

STACK

NIWA

Taihoru Nukurangi

*"Where the waters
meet the sky"*

NIWA



J03326

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INCORPORATED 1993



**STATEMENT OF
CORPORATE INTENT**

1993

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1.0 INTRODUCTION

1.1 Chairman's Foreword

This statement contains the Board's intentions for the financial year 1993-94. Following a successful year, we plan to expand the organisation, and will reinvest the retained profit to support this expansion. We believe growth is sustainable, based upon expanding commercial work.

The Board intends to recruit about 20 scientific and technical staff, of which 10 will be replacement and 10 will be additional staff. This expansion is a consequence of the expected expansion of commercial revenue, efficiency gains and cost control.

The single most significant cost control was the replacement of the former DSIR vessel "Raphia" with the chartered Russian vessel "Akademik Lavrentyev". The Board is very pleased to report the successful arrangement of this charter, and it is expected that the final result will be an increase in oceanographic research carried out by NIWA and additional seetime. We intend to explore effective ways of securing ship access.

NIWA is carrying a surplus commercial site in Taupo which it has been unable to sell due to the Crown's unresolved policy on Maori Land claims. This idle asset is a dead weight on the business, and on our cash flow.

Looking ahead, although NIWA has successfully made the initial transition of its establishment, much remains to be done to complete the transition to an effective research business. An effective employment relationship - unlike those of government departments - is essential, and the Board has concluded an appropriate collective contract with its staff. A remuneration strategy is being developed that rewards achievement of the company's goals.

The Board intends further investment in NIWA's infrastructure, specifically to create effective use of electronic communications for scientific and routine business transactions. We are reviewing the operation of NIWA Kainga, our instrument workshop.

I believe we have the basis of a thriving scientific organisation to support New Zealand's environmental needs and I look forward to the coming years in a positive light.

We are endeavouring to identify new research initiatives. We believe that there is a major gap in research being undertaken for the fishing industry which NIWA is uniquely qualified to fill.



Paul Hargreaves
Acting Chairman

1.2 Chief Executive's Introduction

NIWA is and will continue to be New Zealand's premier research organisation in water and air. We will be increasingly extroverted and entrepreneurial. This will produce both excellent science, with strong international links and growing commercial revenue.

We are a consultancy, supplying FRST and commercial clients with quality, relevant research and scientific services, and we will run NIWA as a profitable research business.

Our experience in 1992/93 has taken the previous departmental operations, and generated: a return of 14% on shareholders' funds; increased commercial revenue; and net recruitment of scientists. We have not found it necessary to call on indemnities at the end of the financial year, despite a small reduction in FRST funding.

We sell the time of our staff, and need excellent people. We will raise our standard by training and, if necessary, re-training of staff, and by demanding high standards of our new recruits. International links are already strong, particularly in oceanography and atmospheric science. We are strengthening and expanding them by our Visiting Scientist programme, which is used to raise the quality of our existing science and develop new areas of excellence.

We will apply the best business management techniques to help our commercial development: account management, clear focus on our line of business, careful costing, consolidation of activities and sites. We are seeking expansion overseas.

The end result will be a NIWA larger, more energetic, more profitable, more rewarding and challenging for our staff; and, as a consequence, producing better and more relevant science.



Malcolm A Grant
Chief Executive

2.0 PURPOSE, NATURE AND SCOPE OF ACTIVITIES

2.1 Purpose

NIWA is the leading provider of scientific research, knowledge and services about New Zealand's air and water resources.

We believe in being a research and knowledge based organisation, with a research capability and range of scientific services that matches the requirements of New Zealand society.

We believe that we can and should contribute to New Zealand's economy.

We believe in being a quality organisation, meeting or exceeding the requirements of all our clients, both internal and external.

We believe in growth, based on empowering all our staff to reach their full potential through provision of training and appropriate resources, and creating opportunities to develop.

We believe the future of our organisation depends on the knowledge, creativity, skills, adaptability, teamwork and integrity of our employees. We value these qualities very highly.

2.2 The Business

NIWA, as the leading provider, operates in all areas of aquatic and atmospheric science. This includes basic research, applied research and commercial consultancy and services. Areas of work include: -

- fundamental physics and chemistry of the oceans, freshwaters and atmosphere;
- flora and fauna of marine and fresh waters;
- interaction of the water and atmosphere with each other and with land, seabed, ice and space;
- interaction of the water and atmosphere with the biosphere; and
- marine geology.

