 2003 and 2004. Identification of this problem has led New Zealand King Salmon Ltd to initiate specific trials aimed at reducing UV exposure in sea-reared stock. These trials have resulted in changes in husbandry that have enhanced fish welfare/health and improved financial performance.

Trials to develop an oral treatment protocol for kingfish parasites have established important baseline information about drug behaviour in fish. Praziquantel, a common active ingredient in the treatment of worms, undergoes extensive metabolism in a kingfish's liver after its absorption from the intestine. As a consequence, less than 40% of the dose actually reaches the systemic circulation system where it is distributed to parasite attachment sites. Several delivery techniques are being explored to enhance the percentage of praziquantel that reaches the systemic circulation system. This information will improve the efficiency of kingfish parasite treatments in aquaculture, reduce costs, and provide a model parasite treatment protocol that can be transferred to other finfish species.

### **Aquatic Biodiversity**

Recent work by NIWA has shown that New Zealand has an unusually high number of lakes where tiny mosses and liverworts form the deepest growing vegetation. These 'bryophytes' occur at depths of 10 m or more in 16 lakes and can grow down to 70 m in very clear water where light levels are less than 1% of those at the surface. Bryophytes have been found at similar depths in another 35 lakes worldwide. Our samples contain about 30 to 40 species – some of which were previously unknown from aquatic habitats.

Recent work on New Zealand octocorals (bubblegum and bamboo corals) by NIWA has shown that New Zealand's fauna is one of the richest in the world at 180 species (only 48 named) and has doubled the world's known species. One species is the largest seafloor invertebrate species on the planet.

Web guides to some of the common inshore polychaete worms are now online at [www.annelida.net](http://www.annelida.net). The two guides, generated from a NIWA database on New Zealand Polychaeta, are to the shell-dwelling worms (pest species in shellfish aquaculture) and to beach polychaetes. They include family-level commentaries and other background information. Further species will be added progressively to the guides as a beneficial offshoot of ongoing taxonomy.

An identification guide to the offshore crabs of New Zealand has been completed. The guide, co-authored with staff from Te Papa, describes 22 deepwater species and was commissioned by the Ministry of Fisheries for use by observers on fishing vessels.

### **Aquatic Biosecurity**

A paper by NIWA reviewing known impacts caused by pest fish in New Zealand freshwaters has revealed that predation by perch reduces the density of small native fish in lakes – such as bullies, smelt, and inanga. If gambusia are present, they can exacerbate this effect. Fin-nipping and aggressive behaviour by gambusia forces small native fish away from the

protection of rushes and weed beds into deeper waters where they are more vulnerable to predation by perch. In comparison, catfish and tench don't prey on other fish and feed mainly on benthic invertebrates, such as snails, insect larvae, and crayfish. They are therefore competitors with bottom-living native fish, such as bullies and eels. Other exotic fish such as koi carp and rudd are mainly plant eaters, so their effects on other fish are indirect and result mainly from deterioration in water quality.

Over the last two years, 13 ports and 3 marinas have been sampled to assess biosecurity risks to New Zealand. This work has been funded by the Ministry of Fisheries. One group of organisms that are commonly found in these surveys is sponges. To date, 136 species have been identified from these surveys, of which 7 are potential historical introductions (e.g., they may have arrived with the Great Migrations in the 1800s), 15 are cryptogenic (introduction uncertain), 42 are regional endemics, and 73 are undescribed or new to science. These surveys have demonstrated just how little we know about the biodiversity of New Zealand's coastal environments (even ones as highly utilised as ports and marinas) and how difficult it is to categorise many of the species as either native to New Zealand or introduced.

A new invasive species of diatom has been discovered during routine monitoring of the Waiiau River, Southland, for Meridian Energy. The particular diatom forms white-brown gelatinous mats several centimetres thick over the river bed and completely smothers the stones and habitat for invertebrates. It also looks very unsightly. In recent years it has been causing problems in the northern hemisphere, especially on the west coast of North America. It has the potential to be a serious threat as it prefers low-nutrient, cool streams with stony sediments (such as commonly occur in New Zealand). The relevant authorities have been informed and we are currently preparing a brief report for Environment Southland on the biology and risks associated with this diatom.

