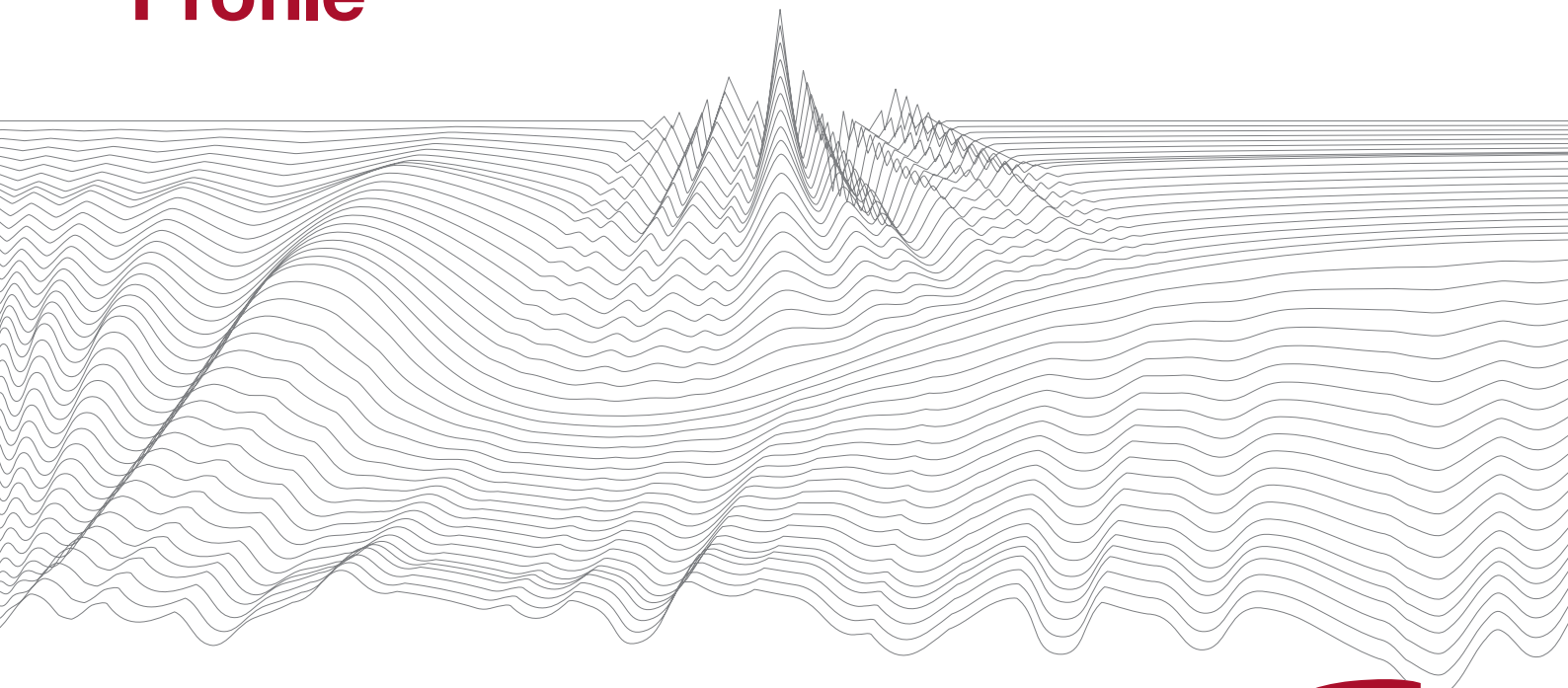
