STATEMENT OF CORPORATE INTENT

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Earth Sciences New Zealand

ORGANISATION EARTH SCIENCES NEW ZEALAND
STATEMENT OF CORPORATE
INTENT / 2026/2027

2026/27

COVER IMAGE: JASMIN MCINERNEY, OCEAN INSTRUMENTATION ENGINEER, INSPECTS A GLIDER ABOARD RV TANGAROA
PHOTO CREDIT (COVER): LUKE MCPAKE

CONTENTS

INTRODUCTION FROM THE CHAIR AND CHIEF EXECUTIVE

Earth Sciences New Zealand was established to apply world-leading Earth, water and climate science to New Zealand's most pressing challenges. It helps New Zealand anticipate risk, protect people and infrastructure, and support economic growth through better decisions about resilience, resources and the future.

We bring together the capability of New Zealand's leading Earth science organisations—NIWA and GNS—alongside our national weather service, MetService, and the Measurement Standards Laboratory, which will join us later this year, further strengthening national capability and economic impact.

Together, this combined scientific and technological capability creates a once-in-a-generation opportunity to accelerate innovation, advance commercialisation, and develop the knowledge and tools needed to keep New Zealand safe, resilient and prosperous in an increasingly uncertain world.

Bringing together this breadth of Earth science capability within a single entity positions Earth Sciences NZ to play a distinctive role nationally and internationally. The opportunity is significant. By combining advanced technologies, integrated hazard forecasting, renewable energy capability, and the new knowledge and intellectual property we create to grow businesses and support economic growth, we are well placed to become a globally recognised leader in integrated, scalable Earth science capability and products.

Our focus for 2026/27

As we approach the end of our first year, we are realising the benefits of integration. Over the past 12 months, we have consolidated systems and support services, progressed a science strategy built around six core missions, and started to build a more connected, collaborative and innovation-focused culture.

In the coming year, we will move our focus from integrating the organisation to shaping our strategy for long-term transformation. There are significant and ongoing changes in our operating environment, including funding system and policy changes, shifting geopolitical power, climate change, and evolving social dynamics. The development of a long-term strategy will allow us to respond to these complex challenges and seize the opportunities they provide in a planned and coordinated way. It will provide a focus on integrated science, cutting-edge technology, stronger connections across systems, and measurable outcomes.

Our priorities for the year ahead align closely with those set out in the Government's recently released Science Investment Plan, including a stronger focus on advanced technologies—an area where we bring world-leading capability with significant potential to enhance sustainability and resilience.

We have also been set clear expectations by our shareholder: to deliver science that generates economic value, enable high-impact research drawing on our full capability, and strengthen innovation through deeper collaboration in New Zealand and internationally.

To deliver on this, we will focus on five areas:

Continuing to realise the benefits of integration

We will move beyond structural integration to fully realise operational and scientific benefits, accelerating the integration of our science capability to enable genuinely multidisciplinary research across Earth, water and climate systems. The expected acquisition of MetService as a wholly-owned subsidiary will enhance collaboration, support advanced infrastructure, strengthen operational capabilities, and generate economies of scale and efficiency. Critically, this integration will deliver comprehensive and advanced weather and climate services that will enable industry to realise value via improved reliability, accuracy and timeliness of tailored weather and climate information.

Increasing our focus on advanced technologies

We will prioritise technologies such as AI, data science, digital twins, remote sensing and high-performance computing to improve forecasting, accelerate insights and deliver scalable solutions for government and industry.

Exploring new commercial opportunities

We will take a more deliberate approach to commercialisation and commercial activities. We will prioritise delivering value to businesses and focus on areas with clear pathways to market, strengthening our IP pipeline, and expanding into international markets to generate sustainable revenue.

Strengthening collaboration and partnerships

We will deepen both domestic and international partnerships. This includes universities, Crown Research Institutes, iwi, industry and government to deliver more coordinated responses to complex challenges and maximise national impact. This includes prioritisation of system outcomes as well as building structures, processes and ways of working with others that will enable us to be highly responsive to needs as they arise.

Ensuring long-term financial sustainability

We will maintain disciplined financial management while investing in capability and infrastructure, strengthening our ability to make strategic investments in a constrained funding environment.

Taken together, these priorities position Earth Sciences NZ to deliver on its mandate—to generate world-class science that drives economic growth, strengthens resilience, and supports better decision-making. As we enter our second year, our focus shifts from establishing the organisation to demonstrating its full potential through measurable impact, integrated science, advanced technology, and stronger system connections.

David Smol
Chair

James Palmer
Chief Executive

OUR ROLE AND IMPACT

2.1
OUR
ROLE

Earth Sciences NZ's purpose is to drive New Zealand's economic growth and wellbeing through increasing returns from the use of New Zealand's natural resources and environments, enhancing energy security, building resilience to natural hazards and increasing prosperity in a changing climate.

We apply integrated Earth, water and climate science to the challenges shaping New Zealand's future, enhancing the value of natural resources, strengthening energy security, and enabling adaptation to a changing climate.

We translate this capability into economic value, resilience and better decision-making by working closely with industry, government, Māori, Pacific partners and international organisations. This ensures our science is applied, aligned with national priorities, and delivers long-term benefit.

In practice, this means supporting sustainable energy growth and security, increasing value from natural resources, strengthening resilience to natural hazards, and enabling effective adaptation to climate change. We also advance new technologies and materials to improve energy efficiency and support low-emissions outcomes, while strengthening environmental stewardship across freshwater and marine systems. As Earth Sciences NZ, we understand the ongoing potential for mineral and hydrocarbon research. We have the expertise to respond to and support the Government's policy and system settings in this area for the benefit of New Zealand.

Alongside this, we accelerate the application of advanced technologies, provide measurement standards that underpin quality assurance and regulatory compliance, and contribute to a more connected and effective Science, Innovation and Technology system through collaboration in New Zealand and internationally.

Earth Sciences NZ was established on 1 July 2025 through the integration of GNS Science and NIWA into a single, unified organisation. MetService and the Measurement Standards Laboratory of New Zealand (MSL) will join this system, further strengthening national capability. This integration brings together a unique breadth of expertise across the full Earth system, from natural resources and environmental science to weather, climate and hazard forecasting, operating across New Zealand, Antarctica, the Pacific and internationally. It enables a more coordinated, multidisciplinary approach to delivering world-class science, improving both efficiency and impact.

The acquisition of MetService and proposed transfer of MSL to Earth Sciences NZ are the next step in our transformation. In particular, the acquisition of MetService as a wholly owned subsidiary will increase collaboration, support state-of-the-art infrastructure, improve operational capabilities, and create scale and efficiencies. Most importantly, it will deliver comprehensive and advanced weather and climate services that will enable industry to realise value via improved reliability, accuracy and timeliness of tailored weather and climate information. This will support business resilience and ultimately growth of New Zealand's economy. Enhanced hazard monitoring, forecasting, risk assessment and communication will also enable communities, businesses and government to plan for, and take timely action in response to, the increasing frequency and severity of extreme weather events.

Programmes of work to prepare for the integration of MetService and MSL into Earth Sciences NZ are underway, including joint programmes. While this document is written on the basis of how Earth Sciences NZ is currently constituted, it is intended to support and remain adaptable to the future integrated operating model and organisational structure.

WHARARIKI BEACH
PHOTO CREDIT : BRYCE CHEN

HOW WE DELIVER IMPACT

2.2
HOW WE DELIVER IMPACT

Delivering impact depends on how we operate as an organisation, bringing together integrated capability, strong partnerships and the effective application of science.

We deliver our science across a broad and diverse customer base, including central and local government, primary industries, energy, transport, tourism, universities and international partners. This diversity reflects the value of our work and provides a resilient platform for continued growth, reinvestment, and an increasing focus on commercialisation and global engagement.

SALLY WATSON DEPLOYING THE CTD (CONDUCTIVITY, TEMPERATURE AND DEPTH PROFILER) DURING RESEARCH INTO THE IMPACT OF LARGE VESSELS ANCHORS ON THE SEA FLOOR

PHOTO CREDIT: STUART MACKAY

Delivering impact at scale depends on how effectively we connect our science to real-world needs. We work in close partnership with users, engaging early, co-designing where appropriate, and maintaining a strong line of sight between our science and the outcomes it enables. This includes working with Māori, iwi and hapū through coordinated and consistent engagement across our science domains.

We are strengthening the systems, capability and partnerships needed to ensure our science is applied in practice, through tools, services and advice that support decision-making. Our work is underpinned by advanced technologies, national environmental observation systems and large-scale modelling platforms that generate insights across hazards, climate, oceans, land and energy systems.

We focus on four interconnected areas that together drive impact:

Advanced technology

Advanced technology underpins and accelerates our science, enabling faster insights and more scalable solutions. Expanding accessibility to advanced technologies means that our science increasingly relies on a widening technological base, including advanced analytical capabilities, data science and artificial intelligence, sensor technology, remote sensing, analysis of data in situ, high-performance and quantum computing and augmented reality technologies. Developing, adapting and adopting advanced technologies makes the most of our information and capability and builds research capability to deliver the greatest value and impact for New Zealand.

Earth Sciences NZ also develops and operates national-scale digital and environmental intelligence platforms that support both research and operational decision-making across hazards, climate, oceans, land and energy systems.

Customers and partners

Our work is grounded in a clear understanding of customer and stakeholder needs. The formation of Earth Sciences NZ enables more integrated, end-to-end solutions, strengthening how we work with industry, Māori, regional stakeholders and government to deliver impact at scale. In the coming year, we will focus on re-engaging and strengthening our relationships to ensure that we are able to bring the full benefits of the merger to our partners and stakeholders. We understand the importance of engaging early with potential users of our science, maintaining this engagement throughout the science process and seeking feedback afterward so we deliver outputs that are tailored to user and customer needs.

Earth Sciences NZ partners with industry to share the latest scientific insights and technologies, working together to enhance productivity and sustainability while inspiring and developing the talent pipeline. Through these efforts, we aim to inform policy, strengthen community trust, uphold our social licence and amplify our impact.

Commercialisation and innovation

We are strengthening the commercialisation of our science to generate economic value and reinvest in future capability. This includes aligning research with market demand, developing clear pathways to application, and building a stronger intellectual property pipeline.

We aim to strengthen commercialisation and innovation across the new organisation, for example, though better understanding of commercial demand and buyer needs and targeting our research and science to deliver value and outcomes to the nation.

Social science and uptake

Impact depends on our science being understood, trusted and used. We integrate social science to better understand behaviour, barriers to adoption and decision-making, supporting more effective engagement, co-design and knowledge transfer.

We also play a central role in New Zealand's science system, with strong connections across universities, Crown Research Institutes and other research organisations, alongside extensive international collaborations. As we continue to integrate and mature, we will strengthen our role as a platform for joint research initiatives, interdisciplinary programmes and advanced technology development. This supports a more cohesive and responsive system, aligned with Government priorities.