A major threat to New Zealand freshwater biodiversity comes from plants introduced for the aquarium or ornamental pond trade. NIWA has recently produced a series of three publications, funded by the Department of Conservation, entitled 'Border control for potential aquatic weeds'. These publications describe a model designed to assess the risk posed by species based on their known characteristics, rank species based on perceived weed risk, inventory all species known in the trade, and assess the competitiveness of species in experiments within secure facilities. As a result, 35 plants are now designated unwanted organisms in the Pest Plant Accord (preventing their importation and sale). Alarming, 65 plants found were not previously recorded within New Zealand, or evaluated for entry via the Ministry of Agriculture & Forestry Post Entry Quarantine system. Further plant growth trials under different temperature regimes in a joint NIWA/University of Auckland project will contribute to a 'weed risk assessment model' and form a basis for predicting impact and potential ranges of introduced freshwater species in New Zealand.

A 92-page guide to invasive pests in New Zealand's freshwater environments has been published by NIWA.

### **Maori Development**

NIWA scientists have joined with Ngāti Pikiao (Rotoiti) to develop the traditional tau method for koura harvesting in lakes as a monitoring tool. Tau comprises bundles of dried bracken fern fronds tied together and attached to a longline that is set permanently on the lake bed. The method was scientifically described in 1921, in a study on Māori food supplies of Lake Rotorua, but is a technique that is rarely practised today. The method has several advantages

over other trapping methods we have trialled. We will carry out a detailed analysis of catches and variability in abundance and catch composition to streamline data gathering into a robust protocol that is manageable for iwi to use routinely. We think that this is the first time that a traditional collection method has been developed into a monitoring tool, and our iwi collaborators are very enthusiastic about it.

Te Kūwaha (NIWA's Maori Development Unit) has worked in collaboration with two remote communities – Waipoua (Te Rōroa) and Waihi (Tūwharetoa) – to improve energy efficiency and to assess the potential for developing renewable energy sources. Energy audits have identified where energy efficiency can be improved. More than a dozen houses and communal buildings in each location have been retrofitted with energy-saving products such as ceiling and underfloor insulation and efficient shower heads. Community members have carried out the work, with training and assistance from Te Kūwaha, Negawatt Resources Ltd, and the Energy Efficiency & Conservation Authority. Residents have reported that their homes are now considerably warmer, drier, and quieter and that they have used two-thirds less firewood for space and water heating. With assistance from each community, NIWA has installed monitoring equipment to assess wind, solar, and hydrological resources. The potential of wave power was also assessed at Waipoua. There, measurements suggest a combination of wind, solar radiation, and hydro could generate sufficient electricity to meet the community's needs. At Waihi, NIWA found micro-hydro appears the best option for connecting to the national grid, while there is also potential for small-scale solar power generation.

A project to screen thermophile isolates from the Tokaanu Hot Springs area for anti-microbial activity has identified a number of thermophile isolates that decrease the growth of selected pathogenic bacteria.

A prototype evaporator has been designed for construction at the Tokaanu marae to extract bath salts from the thermal springs. Taupo District Council has granted NIWA a consent to erect a 4 m x 8 m structure for two years. The evaporator should produce 5 kg of balneotherapy salts after seven days of drying.

### **Freshwater**

Recent work undertaken by NIWA for the Ministry for the Environment has shown that there have been marked changes in the water quality of New Zealand rivers over the last decade. Indicators of point source pollution have decreased (particularly in large rivers), whereas indicators of non-point source pollution have increased (particularly in lowland streams). Perhaps the most alarming result was that 83% of pastoral streams surveyed had *E. coli* levels that exceeded Ministry of Health/Ministry for the Environment guidelines for contact recreation. The report indicates that more effort needs to be directed at minimising diffuse runoff from agricultural activities.

SCALES, a simple web-based tool and catchment model developed by NIWA that predicts nitrogen loads into Lake Taupo under different land uses, has been released for use by the public. This interactive tool allows the user to change land use in different parts of the catchment and then see the likely effect on nitrogen loads. The model can be seen from <http://taupo2020.niwa.co.nz/>, and links to the site will be included in the Taupo2020 website.

