

GNS SCIENCE
2023 HALF YEAR REPORT
31 DECEMBER





*Tūhura Papatūānuku ākonga (students)
learning about landforms and contour lines,
and sea-level rise in Ahipara, Northland*

Cover
Deep sediment coring on Lake Ōhau, Canterbury

**THE BOARD OF GNS SCIENCE
IS PLEASED TO PRESENT THE
ORGANISATION'S FINANCIAL
STATEMENTS AND REPORTS
FOR THE SIX MONTHS ENDED
31 DECEMBER 2023.**

FINANCIAL SUMMARY

GNS Science recorded a net profit after tax of \$1.1m for the first six months of the 2023/24 financial year, compared to a net loss of \$2.2m for the same period last year. Revenue performance for the six months was \$59.9m, compared to \$54.1m for the same period last year, which primarily reflects an uplift in funding for GeoNet services.

Operating expenses were \$55.7m for the half year, which represents an increase of \$1.4m over last year. This reflects expenditure relating to the continued investment in our people, technology and data needs.

The consolidated balance sheet for GNS Science shows a current liquidity (bank and short-term investments) of \$32.1m, and a liquidity ratio of over 2.9. This is adequate for our current operating model, but insufficient for essential investment in property and facilities.

CONTENTS

02	Highlights
04	Consolidated Statement of Comprehensive Income
05	Consolidated Statement of Changes in Equity
06	Consolidated Balance Sheet
07	Consolidated Statement of Cash Flows
08	Notes to and forming part of the Condensed Consolidated Interim Financial Statements
11	Statement of Responsibility
12	Directory

HIGHLIGHTS

A GNS Science early career researcher in one of our research laboratories



BSPKL RECEIVES BREAKTHROUGH PROJECT AWARD

Bspkl, GNS Science's first spin-out business, was recognised at the 2023 KiwiNet Research Commercialisation Awards. The PwC Breakthrough Project Award is awarded to a project that demonstrates best practice commercialisation of publicly funded research. Bspkl is a stand-alone company that 'spins-out' GNS Science's world-class green hydrogen expertise and innovation, making the technology accessible for application in real-world solutions. It's set to support the transition to a low-carbon future through its innovative approach to manufacturing Catalyst Coated Membrane for hydrogen electrolyzers, significantly limiting the need for precious metals. Bspkl's technology has significant potential to overcome supply chain constraints and accelerate hydrogen's widespread adoption as a clean energy source.

'SHAKING LAYERS' MAPS RELEASED

Visitors to the earthquake pages on GeoNet can now view dynamic 'Shaking Layers' maps, which illustrate the intensity of ground shaking caused by earthquakes in different parts of the country. This new way of presenting earthquake information incorporates data from ground motion sensors, with maps automatically produced within 10 to 20 minutes of a magnitude 3.5 or greater earthquake. Users can zoom into the map and get a measure of how strong the shaking was in any area.

Shaking Layers combines recorded data from strong motion stations with ground motion models to produce spatial estimates of ground shaking for each intensity measure. Maps of peak ground acceleration and velocity and spectral acceleration can also be viewed. Shaking Layers can support emergency responders to target their resources where they are needed most by indicating both the level and location of potential damage to buildings and infrastructure. Shaking Layers can be viewed on the GeoNet website and the GeoNet mobile app.

SUPPORTING CYCLONE GABRIELLE RECOVERY

GNS Science, including the GNS Science hosted Resilience to Nature's Challenges National Science Challenge, played a key role in supporting the Cyclone Gabrielle recovery. An important piece of work was the GNS Science-led Landslide Mapping project, which identified and mapped the large number of landslides triggered by Cyclone Gabrielle. GNS Science developed new mapping and modelling approaches, which provided stakeholders with landslide intensity information in a timely manner and at a sufficient level of spatial and positional accuracy to be useful. The new dataset also enables landslide occurrence to be linked to the rain that triggered them.