OUR SCIENCE MISSIONS

3.0
OUR SCIENCE
MISSIONS

At the centre of Earth Sciences NZ's approach is a clear focus on delivering impact through six integrated Science Missions.

These Science Missions organise our capability, guide our investment, and ensure our science is aligned to New Zealand's most important economic, environmental and resilience challenges and opportunities.

By bringing together expertise across the breadth of Earth sciences, including human systems, we are uniquely positioned to understand and respond to the complex, interconnected systems that shape New Zealand's environment, economy and society. Our Science Missions translate this breadth of capability into focused, outcome-driven programmes of work that deliver real-world value.

We deliver our science through six Science Missions:

Geological Hazards 01

Weather and Climate Hazards 02

Land and Water 03

Energy 04

Oceans and Fisheries 05

Atmosphere and Climate 06

Each Science Mission brings together multidisciplinary expertise to address challenges that no single field can solve alone, combining Earth, water and climate science with advanced technologies, engineering and social science.

SCIENCE MISSIONS AND FLAGSHIPS

This integrated approach enables more comprehensive insights, better decision-making, and solutions that reflect the full complexity of the systems we work within.

Within each Mission, our science is delivered through Flagships. These are coherent, outcome-focused programmes that bring together related research, applied science, data and products and services. Flagships provide the primary mechanism for designing activities that deliver impact, ensuring our science is coordinated, applied and aligned with user needs. Together, they deliver the objectives of each Science Mission.

The Science Missions provide continuity of purpose and long-term focus. Flagships are more adaptive, evolving over time to respond to emerging priorities, new opportunities and changing customer needs. This combination of stability and agility ensures we remain both strategically focused and responsive.

MISSIONS	Oceans and Fisheries	Land and Water	Energy	Geological Hazards	Weather and Climate Hazards	Atmosphere and Climate
FLAGSHIPS	FUTURE OCEANS HEALTHY OCEANS WILD FISHERIES HIGH VALUE AQUACULTURE	FUTURE WATER HEALTHY FRESHWATER MOUNTAINS TO SEA	ENERGY GENERATION ENERGY USE, STORAGE AND MATERIALS	EARTHQUAKE HAZARDS VOLCANO HAZARDS GEOLOGICAL PROPERTIES AND PROCESSES	FLOODING, EXTREME WEATHER AND SPACE HAZARDS TSUNAMI AND COASTAL HAZARDS LANDSLIDE HAZARDS	FUTURE CLIMATE CHANGING ATMOSPHERE WEATHER AND SEASONAL FORECASTING
	AQUATIC BIOSECURITY			MULTI-HAZARD RISK AND RESILIENCE		

OUR SCIENCE MISSIONS

3.0 ——
OUR SCIENCE MISSIONS

Integration across our Science Missions

Delivering impact through our Science Missions requires a fully integrated approach. The challenges we address across climate, natural hazards, resources and environmental systems do not sit within a single domain or discipline. Integration is therefore fundamental to how we operate, enabling us to maximise both the impact and effectiveness of our science. We focus our integration across three areas: across disciplines, within and across Flagships, and across Science Missions.

Across disciplines

We bring together expertise from climate, atmosphere, freshwater, oceans, land and marine geosciences, natural hazards, social science, mātauranga Māori, data science and advanced technologies. We actively promote multi- and trans-disciplinary approaches, including the integration of social science, to ensure our science reflects the complexity of real-world problems and delivers more relevant and applied outcomes. Our matrix management structure supports this by enabling teams to be formed around problems and opportunities rather than organisational boundaries.

KAIKOURA SURVEY

PHOTO CREDIT (LEFT): DAVE ALLEN

CONTROLLED RELEASE EXPERIMENT TO MEASURE METHANE AND ETHANE GASES IN LAUDER

PHOTO CREDIT (RIGHT): NAVA FEDAEFF

Within and across Flagships

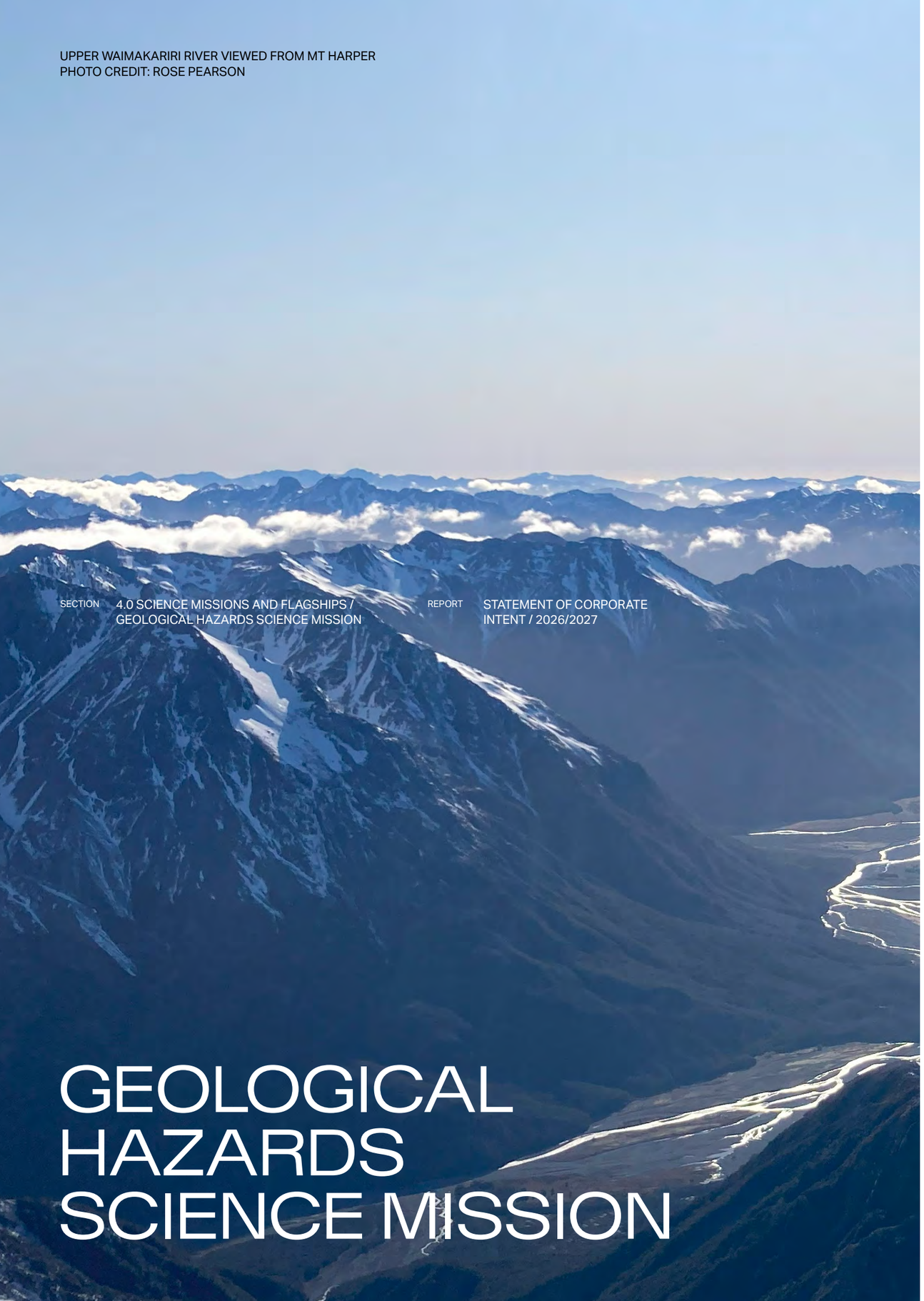
We bring together science funded through government investment, contestable research and applied science services into coherent, outcome-focused programmes. Our aim is to deliver integrated programmes of work rather than collections of individual projects, so that we maximise impact and realise synergies across related activities. Most Flagships draw on capability from across our legacy organisations, and their leaders work collaboratively to prioritise and design science through cross-cutting teams. This enables Flagships to both contribute to and draw from one another. For example, the Future Climate Flagship provides climate projection data that informs work across multiple other Flagships.

Across Science Missions

We connect work across Science Missions where this adds value, sharing insights, aligning priorities and coordinating delivery. This is driven by the General Managers of our Science Missions working collectively alongside Flagship Leaders to ensure a joined-up approach to planning and execution.

We will continue to strengthen this model, including developing a more comprehensive understanding of how information flows across Flagships and Science Missions, to further enhance the impact and coherence of our science.

The nature and scope of activities within each Science Mission are described in the following sections.



UPPER WAIMAKARIRI RIVER VIEWED FROM MT HARPER
PHOTO CREDIT: ROSE PEARSON

GEOLOGICAL HAZARDS SCIENCE MISSION

Our science strengthens New Zealand's ability to reduce risk, prepare for, respond to and recover from geological hazards—including earthquakes, volcanoes, landslides and tsunamis—in close coordination with the Weather and Climate Hazards Science Mission.

4.1
GEOLOGICAL HAZARDS SCIENCE MISSION

New Zealand cannot afford the current and growing costs of natural disasters. These are increasing with climate change and intensified development, at the same time as economic growth depends on significant new investment in buildings and infrastructure. Avoiding repeated losses and limiting ongoing socio-economic disruption from natural hazards is therefore critical.

For both geological hazards and weather and climate hazards, strengthening resilience requires better decisions before, during and after events. This depends on decision-makers and responders having access to timely, reliable information, advice and tools to understand risk, prepare for impacts, and respond effectively when events occur.

We support this by developing science and expertise relating to geological processes and working with partners to translate this into practical models, tools and advice. This includes supporting climate change adaptation, reducing risk and managing residual risk. A key focus is the development of multi-hazard, impact-based early warning systems to maximise life safety and protect property. Achieving this is globally ambitious and will be enabled through the combined capabilities of Earth Sciences NZ, MetService and RiskScape.

This work is delivered in close partnership with central government agencies—including the Ministry of Business, Innovation and Employment, the National Emergency Management Agency (NEMA), and the Natural Hazards Commission Toka Tū Ake—as well as local government, iwi and Māori enterprise, critical infrastructure providers and communities.

Our capability, is underpinned by GeoNet, a world-class geohazards monitoring network built over more than two decades. Through the National Geohazards Monitoring Centre Te Puna Mōrearea e te Rū, we provide continuous, 24/7 monitoring of New Zealand's geological hazards, supporting both research and real-time response.

We also support iwi-Māori aspirations by providing hazard and risk information that strengthens intergenerational resilience, alongside capabilities that support response and recovery. This extends to our work with Pacific nations and other international partners, including support for volcanic eruptions in Vanuatu and Tonga, and earthquakes and their associated landslide and tsunami impacts across the region.

We will deliver this Science Mission through four Flagships: Earthquake Hazards; Volcano Hazards; Geological Properties and Processes; and Multi-hazard Risk and Resilience (also aligned with the Weather and Climate Hazards Science Mission).