3.0 FINANCIAL PERFORMANCE

We are strongly committed to operating NIWA as a commercially viable organisation, with commercial standards of performance and accountability.

NIWA will fulfil its financial obligations as specified in Section 5 of its empowering legislation namely:

- 2 "...operate in a financially responsible manner so that it generates operating funds sufficiently to maintain its financial viability".
- 3a "...providing a reasonable return on the shareholders' funds invested in the Crown Research Institute".
- 3b "...operated as a going concern".

More specifically our financial objectives will be (in current 1993/94 dollars):

| | Actual 1992/93 | Budget 1993/94 | Budget 1994/95 |
|--|-------------------|-------------------|-------------------|
| Revenue (\$'000) | 35,764 | 36,516 | 37,540 |
| Operating expenses (\$'000) | 33,253 | 32,664 | 34,545 |
| Operating net profit before tax (\$'000) | 2,511 | 3,852 | 2,995 |
| Net Profit after tax (\$'000) | 1,611 | 2,281 | 1,807 |
| Total Assets (\$000) | 19,929 | 19,949 | 21,657 |
| Shareholders Funds (\$'000) | 11,438 | 13,719 | 15,526 |
| Productivity | | | |
| Revenue per scientist & technical | 127,641 | 124,200 | 126,149 |
| Ratio of revenue to personnel costs | 2.10 | 2.02 | 1.95 |
| Scientists & technicians per support staff | 5.13 | 5.37 | 5.38 |
| Profitability | | | |
| Operating profit margin (%) | 7.1 | 10.6 | 8.0 |
| Return on equity (%) | 14.1 | 16.6 | 11.6 |
| Return on assets (%) | 12.6 | 19.3 | 13.8 |
| Liquidity and Efficiency | | | |
| Current ratio | 0.88 | 0.82 | 0.89 |
| Liquidity ratio | 0.76 | 0.68 | 0.76 |
| Creditors days | 21.3 | 19.5 | 22.3 |
| Non-FRST Work in Progress Days | 4.4 | 4.6 | 4.1 |
| Non-FRST Debtor Days | 20.7 | 25.2 | 25.3 |
| Financial Leverage | | | |
| Debt to equity (%) | 9.4 | 3.6 | N/A |
| Proprietorship (%) | 57.4 | 68.8 | 71.7 |
| Diversification | | | |
| Non-FRST revenue (%) | 31.0 | 29.6 | 32.9 |

Note: All figures have been adjusted for looped (ex-MAF) funding and for Kainga.

Profits are generated in each year. In FY93/94 there is significant cash outlay on new buildings to apply last year's retained profit to two purposes:

- The construction of new premises in Hamilton.
- The repayment of debt. NIWA is very exposed to financial risk because of the restructuring costs it faces if there is significant downturn in FRST funding. The Board therefore plans to strengthen its financial position by retiring debt. Of the \$2.27m debt, \$1.2m has been repaid at the end of FY92/93. The balance will be repaid in FY93/94 and 94/95.

4.0 NON-FINANCIAL PERFORMANCE

4.1 Principles of Operation

NIWA is committed to the principles as stated in section 5 of the Act:

- (a) That research undertaken by NIWA should be undertaken for the benefit of New Zealand.
- (b) That NIWA should pursue excellence in all its activities.
- (c) That in carrying out its activities, NIWA should comply with any applicable ethical standards.
- (d) That NIWA should promote and facilitate the application of:
 - the results of research; and
 - technological developments.
- (e) That NIWA should be a good employer.
- (f) That NIWA should be an organisation that exhibits a sense of social responsibility by having regard to the interests of the community in which it operates and by endeavouring to accommodate or encourage those interests when able to do so.

4.2 Scientific Performance

NIWA will use and report a number of quantitative and qualitative measures that reflect its development.

| | 1992/93 | 1993/94 | 1994/95 |
|--|---------|---------|---------|
| Net scientist recruitment | 2 | 10 | |
| Staff turnover | 4.2% | | |
| Industry seminars held or presented to | 4 | 15 | |
| International Collaboration* | \$1.56m | | |

* *International collaboration measures the value of work done by collaborators, costed as though it were done by NIWA staff. To qualify, all experimental work must be done within New Zealand or its EEZ.*

In addition, NIWA staff had the use for varying periods of \$10m of capital equipment, plus collaborative part usage of a foreign ship (“Knorr”).