Landslide impact models will be retrained on this new dataset, enabling the forecasting of potential impacts to be more accurate for future landslide-triggering events.

SUPERHOT GEOTHERMAL ENERGY

Superhot geothermal resources have the potential to meet a significant portion of Aotearoa New Zealand's future energy needs while helping to meet climate policy commitments. GNS Science commissioned Castalia Ltd to estimate the economic potential of superhot geothermal for New Zealand¹.

Based on GNS Science's research, Castalia's report found that superhot geothermal has the potential to be an abundant, low-cost, zero-emissions and reliable source of energy for electricity generation and other industrial applications. It could supply up to 30,000 GWh of electricity per year, at least three times the current output of conventional geothermal. This presents an exciting frontier for renewable energy generation and utilisation that could meet a significant component of New Zealand's renewable electricity demand in the future.

ZEALANDIA MAPPING COMPLETED

Six years ago, Zealandia (also known as Te Riu-a-Māui) was announced as Earth's eighth continent. GNS Science has now completed mapping the continent. A key finding was the discovery of a giant volcanic region, which ignited along the edge of the Gondwana supercontinent between 100 and 60 million years ago. The mapping showed the extent of magma eruptions and role of the magma in the Gondwana breakup, which had previously been underestimated. We can now see these lavas cover an area of 250,000 km² across the continent – about the size of New Zealand itself.

The big scale continent-wide framework that we now have for Zealandia provides a useful context for ongoing, more focused research into New Zealand's natural hazards, resources and environment, including providing insights into why supercontinents break up. It also provides biologists with important information about the plants and animals that lived on Zealandia.

WAIAROHA HERETAUNGA DISCOVERY CENTRE OPENS

The new Waiaroha Heretaunga Discovery Centre in Hastings explores the importance of water and its journey from the mountains, rivers, streams, wetlands and aquifers, household taps, and out to sea.

GNS Science groundwater experts have played a part in the development of some of the exciting new interactive learning tools. One of GNS Science's focus areas is improving knowledge and understanding of Aotearoa New Zealand's groundwater resources, developing tools and models for efficient and sustainable groundwater management. Our groundwater science team has worked extensively in the Heretaunga Plains and were invited to provide expert scientific advice for the 'Our Amazing Aquifer' video and the interactive map of the aquifer displayed in the Centre.

The video features footage of our scientists working with mana whenua as part of our national research programme Te Whakaheke o Te Wai², using world-leading water dating techniques. It also showcases the innovative SkyTEM electromagnetic scanner collecting data from the skies through our work with Hawke's Bay Regional Council on the 3D Aquifer Mapping Project.

GEOSCIENCE SOCIETY OF NEW ZEALAND AWARDS RECOGNITION

At this year's awards, Margaret Norris was awarded the Kingma Award – presented to the most outstanding Earth Science technician of the year in Aotearoa New Zealand. In addition, David Barrell was awarded the Hochstetter Lecturer Award. David's Hochstetter lecture tour will explore forthcoming changes to the Aotearoa coast, and what it means in wider contexts of Zealandia's geological, tectonic, and landscape evolution.

2023 L'ORÉAL-UNESCO FOR WOMEN IN SCIENCE NEW ZEALAND FELLOWSHIP

GNS Science sedimentologist Dr Georgia Grant has been awarded the 2023 L'Oréal-UNESCO For Women in Science New Zealand Fellowship. The fellowship recognises the achievements of an exceptional early career Aotearoa New Zealand-based female scientist. Georgia will be using the funds awarded to further her research into the Greenland Ice Sheet and how its past might inform predictions of future sea-level rise.

SUPPORTING MĀORI PARTICIPATION IN SCIENCE

In a continued partnership with Te Herenga Waka – Victoria University, this year we welcomed two new Ahunuku Scholars under our Vision Mātauranga scholarship programme, alongside 16 summer interns. The Ahunuku Scholars and summer interns are working for three months at our Gracefield, Avalon and Wairakei sites on a variety of projects.