4.1.1

Earthquake Hazards Flagship

Goal: To make New Zealand more resilient to earthquakes and their cascading hazards, through developing and applying end-to-end cutting-edge science that enhances preparedness, reduces risk, forecasts the future hazard, and enables effective response and recovery.

Earthquakes are among New Zealand's most deadly natural hazards and are responsible for the biggest single-event financial losses in recent history, with wide-ranging cascading hazards and impacts that repeatedly set back economic growth and prosperity. We aim to reduce these impacts through the uptake and use of our science (for example, through provision of data, services and guidance). We will work with our partners to:

- Create and implement multi-hazard impact models, capturing the complex interplay between earthquakes and downstream hazards (for example tsunami, landslide, liquefaction, flooding, sea-level rise) and risk.
- Investigate New Zealand's unique tectonic and site characteristics, developing advanced modelling methods using multi-disciplinary observational datasets, artificial intelligence and high-performance computing to understand future events and their implications for New Zealand (e.g. joint subduction-crustal ruptures, local ground motion effects).
- Provide rapid science advice for large earthquakes in New Zealand and the Pacific, based on advanced expertise, tools, systems, and data technologies that enable faster and more accurate impact assessments and forecasts.

4.1.2

Volcano Hazards Flagship

Goal: To improve New Zealand's resilience to future volcanic eruptions through cutting-edge, multi-disciplinary, and mission-led research.

Volcanoes are iconic features in New Zealand's landscapes. Several of these volcanoes are active or have the potential to become active in the future. They pose very real threats to lives, livelihoods, infrastructure and the landscape. To ensure enhanced resilience for communities, we ensure there is a strong connection between volcano activity monitoring and research and our partners, customers and communities. We will do this by:

- Developing national-scale hazard models for eruption processes at New Zealand's active volcanoes and the wider Pacific. This will support the quantification of deterministic and probabilistic risk models.
- Improving understanding of the generation, storage, and ascent of magma in the lead up to an eruption (across all magma types) through the integration of geology, geophysics, and geochemistry.
- Embedding advanced forecasting and probabilistic modelling tools, including AI-enabled analysis of monitoring data, into volcano monitoring systems to improve preparedness and eruption planning, supporting coordinated decision-making across existing multi-agency planning groups.

4.1.3

Geological Properties and Processes Flagship

Goal: To understand the geological properties and Earth processes that shape New Zealand, and to provide the geological data to reduce natural hazards risk, build resilience to environmental change, and to support renewable energy development.

Solid-Earth data and understanding of tectonic processes are critical to Earth Sciences NZ's work and to national decisions regarding hazards, energy and environmental management. We will ensure geological and geophysical information is nationally consistent, digitally accessible and integrated across Earth Sciences NZ platforms, supporting other Flagships by:

- Developing new solid-Earth information data products based on existing geological maps and databases that are tailored for specific end-uses.
- Advancing understanding of how fast and slow lithospheric deformation shapes Zealandia Te Riu-a-Māui.
- Maintaining and evolving national observation and geophysical monitoring infrastructure.

4.1.4

Multi-Hazard Risk and Resilience Flagship

Goal: To enable evidence-based decisions that reduce losses, improve preparedness, and strengthen resilience to natural hazards across New Zealand by integrating hazard, exposure, vulnerability and human behaviour data through nationally consistent risk modelling platforms.

As natural hazards continue to grow in frequency, magnitude and complexity, many communities are increasingly exposed to multi-hazard scenarios. We will:

- Quantify and compare benefits of risk reduction interventions using RiskScape.
- Integrate environmental, socio-economic and behavioural modelling including mātauranga Māori.
- Develop people-centred approaches to delivering science advice and improving decision-making.

DOBSON SPECTROPHOTOMETER DOME THAT HOUSES THE DOBSON OZONE SPECTROPHOTOMETER #72
PHOTO CREDIT: REBEKAH PARSONS-KING

WEATHER AND CLIMATE HAZARDS SCIENCE MISSION

Our science enables more effective reduction, readiness, response and recovery for events such as extreme weather, landslides, floods, droughts, wildfires, space weather, coastal hazards, and tsunami, in close coordination with the Geological Hazards Science Mission.

4.2

WEATHER AND CLIMATE HAZARDS SCIENCE MISSION

Weather and climate hazards create significant and increasing risks to communities, infrastructure, businesses and the wider economy. Climate change will continue to exacerbate many of these hazards, increasing their frequency and intensity. New Zealand requires better information on current and future exposure and societal risk to reduce impacts and support long-term resilience and economic stability.

Our focus is to map the current and future exposure and societal risk to weather and climate hazards such as fluvial, pluvial and coastal flooding, drought, landslides, tsunamis, extreme temperatures, wildfire, heavy rainfall, snow, hail and high winds. For the first time in New Zealand, and made possible through the formation of Earth Sciences NZ, we will analyse extreme weather, flooding and landslide hazards through an integrated multi-hazard approach. This will support coordinated risk reduction, adaptation, spatial planning and infrastructure resilience, while reducing economic and environmental costs.

New Zealand and Pacific Island communities, iwi and hapū, businesses, central and local government agencies and critical infrastructure providers require timely and accurate information, forecasts, warnings and tools to prepare for, respond to and recover from extreme events. We serve these needs by advancing real-time monitoring, numerical modelling, data assimilation and AI-enhanced forecasting of weather and climate hazards, including space weather and tsunami, drawing on the combined capability of Earth Sciences NZ, MetService and partners.

Our experts work alongside emergency managers, iwi and other responders in times of crisis. This supports public safety, emergency decision-making, effective deployment of response resources, and reduces the economic and social costs of hazard events.

We will deliver this Science Mission through four Flagships. They are: Flooding, Extreme Weather and Space Hazards; Tsunami and Coastal Hazards; Landslide Hazards; and Multi-hazard Risk and Resilience (also aligned with the Geological Hazards Science Mission).

4.2.1

Flooding, Extreme Weather and Space Hazards Flagship

Goal: To better understand, predict and communicate flooding, extreme weather and space hazards and their impacts, costs and risks for a safer and more economically resilient New Zealand and Pacific.

Flooding and extreme weather events are increasing in frequency and intensity, creating widespread impacts across infrastructure, communities and economic activity. We will:

- Improve prediction through advanced numerical weather prediction, ensemble forecasting, data assimilation and hybrid physical–AI modelling approaches.
- Support impact-based forecasting and the translation of flooding and extreme weather hazard information into likely consequences for communities, infrastructure and economic systems.
- Maintain and enhance national capability for monitoring and forecasting space weather hazards, recognising their growing importance for communications, navigation and energy systems.

4.2.2

Tsunami and Coastal Hazards Flagship

Goal: To better understand, predict and communicate tsunami and coastal hazard impacts, costs and risks for a safer and more economically resilient New Zealand and Pacific.

Coastal environments face increasing risks from sea-level rise, storm surge and tsunami. We will:

- Improve models of tsunami generation, propagation and coastal inundation to support warning systems and emergency response.
- Advance understanding of meteorological coastal hazards and subsequent coastal processes including erosion, sediment transport and shoreline change.
- Support coastal planning and adaptation through integrated hazard and risk information.

4.2.3

Landslide Hazards Flagship

Goal: To better understand, forecast and communicate earthquake and climate-induced landslides and their impacts, costs and risks for a safer and more economically resilient New Zealand and Pacific.

Landslides are a major and often cascading hazard triggered by both geological and weather events. We will:

- Improve understanding of landslide mechanisms across different environments and triggers.
- Develop forecasting tools integrating rainfall, soil conditions, terrain and seismic inputs.
- Support risk assessment, land-use planning and emergency response through improved landslide hazard information.

LAND AND WATER SCIENCE MISSION

Our science enables the sustainable use and development of New Zealand's land and water resources in a changing environment by improving water security, protecting ecosystem health and enabling integrated management of catchments and coasts.

4.3
LAND AND WATER SCIENCE MISSION

High-quality freshwater and healthy catchments underpin livelihoods, productivity and economic growth. Increasing pressure on these resources is creating tension between competing uses, including irrigation, hydropower generation, ecosystem health and cultural values, which is further compounded by climate change and invasive species. Managing these trade-offs requires integrated science that supports informed decisions across economic, environmental, social and cultural outcomes.

We address this through a whole-of-catchment approach to observing and modelling the water cycle. By bringing surface water and groundwater science together, alongside expertise in geological processes, hazards, climate and ecosystems, we provide a more coherent and system-level understanding of land and water environments.

This integrated capability, enabled by combining the capabilities of our legacy organisations, allows us to deliver science, data and tools that support legislation, policy, regional planning and resource management decisions across sectors including agriculture, conservation and energy. We are strengthening this through improved data systems, environmental observations and modelling to better assess water availability, flooding and ecosystem health.

Our work is grounded in partnership. We work with communities, farmers, industry, Pacific partners, iwi and Māori to support sustainable resource use and the restoration of freshwater and estuarine ecosystems. This includes developing nature-based solutions to challenges such as agricultural runoff, climate adaptation and wastewater management.

We integrate information from mountains to sea, combining field monitoring, remote sensing, laboratory experimentation and advanced data analysis, including AI, with high-performance modelling. Through partnerships with Māori, we co-design research and incorporate mātauranga Māori into innovation and management approaches.

We will deliver this Science Mission through four Flagships: Future Water; Healthy Freshwater; Mountains to Sea; and, Aquatic Biosecurity (also aligned with the Oceans and Fisheries Science Mission).

4.3.1

Future Water Flagship

Goal: To ensure New Zealand secures enough clean water for people, businesses, and the environment by understanding, predicting, and advising on water supply and demand.

We provide scientific evidence, guidance and solutions to achieve water security through water policy, management, and planning. We also develop integrated water forecasting and decision-support systems that combine hydrological modelling, environmental observations and climate projections to support national and regional water security planning. We will:

- Incorporate observation data and upscaled physical process understanding into a suite of hydrologic, hydrodynamic, and fluvial-geomorphological models.
- Predict surface water and groundwater interactions and states to quantify water availability, water demand, flood generating flows, and environmental impacts given changes to land cover and climate.
- Partner with customers to advance understanding of freshwater quantity and quality to support environmentally sustainable agriculture, hydropower, river management and regional planning.

4.3.2

Healthy Freshwater Flagship

Goal: To support healthy freshwater ecosystems and sustainable catchments by predicting how surface- and ground-water systems respond to a changing environment.

We work with end-users to develop fit-for-purpose decision-support tools for enduring management of freshwater contaminants and resource use. Our tools support long-term freshwater system management. We will:

- Leverage emerging molecular technologies (e.g. eDNA metabarcoding) for cost-effective assessment of biological communities at policy-relevant scales.
- Develop a stronger and more accessible evidence-base to enable sustainable farming while protecting and rehabilitating ecosystems.
- Predict how hydrological and thermal regimes under a changing climate will affect freshwater biodiversity of lakes and rivers.

4.3.3

Mountains to Sea Flagship

Goal: To advance understanding of connected catchment to coastal systems from mountains to the sea to support resilient ecosystems, sustainable resources and adaptation to environmental change.