4.3 Market Research

Annual market surveys will be used. The survey done in 1992/93 did not yield quantitative results and so remains a qualitative measure. Surveys will be repeated.

5.0 POLICY STATEMENTS

5.1 Accounting Policy

NIWA will adopt the generally accepted accounting principles and policies prescribed by the NZ Society of Accountants. Further details are given in the Appendix to this Statement.

5.2 Borrowing Policy

NIWA will follow a conservative borrowing policy. Investment in new assets or programmes and activities will be financed from NIWA's own cashflows.

We will undertake an annual independent audit to assure the Crown that no borrowings have been undertaken that imply any guarantee by the Crown.

Any information or documentation produced by NIWA in support of debt raising or credit agency revenues will be provided to our owners.

5.3 Dividends Policy

NIWA intends to distribute all funds surplus to its investment and operating requirements to our shareholders. The level of surplus funds will be determined each year by reference to:

- Our medium and long term capital expenditure programmes
- Our working capital requirements
- A sustainable financial structure for the Institute

Any distribution will be paid within four months of financial year end.

However, until NIWA has established itself on a firm financial basis, with secure sources of income from a broad mix of clients, NIWA does not intend to pay dividends. With a legacy of capital underspending in science in recent years, NIWA expects to need significant retained profits to support investment in its capital infrastructure. Free cashflows will be used for reinvestment to avoid the need for further injections of equity or debt. Accordingly no dividends are forecast.

5.4 Treasury Policy

- (a) New overseas bank accounts require approval of the Board.
- (b) New local bank accounts require approval of the Chief Executive Officer plus Chief Finance Officer, but must be ratified by a subsequent Board meeting.
- (c) The Chief Executive, plus the Chief Finance Officer, are authorised to:
 - Sign negotiable instruments;
 - Borrow funds from Finance Institutions within specific facilities approved by the Board;
 - Invest surplus funds with the Financial Institutions approved by the Board.

(Note: refer below for approved Financial Institutions)

- (d) Day to day funds management with approved institutions may be further delegated in writing. Such delegations must be in writing to the bank and be signed by the Chief Executive Officer plus Chief Finance Officer.
- (e) All investments in shares, patents and copyrights, requires specific Board approval.
- (f) Any write-down or write-off of investments requires specific Board approval.
- (g) Leased Assets - Financing.
As leasing is in fact a form of financing, delegations for fixed asset purchases/ construction apply, i.e, the appropriate approvals for the asset purchase must be obtained.

Financial Institutions approved for investing and borrowing funds:

- Bank of New Zealand Limited
- ANZ Bank Limited
- National Bank of New Zealand Limited
- Westpac Banking Corporation of New Zealand
- National Australia Bank (NZ) Limited
- ASB Bank Limited
- Countrywide Banking Corporation Limited

5.5 Purchases and Disposals Policy

The following activities will only be undertaken following consultation with our owners:

- Subscription for purchase of shares in other organisations.
- Loan to any other organisation.
- Establishment of subsidiary companies.
- Disposal of significant assets, shares or undertakings of NIWA or any of its subsidiaries.
- Disposal of shares in any company in which NIWA holds more than 20% of the total shares.

5.6 Non Core Activities Policy

NIWA is engaged primarily in the business of undertaking research and providing related information and advisory services. The nature of our various research programmes means that we undertake activities which have the opportunity to earn additional income. For example, we sell salmon eggs produced from our research hatchery and operate an instrument servicing business. Any and all such activities will be regularly reviewed to ensure that they remain relevant and necessary to our core activities and that they operate on a strictly commercial basis. Where these criteria cease to be met, the activity in question will either be sold or liquidated.

NIWA has no current proposals to diversify beyond its present core business.

5.7 Control of Subsidiary Companies

NIWA will ensure at all times that:

- Control of the affairs of every subsidiary of NIWA is exercised by the majority of the directors of that subsidiary.
- A majority of the directors of every subsidiary of NIWA are directors or employees of NIWA or have been approved by our owners for appointment as directors of the subsidiary.

5.8 Co-operative Activities

NIWA will prefer its relationship with other CRIs and universities to be co-operative. In particular it will co-operate with the other two resource CRIs, Landcare Research and the Institute of Geological and Nuclear Sciences Ltd, and with the Meteorological Service of New Zealand Ltd. It will also pursue cooperation in marine work with Defence and MAF Fisheries, and has signed Memoranda with Otago and Waikato Universities.