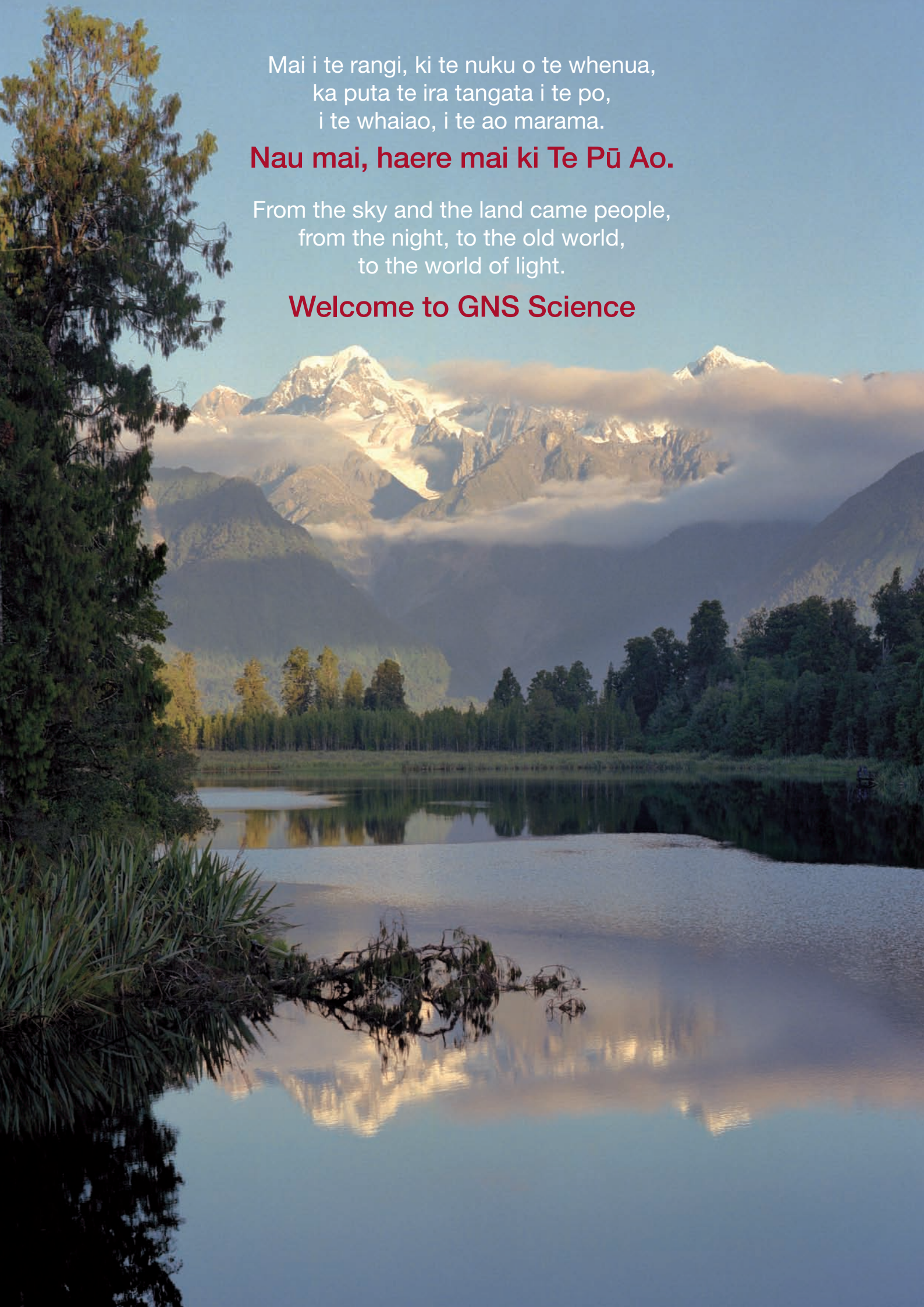