We work with iwi, communities, councils, government agencies, industry and international science partners to observe, quantify and model connected catchment and coastal processes, environmental fluxes, ecosystem resilience and change thresholds across multiple timescales. We will:

- Quantify how sediment, carbon, nutrients and contaminants move through connected catchment and coastal systems under changing climate, land use and disturbance regimes.
- Understand how ecosystems and landscapes respond to episodic events, cumulative stress and slow environmental change, including ecological thresholds for disturbance, resilience and recovery.
- Develop integrated observational, modelling and decision-support approaches that identify vulnerabilities, adaptation opportunities and restoration potential across catchments and coasts.

4.3.4

Aquatic Biosecurity Flagship

Goal: To protect freshwater and marine ecosystems from the negative environmental and economic impacts of aquatic pests and diseases and support the use of our aquatic environments now and in the future, through predicting species risks, and developing effective detection and management approaches for aquatic invasive species.

We work with partners, end users and customers to provide the scientific basis to enable the cost-effective management of aquatic invasive species and reduces their economic impact. We will:

- Improve invasive species surveillance efficiency using autodetection methods and AI technology to fine-tune detection.
- Refine the use of controlled environmental aquatic culture facilities to assess invasive species impacts and develop new intervention tools for field use.
- Improve efficiency and rate of target detection of invasive species by integrating taxonomy and molecular techniques with modelling approaches.

THE WAIKATO RIVER GUSHING THROUGH HUKA FALLS, NEAR LAKE TAUPO
PHOTO CREDIT: LANA YOUNG

ENERGY SCIENCE MISSION

Our science strengthens New Zealand's long-term energy sovereignty by driving progress toward an abundant, secure, sustainable, and low-emissions energy system, through improved resource understanding, greater efficiency, and the development of new technologies and infrastructure.

4.4
ENERGY SCIENCE MISSION

New Zealand's future economic growth and resilience depend on abundant, reliable, affordable and sustainable energy. The increase of low-emissions energy sources presents both challenges and opportunities, including the need to balance energy security, demand, affordability, environmental limits and infrastructure investment. Science plays a critical role in enabling informed decisions, reducing risk and accelerating innovation in the energy system.

We bring together expertise across water and weather dependent and subsurface energy systems, environmental processes and advanced technologies to support the development, integration and optimisation of energy resources. This includes understanding the availability and performance of geothermal, hydro, wind, solar and emerging energy systems, as well as the environmental, geological and social constraints that shape their use.

We support government, industry and investors with data, models and insights that inform energy planning, infrastructure development and system integration. This includes understanding energy storage, distribution, system resilience, and the impacts of climate variability and change on energy supply and demand.

We contribute to the development of new materials and technologies that improve energy efficiency and enable low- and zero-emissions energy use. We recognise the opportunities for continued mineral and hydrocarbon research, and support the Government's policies and frameworks in this sector to advance New Zealand's interests. Our work supports innovation across the energy sector, including the commercialisation of new technologies and the development of new energy markets.

We will deliver this Science Mission through two Flagships. They are: Energy Generation; and Energy Storage, Use and Materials.

ŌTAKI RIVER MOUTH
PHOTO CREDIT: PJ WARREN

4.4.1

Energy Generation Flagship

Goal: To decarbonise and secure a sustainable and affordable energy network in New Zealand through increasing renewable (geothermal, hydroelectric, wind, and solar) energy generation and supporting integrity and resilience of the energy distribution network.

Working with the energy sector, including mana whenua, we will:

- Enable renewable geothermal generation expansion to replace fossil-fuelled process heat and lead research into sustainable superhot systems.
- Enhance utilisation efficiency of existing geothermal fields through next generation techniques that increase long-term sustainable use.
- Improve nowcasting and forecasting of key weather inputs for energy companies and refine freshwater inflow forecasting to support hydroelectric operations. This strengthens real-time and long-range planning for wind, solar, and hydro generation.
- Support the development of resilient, environmentally sustainable energy infrastructure to inform new energy generation developments and assess existing assets for environmental and utilisation risks.

4.4.2

Energy Use, Storage and Materials Flagship

Goal: To accelerate decarbonisation and sustainable economic growth by advancing innovative energy storage materials, critical minerals, and above- and below-ground storage technologies, enabling secure, resilient, and low-emissions energy systems.

Working with the wider energy and government sector to support New Zealand's energy transition, we will:

- Accelerate advanced materials development for green hydrogen, ammonia, and solid-state energy conversion systems to enable efficient low-carbon fuel production and distributed clean energy solutions.
- Develop integrated subsurface and long-duration energy storage solutions. This includes hydrogen, compressed air, and thermal systems designed for New Zealand's geological environments, supporting secure, large-scale, long-duration storage capability.
- Strengthen energy system resilience through systems modelling and critical resource development.
- Advance responsible exploration and extraction of critical minerals (including rare Earth elements) and build evidence-based assessments of New Zealand's evolving energy needs to guide investment and policy.

HAKU (KINGFISH) SKIN MACRO
PHOTO CREDIT: LUKE MCPAKE

OCEAN AND FISHERIES SCIENCE MISSION

Our science supports the sustainable use and management of New Zealand's oceans by improving understanding of marine environments, ecosystems and fisheries, and enabling informed decision-making across economic, environmental and cultural objectives.

4.5
OCEAN AND FISHERIES SCIENCE MISSION

New Zealand's marine environment is a critical driver of economic activity, supporting fisheries, aquaculture, transport and emerging industries. Ocean ecosystems are under increasing pressure from climate change, resource use and environmental impacts. Balancing economic development with sustainability requires integrated science that supports effective, system-level management and an understanding of causes, effects and risks.

We address this by building a comprehensive understanding of ocean processes, marine ecosystems and fisheries dynamics, from coastal environments to the deep ocean. This includes the physical, chemical and biological processes interacting across multiple spatial and temporal scales, and providing the foundation for more informed management and investment decisions.

This capability supports sustainable fisheries through improved stock assessment, ecosystem-based management and a better understanding of environmental drivers. It also underpins marine spatial planning, conservation, adaptation, biosecurity and the responsible development of marine resources. Along with our recirculating aquaculture facility and our strengthening collaboration with the Bioeconomy Science Institute, this capability is used in the development of new science and technology that supports and improves the New Zealand aquaculture industry.

Our work integrates observations, modelling and data analysis across ocean systems, using remote sensing, habitat mapping, autonomous platforms and advanced analytical tools. We work closely with local and central government, industry, iwi and Māori, communities and international partners to ensure our science delivers information and tools that are needed to inform management and conservation.

We will deliver this Science Mission through five Flagships: Healthy Oceans; Future Oceans; Wild Fisheries; and High Value Aquaculture, and Aquatic Biosecurity (also aligned with the Land and Water Science Mission).

4.5.1

Healthy Oceans Flagship

Goal: To understand marine biodiversity and ecosystem function in a changing environment, to support sustainable ecosystem health, values and services.

Healthy marine ecosystems underpin economic and environmental outcomes. With our partners (including iwi) and stakeholders, we develop and implement models and other tools to aid and inform ocean management, economic opportunities and conservation. We will:

- Improve understanding of marine ecosystem structure, function and health.
- Provide data to support conservation and future focused ecosystem-based management approaches.
- Assess, monitor and predict the impacts of human activities and environmental change on marine systems.

4.5.2

Future Oceans Flagship

Goal: To enable adaptation, use and effective responses to ocean change by understanding its physical, geological and chemical drivers.

We enhance understanding of oceanographic and physical processes, ocean climate, anthropogenic influences and their impacts on the marine environment. This allows us to support economic development and the effective management of resources, particularly in response to growing environmental challenges and marine hazards. We will:

- Collect, model and interpret oceanographic data, to understand and predict bio-physical changes in the oceans around New Zealand.
- Quantify the role of New Zealand's oceans in global climate and carbon cycles, and increase our knowledge of marine heatwaves, ocean acidification, deoxygenation, and land-sea impacts by tropical cyclones.
- Increase understanding of the changing maritime climate and seascape to support effective management of resources and benthic habitats, and the development of adaptation strategies.
- Observe and monitor the oceans for geological and climate hazards including marine heat waves, tropical cyclones, and earthquake triggered changes in the seascape.

4.5.3

Wild Fisheries Flagship

Goal: To support sustainable fisheries and aquaculture that maximise economic value while maintaining ecosystem health.

We enable the growth of existing and new seafood businesses while sustaining healthy seas for future generations. We will:

- Undertake research that supports international and New Zealand management of fisheries stocks, to better understand the sustainability of key fisheries species.
- Develop ecosystem-based tools, advice and methods for better fisheries management in a multi-stressor environment.
- Understand the impacts of climate change on wild fisheries, such as changes in species and prey distribution, impacts on productivity, and disease emergence.
- Support iwi and community groups through wild fishery research and activities, building capability and enabling greater community driven sustainable management approaches.

4.5.4

High Value Aquaculture Flagship

Goal: To support the growth of New Zealand aquaculture through innovative, commercially focused research on species and production systems.

We undertake applied research to deliver tangible solutions for growth to the aquaculture sector. We focus on species and production systems with credible economic viability, environmental sustainability, and overall benefit to New Zealand. To support growth of the aquaculture sector we will:

- Demonstrate the viability of land-based recirculating aquaculture production of branded yellowtail kingfish through the Haku Kingfish farm.
- Leverage our expertise in aquaculture systems and aquatic sciences to realise profitable expansion of other commercial aquaculture species in New Zealand.
- Apply advanced water engineering principles to expand production, improve product quality, and reduce environmental footprints and the cost of production across the fish and shellfish sectors.
- Applying genetics and biotechnical tools to develop high performance stocks of existing and emerging commercial aquaculture species.
- Developing sustainable and improved nutrition for existing and new aquaculture species and rearing systems.

QUEEN CHARLOTTE SOUND
PHOTO CREDIT: PAUL WHITE

SECTION 4.0 SCIENCE MISSIONS AND FLAGSHIPS / ATMOSPHERE AND CLIMATE SCIENCE MISSION

REPORT STATEMENT OF CORPORATE INTENT / 2026/2027

ATMOSPHERE AND CLIMATE SCIENCE MISSION

Our science allows us to prepare for weather, adapt to unavoidable climate change impacts, anticipate and evaluate risks associated with climate change, and effectively reduce longer-term climate change impacts by mitigating greenhouse gas emissions. This helps strengthen New Zealand's economy and reduce economic losses.

4.6 ATMOSPHERE AND CLIMATE SCIENCE MISSION

Climate change is one of the most significant challenges facing New Zealand, affecting natural systems, infrastructure, communities and the economy. Managing these impacts, and identifying emerging opportunities, requires a clear understanding of changing daily and seasonal weather patterns, local- to national-scale greenhouse gas emissions, uptake by the land biosphere, and projected future climate pathways to support long-term planning and investment.