NIWA intends to develop a Maori Science programme, in co-operation with knowledgeable Maori. NSOF has already been allocated to the development of this programme.

NIWA participates in a wide range of international committees or organisations. Generally it is on the basis of the scientific standing of the individual, or on an informal basis as the relevant organisation in New Zealand. NIWA believes that participation in international organisations is an essential part of science, for the informal linkages it offers, and will strongly support its staff's participation.

Organisations on which we are represented are:

- Scientific Committee on Oceanic Research
- WESTPAC National Focal Point
- SCOR Working Group 93 Pelagic
- Biography International Geological Correlation Programme
- World Ocean Circulation Experiment
- International Association of Physics of the Ocean
- Freshwater Fish Specialist Group Indo Pacific Fisheries Council, FAO
- Fish Specialty Group Species Survival Committee, IUCN
- NZ National Committee for International Hydrological Programmes
- International Association of Hydrological Sciences
- SIL Working Group on Biological Monitoring of Freshwater
- WMO Commission for Atmospheric Science
- WMO Commission for Agricultural Meteorology
- WMO Commission for Climatology
- WMO Commission on Hydrology
- WMO Ozone Commission
- International Union of Pure and Applied Chemistry
- UNEP/WHO Global Environmental Monitoring System
- NDSC Steering Committee

5.9 Databases

NIWA is responsible for four covenanted national databases or reference collections:

- Biology Collection of Marine Biota
- Geology Collection of Seabed Sediments
- Water Resources Archive
- Climatological Database

Management of these databases and collections will be in accordance with the following principles:

NIWA will provide access to these national databases and reference collections so long as they are substantially paid for from the public purse and in providing this access:

- 1 the costs of collection, archiving and maintenance will be recovered only to the extent that they have not been paid for from public good funding;
- 2 the costs of actual retrieval of data from databases and collections will be recovered;
- 3 the data supplied will be subject to copyright, so that the right to further copy the data and acknowledgement as to source is subject to normal conventions; and
- 4 in situations where a third party wishes to obtain large portions of data from a database or collection for direct commercial use then NIWA will charge a copyright, royalty or licence fee.

5.10 Human Resources

NIWA's Human Resources strategy will concentrate on those activities that will contribute most to the goals of:

- a quality organisation
- client focus
- high quality people

Specific strategies are:

Integration

To create a common vision and goals will require a number of steps:

- An understanding of the incoming cultures, and what should be preserved;
- Presentation of a realistic view of the future to the staff;
- Development of a process to monitor culture and identify problems before they escalate.

Management Skills

Key management competencies will be identified and appropriate training arranged. The development of a client focus will require a high level of commercial awareness and superior management skills.

A career and succession planning programme will identify and allow for ongoing superior management. A recruitment strategy will ensure a match to future needs and commercial awareness.

Remuneration Management

Over a period of 2-3 years, we will develop remuneration systems to reward effective performance. This will ensure that:

- Individuals know why their job exists and what is expected of them.
- Individuals can monitor and correct their own performance.
- Personal development is facilitated.

There is an equitable distribution of rewards.

EEO

Effective EEO policies will be implemented.

Visiting Scientists

Part of NIWA's NSOF is allocated to bring in world-class scientists from overseas to visiting positions. NIWA will use its freedom to manage its own affairs, to allocate sufficient money.

6.0 INFORMATION REPORTING

NIWA is establishing information systems and reporting mechanisms both for its own management use and to fulfil its obligations to its owners, including quarterly, half yearly and yearly annual reports together with audited annual financial results:

- Quarterly Reports - with summary financial statistics indicating:
 - Financial and operating performance versus the same period in the previous year, when applicable.
 - Explanations for divergence from budget.
 - Forecasts for the remainder of the financial year including key financial and performance measures and cashflows.
 - Explanations for significant changes in forecasts from business plan targets.
- Half-Yearly Reports - within two months of the end of the first half of the financial year, indicating:
 - Financial and operating performance for the half year, versus the same period in the previous year where applicable.
 - Major issues during the period.
 - Profit and loss statement, end-of-period balance sheet and cashflow statement.
- Annual Reports - within three months of the end of the financial year, indicating:
 - Full annual report, accounts and proposed dividend for the year.
 - Comparison of performance business plan targets.
 - Auditors statement.
- Business Plans - at the start of each year, NIWA will submit a summary of its business plans to its shareholders. Any material revision to these plans during the course of the year will be advised to shareholders.
- Any other information reasonably required by shareholders.
- Internal reporting will be monthly.