A new web-based service, called Freshwater Information New Zealand, has recently been launched by NIWA and is available at <http://finz.niwa.co.nz>. The website provides map-based access to information and data relating to New Zealand's freshwater systems.

Small farm dams are a rapidly increasing feature of rural landscapes. A project was conducted by NIWA to assess the impact of 'water harvesting' dams on streamflow. An index was developed to assess the potential for altering flow regimes downstream. This index was mapped across New Zealand using the River Environment Classification system. The analysis showed that, in many areas, small dams could intercept >25% of the annual runoff, thus severely depleting low flows, changing bed sediment transport, and significantly altering in-stream habitats.

It has long been thought that glass eels arrive in New Zealand from their spawning grounds in Fiji/Samoa via the east coast of Australia on the East Australian Current. An analysis of eel ages and oceanographic dispersal patterns by NIWA indicates that this is unlikely. This important migration is more likely to be the result of direct transport to New Zealand via surface ocean currents.

### **Marine**

NIWA has successfully concluded its role in the United Nations Convention of the Law of the Sea (UNCLOS) negotiations with Australia. The UNCLOS agreement between New Zealand and Australia significantly extends New Zealand's sovereignty over continental shelf territory in the Tasman Sea, enclosing area of about 284 000 square miles beyond the New Zealand Exclusive Economic Zone. Under contract to the Ministry of Foreign Affairs & Trade, NIWA and the Institute of Geological & Nuclear Sciences provided all the mapping and boundary advice and participated as technical advisors in the New Zealand negotiating delegation. The next phase in the UNCLOS delimitation process is to conclude agreements with Tonga and Fiji.

Significant advances have been made in identifying the location and significance of major earthquake fault systems in coastal areas of New Zealand. In Kapiti, a system of faults has been discovered using a network of seismic reflection profiles, enabling staff at NIWA to evaluate the plate boundary deformation west of the Tararua and Ruahine Ranges. The present faulting commenced about 1.75 million years ago, and accommodates about 15% of the total motion predicted between the Pacific and Australian tectonic plates. In Fiordland, New Zealand's largest earthquake fault line, the Alpine Fault, is more complex than previously understood, and appears capable of generating very large magnitude earthquakes. In collaboration with the Institute of Geological & Nuclear Sciences, the results are being incorporated into improved models of earthquake hazard assessment.

Two new models have been developed to assist mussel farmers and local authorities in positioning new farms amongst existing ones. One model determines flow distortion due to a proposed mussel farm. The other predicts phytoplankton depletion in and around farms. Both models have been trialled in collaboration with industry and found to perform extremely well.

Research by NIWA into declining rockhopper penguin populations on Campbell Island has revealed that predation by brown skuas has increased the rate of decline of small sub-colonies. Resource managers now face some difficult conservation decisions because both brown skuas and rockhopper penguins are at historically low levels worldwide.

Coastal ecosystems are dependent on nutrients and light to fuel plankton growth. Plankton then pass on the benefits through the food chain by various pathways. A significant change in the major pathway appears to have occurred in the Marlborough Sounds – the diatoms, which are the dominant phytoplankton, have declined substantially, seemingly from grazing by protozoan ciliates. From 1997 to 2004, annual averaged abundance of ciliates has steadily increased by a factor of approximately ten to the point where they appear to be the dominant phytoplankton consumer. Recent work in Beatrix Bay found ciliates consumed approximately 50% of the diatoms per day during summer. Working in conjunction with Sealord Shellfish scientists, we have identified these changes as being the key factor in a substantial decline in condition of mussels during that period. The cause of the ciliate increase is unknown, but seems to have been triggered by the strong 1997–98 El Niño.

Significant progress has been made in developing climatologies of ocean currents around New Zealand. Climatological regional ocean model solutions are now available for all the Exclusive Economic Zone and adjacent waters. Validation against observed circulation shows that these models can reproduce many of the large-scale features of the flow around New Zealand. These solutions now provide boundary forcing for finer scale models at the 2–3 km scale.