We continued our work with iwi in the Far North, with the Tūhura Papatūānuku team (a collaboration between GNS Science, Te Aho Tū Roa – Toimata Foundation, Te Rarawa Anga Mua Trust and Te Kura Taumata o Panguru) delivering two Tūhura Papatūānuku Geo Noho camps as part of an MBIE Unlocking Curious Minds project. The camps aim to provide science opportunities to local students, with mātauranga and Te Ao Māori as a central element.

UPCOMING SENTENCING RELATING TO WHAKAARI/WHITE ISLAND ERUPTION

Following dismissal of the primary charge against GNS Science related to the 2019 Whakaari/White Island eruption, GNS Science pled guilty to a reduced secondary charge under section 49 of the Health and Safety at Work Act 2015 in May 2023.

The sentencing hearing is set for two weeks commencing in late February 2024. GNS Science will also take part in the Coroner's hearing, which is likely to be after June 2024.

Those impacted by the 2019 Whakaari/White Island eruption remain in our thoughts.

1. This work has been undertaken as part of the GNS Science-led Geothermal: The Next Generation Programme, funded through the Ministry of Business, Innovation and Employment (MBIE) Endeavour Fund.

2. A GNS Science-led programme funded by the MBIE Endeavour Fund.

FINANCIAL STATEMENTS

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

For the six months ended 31 December 2023

	Unaudited 6 Months Dec-23	Unaudited 6 Months Dec-22	Audited 12 Months Jun-23
<i>in thousands of New Zealand dollars</i>			
Revenue			
Research contracts	34,268	33,365	70,589
Commercial	10,234	9,379	21,265
GeoNet services	14,060	10,355	23,815
Other income	1,356	1,005	3,026
Total revenue	59,918	54,104	118,695
Operating expenses			
Employee benefit expense	34,051	30,660	62,065
Other operating expenses	21,689	22,973	50,573
Enterprise system implementation costs	–	745	1,092
Total operating expenses	55,740	54,378	113,730
Profit/(loss) before interest, tax, depreciation and amortisation	4,178	(274)	4,965
Depreciation	3,237	3,101	6,785
Amortisation and impairment	135	49	277
Profit/(loss) before interest and tax	806	(3,424)	(2,097)
Interest income	766	432	1,215
Interest expense	–	–	–
Profit/(loss) before tax	1,572	(2,992)	(882)
Income (tax)/benefit	(440)	839	175
Net profit/(loss) after tax	1,132	(2,153)	(707)
Other comprehensive income	–	–	–
Total comprehensive profit/(loss) attributable to owners	1,132	(2,153)	(707)

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

For the six months ended 31 December 2023

		Equity reserves	
	Share capital	Retained earnings	Total equity
<i>in thousands of New Zealand dollars</i>			
Balance at 1 July 2022	6,167	33,936	40,103
Loss after tax	–	(2,153)	(2,153)
Balance at 31 December 2022	6,167	31,783	37,950
Profit after tax	–	1,446	1,446
Balance at 30 June 2023	6,167	33,229	39,396
Profit after tax	–	1,132	1,132
Balance at 31 December 2023	6,167	34,361	40,528