7.0 COMMERCIAL VALUE OF THE CROWN'S INVESTMENT

The valuation of NIWA agreed for the purposes of asset transfer was \$12.3 million, net of a provision of \$1.2 million for future restructuring costs.

The Directors plan to conduct a review of the commercial value of the Company every two to four years or whenever there is considered to be material change in the value of the shareholder's investment. Owners will be fully consulted throughout any valuation process and will be provided with copies of relevant reports.

8.0 DIRECTORY

Board of Directors

Paul Hargreaves, *Acting Chairman*

Dr Robin Falconer

Emeritus Professor Paul Mulcock

Dr Margaret Mutu

Tim Saunders

Company Secretary

Patricia Wooten

Solicitors

Macalister Mazengarb Perry Castle

Auditors

Deloitte Touche Tohmatsu

Bankers

National Bank of NZ Ltd

Insurers

Willis Corroon Ltd

APPENDIX

Accounting Policies

NIWA will adopt general accounting principles as recommended by the New Zealand Society of Accountants for the measurement and reporting of results and financial position under the historical cost and accrual accounting conventions for a going concern.

The following particular accounting policies which materially effect the measurement of profit and financial position are applied.

Shareholder's Funds

Shareholder's funds are defined to be the total of retained earnings, revenue reserves and equity capital at the end of the financial year.

Total Assets

Total assets include all tangible assets.

Revenue Recognition

Revenue is recognised in the month the work is done. Most clients are billed monthly or fortnightly for work done to date either on a contract basis or a time and cost basis.

Debtors

Debtors are valued at net realisable value.

Fixed Assets

Fixed assets are shown in the balance sheet at net book value (i.e. cost less depreciation). The cost of assets at 30 June 1992 is the estimated net book value as advised by the Government departments who currently own those assets.

Depreciation

All assets are written off over their useful life using the straight line method of depreciation, except software, for which the rates are the same as IRD rates.

Depreciation is provided from the date the assets enter service. The range of average depreciation lines is as follows:

| | New Assets |
|------------------------|------------|
| Buildings | 40 years |
| Plant and equipment | 10 years |
| Vehicles | 4 years |
| EDP equipment | 3 years |
| Furniture and fittings | 10 years |
| Office equipment | 5 years |
| Miscellaneous assets | 5 years |

Income Tax

Income tax is assumed at 33% of operating profits. No allowance for deferred taxation has been made.