# Discover Understand Apply

## GNS Science

### Profile





Mai i te rangi, ki te nuku o te whenua,  
ka puta te ira tangata i te po,  
i te whaiao, i te ao marama.

**Nau mai, haere mai ki Te Pū Ao.**

From the sky and the land came people,  
from the night, to the old world,  
to the world of light.

**Welcome to GNS Science**

**We are the New Zealand research institute that focuses on geological resources, environmental and industrial isotopes, and natural hazards.**



Since 1865 we have demonstrated scientific excellence in a country that straddles two tectonic plates, where earthquakes were first associated with geological faulting, and whose first Nobel Laureate, Ernest Rutherford, saw that radioactive isotopes could be used for geological dating.

Today, we continue these investigations, from the atomic to the planetary scale. These activities are expressed through our Māori name, Te Pū Ao, which means “the foundation, origin, and source of the world”. We apply this science to create wealth, to protect the environment and to improve the safety of people.

### Staffing and revenue

We have over 350 staff located in Wellington (75%), Taupo (20%), and Dunedin (5%).

Our revenue is generated from:

- open bidding and negotiation for public-good research contracts (40–45%)
- consultancy, product development, and laboratory services for the private sector (20–30%)
- monitoring geological hazards for the New Zealand Earthquake Commission (15–20%)
- advice to central and local government agencies (5–10%)
- a government grant to maintain and enhance our capabilities (5–10%)

### Scope and governance

We are a research institute operating as a limited liability company owned by the New Zealand government, with an independent Board of Directors. This unique structure allows us to:

- focus on strategically important science at a national level
- engage in the full spectrum of science from basic research through to product development and consultancy services
- undertake work for both the public and private sectors
- operate internationally as well as within New Zealand
- have autonomy and self-determination

Each year we invest the bulk of our tax-paid profit in scientific equipment and infrastructure. This ensures our capabilities keep pace with or lead international standards.

# Knowledge of our world...

**Planet Earth is a mass of 6 billion trillion tonnes. It is held together by gravity, is heated internally by radioactive elements and externally by solar radiation. Gravity and heat drive plate tectonics and the processes that generate geological resources and climate change.**

## Earth's endowments

Through research, we discover and understand the natural endowments of the Earth's crust, including:

- rocks and fossils
- biodiversity and the geological record of climate history
- minerals and groundwater
- earthquakes, volcanoes, landslides and tsunami
- hydrocarbons and geothermal energy
- extremophile bacteria and archaea
- gravitational and electromagnetic fields
- natural isotopes and radiation
- industrial isotopes and nanotechnology

## National facilities

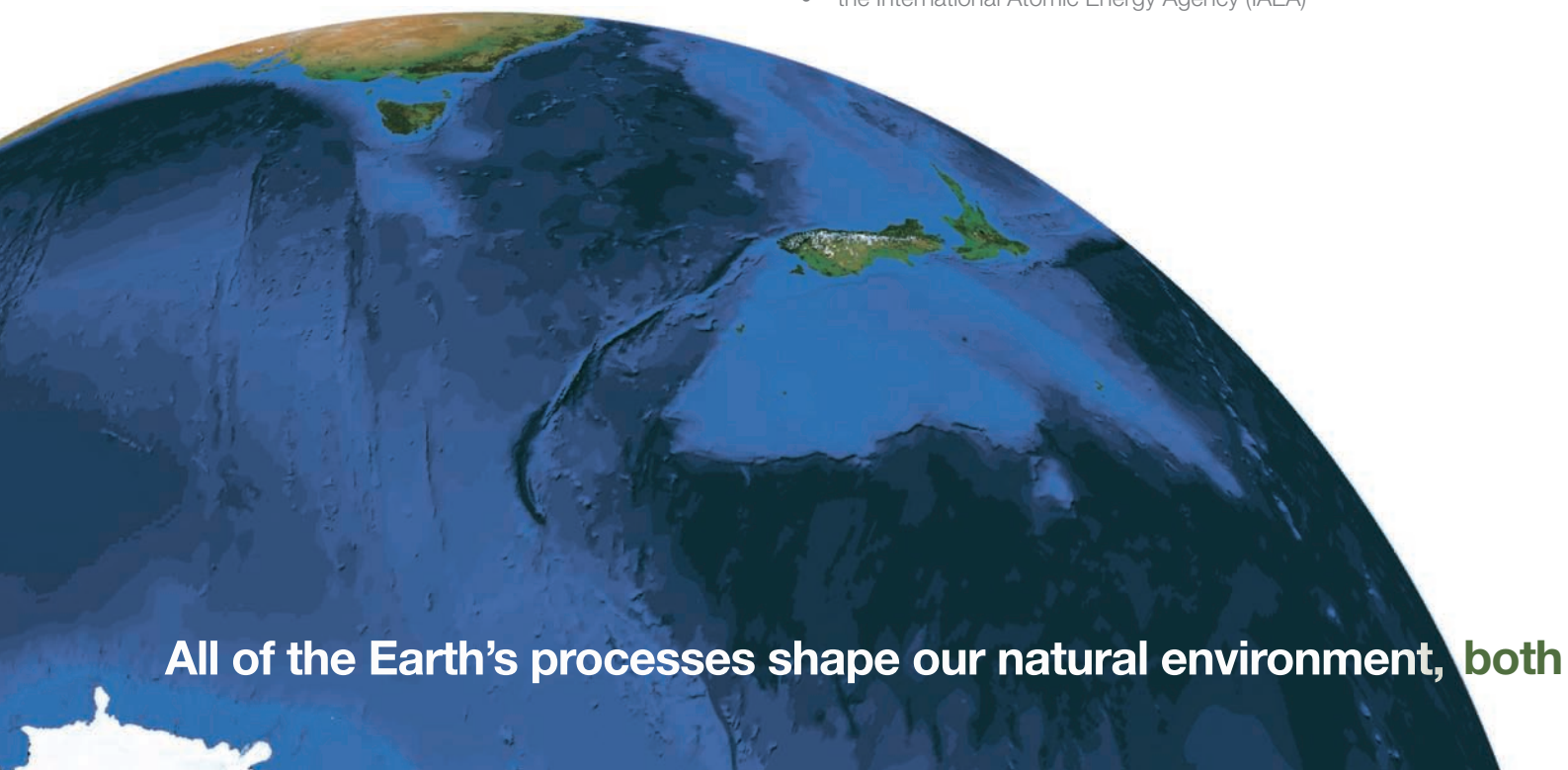
We operate New Zealand's national facilities for earth and isotope science, which include:

- GeoNet, the nation's network for monitoring earthquakes, volcanoes, tsunami, landslides and tectonic deformation
- the National Isotope Centre
- geological and geophysical maps and databases
- paleontology and petrology collections

## Collaborators

We work with many other research organisations to assemble the best science teams. These include:

- other New Zealand research institutes and universities
- Australian agencies (eg Geoscience Australia, CSIRO, CO2CRC, ANSTO)
- European research institutes (eg Ifremer in France, and IFM-GEOMAR and GFZ Potsdam in Germany)
- United States research centres (eg USGS, NOAA, WHOI, SCEC, IRIS, University of Hawaii)
- institutes in the Asian region (eg UGM in Indonesia, KIGAM in Korea, and VAST in Vietnam)
- the International Atomic Energy Agency (IAEA)



**All of the Earth's processes shape our natural environment, both**

# ...for wealth and security

**We apply our research to product development, consultancy and analytical services in a diverse range of areas.**

## Energy, minerals and water

We identify and assess national resources for:

- oil, gas, and gas hydrates
- geothermal energy
- onshore and offshore minerals
- groundwater

## Environmental protection

We contribute to environmental management in the areas of:

- past climate changes as indicators for future scenarios
- geological sequestration of carbon dioxide
- water quality
- geochemical and isotopic tracing
- identification of sources and levels of air-pollution
- policy advice to environmental monitoring agencies
- advice on United Nations Law of the Sea claims

## Technologies

We underpin technology development for industries in:

- extremophile biotechnology
- ion beam implantation
- nanoscale electronics
- radiocarbon dating
- non-invasive x-ray, gamma-ray and neutron scanning
- provision of accredited training for users of radiation

## Hazard mitigation

We underpin economic and social resilience to natural hazards through:

- earthquake, volcano, landslide and tsunami monitoring
- earthquake and geotechnical engineering
- natural hazard assessment and risk modelling
- policy and planning advice to local government
- improving public awareness and preparedness



## Private sector clients

- oil and gas exploration companies
- geothermal energy exploration and operating companies
- hydroelectricity operating companies
- onshore and offshore minerals exploration industry
- meat, dairy, wool, timber and horticulture industries
- biotechnology industry
- insurance and reinsurance companies
- engineers, developers and infrastructure companies
- non-governmental aid and development organisations