CONSOLIDATED BALANCE SHEET

As at 31 December 2023

<i>in thousands of New Zealand dollars</i>	Unaudited Dec-23	Unaudited Dec-22	Audited Jun-23
Equity			
Share capital	6,167	6,167	6,167
Retained earnings	34,361	31,783	33,230
Total equity	40,528	37,950	39,397
<i>Represented by:</i>			
Non-current assets			
Property, plant and equipment	42,849	41,475	41,471
Intangible assets	201	497	335
Deferred tax	3,172	2,857	3,172
Investments	30	30	30
Total non-current assets	46,252	44,859	45,008
Current assets			
Cash and cash equivalents	18,775	18,876	13,547
Short-term investments	13,854	13,320	13,622
Trade receivables	2,760	5,335	7,963
Prepayments	3,896	4,214	3,997
Current tax	131	1,160	175
Work in progress	2,152	2,567	4,128
Total current assets	41,568	45,472	43,432
Total assets	87,820	90,331	88,440
Non-current liabilities			
Non-current provisions	1,882	1,738	1,623
Capital Grants from the Crown (long-term portion)	12,370	11,390	13,230
Total non-current liabilities	14,252	13,128	14,853
Current liabilities			
Trade and other payables	9,066	9,274	9,240
Current provisions	4,659	4,175	4,161
Revenue in advance	17,148	22,085	18,932
Capital Grants from the Crown (current portion)	1,774	3,719	1,857
Provision for income tax	393	–	–
Total current liabilities	33,040	39,253	34,190
Total liabilities	47,292	52,381	49,043
Net assets	40,528	37,950	39,397

For and on behalf of the Board:


David Smol

Chair

28 February 2024


Wendy Venter

Chair, Audit and Risk Committee

28 February 2024

CONSOLIDATED STATEMENT OF CASH FLOWS

For the six months ended 31 December 2023

	Unaudited 6 Months Dec-23	Unaudited 6 Months Dec-22	Audited 12 Months Jun-23
<i>in thousands of New Zealand dollars</i>			
Cash flows from operating activities			
<i>Cash was provided from:</i>			
Receipts from customers	64,552	59,405	111,705
Interest received	582	–	1,151
	65,134	59,405	112,856
<i>Cash was applied to:</i>			
Payments to suppliers and employees	(55,057)	(57,426)	(112,097)
Interest paid	–	–	–
Income tax paid	–	(234)	(771)
	(55,057)	(57,660)	(112,868)
Net cash flows from operating activities	10,077	1,745	(12)
Cash flows from investing activities			
<i>Cash was provided from:</i>			
Sale of property, plant, equipment and intangible assets	–	–	150
Receipts of capital funding in advance	–	–	4,190
Maturity of short-term investments	11,586	–	13,170
	11,586	–	17,510
<i>Cash was applied to:</i>			
Purchase of property, plant, equipment and intangible assets	(4,616)	(2,146)	(9,606)
Placement of short-term investments	(11,819)	–	(13,622)
	(16,435)	(2,146)	(23,228)
Net cash flows from investing activities	(4,849)	(2,146)	(5,718)
Net increase/(decrease) in cash and cash equivalents	5,228	(401)	(5,730)
Effect of exchange rate changes on cash held in foreign currency	–	–	–
Opening cash and cash equivalents	13,547	19,277	19,277
Closing cash and cash equivalents	18,775	18,876	13,547

The accompanying notes form part of these financial statements

NOTES TO AND FORMING PART OF THE CONDENSED CONSOLIDATED INTERIM FINANCIAL STATEMENTS

For the six months ended 31 December 2023

1. REPORTING ENTITY AND ACTIVITIES

The Institute of Geological and Nuclear Sciences Limited (trading as GNS Science) is established under the Crown Research Institutes Act 1992 and the Companies Act 1993. Its subsidiary companies are established under the Companies Act 1993. These financial statements have been prepared in accordance with the Crown Research Institutes Act 1992, the Public Finance Act 1989, the Companies Act 1993, the Crown Entities Act 2004, the Financial Reporting Act 2013 and New Zealand generally accepted accounting practice (NZ GAAP).

The principal activities of the Group are to undertake geoscience and isotope science research, development and commercial projects, predominantly in New Zealand. GNS Science International Limited holds a 50% interest in EDDI Project, an unincorporated joint operation formed to undertake a contract for dam hazard management in Vietnam.