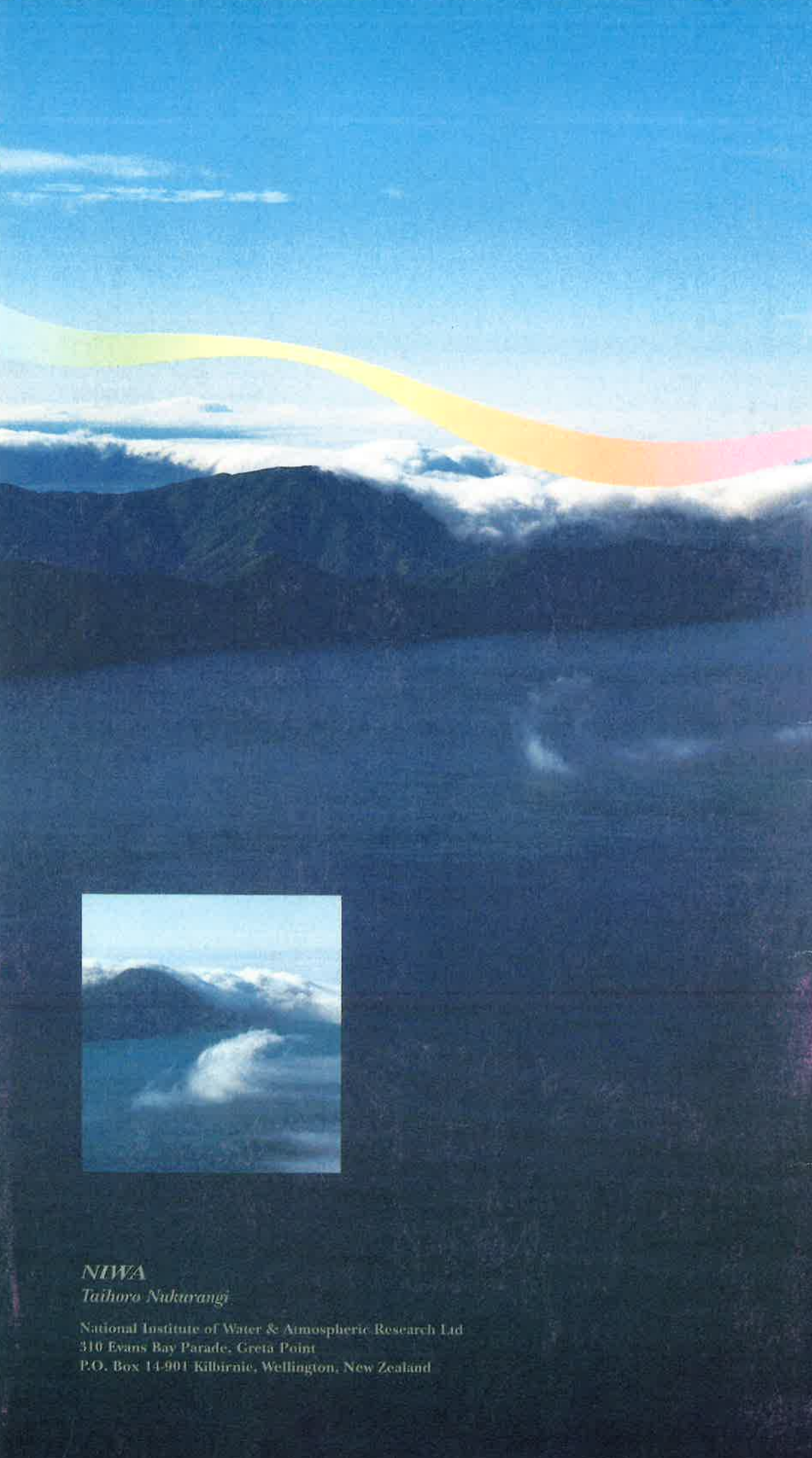
GST

All revenue and expenses have been calculated on a GST exclusive basis

Inflation

All forecasts assume a zero inflation rate.





NIWA

Taihoro Nukurangi

National Institute of Water & Atmospheric Research Ltd
310 Evans Bay Parade, Greta Point
P.O. Box 14-901 Kilbirnie, Wellington, New Zealand

NIWA CORPORATE

CEO AND CORPORATE MANAGERS

| | |
|-----------------------|-------------------------|
| Dr Malcom Grant | Chief Executive |
| Miss Patricia Wooten | Chief Finance Officer |
| Mrs Adrienne Murray | Human Resources Manager |
| Mrs Adrienne Cranshaw | Marketing Manager |

NIWA CORPORATE

Postal Address: PO Box 14-901
Kilbirnie
Wellington

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Greta Point
Wellington

Telephone: (04) 386 1189
Facsimile: (04) 386 2153

Manager: Graham Elley

Phone: +64-3-323 8199 Fax: +64-3-323 7596

Postal Address 21 Kainga Road, Christchurch, New Zealand.

NIWA Kainga specialises in Hydrometric and Climatological instrumentation, service, and supply. In addition NIWA Kainga supplies the accessories needed for data collection programmes and provides an advisory service on choice of equipment.

SERVICES

- **Instrument Servicing**

A wide range of instruments are supported and serviced, e.g. Pressure recorders, temperature sensors, humidity sensors, orthographic climate instruments, electronic data loggers, chart recorders, current meters and numerous other electronic and electromechanical instruments.

- **Instrument Calibration**

The centre carries out calibration of equipment to ISO or New Zealand standards. Calibration facilities are available for: velocity current meters, humidity sensors, pressure transducers, pressure and temperature sensors.

- **Advisory Service**

Advisory services are available e.g. instrument trials, procurement and system development.

General Manager: Dr Ron Heath

Phone: +64-4-386 1189 Fax: +64-4-386 2153

Postal Address: PO Box 14-910 Wellington, New Zealand.