We address this by developing science and making detailed measurements that improve understanding of atmospheric gases and processes, weather and climate variability and long-term climate change. This includes generating climate projections, identifying key drivers of variability, and assessing impacts across sectors and regions to inform more consistent and forward-looking decision-making. We also assess the potential for abrupt or irreversible changes to the Earth system, such as those involving ocean or Antarctic ice sheet dynamics.

This capability supports adaptation and mitigation decisions by providing information and tools that enable government, industry, communities and iwi to manage weather and climate risks and their greenhouse gas emissions.

Our work integrates observations, modelling and data analysis across atmospheric and climate systems, supported by advanced technologies and strong international collaboration. Through this work, we contribute to national and global climate science efforts, ensuring New Zealand both benefits from and contributes to international knowledge.

We will deliver this Science Mission through three Flagships: Future Climate; Changing Atmosphere; and Weather and Seasonal Forecasting.

4.6.1

Future Climate Flagship

Goal: To deliver quality data, tools and guidance about the past, current and future climate of New Zealand, Antarctica and the Pacific to support planning, adaptation and decision-making.

Understanding past and future climate conditions is critical for long-term planning. We will:

- Combine physical models of the climate with AI, weather observations and satellite data to refine climate projections at national, regional and local scales.
- Improve understanding of drivers of past, present, and future Antarctic ice sheet and sea ice variability.
- Provide data and tools to support climate-informed decision-making.

4.6.2

Changing Atmosphere Flagship

Goal: To track gases that drive changes in Earth's atmosphere and support the transition to a low-carbon emission economy in New Zealand and around the world.

To develop and implement effective mitigation approaches we will:

- Observe atmospheric change, enabling the calibration and validation of international satellite missions.
- Quantify greenhouse gas emissions and uptake from forests and urban environments and track agricultural emissions from farm to national level using on-farm data, satellites, and machine learning.
- Support international partners to establish tools pioneered in New Zealand to support overseas climate mitigation efforts.
- Measure air pollutant (ozone, aerosols) pathways and ultraviolet radiation to support improvements to human health policy.

4.6.3

Weather and Seasonal Forecasting Flagship

Goal: To unite climate and weather science and operations to power a world class impact based multi-hazard early warning system that protects communities, builds resilience, and enables economic wellbeing for New Zealand and the wider Pacific region.

To strengthen and New Zealand's weather and seasonal forecast capability, we will:

- Advance impact-based forecasting, decision support, and early-warning systems.
- Create and implement an integrated climate and weather science pipeline leveraging technology (e.g. AI and machine learning) and automation for improved efficiency.
- Enhance delivery of meteorological and climatological products by growing digital services and broadening knowledge and communication channels and products.
- Grow key international and domestic partnerships as well as expanding and deepening engagement with end users. This includes iwi and Māori communities, emergency managers, businesses and industry sectors.

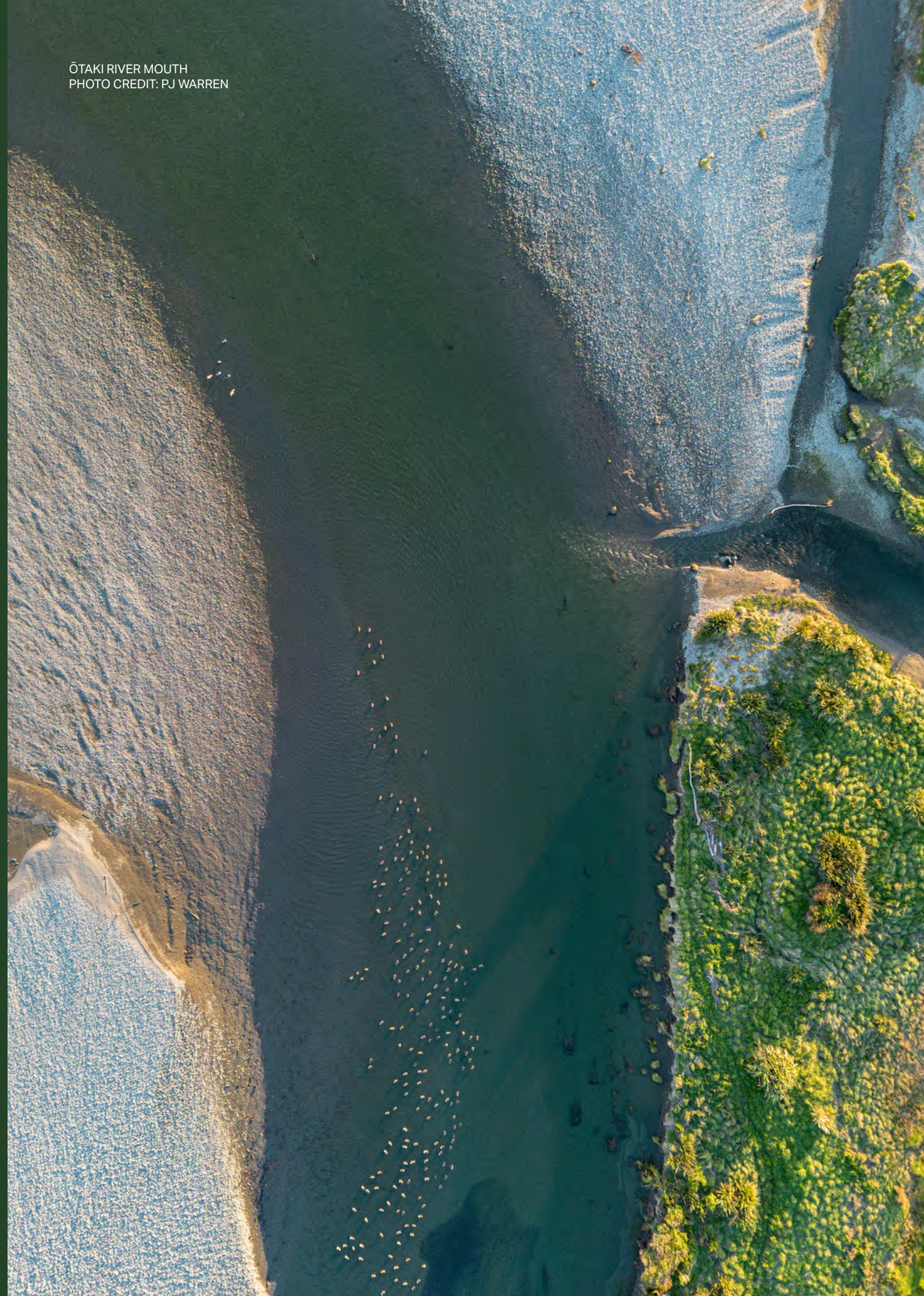
ENABLING DELIVERY OF WORLD-CLASS SCIENCE

Delivering the full impact of our science depends on how we operate as an organisation.

We take a deliberate, integrated approach by investing in our people, advanced technology and critical infrastructure, and building strong partnerships across New Zealand and internationally. This ensures our science is applied, connected and effective.

This includes deepening collaboration with Māori, supporting Pacific resilience, and ensuring our science is clearly communicated and used. Our approach is underpinned by a sustained focus on environmental responsibility and financial discipline, providing a strong foundation for long-term impact.

We maintain a comprehensive risk management framework and adopt a risk-based approach to managing risks, including those related to foreign interference, inappropriate knowledge transfer, and the misuse of sensitive or dual-use research in our research projects.



ŌTAKI RIVER MOUTH
PHOTO CREDIT: PJ WARREN

5.1

Building capability to deliver world-class science

Our people are central to delivering the impact of Earth Sciences NZ. We are building an organisation where scientific, technical and enabling talent can do their best work, attracting and retaining people who want to contribute to high-impact science in a collaborative, high-performing environment.

Realising this ambition depends on how effectively we operate as one organisation. Over the next three years, we will bring together the people, systems and ways of working of our legacy organisations to establish a unified Earth Sciences NZ. This will provide a consistent foundation for how we work, enabling collaboration across disciplines and locations, and supporting multidisciplinary science at scale.

Alongside this integration, we will maintain a strong focus on workforce risk, compliance, and the health, safety and wellbeing of our people, ensuring we remain a resilient and responsible organisation through a period of significant change.

Our immediate priority is to embed this foundation and strengthen capability in areas critical to our future impact. This includes developing our science leadership cohort, strengthening digital, data science and commercial capability, and ensuring our people have clear pathways for development, mobility and progression. We are also improving how we manage safety, wellbeing, psychosocial and privacy risks, supported by consistent systems and practices across the organisation.

Through this approach, we are positioning Earth Sciences NZ as a destination for talent and a high-performing organisation, one that is equipped to deliver world-class science that makes a measurable difference for New Zealand.

WORK UP DIVES. TE KUWAHA SCIENTIST, JESSIE SCARROTT SWIMS THROUGH A HEART SHAPED OPENING IN A SCHOOL OF BLUE MAOMAO AT THE POOR KNIGHTS ISLANDS WHILE GAINING DIVES AND 'WORKING UP' TO TRAIN AS A SCIENTIFIC DIVER FOR NIWA

PHOTO CREDIT: CRISPIN MIDDLETON

5.2

Advanced technology as a core capability

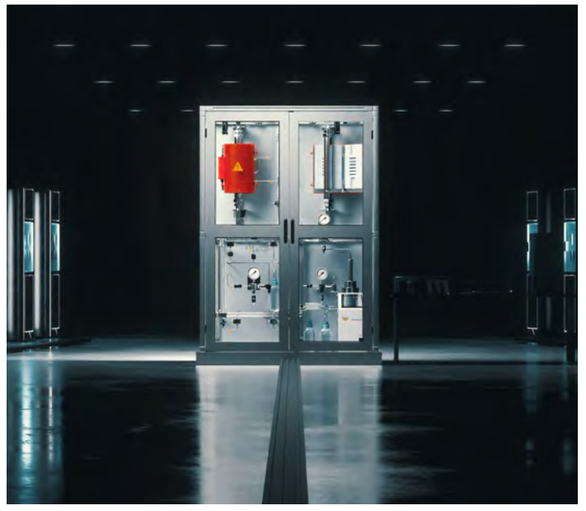
Advanced technologies are fundamental to how Earth Sciences NZ delivers science impact. They enable us to accelerate discovery, improve forecasting and decision-making, and deliver scalable solutions that support economic growth, resilience and environmental management.

We are building and applying capability across a rapidly evolving technology landscape, combining deep in-house expertise with targeted partnerships. This includes artificial intelligence, advanced analytics, high-performance computing, quantum science, robotics, sensor networks and digital platforms—applied in ways that enhance both research and operational delivery.

Our high-performance computing platforms, Cascade and Rapids, are critical national assets. They provide the scale and speed required for complex modelling, ensemble forecasting, AI workloads and data-intensive science. These platforms support both research and 24/7 operational services across climate, geohazards, oceans and atmosphere, and are also made available to the wider science system through REANNZ and commercial partnerships.