### **Atmosphere**

NIWA has provided the Southland Museum with UVB data for 2001, 2002, and 2003, for Invercargill and Christchurch, from the NIWA UV Atlas. The museum requires these data because they suspect that there may not be enough UVB for tuatara survival in the south. Christchurch has had good breeding success outdoors compared with Invercargill and it is possible that UV fluctuation will affect the cold blooded tuatara's endocrinic cycles, particularly breeding and egg quality. They suspect that their artificial environment results in Vitamin D deficiencies through lack of UVB, leading on to osteoporosis/Metabolic Bone Disease and egg failure. The fact that wintertime UV levels in Invercargill are about 60% of those in Christchurch supports this suspicion. The Invercargill museum is now planning to build a new UV transparent roof in the hope that this solves the breeding problems.

NIWA has designed, constructed, and supplied a highly innovative automated air sampler to the Max Planck Institute in Germany. The design is based on our experience operating automated sampling instruments at Baring Head near Wellington. The sampler, which is destined for a remote location in Poland, is capable of running unattended, receiving instructions remotely, and collecting samples on specific schedules or under specific weather conditions.

### **Natural Hazards**

In March 2003 NIWA installed a trial version of a new advanced flood-forecasting system for the Rangitaiki River at Environment Bay of Plenty. This forecasting system links a weather model to a catchment-runoff model. The weather model makes detailed predictions of the rainfall, and the catchment model uses these predictions to forecast river flows. On Saturday, 17 July, the 9.00 a.m. flood forecast made by the system indicated that the Rangitaiki River would reach a peak flow of 790 m<sup>3</sup>/s at the Te Teko measurement station about 10.00 p.m. The forecast was for a severe event (i.e., one that occurs less often than once in every 50 years on average). A later check by Environment Bay of Plenty showed that the true peak flow was 740–750 m<sup>3</sup>/s. Thus, the forecast was correct to within 5% and gave 30 hours advance warning. Environment Bay of Plenty are encouraging Trustpower to adopt the system for the Matahina and Aniwhenua power stations.



A new flood forecasting system has been developed for Environment Southland by NIWA. NIWA staff wrote and tested the computer software, installed the system, trained future operators, and documented all procedures. The system provides forecasts 16 hours ahead for Gore, using measured river flow from upstream sites and a simple routing model. This project is the first of a five-stage project with Environment Southland to modernise their forecasting systems.

Sailors and surfers are familiar with the idea that waves often come in groups (or 'sets') of perhaps 5–10 waves each, with wave height varying from small to large and back again as the group passes. This 'grouping' of waves has important effects on beach erosion and the development of dangerous surf 'rips', for example, but is generally ignored in standard methods of measuring and predicting wave conditions. With the advent of new remote imaging techniques, it is now possible to get 'snap shot' measurements of the ocean surface. NIWA has begun to develop 'directional wavelet' methods for analysing remote sensing data in order to quantify the spatial variability associated with these wave groups. The method has been tested on data from Aerial Laser Scanning surveys of coastal waters near the Waitaki River mouth. The wavelet analysis was able to separate out the different patterns of spatial variability associated with waves of different length scales and travelling in different directions. This offers the prospect of NIWA playing a leading role in developing methods to predict hazardous conditions at the coast.

Web pages focusing on NIWA's beach camera network, Cam-Era, had 1.5 million visitors during the first six months of 2004. This amazing statistic highlights the interest people have in general knowledge about the environment. Recent Cam-Era research is driving the development of a new Cam-Era tool, which will help coastal managers to directly monitor changes in beach width and the associated erosion hazards.

### **Renewable Energy**

A CD containing maps of wind speed averages and variability over New Zealand has been produced. This CD provides gridded wind speed data for the whole country, and includes means, extremes, and seasonal variations, suitable for assessing wind energy potential.

### **NIWA Vessel Management Ltd**

Both RV *Tangaroa* and RV *Kaharoa* will spend more time at sea this financial year than budgeted in our 2004–05 Business Plan. The likely number of sea days for RV *Tangaroa* is 256 (cf. 229 budgeted). The likely number of sea days for RV *Kaharoa* is 196 (cf. 161 days budgeted).