NIWA Oceanographic (NZOI) specialises in biological, geological and physical oceanography of New Zealand's oceans, coasts and estuaries with associated expertise, knowledge and equipment.

In addition it offers clients a wide range of experience and facilities, data and library information, and interpretation skills.

SERVICES

- **Physical Oceanographic Services**

Monitoring and analysing tides and currents.

Measurement of salinity, temperature, and turbidity.

Satellite remote sensing.

Instrument mooring, design, and development.

Instrument servicing and repair.

- **Seafloor Mapping**

Depth sounding and sub-bottom (seismic) profiling.

Microwave transponder and satellite navigation.

Side-scan sonar mapping of seafloor features.

Rock sampling and sediment coring.

Underwater photography.

- **Environmental Services**

Scuba diver capability.

Environmental impact assessments - all aspects.

Ecological surveys.

Biological sampling.

Nutrient and productivity analyses.

- **Data Analyses and Interpretation**

Laboratory and computer data analyses.

Highly-trained and experienced personnel for data interpretation.

Extensive database in all disciplines.

Extensive library and educational services.

- **Coastal and Estuarine Research and Services**

Coastal erosion.

Aquaculture potential.

Marine natural products.

General Manager: Dr Rod East.

Phone: +64-7-856 7026 Fax: +64-7-856 0151

Postal Address: PO Box 11-115 Hamilton

NIWA Ecosystems researches the chemistry, physics and biology of New Zealand's lakes, rivers and coastal waters in order to understand the complex interactions influencing how these ecosystems function and their response to environmental disturbances. In addition the division provides: a specialist hydrodynamic modelling service to assist in pre-design of aquatic engineering structures (ocean outfalls, bridges etc), aquatic resource assessments (plants and fish), ecological engineering services (eg wetlands for waste treatment, ecosystem restoration).

SERVICES

- **Predicting impacts of waste discharges**

Predicting the transport, dispersion and transformation of pollutants discharged from coastal or river outfalls.

Mathematical modelling, ecological assessment, and ecotoxicity testing.

- **Advising on techniques for monitoring ecosystem responses**

Designing of new methodology for cost-effective monitoring of waters, sediments and biota.

Design of monitoring networks.

Development of new techniques and instruments.

- **Land Management impacts on aquatic ecosystems**

Predicting effects of land management practices (especially riparian management) on inland and coastal waters.

Assessment of effectiveness of different riparian strategies for enhancing water quality and ecosystem functioning.

- **Predicting response of aquatic ecosystems to toxic pollutants.**

Predicting the response of aquatic ecosystems to toxic pollutants.

Developing management options for restoration of polluted rivers, lakes and coastal waters.

- **Ecological engineering.**

Designing cost-effective waste treatment methods based upon processes utilised by aquatic ecosystems (e.g. wetlands) to transport and transform waste products.

Restoration strategies for eutrophic lakes and coastal waters.

Creation of feature urban lakes and wetlands.

- **Management of water quality, plants and fish in aquatic ecosystems**

Specific studies on water quality, plants and fish.

Establishing importance and function of fish and aquatic plants within aquatic ecosystems.

Resource assessment, and management advice.

General Manager: Dr Paul Mosley
Phone: +64 4-472 9966 Fax +64 4-496 9414
Postal Address: PO Box 3047, Wellington, New Zealand

NIWA Environmental Data specialises in the collection, archiving, and analysis of information about New Zealand's weather, climate, and water resources. In addition, it provides environmental monitoring services to a wide range of industries, and actively transfers its skills and technology to other environmental agencies, through an active technology transfer and training programme.

SERVICES

- **Monitoring weather, climate and water resources**

Operation of nationwide network of observing stations monitoring weather, climate and water resources.

Archived information includes sunshine hours, precipitation intensities, lake levels and river flows, and information on lake and river quality.

- **Technical training in hydrometry and meteorology**

Skills and technology actively transferred to environmental management agencies in New Zealand.

Hands on experience of using our technology through our staff working with your staff.

- **Environmental monitoring services**

Technology and skills made available to a wide range of industries, (e.g. energy, mining, forestry, agriculture and aquaculture) through operating environmental monitoring stations and networks on your behalf.

Emphasis on real-time information to support prompt decision-making.

- **Information on energy resources (geothermal and hydro)**

Monitoring of status and trend of energy resources for clients

Providing real-time information for management purposes

Providing archived information for legal requirements and for resource assessment.