We are embedding AI across science and operations to improve insight generation, automate processes and support more informed decision-making. This is supported by investment in model operations (ModelOps) to ensure AI is applied at scale in a way that is robust, transparent and fit for purpose in environmental contexts. Alongside this, we are developing capability in quantum science, exploring its potential for forecasting, simulation and future applications in areas such as environmental sensing, hazard management and digital twins.

Our environmental observation capability is also being transformed. Sensor networks are being modernised through edge computing, automation and cloud integration, improving the speed, reliability and usability of data. This is complemented by the increasing use of autonomous platforms, such as drones, underwater remote operated vehicle (ROV) technology and uncrewed land systems, and emerging robotics applications for field deployment, asset inspection and laboratory automation.



GPS GEOTHERMAL PROCESS SIMULATOR

CREDIT (LEFT): NICO SPEZIALI

DATA STORAGE FOR THE CASCADE SUPERCOMPUTER AT CDC DATA CENTRE IN AUCKLAND

PHOTO CREDIT (RIGHT): STUART MACKAY

Underpinning this is a modern, secure digital environment that combines cloud and sovereign infrastructure to support both research and operational needs. Our integrated Earth Sciences NZ Data Platform strengthens access to, and governance of, nationally significant datasets, aligned with FAIR data principles. This includes real-time data services such as GeoNet and national weather forecasting, and supports more efficient, connected and scalable science.

We are also advancing space and Earth observation technologies, including satellite-based sensing and real-time geospatial data integration. By combining data from orbit, ocean, land and modelling systems, we are enabling new capabilities in areas such as emergency response, ocean monitoring and environmental intelligence. Emerging immersive technologies, including augmented and virtual reality, are also being explored to support scenario planning, risk communication and more effective engagement with stakeholders.

In 2026/27, we will continue to strengthen this capability by progressing a unified digital systems and infrastructure environment, planning the integration of observation networks and supercomputing with MetService to support a world-class forecasting system, expanding access to national computing capability through REANNZ, and advancing collaborative data science initiatives in sectors such as health and infrastructure.

5.3

THE FILAMENTOUS ALGAE NUTRIENT SCRUBBERS (FANS) TRIALS ARE TESTING THE CAPABILITY OF NATIVE ALGAE TO FILTER CONTAMINANTS

PHOTO CREDIT: STUART MACKAY

Partnerships for national and global impact

Earth Sciences NZ builds strong, enduring relationships across government, iwi, communities, industry and the science system to maximise the impact and value of our work. We aim to be a trusted partner, known for delivering expert guidance and practical, high-impact solutions.

Partnerships are central to how Earth Sciences NZ delivers impact. We take a deliberate, system-level approach to building and maintaining relationships across government, iwi, industry, communities and the science system to extend the reach, relevance and value of our science. In the coming year we will focus on re-engaging and strengthening our relationships to ensure that we are able to bring the full benefits of the merger to our partners and stakeholders.

Domestically, we play an active role in strengthening the science and innovation system. This includes supporting Science System reforms, planning for the integration of the Measurement Standards Laboratory and MetService into Earth Sciences NZ, and partnering with REANNZ to enhance national eResearch infrastructure.

We work closely with key government agencies, particularly the Ministries of Business, Innovation and Employment, Primary Industries and Environment, the Department of Conservation, Natural Hazards Commission, and the National Emergency Management Agency to ensure our science informs policy, investment and operational decision-making.

We also use partnerships to translate science into economic value. Working with industry, Māori and iwi, and sector partners, we support market development, productivity and sustainable resource use across infrastructure, utilities, primary industries and other parts of the economy. Our contribution to national research platforms, including the Natural Hazards and Resilience Platform, Antarctica New Zealand's Antarctic Science Platform and the Joint Centre for Disaster Research, enables coordinated, national-scale responses to complex challenges.

Our relationships with universities are a critical part of this system. Through joint appointments, graduate training and partnerships such as Joint Graduate Schools and Centres of Research Excellence, we support capability development, knowledge transfer and the next generation of science and technical talent. The signing of a formal Statement of Collaboration between the eight universities and three Crown Research Institutes has been a significant step forward, and the establishment of a joint work programme is enabling us to explore new areas of collaboration and drive greater system connectivity. This partnership includes exploring opportunities to share resources and assets for mutual benefit and to deliver impact for the nation.

Internationally, we focus on partnerships that extend capability, enhance scientific leadership and open pathways to applied impact. Our global connections—spanning the Pacific, Australia, the United States, the United Kingdom, Europe and Asia—enable access to leading science, technology and markets, and position Earth Sciences NZ as a globally connected and relevant research organisation. Over the past five years, we have co-authored publications with more than 1,300 organisations in 165 countries.

We will continue to strengthen this approach by targeting partnerships that support national priorities, expand applied science services and increase our international impact.

In 2026/27, this includes aligning science strategies with other Crown Research Institutes, deepening collaboration with universities, and growing our presence in Asia and the Pacific. This includes, for example, collaborating with the Bioeconomy Science Institute on emerging aquaculture technology.

5.4

Partnering with Māori

Earth Sciences NZ aspires to be a trusted and enduring science and innovation partner to whānau, hapū, iwi, Māori communities and Māori businesses—delivering research and services that create tangible, long-term impact.

We will achieve this through a deliberate Māori growth agenda that guides how we partner with iwi and Māori to support their aspirations and unlock economic, environmental and social value. The Māori economy, with an estimated $126 billion in assets, is a significant and growing part of New Zealand's future. Much of this asset base is grounded in land, water and coastal resources, with major opportunities in renewable energy, aquaculture and high-value primary industries. At the same time, these assets are increasingly exposed to climate and natural hazard risks, making resilience and sustainable resource management critical.

Our role is to partner with Māori to both protect and grow this asset base. This includes supporting improved productivity and value creation across land- and water-based industries, strengthening resilience to climate and environmental pressures, and enabling new opportunities through science, innovation and technology.

Te Kūwaha, our dedicated Māori enabling and research capability, plays a central role in this. It strengthens our ability to work in partnership with Māori by providing culturally grounded guidance, building organisational capability, and supporting co-designed, fit-for-purpose research and services. By bringing together science, innovation and mātauranga Māori, we can support more confident long-term investment decisions and unlock new pathways for growth and prosperity.

Our focus is on enabling sustained Māori growth through three connected areas. We will support the growth of the Māori economy by improving productivity and creating long-term value in sectors such as geothermal, aquaculture, fisheries and agribusiness. We will strengthen resilience by supporting the preparedness of Māori communities, assets and ecosystems to respond to climate change, energy transition and environmental pressures.

We will also enable Māori-led innovation by advancing approaches that combine mātauranga Māori, emerging technologies and place-based knowledge to address complex challenges and create new opportunities.

Delivering this requires more than engagement—it requires genuine partnership. We will deepen relationships with iwi and Māori organisations, co-design research agendas, and tailor our science, services and communications to align with Māori priorities and aspirations.

OHAKI MARAE

PHOTO CREDIT: SARAH MILICICH

Over the next three years, we will strengthen this approach by focusing on three core enablers.

We will build deeper, long-term partnerships across iwi, regions and the wider science system. We will invest in capability, developing our workforce and leadership to engage effectively and confidently with Māori, supported by culturally grounded guidance and organisation-wide capability programmes. And we will ensure that our research delivers excellence and impact, supporting Māori-led knowledge creation, innovation and technology that is grounded in mātauranga Māori and delivers tangible outcomes.

5.5

Supporting Pacific resilience

Earth Sciences NZ is committed to strengthening long-standing partnerships across the Pacific and increasing the application of our science to support resilience, sustainable development and Pacific-led priorities.

PRINCIPAL TECHNICIAN MARTY FLANAGAN INSTALLS A SENSOR BY A SHORELINE HOUSE IN ATAFU ATOLL, TOKELAU

PHOTO CREDIT : MOLLY POWERS-TORA

We will deepen collaboration with Pacific partners through formal agreements and targeted programmes focused on natural resource management, climate and hazard resilience, risk assessment and applied science. Our approach brings together scientific, social science, economic and indigenous-led expertise to deliver integrated solutions that respond to the needs and aspirations of Pacific communities.

A core part of our role is supporting long-term capability and capacity across the region. We will continue to provide technical expertise and invest in building local capability, while strengthening our own organisational capability to ensure our contribution is culturally grounded, technically robust and aligned with regional priorities.

We work closely with the Ministry of Foreign Affairs and Trade to support science-informed development investments, and will strengthen engagement with regional institutions and international partners to improve coordination and maximise collective impact. This includes working more closely with other Crown Research Institutes to deliver joined-up, effective approaches to Pacific programmes.

Our focus is on delivering applied science and capacity building that supports sustainable development, deepening our engagement with regional governance bodies and institutions, and strengthening partnerships with the Ministry of Foreign Affairs and Trade, regional agencies and delivery partners to improve implementation and impact.

In 2026/27, we will advance key strategic partnerships, including formal agreements with the Pacific Community and the University of the South Pacific, and continue delivery of the SPREP work programme. We will also strengthen and coordinate our approach to training for Pacific-based professionals, improve how we communicate our Pacific capability and activities, and invest in building a culturally capable workforce with the confidence and skills to work effectively across the region.

5.6

Investing in assets and infrastructure

Earth Sciences NZ invests in the assets and infrastructure needed to deliver high-impact science and support critical national capability. This includes maintaining and developing major research assets of national significance, while continuously upgrading our broader technology, equipment and data systems to meet future science and operational needs.

The formation of Earth Sciences NZ enables a more coordinated and efficient use of these assets. By integrating the capabilities of GNS Science and NIWA, we are strengthening the performance and value of our infrastructure through shared use of major facilities, integrated observation networks, combined laboratory capability, and a more connected environmental data system.

Our investment is focused on a set of core capability areas.

We maintain and modernise our field assets and vessel fleet to support research across New Zealand, the Pacific and the Southern Ocean.

RV TANGAROA WORKING IN THE ROSS SEA, ANTARCTICA

PHOTO CREDIT (LEFT): JOSHU MOUNTJOY

RECIRCULATING AQUACULTURE SYSTEM AT THE NORTHLAND MARINE RESEARCH CENTRE

PHOTO CREDIT (RIGHT): STUART MACKAY

This includes remote operations, specialist field equipment, and our ocean-going vessels, ensuring continued access for science, government and industry.

We are strengthening our digital and ICT infrastructure to support data-intensive science and operational delivery. This includes modernising core systems, addressing technical debt, enhancing cybersecurity, and maintaining advanced computing capability, including our supercomputing platforms.

We continue to expand and integrate our monitoring and measurement networks, incorporating new geophysical, weather and environmental sensing technologies. These systems underpin hazard monitoring, environmental observation, and forecasting capability.

Our laboratories and analytical facilities remain a critical national asset. We are sustaining and advancing specialised, and in some cases globally leading, analytical capability to support both current science and emerging areas of research.

We are also investing in the long-term integrity and accessibility of our data, models and physical collections. Nationally significant datasets and collections are maintained as enduring assets to support research, decision-making, commercial application and public access, while creating new opportunities for value generation.