### **NIWA Natural Solutions Ltd**

The creation of NIWA Natural Solutions Ltd has led to the rapid commercialisation of our unique electronic identification tags for use by the fishing and aquaculture sectors. Since July 2004, we have invested in securing worldwide patents, conducting global market research, comparing component performance, and securing component supply agreements. A spin-off company is now in the process of being formed in a 50:50 partnership with a private investor, with initial enquiries for purchasing tags being received from Australia, South America, and Norway.

The rearing of juvenile kingfish for on-growing by industry has quickly turned into a business. Three years ago this capability did not exist within New Zealand. This year contracts have

been secured to rear more than 80 000 kingfish for ongrowing. We expect contracts in 2005–06 to require delivery of some 160 000 smolts.

### **Unidata Pty Ltd**

In May 2004, NIWA purchased 80% of the shares in Unidata Pty Ltd, an instrument manufacturing company, located in Perth, Australia, which specialises in the creation of new technologies for environmental monitoring and real-time decision support networks. This company complements a similar service provided by NIWA in New Zealand. Significant progress has been made during the last six months in getting the business settled, putting appropriate governance and management structures in place, strengthening manufacturing capability, building relationships with clients, and developing new market opportunities. Monthly revenue targets are now meeting expectations and significant improvements have been made to several key products.

### **EcoConnect Ltd**

EcoConnect Ltd, our newest subsidiary, is a joint venture company with the United Kingdom MetOffice. 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 Europe. Good progress has been made to date in establishing the web-based delivery infrastructure, bringing environmental models up to operational capability, and in assessing market demand.



**Sue Suckling**  
*Chair*



**Rick Pridmore**  
*Chief Executive*

**February 2005**

**National Institute of Water & Atmospheric Research Ltd and Group**  
**Statement of Financial Performance**  
**for the 6 months ended 31 December 2004**

	<i>Note</i>	<b>6 mths to Dec 04 (\$000s)</b>	<b>6 mths to Dec 03 (\$000s)</b>	<b>12 mths to Jun 04 (\$000s)</b>
Revenue		<u>40,419</u>	<u>34,910</u>	<u>84,631</u>
<b>Operating surplus/(loss) before taxation</b>	2	<b>2,282</b>	<b>(1,748)</b>	<b>7,036</b>
Taxation (expense)/efund		<u>(753)</u>	<u>566</u>	<u>(1,760)</u>
<b>Net surplus</b>		<b><u>1,529</u></b>	<b><u>(1,182)</u></b>	<b><u>5,276</u></b>
<b>Net surplus comprises:</b>				
Parent interest		1,550	(1,182)	5,280
Minority interest		<u>(21)</u>	<u>—</u>	<u>(4)</u>
		<b><u>1,529</u></b>	<b><u>(1,182)</u></b>	<b><u>5,276</u></b>

The accompanying 'Notes to the Financial Statements' are an integral part of, and should be read in conjunction with, this 'Statement of Financial Performance'.

**National Institute of Water & Atmospheric Research Ltd and Group**  
**Statement of Movements in Equity**  
**for the 6 months ended 31 December 2004**

	<i>Note</i>	<b>6 mths to Dec 04 (\$000s)</b>	<b>6 mths to Dec 03 (\$000s)</b>	<b>12 mths to Jun 04 (\$000s)</b>
<b>Net surplus</b>				
Parent		1,550	(1,182)	5,280
Minority interests		(21)	—	(4)
Foreign currency translation reserve movement		<u>539</u>	<u>(26)</u>	<u>(113)</u>
<b>Total recognised revenues and expenses</b>		<b>2,068</b>	<b>(1,208)</b>	<b>5,163</b>
Acquisition of subsidiary		<u>—</u>	<u>—</u>	<u>68</u>
<b>Movements in equity for the year</b>		<b>2,068</b>	<b>(1,208)</b>	<b>5,231</b>
Equity at the beginning of the year		<u>51,944</u>	<u>46,713</u>	<u>46,713</u>
<b>Equity at the end of the year</b>		<b><u>54,012</u></b>	<b><u>45,505</u></b>	<b><u>51,944</u></b>

The accompanying 'Notes to the Financial Statements' are an integral part of, and should be read in conjunction with, this 'Statement of Movements in Equity'.