- **Training in audit and review of operational procedures.**

Through the Quality Assurance/Staff Development (QA/SD) Unit - :

Supply of manuals for field or office practices, and other work related instructions.

Training in technical or quality matters - courses and modules are presented on request.

Reviewing procedures and systems of data collection and field practices.

Auditing data archives, field installations and practices.

Staff are also located at: Wellington, Whangarei, Auckland, Hamilton, Rotorua, Turangi, Gisborne, Havelock North, Wanganui, Nelson, Christchurch, Greymouth, Tekapo, Alexandra and Dunedin.

General Manager: Sally Davis

Phone: +64 -3-348 8987 Fax: +64 -3-348 5548

Postal Address: PO Box 8602, Christchurch, New Zealand.

NIWA Freshwater specialises in the provision of high quality information to support management decisions affecting aquaculture, fisheries, rivers, lakes, estuaries and coastal areas. In addition, advanced software, both proprietary and developed 'in-house,' is available for archiving and processing data or for creating simulations.

SERVICES

- **Water Quality**

Assessment and prediction of impacts of changes to water environments.

Determination of water quality indicators.

Provision of information required for resource management decisions.

Environmental impact studies.

- **Freshwater Fisheries**

Habitat modelling and river flow recommendations.

Advice on management of recreational, commercial and indigenous fisheries.

Salmon product sales and services to the aquaculture industry.

Diagnostic service for fish diseases.

- **Aquatic Biology**

Studies of the health and abundance of aquatic plants, periphyton and invertebrates as indicators of water quality (marine and fresh water).

Assessment of the state of aquatic environments.

Environmental monitoring and management recommendations.

- **Open Channel Hydraulics**

Use of innovative methods and advanced software to gain an understanding of the physical processes determining river behaviour.

Estimation of river behaviour when conditions e.g flow pattern, are changed.

River hydraulics

Flood control assessment and design.

Bridge water design.

Sediment transportation.

- **Coastal Dynamics**

Use of advanced computer systems to produce information on coastal issues.

River mouth processes.

Studies of river and ocean hydraulics

Hazard identification and mitigation

Tidal hydraulics, tide forecasting

- **Hydrology**

Water resource assessment.

Flood forecasting and warning.

Flood estimation.

Software systems for modelling and prediction.

- **Technology and Development**

Development of new data collection methods.

Integration of different types of databases.

Decision supporting information.

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NIWA Atmosphere specialises in weather and climate, physical and chemical processes in the atmosphere and stratosphere, and the interaction of the atmosphere with the earth's surface. NIWA Atmosphere is recognised as New Zealand's largest single provider of research and consultancy on the weather and climate of New Zealand, parts of the South Pacific and the Ross Dependency. In addition NIWA Atmosphere undertakes a wide range of applied consultancy work relating to atmospheric issues.

SERVICES

• Weather and Climate

Understanding and predicting the impacts of global climate change on New Zealand.

Providing data and advice on climate.

Undertaking research on all aspects of the weather and climate.

Developing better weather forecasting techniques.

Providing applied consultancy to many sectors of the economy which are affected by the weather and climate.

• Air Quality

Research programmes determining current air quality.

Assessing effects of global changes on air quality.

Studying dispersion patterns of industry pollutants in atmosphere.

Solutions for dealing with potential pollution problems, and accidental releases of dangerous substances.

Applied consultancy measurements, monitoring, modelling and impact evaluations.

• Atmospheric Analysis and Modelling

Use of sophisticated techniques for data gathering analysis, numerical modelling and theoretical development.

Accurate and reliable measurement of concentrations of the major Greenhouse gases, e.g., carbon dioxide and methane.

Collaboration internationally in attempts to model distribution of greenhouse gases and assess impact of changes.

• Ozone/UV Research (Lauder, New Zealand and Antarctica)

Leader in research into ozone and ultra-violet radiation.

Measurement programmes for critically important components of the atmosphere.

Provision of high quality valuable data for global records.

Advice on the 'ozone hole' and on UV effects.

• Remote Sensing of the Environment

Use of satellites, radars and various other forms of optical, electromagnetic and acoustic sounding.

Specialised facilities for measuring winds, waves, radio propagation, temperatures, concentrations of atmospheric constituents and stratospheric properties.

Staff are located at: Wellington, and Lauder, Central Otago, New Zealand