In addition, we are developing applied capability through assets such as our commercial-scale recirculating aquaculture system, supporting innovation, regional development and high-value export opportunities.

5.7

Property

Earth Sciences NZ's property portfolio is a critical enabler of its science and operational delivery. Our staff operate across 17 facilities nationwide, 11 of which are owned by the Company, with locations historically aligned to the environments we study and the customers we serve.

The formation of Earth Sciences NZ provides an opportunity to take a more coordinated approach to our property footprint. Plans inherited from predecessor organisations are being reassessed to ensure they align with the needs of the integrated organisation.

Several sites have been upgraded to contemporary standards, including a new research facility on the University of Waikato campus in Hamilton completed in 2023, and refurbishment of the Wairakei facility is underway. However, a number of core science facilities require renewal, including major centres at Greta Point, Avalon, Gracefield and Christchurch. These are ageing and no longer fully support modern science delivery.

The Future Property Programme addresses this by modernising our most significant facilities to ensure they are fit for purpose over the long term. This includes aligning location, scale and design with the needs of contemporary science, supporting safer and more efficient operations, enabling flexible and collaborative ways of working, and reflecting organisational priorities such as sustainability and partnership with Māori.

EARTH SCIENCES OFFICES, HAMILTON

PHOTO CREDIT: MARK SCOWEN

In 2026/27, our focus is on progressing key elements of this programme, including advancing redevelopment at Greta Point, strengthening the coherence and identity of our property portfolio through consistent Earth Sciences NZ branding, and improving visibility of our monitoring and measurement assets through a comprehensive stocktake and upgrade planning.

5.8

Environmental responsibility in our science and operations

Environmental responsibility is integral to how Earth Sciences NZ delivers its science and operates as an organisation. We support New Zealand's sustainability goals through our research and advice, while ensuring our own activities are managed with a disciplined focus on reducing environmental impact.

RASOOL PORHEMMAT AND JO BIND SURVEYING STREAM CROSS-SECTIONS IN A SMALL STREAM IN DENSE COROMANDEL BUSH

PHOTO CREDIT: JOCHEN BIND

As we build Earth Sciences NZ, we are embedding sustainability across our systems, decisions and ways of working. This includes how we invest in people, technology and infrastructure, how we deliver science and services, and how we partner with iwi, communities and wider society, including across the Pacific.

Environmental responsibility is one of four pillars of our broader sustainability framework, alongside social, cultural and economic outcomes. We are focused on continuous improvement, strengthening systems and processes to reduce our environmental footprint while increasing the contribution our science makes to sustainable resource use, energy efficiency and emissions reduction across the economy.

We maintain a clear and transparent approach to managing our own emissions. Our greenhouse gas footprint is independently verified through Toitū Envirocare, and we are progressing both near-term and long-term emissions reduction targets, supported by a roadmap to guide action across the organisation.

As part of our transition to Earth Sciences NZ, we are strengthening how environmental responsibility is embedded in day-to-day operations. In 2026/27, this includes improving the accuracy and consistency of emissions reporting through more integrated systems and engagement with suppliers, identifying priority areas for emissions reduction such as business travel, and improving operational efficiency to reduce energy use and waste. We will also implement a clear, organisation-wide approach to ensure environmental responsibility is consistently understood and applied.

5.9

A financial approach that enables delivery

Earth Sciences NZ will maintain robust financial management that delivers financial information and advice for decision-making and improved financial performance.

A core operating principle of Earth Sciences NZ is that we must be run in a financially sustainable manner. This means not only securing enough revenue to cover day-to-day operations, but also generating sufficient cash flow to continually invest in maintaining and upgrading the assets required to support our science delivery and growth for the long term.

Earth Sciences NZ is operating in a challenging economic climate that is placing significant pressure on revenues. We will continue to explore growth opportunities, look closely at our costs, and make the most of collaborative working and investment opportunities. We have a focus on project management, ensuring delivery of agreed outputs on time and to budget, and alignment with customer, stakeholder and funder expectations. We see the formation of Earth Sciences NZ as having the potential to enhance our opportunities to secure revenue in overseas markets.

Our approach ensures that Earth Sciences NZ maintains financial disciplines aligned with our goals and plans, supported by a resource allocation process that delivers on our priorities. Achieving the required financial performance involves securing appropriate margins from our research and commercial work, while optimising the costs associated with supporting our operations. We will equip our people with the right tools and information to perform effectively and manage our publicly funded resources prudently and responsibly.

Over the next 12 months, a key priority is to complete the integration of Earth Sciences NZ's financial management and reporting systems into a single, seamless platform, while maintaining effective day-to-day operations to ensure business-as-usual priorities continue to be delivered. These include ensuring that:

- Financial and administrative operations are effective and efficient, while allowing seamless interaction with our customers, suppliers and staff.
- Management reporting and financial analysis is timely, insightful, intuitive and well positioned to support agile decision making at all levels of the organisation.
- Risks are managed to an acceptable level while enabling an agile and responsive operating environment.
- Internal audit activities identify opportunities to improve systems and processes while providing assurance to Earth Sciences NZ's management and Board that risks are being appropriately managed.

A SCHOOL OF SWEEP FLOAT IN THE SURGE ABOVE THE KELP AT BARREN ARCH AT THE POOR KNIGHTS ISLANDS MARINE RESERVE

PHOTO CREDIT: CRISPIN MIDDLETON

In 2026/27 we will complete the establishment of a single integrated Finance function and embed standardised financial reporting and transactional processes across the organisation. We will also complete a consistent financial reporting framework for the merged organisation, supported by standard monthly reporting packs for key science and functional management tiers, and clear visibility of financial performance to inform decision-making by the Board, management and other business leaders.

The financial integration of MetService following its acquisition as a subsidiary will also be a key focus. This includes establishing group accounting policies, defining consolidation and reporting processes, and ensuring MetService financial information can be incorporated into group reporting in a way that supports the chosen operating model.

FINANCIAL INFORMATION

6.0
FINANCIAL INFORMATION

The financial projections for Earth Sciences NZ reflect broadly flat or declining research revenue streams, resulting from expected continued fiscal constraint.

Modest increases in commercial revenue are anticipated, broadly reflecting inflation expectations, together with an increase to full-scale production volume of the Company's experimental recirculating aquaculture facility (RAS).

For 2026/27 a profit before tax of $18.5M is projected, with a gradual decline in subsequent years mainly reflecting both financing cost associated with the Future Property Programme and the depreciation of newly constructed assets as they come into service. Profit at the EBITDA level is projected in the $54–60M range during the period.

Revenue

In 2026/27 Earth Sciences NZ revenue is budgeted at $318.1M, up by $24.9M compared with the forecast for the 2025/26 year and $11.8M above the level contemplated by last year's Statement of Corporate Intent. The increase on the prior year forecast primarily reflects the rephasing of SSIF Platform revenue from 2025/26 to 2026/27, modest growth in commercial applied science revenue, and revenue related to the RAS.

We are projecting increases in revenue in each of the remaining two years of the Statement of Corporate Intent period. However, we assume that research funding will remain flat in 2027/28 and 2028/29, putting further pressure on Earth Sciences NZ's ability to conduct fundamental research aligned with the goals of the nation.

Operating expenditure

In 2026/27, operating expenses are budgeted at $264.4M, an increase of $11.4M compared with the 2025/26 forecast, reflecting the ramp-up of production from the RAS facility and higher subcontractor costs, primarily due to rephasing of work related to Endeavour programmes and to the Natural Hazards and Resilience Platform.

Beyond 2026/27, we have provided for cost increases broadly in line with inflation.

Balance sheet management

Earth Sciences NZ's science is capital intensive and requires an ongoing investment in scientific equipment if we are to deliver excellent science, secure revenue and be financially sustainable.

Investment has primarily been funded by reserves and operating cash flows. The Company also has a debt facility in place, the balance of which is forecast to be $6.5M at June 2026 (2% gearing) and peaking at $59.6M (16.3% gearing) during the period.

The Future Property Programme (FPP) is a key component of the capital expenditure programme, representing a multi-year investment in renewing and upgrading the property portfolio to maintain operational resilience and enable future revenue. FPP expenditure is forecast at approximately $140M over the three-year Statement of Corporate Intent period, alongside ongoing sustainment levels of spending on scientific equipment and other infrastructure of approximately $57M.

Cash flow

Earth Sciences NZ expects its operating cash flow to remain steady, with an EBITDA margin of about 18% throughout the Statement of Corporate Intent period, and EBITDA in a range of $54–60M. While Earth Sciences NZ is forecast to have debt financing of $6.5M at the end of 2025/26, this is projected to increase to $59.6M by the end of 2028/29 as the planned redevelopment of the Greta Point facility is undertaken.

Dividend

In view of the current operating environment, together with the Company's strategic capital investment requirements, no dividends are planned during the period of this SCI. The Earth Sciences NZ Board will continue to review this on an annual basis.

Return on equity

Earth Sciences NZ's return on equity is forecast to be 4.2% 2026/27. This is expected to decline slightly over the period to 3.1% in 2027/28 and 3.4% in 2028/29, as depreciation and interest costs increase due to strategic capital investments described above.

Risks

There is some forecasting uncertainty associated with Earth Sciences NZ's revenue expectations. The budget for 2026/27 and the subsequent years are shaped by the constraints of the current fiscal and wider economic environment. While constraints on central government spending in the short to medium term have been well signaled, the same pressures have emerged in all sectors of the market that Earth Sciences NZ serves, including regional and local government and the private sector. The financial assumptions in this document reflect an expectation of only modest increases in commercial revenue to mitigate the risk.

A significant amount of Earth Sciences NZ's revenue is secured through long-term fixed price contracts. This includes most of the MBIE research funding and significant components of MPI applied science work which together account for approximately $180M of revenue. Over time, the value of this funding has eroded because of inflation. In a 'normal' low inflation environment, Earth Sciences NZ has been able to respond to this through careful management of costs, and revenue growth elsewhere in the business. However, over the past five years, the CPI has increased by around 20%, effectively eroding combined MBIE and MPI revenue by $30M.

We further highlight that the Statement of Corporate Intent projections assume a continued year-on-year reduction in the number of MBIE-funded research days at sea for Tangaroa, as funding available for these continues to fail to increase in line with inflation as has been the case for a number of years.

The growing fuel crisis presents a risk to revenue, as it may impact our ability to deliver planned field operations and vessel activity, and therefore maintain expected utilisation levels. Management is closely monitoring the situation, including fuel availability, supply chain pressures, and any impacts on project delivery schedules, and is actively working with operational teams and clients to prioritise critical work and protect revenue where possible. However, given the external and evolving nature of the issue, there remains a degree of uncertainty, and it is largely a waiting game as the situation unfolds.

There are both liquidity and interest rate risks associated with the financing of Earth Sciences NZ's capital investment plans. Liquidity risk will be managed through continued close management of the Company's operating performance as well as by maintaining the availability of suitable debt facilities. Options to manage interest rate risk will be explored prior to entering into contractual commitments to undertake future debt-funded major capital investments.