The wholly owned subsidiaries of the Institute of Geological and Nuclear Sciences Limited (the Parent) are:

- Isoscan Limited
- Isoscan Food Limited
- Geological Surveys (New Zealand) Limited
- Geological Risk Limited
- GNS Science International Limited

These unaudited condensed consolidated interim financial statements are for the six months ended 31 December 2023 and were approved by the Board on 28 February 2024.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

These unaudited condensed consolidated interim financial statements for the six months ended 31 December 2023 do not include all the notes of the type normally included in an annual financial report but have been prepared using the same accounting policies and methods of computation, and should be read in conjunction with, the financial statements and related notes included in the Group's Annual Report for the year ended 30 June 2023.

The financial statement figures for the six-month period ended 31 December 2023, and for the comparative six-month period to 31 December 2022, are unaudited. The figures for the year ended 30 June 2023 are audited.

The same significant judgments, estimates and assumptions included in the notes to the financial statements in the Group's Annual Report for the year ended 30 June 2023 have been applied to these unaudited condensed consolidated interim financial statements.

These financial statements are presented in New Zealand dollars which is the Group's functional currency. Amounts have been rounded to the nearest thousand dollars.

3. RELATED PARTY TRANSACTIONS

The New Zealand Government is the ultimate shareholder of the Parent. No other transactions with New Zealand Government owned entities are considered as related party transactions in terms of NZ IAS 24 *Related Party Disclosures*.

Key management personnel

Key management personnel, considered to be the Directors and Executive Leadership Team, are those people with responsibility and authority for planning, directing and controlling the activities of the entity. A number of key management personnel also provide directorship services to other third-party entities that have transacted with the Institute during the reporting period, in all circumstances on commercial terms.

The Group purchases directors' and officers' insurance for the benefit of key management personnel in relation to the services they provide to the Group.

	Unaudited 6 Months Dec-23	Unaudited 6 Months Dec-22	Audited 12 Months Jun-23
<i>in thousands of New Zealand dollars</i>			
Key management personnel compensation comprised:			
Directors' fees	137	84	176
Benefits for the Executive Leadership Team	1,000	1,139	2,205
Total key management personnel compensation	1,137	1,223	2,381

4. RECONCILIATION OF PROFIT AFTER TAX TO NET CASH FLOWS FROM OPERATING ACTIVITIES

	Unaudited 6 Months Dec-23	Unaudited 6 Months Dec-22	Audited 12 Months Jun-23
<i>in thousands of New Zealand dollars</i>			
Profit/(loss) after tax	1,132	(2,153)	(707)
<i>Add/(less) items classified as investing activities:</i>			
Net gain on disposal of property, plant and equipment	–	30	229
	–	30	229
<i>Adjust non-cash items:</i>			
Depreciation	3,237	3,101	6,785
Amortisation	135	49	277
Decrease in credit allowance for doubtful debts	–	–	(18)
Amortisation of capital grant	(943)	–	(2,484)
Increase/(decrease) in provision for income tax	440	(300)	(631)
Decrease in deferred tax	–	–	(315)
Increase in non-current provisions	259	321	206
	3,128	3,171	3,820
<i>Add/(less) movements in working capital items:</i>			
Decrease/(increase) in trade receivables and prepayments	5,304	1,764	(630)
Decrease in payables, current provisions, revenue in advance	(1,463)	(336)	(423)
Change in trade payables relating to investing activities	–	10	–
Decrease/(increase) in work in progress	1,976	(741)	(2,301)
	5,817	697	(3,354)
Net cash flows from operating activities	10,077	1,745	(12)

5. DIVIDEND

No dividends were declared by the Group for the six months ended 31 December 2023 (2022: Nil).

6. COMMITMENTS

Non-cancellable operating lease commitments

Operating lease payments are recognised on a systematic basis representing the pattern in which economic benefits from the leased asset are consumed over the lease term.

Leases are classified as finance leases whenever the terms of the lease transfer a significant portion of all of the risks and rewards of ownership to the lessee. All other leases are classified as operating leases. The Group has no leases which would be classified as finance leases.