**National Institute of Water & Atmospheric Research Ltd and Group**  
**Statement of Financial Position**  
**as at 31 December 2004**

	<i>Note</i>	<b>6 mths to Dec 04 (\$000s)</b>	<b>6 mths to Dec 03 (\$000s)</b>	<b>12 mths to Jun 04 (\$000s)</b>
<b>Equity</b>				
Share capital		24,799	24,799	24,799
Retained earnings	3	28,879	20,867	27,329
Foreign currency translation reserve		<u>289</u>	<u>(161)</u>	<u>(248)</u>
Shareholders' interest		53,967	45,505	51,880
Minority shareholders' interest		<u>45</u>	<u>—</u>	<u>64</u>
<b>Total equity</b>		<b><u>54,012</u></b>	<b><u>45,505</u></b>	<b><u>51,944</u></b>
<b>Non-current liabilities</b>				
Unsecured loans		400	—	424
Employee entitlements		<u>1,708</u>	<u>1,863</u>	<u>1,752</u>
<b>Total non-current liabilities</b>		<b><u>2,108</u></b>	<b><u>1,863</u></b>	<b><u>2,176</u></b>
<b>Current liabilities</b>				
Payables and accruals		16,661	13,158	13,339
Redundancy provision		—	504	—
Short-term advance facility		—	200	—
Employee entitlements		<u>4,004</u>	<u>3,493</u>	<u>4,825</u>
<b>Total current liabilities</b>		<b><u>20,665</u></b>	<b><u>17,355</u></b>	<b><u>18,164</u></b>
<b>Total equity and liabilities</b>		<b><u>76,785</u></b>	<b><u>64,723</u></b>	<b><u>72,284</u></b>
<b>Non-current assets</b>				
Property, plant, & equipment		43,475	45,049	45,174
Identifiable intangibles		92	—	68
Future income taxation benefit		979	1,322	979
Receivables and prepayments		<u>547</u>	<u>—</u>	<u>547</u>
<b>Total non-current assets</b>		<b><u>45,093</u></b>	<b><u>46,371</u></b>	<b><u>46,768</u></b>
<b>Current assets</b>				
Cash and short-term deposits		7,317	624	5,195
Receivables and prepayments		13,167	8,988	15,022
Taxation receivable		1,038	2,073	791
Inventory and Contract work in progress		<u>10,168</u>	<u>6,667</u>	<u>4,508</u>
<b>Total current assets</b>		<b><u>31,692</u></b>	<b><u>18,352</u></b>	<b><u>25,516</u></b>
<b>Total assets</b>		<b><u>76,785</u></b>	<b><u>64,723</u></b>	<b><u>72,284</u></b>

The accompanying 'Notes to the Financial Statements' are an integral part of, and should be read in conjunction with, this 'Statement of Financial Position'.

**National Institute of Water & Atmospheric Research Ltd and Group**  
**Statement of Cash Flows**  
**for the 6 months ended 31 December 2004**