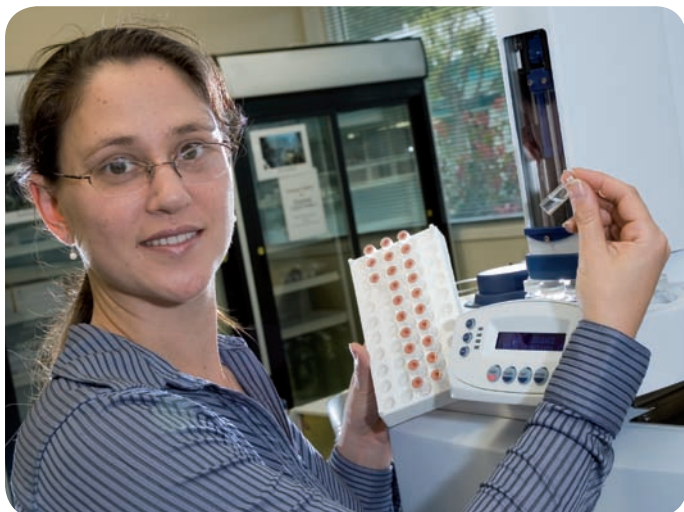
## Public sector clients

- central and local government in New Zealand
- overseas government agencies
- public aid and development agencies
- research organisations and museums

**enhancing and threatening our social and economic development.**

# Pride in our people...

**85% of our staff are directly involved in science. Our strength comes from our ability to integrate their various discipline areas within one organisation.**



## Research culture

Our research and management teams are both built around the 60% of our science staff with postgraduate degrees. We recruit globally with some 25 nationalities represented on our staff, and we therefore know we have the best people for our research programmes.

## Commercial acumen

For each consultancy project, we assemble the balance of skills and experience needed in the team to ensure the client receives quality for the value of the contract. A large proportion of our staff have overseas experience and this gives them the additional skills required for international assignments.

## Professional output

Our scientists publish in scientific and professional journals. They also present their research results at national and international scientific conferences, and to industry groups and policy advisors. These activities ensure that our results are used by the relevant sectors.

## Staff skills

- Geology
- Geophysics
- Geochemistry
- Geobiology
- Environmental biology
- Radiation physics
- Isotope physics
- Nanotechnology
- Earthquake engineering
- Geotechnical engineering
- Social sciences
- Mathematics
- Data management and visualisation
- Information technology

**He aha te mea nui i te ao?  
What is most important in the world?**

# ...sharing their knowledge

**In addition to scientific publication and commercial consultancy, we make our scientific knowledge accessible to general audiences through various channels.**



## **Schools**

Our educational outreach specialises in supporting science teachers through material related to the curriculum, hosting visits from school groups, and arranging visits to schools.

## **Postgraduate education**

We contribute to the university sector with many staff holding adjunct positions, by supervising 80–100 graduate students, and by funding 10–20 scholarships each year.

## **News media**

In addition to distributing our own media releases, we respond rapidly to media enquiries, provide expert commentary, and offer assistance with background stories.

## **Popular publications**

We contribute to a variety of popular publications in conjunction with national and international publishing houses.

## **Exhibitions**

We exhibit aspects of our work in museums, and help to ensure the authenticity of their science exhibitions. We also tour sponsored exhibitions in New Zealand and the Pacific region.

## **Guest speakers**

Our staff are frequently invited to speak to community and professional groups in New Zealand and overseas about topical issues, new discoveries and their own specialities.

## **Websites**

Our principal website, [www.gns.cri.nz](http://www.gns.cri.nz), provides detailed information about our organisation, including: research, products, consultancy and analytical services, photo library, and support for science teachers and schools.

The GeoNet website, [www.geonet.org.nz](http://www.geonet.org.nz), provides real-time information on earthquakes, volcanoes, landslides, tsunami and tectonic deformation. These data are freely available to the public and to researchers world-wide.

**He tangata, he tangata, he tangata  
It is people, people, people**

## Discover more:

To know more about GNS Science, or to download other brochures about our work, please visit

[www.gns.cri.nz](http://www.gns.cri.nz)

or call us on

**+64 4 570 1444**

or email us at

**info@gns.cri.nz**

### Principal Location

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Lower Hutt 5040  
New Zealand  
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F +64-4-570 4600

### Other Locations

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30 Gracefield Road  
Lower Hutt 5010  
PO Box 31312  
Lower Hutt 5040  
New Zealand  
T +64-4-570 1444  
F +64-4-570 4657

Dunedin Research Centre  
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Dunedin 9054  
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