Operating lease commitments

<i>in thousands of New Zealand dollars</i>	Unaudited 6 Months Dec-23	Unaudited 6 Months Dec-22	Audited 12 Months Jun-23
Within one year	134	140	191
Between one and five years	147	82	74
Over five years	3	7	3
	284	229	268

7. CONTINGENT LIABILITIES

In December 2020, WorkSafe laid two charges against GNS Science under the Health and Safety at Work Act 2015 (HSWA) relating to the 2019 eruption on Whakaari/White Island. The first charge against GNS Science has been dismissed by the Court. In May 2023, GNS Science reached agreement with WorkSafe for early resolution of the second charge. This has resulted in GNS Science pleading guilty to a reduced charge under section 49 of HSWA 2015. GNS Science is waiting for a sentencing date (expected February-March 2024) in respect of the second charge which has a maximum penalty of \$500,000. GNS Science accrued for the penalty based on the probable outcome as discussed with the Legal representative.

(31 December 2022: Nil.)

8. EVENTS AFTER THE BALANCE DATE

There were no significant events after the balance date (31 December 2022: Nil).

STATEMENT OF RESPONSIBILITY

The Board is responsible for the preparation of the Group's half year financial statements and for the judgements made in them.

For and on behalf of the Board:



David Smol

Chair

28 February 2024

The Board through management is responsible for establishing and maintaining a system of internal control designed to provide reasonable assurances as to the integrity and reliability of the financial reporting.



Wendy Venter

Chair, Audit and Risk Committee

28 February 2024

In the opinion of the Board, the financial statements for the six months ended 31 December 2023 fairly reflect the financial position and operations of GNS Science.

DIRECTORY

PRINCIPAL LOCATION AND REGISTERED OFFICE

1 Fairway Drive, Lower Hutt 5010,
PO Box 30368, Lower Hutt 5040,
New Zealand
Tel: +64 4 570 1444
Email: avalon@gns.cri.nz

OTHER LOCATIONS

National Isotope Centre

30 Gracefield Road, Lower Hutt 5010,
PO Box 31312, Lower Hutt 5040,
New Zealand
Tel: +64 4 570 1444
Email: gracefield@gns.cri.nz

Wairakei Research Centre

114 Karetoto Road, RD4, Taupō 3384,
Private Bag 2000, Taupō 3352,
New Zealand
Tel: +64 7 374 8211
Email: wairakei@gns.cri.nz

Dunedin Research Centre

764 Cumberland Street,
Private Bag 1930,
Dunedin 9054,
New Zealand
Tel: +64 3 477 4050
Email: dunedin@gns.cri.nz

Auckland

GridAkl, 12 Madden St,
Wynyard Quarter,
Auckland 1010,
New Zealand
Tel: +64 4 570 1444
Email: auckland@gns.cri.nz

DIRECTORS

David Smol
Chair

Felicity Evans
Deputy Chair

Andrew Cordner

Livia Esterhazy

Wendy Venter

Paul White

Brian Young

EXECUTIVE LEADERSHIP TEAM

Chelydra Percy
Chief Executive

Peter Benfell
General Manager,
Science

Diane Edwards
Interim General Manager,
People and Culture

Tania Gerrard
General Manager,
Māori and Stakeholder Relations

Kaetrin Stephenson
General Manager,
Business Services

Dr Gary Wilson
General Manager,
Research Strategy and
Partnerships and Chief Scientist

BANKERS

ANZ

AUDITOR

Silvio Bruinsma
Deloitte Limited
On behalf of the Auditor-General

SOLICITORS

Chapman Tripp

WEBSITES

www.gns.cri.nz
www.geonet.org.nz

PHOTO ACKNOWLEDGMENTS

Cover

Delia Tamsen

Inside front cover

Kyle Bland, GNS Science

P2

Jeff Brass, GNS Science

Inside back cover

Jeff Brass, GNS Science