	<i>Note</i>	<b>6 mths to Dec 04 (\$000s)</b>	<b>6 mths to Dec 03 (\$000s)</b>	<b>12 mths to Jun 04 (\$000s)</b>
<b>Cash flows from operating activities</b>				
Cash was provided from:				
Receipts from customers		46,377	40,350	85,580
Interest received		222	53	242
Cash was disbursed to:				
Payments to employees and suppliers		(40,959)	(36,495)	(71,904)
Interest paid		—	(5)	(14)
Taxation expense paid		<u>(1,000)</u>	<u>(805)</u>	<u>(1,506)</u>
<b>Net cash inflow from operating activities</b>	<b>4</b>	<b><u>4,640</u></b>	<b><u>3,098</u></b>	<b><u>12,398</u></b>
<b>Cash flows from investing activities</b>				
Cash was provided from/(applied to):				
Sale of property, plant, & equipment		38	43	168
Purchase of property, plant, & equipment		<u>(2,531)</u>	<u>(3,243)</u>	<u>(8,389)</u>
<b>Net cash outflow from investing activities</b>		<b><u>(2,493)</u></b>	<b><u>(3,200)</u></b>	<b><u>(8,221)</u></b>
<b>Cash flows from financing activities</b>				
Cash was provided from/(applied to):				
Issue of equity share capital to minority shareholders		—	—	68
Unsecured loan received/(repaid)		(24)	—	424
Repayment of short-term advance facility		—	<u>(400)</u>	<u>(600)</u>
<b>Net cash outflow from financing activities</b>		<b><u>(24)</u></b>	<b><u>(400)</u></b>	<b><u>(108)</u></b>
<b>Net increase/(decrease) in cash held</b>		<b>2,123</b>	<b>(502)</b>	<b>4,069</b>
Opening cash balance		<u>5,195</u>	<u>1,126</u>	<u>1,126</u>
<b>Closing cash balance</b>		<b><u>7,318</u></b>	<b><u>624</u></b>	<b><u>5,195</u></b>

The accompanying 'Notes to the Financial Statements' are an integral part of, and should be read in conjunction with, this 'Statement of Cash Flows'.

# National Institute of Water & Atmospheric Research Ltd and Group

## Notes to the Financial Statements

### 1. Statement of accounting policies

There have been no changes to the accounting policies stated in the 2004 annual report. These policies have been consistently applied during the 6 months ended 31 December 2004.

These interim financial statements have been prepared under the requirements of FRS-24: Interim Financial Statements. They should be read in conjunction with the 2004 annual report.

#### (a) Basis of consolidation

The financial statements are for the NIWA Group only. This comprises the Parent company (the National Institute of Water and Atmospheric Research Limited) and its subsidiaries (NIWA Vessel Management Limited, NIWA Australia Pty Ltd, NIWA Environmental Research Institute, NIWA (USA) Inc., NIWA Natural Solutions Limited, and Unidata Pty Ltd.). The NIWA Group financial statements are accounted for using the purchase method. All significant intercompany transactions are eliminated on consolidation.

#### (b) Comparatives

The financial statements for the 6 months ended 31 December 2004 and for the comparative 6 month period to 31 December 2003 are unaudited. The comparative figures for the year ended 30 June 2004 are extracted from the audited financial statements at that date.

### 2. Operating surplus before taxation

	6 mths to Dec 04 (\$000s)	6 mths to Dec 03 (\$000s)	12 mths to Jun 04 (\$000s)
The operating surplus before taxation is stated after charging/(crediting):			
Interest revenue	(222)	(53)	(242)
Interest expense	—	5	14
Depreciation	4,294	4,595	9,533
Directors' fees	130	88	237
Renting and operating lease costs	527	546	1,141
Remuneration of auditor:			
Deloitte – audit fees	19	34	58
Deloitte – other services	—	22	22

### 3. Retained earnings

	6 mths to Dec 04 (\$000s)	6 mths to Dec 03 (\$000s)	12 mths to Jun 04 (\$000s)
Balance at beginning of the year	27,329	22,049	22,049
Add net surplus	<u>1,550</u>	<u>(1,182)</u>	<u>5,280</u>
<b>Balance at end of the year</b>	<b><u>28,879</u></b>	<b><u>20,867</u></b>	<b><u>27,329</u></b>

### 4. Reconciliation of net surplus to net cash inflow from operating activities

	6 mths to Dec 04 (\$000s)	6 mths to Dec 03 (\$000s)	12 mths to Jun 04 (\$000s)
<b>Net surplus</b>	<u>1,529</u>	<u>(1,182)</u>	<u>5,276</u>
<b>Add/(less) items classified as investing activities</b>			
Net gain on disposal of property, plant, & equipment	50	(42)	(166)
<b>Add/(less) non-cash items</b>			
Depreciation	4,294	4,595	9,533
Deficit attributable to minority interests	17	–	4
Unrealised changes in the value of subsidiaries	346	(35)	(113)
Increase/(decrease) in employee entitlements	(44)	(97)	(208)
Increase/(decrease) in provisions	–	–	(571)
(Increase)/decrease in future income taxation benefit	<u>–</u>	<u>–</u>	<u>343</u>
	<u>4,613</u>	<u>4,463</u>	<u>8,988</u>
<b>Add/(less) movements in working capital items</b>			
Increase/(decrease) in payables and accruals	3,322	2,416	2,598
Increase/(decrease) in employee entitlements	(821)	(2,666)	(1,267)
(Increase)/decrease in receivables and prepayments	1,855	5,527	(1,054)
(Increase)/decrease in inventory and contract WIP	(5,661)	(4,047)	(1,888)
(Increase)/decrease in taxation receivables	<u>(247)</u>	<u>(1,371)</u>	<u>(89)</u>
	<u>(1,552)</u>	<u>(141)</u>	<u>(1,700)</u>
<b>Net cash inflow from operating activities</b>	<b><u>4,640</u></b>	<b><u>3,098</u></b>	<b><u>12,398</u></b>

## 5. Commitments

### 5a Operating lease obligations

	6 mths to Dec 04 (\$000s)	6 mths to Dec 03 (\$000s)	12 mths to Jun 04 (\$000s)
Obligations payable after balance date on non-cancellable operating leases:			
Within 1 year	744	745	704
Between 1 and 2 years	678	368	279
Between 2 and 5 years	1,831	566	632
Over 5 years	<u>3,136</u>	<u>2,716</u>	<u>2,503</u>
	<b><u>6,389</u></b>	<b><u>4,395</u></b>	<b><u>4,118</u></b>

### 5b Capital commitments

Commitments for future capital expenditure:

Approved, but not contracted for	2,656	1,368	–
Contracted, but not provided for	<u>809</u>	<u>656</u>	<u>428</u>
	<b><u>3,465</u></b>	<b><u>2,024</u></b>	<b><u>428</u></b>

## 6. Contingent liabilities

The New Zealand companies have a contingent liability in respect of the Accident Compensation Commission's residual claims levy. The levy will be payable annually from May 1999 for up to 15 years. Each Company's future liability depends upon ACC's unfunded liability for past claims and future payments to employees by these companies. There are no other significant contingent liabilities that require disclosure in the financial statements.

## 7. Subsequent events

The Board of Directors declared a dividend of \$15.0 million on 25 August 2004. The first payment of \$7.5 million of the declared dividend was made on 7 January.



# National Institute of Water & Atmospheric Research Limited

## Directory

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### **BOARD OF DIRECTORS**

Sue Suckling, *Chair*

John Spencer, *Deputy Chair*

Dr Carolyn Burns

Miranda Cassidy

John Hercus

Dr Graham Hill

Troy Newton

David Sharp

### **EXECUTIVE MANAGEMENT**

Dr Rick Pridmore, *Chief Executive Officer*

Dr Bryce Cooper, *Director, Strategic Development*

Dr Mark James, *Director, Operations*

Dr Rob Murdoch, *Director, Research*

Dene Biddlecombe, *Chief Financial Officer & Company Secretary*

Dr Neil Andrew, *General Manager, Marine & Aquaculture*

Dr Clive Howard-Williams, *General Manager, Freshwater & Education*

Dr John McKoy, *General Manager, Fisheries & Bioactives*

Dr Murray Poulter, *General Manager, Atmosphere*

Dr Don Robertson, *General Manager, Biodiversity, Biosecurity, & Information Services*

Dr Charlotte Severne, *General Manager, Māori Development*

### **Solicitors**

Bell Gully Buddle Weir

Kaimai Law

### **Auditors**

Deloitte on behalf of the Auditor-General

### **Bankers**

The National Bank of New Zealand Limited

### **Insurance Broker**

Marsh Limited

### **Registered Office and Address for Service**

269 Khyber Pass Road, Newmarket, Auckland, New Zealand

### **NIWA on the Web**

[www.niwa.co.nz](http://www.niwa.co.nz)

**National Institute of Water &  
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