Overall, we consider Earth Sciences NZ's financial planning to be realistic and are of the view that there is broadly equal downside risk and upside opportunity. We are confident that Earth Sciences NZ's plans remain robust in the near term to potential negative volatility, and we will actively monitor and respond to any emerging risks.

YEAR ENDING 30 JUNE	FORECAST 2025/26 $000	SCI 2026/27 $000	SCI 2027/28 $000	SCI 2028/29 $000
REVENUE				
Total revenue	293,253	318,135	318,296	327,533
Revenue growth	-3.5%	8.5%	0.1%	2.9%
OPERATING RESULTS				
Operating expenses	253,032	264,426	264,289	267,711
EBITDA	40,221	53,709	54,007	59,822
EBIT	9,721	21,281	17,851	22,655
Profit/(loss) before tax	6,731	18,548	14,074	16,826
Profit/(loss) after tax	4,846	14,409	11,043	12,516
EBITDA per FTE	39.31	52.29	52.79	58.47
Total assets	480,637	494,345	540,944	609,096
Total equity	326,887	341,296	352,339	364,855
Capital expenditure	40,466	51,776	81,524	70,127
Capital expenditure % to revenue	13.8%	16.3%	25.6%	21.4%
LIQUIDITY				
Current ratio	0.7	0.6	0.7	0.6
Quick ratio (Acid test)	0.6	0.5	0.4	0.4
Interest cover	49.6	120.4	34.9	20.5
PROFITABILITY				
Return on equity	1.5%	4.2%	3.1%	3.4%
Return on assets	1.1%	3.0%	2.1%	2.2%
Operating profit margin	13.7%	16.9%	17.0%	18.3%
EBIT margin	3.3%	6.7%	5.6%	6.9%
GROWTH/INVESTMENT				
Capital renewal	1.4	1.7	2.4	2.1
FINANCIAL STRENGTH				
Gearing	2.0%	2.8%	13.2%	16.3%
Equity ratio	68.0%	69.0%	65.1%	59.9%
Cash and short-term deposits	8,098	3,000	3,000	3,000
Financial Debt	6,500	9,722	46,499	59,561

OTHER INFORMATION REQUIRED BY THE CRI ACT 1992

7.0 OTHER INFORMATION REQUIRED BY THE CRI ACT 1992

Shareholder Consent for Significant Transactions

The Board will obtain prior written consent of Shareholding Ministers for any transaction (or series of interconnected transactions) involving full or partial acquisition, disposal, or modification of property (buildings, land and capital equipment) and other assets with a value equivalent to or greater than $10 million or 20% of the Company's total assets (prior to the transaction), whichever is the lesser.

The Board will obtain the prior written consent of Shareholding Ministers for any transaction (or series of interconnected transactions) with a value equivalent to or greater than $5 million or 30% of the Company's total assets (prior to the transaction) involving:

- The acquisition, disposal, or modification in a joint venture, partnership, or other similar association.
- The acquisition or disposal in full or in part of shares or interests in external companies, subsidiaries, and business units.
- Transactions that affect the Company's ownership of a subsidiary or a subsidiary's ownership of another entity.
- Other transactions that fall outside the scope of the definition of the Company's core business or may have a material effect on the Company's science capabilities.

The Board will advise the Shareholding Ministers in writing (in the Quarterly Report) before entering into any transaction involving a change in intellectual property ownership or control.

Accounting Policies

A summary of our Accounting Policies is included in our predecessor organisations' Annual Reports. These current (and previous) Annual Reports can be found via our external websites.

Ratio of Shareholders' Funds to Total Assets

The target ratio of 'shareholders' funds to total assets' is as follows:

	2026 Forecast	2027 Outlook	2028 Outlook	2029 Outlook
Target Ratio %	68.0%	69.0%	65.1%	59.9%

Shareholders' funds are defined as the sum of the 'share capital' and 'equity reserves' (otherwise called 'total equity'). Total assets are defined as the sum of the net book value of 'current' and 'non-current assets'.

This is as disclosed in the Company's balance sheet as per the Annual Report, prepared in accordance with the accounting policies adopted by the Board.

Commercial Value

Section 16(3) of the CRI Act requires the Earth Sciences NZ Group to furnish an estimate of the current commercial value of the Crown's investment.

The Board is satisfied that the net asset position (or shareholders' funds) as at 30 June 2025 was a fair and reasonable indication of the commercial value of the Group at that time. The aggregated net asset position as at 30 June 2025 as reported in accordance with Earth Sciences NZ's predecessor companies' accounting policies was $196.9 million.

Dividend Policy

Profit retention and dividend distribution will be determined from year to year by the Board. The policy's objective is to ensure that an appropriate level of funds is maintained in the company to sustain financial viability, whilst providing an adequate return to the shareholders. In considering this objective, the Board each year determines the level of surplus funds by reference to Earth Sciences NZ's:

- Medium- and long-term capital investment requirements (including equity investments).
- Ability to maintain and expand operational capability.
- Ability to repay debt (if any).
- Funding requirements for subsidiaries.
- Capacity to fund RV Tangaroa.
- Working capital requirements.
- Legislative requirements, for example, ensuring that Section 4 of the Companies Act 1993 (Solvency test) has been satisfied.
- Any dividend would be paid within two months of the financial year-end.

Activities Where Shareholder Compensation Would Be Required

The Board would look to seek compensation from the shareholders in the following circumstances:

Where the shareholders instruct Earth Sciences NZ to undertake activities or assume obligations that would result in a reduction of the company's profit or net realisable value.

Where the Board may consider undertaking strategic investments for the wider benefit of the New Zealand public, involving financial outlays beyond those incorporated within the company's Statement of Corporate Intent or financing capabilities.

No request for compensation is currently being sought from the shareholders. At this time no such investment has been identified, nor have any financial projections for such investment been included in Earth Sciences NZ's Statement of Corporate Intent 2026/27. In the longer-term, Earth Sciences NZ will be reviewing deep-sea marine capability and how investment in these national science infrastructure assets may be supported.

David Smol
Chair
25 June 2026

Paul Connell
Board Member
25 June 2026

KEY PERFORMANCE INDICATORS

INDICATOR	MEASURE (YEAR ENDING 30 JUNE)	TARGET 2026/27
Science quality	Citation impact of scientific publications	2.5
Research collaboration	Journal paper co-authorship with collaborators (%)	85%
Technology and knowledge transfer	Client reports per researcher FTE	1
Revenue generation	Revenue per FTE ($000) - gross	$309,732
	Revenue per FTE ($000) – net of subcontracting	$278,980
Industry collaboration	Private revenue and royalty revenue per FTE	$67,123
Commercialisation	IP transaction deals per 1,000 FTE researchers	>2
	Spinouts and start-ups per 1000 FTE researchers	1[1]
Operational Delivery	% of projects delivered on time	>90%
Health and Safety	Recordable injuries per 200,000 work hours (rolling 12-month average)	<3

Notes:
1. This is equivalent to one spin out or start-up every two-three years for Earth Sciences NZ.

TAHAROA LAKES KAIAUA (FRESH WATER MUSSEL) SURVEY
PHOTO CREDIT: STUART MACKAY

EARTH SCIENCES NZ INTERIM STATEMENT OF CORE PURPOSE

9.0

EARTH SCIENCES NZ INTERIM STATEMENT OF CORE PURPOSE

Purpose

To drive New Zealand's economic growth and wellbeing through increasing returns from the use of New Zealand's natural resources and environments, enhancing energy security, building resilience to natural hazards and increasing prosperity in a changing climate.

The CRI will aggressively pursue opportunities to lift innovation, commercial outcomes, and use of advanced technology to grow the national economy.

Outcomes

The CRI will fulfill its purpose through leadership in global science and innovation, the provision of research that benefits the economy, and the transfer of data, technology and knowledge in partnership with industry, government, Māori and Pacific partners to:

- Support future energy growth, sustainability and security through increased production, effective storage, and resilient distribution through geothermal, hydro, wind, solar, mineral and marine resources.
- Increase economic benefit from the development and diversification of aquatic and geologic resources, including aquaculture, fisheries and minerals.
- Support the economy through increased preparedness and resilience to natural hazards such as geological, space weather, and extreme weather and climate hazards.
- Develop new materials and technologies that improve energy efficiency and advance zero or low carbon energy use to contribute to economic growth.
- Increase social and economic benefits within environmental boundaries through improved management and stewardship of freshwater and marine resources and ecosystems and enhanced biosecurity.
- Adapt to and realise the economic opportunities of climate variability and change, and mitigation of the drivers of climate change.
- Accelerate Earth science and its application through the development and use of advanced technologies, such as space, environmental observation and analysis, biotechnology, engineering, nanotechnology, AI and supercomputing.
- Ensure key parts of the economy and society meets quality assurance, accreditation processes and regulatory compliance by providing measurement standards for New Zealand domestically and internationally.
- Build a more dynamic, effective and efficient Science, Innovation and Technology system for New Zealand by working collaboratively with other research organisations, including other CRIs and universities, and through enduring partnerships with international science organisations.

Scope of Operations

To achieve these outcomes, the New Zealand Institute for Earth Science will integrate physical, biological, and social scientific approaches to study New Zealand, Antarctica and the Southern Ocean, and the Pacific region in the following core research areas:

Earth System Observations and Processes	• Understanding geological, atmospheric, cryospheric, freshwater and oceanic processes, and their role in the climate system and hydrological cycle across temporal and spatial scales.
Natural Hazards	• Monitoring, risk management, forecasting and emergency response for geological, weather, climate and space hazards. • Multi-hazard risk and impact-based approaches across sectors to inform warnings and short to long term risk-based decision making.
Landscape Evolution and Mineral Resources	• Understanding and modelling of processes that shape New Zealand's landscape and influence land use. • Determining the distribution, scale, formation processes and nature of New Zealand's minerals and evaluating the impacts of extraction.
Energy	• Determining the distribution, scale and nature of energy resources (e.g., geothermal, hydrogen, minerals, hydro, wind, solar and marine generation), the impacts of their use and energy storage options.
Materials and Technologies for Energy Efficiency and security of supply	• Development of materials and technologies for efficient renewable energy production (e.g., hydrogen, geothermal, solar, and wind), reduced emissions, and improved carbon capture and storage.

Freshwater Resources and Environments	• Increased returns from the optimal and sustainable use of water resources from streams, rivers, lakes and groundwater. • Support freshwater environmental resilience, including in a variable and changing climate, through geological, physical and biological freshwater research.
Ocean Resources and Environments	• Support ocean resource use and environmental resilience, including in a variable and changing climate, through geological, chemical, physical, and biological oceanographic research. • Operation of the national deepwater and coastal research vessel fleet.
Climate and Weather Science, Monitoring, Forecasting and Risk	• Modelling and operational delivery of weather and climate forecasts and non-hazard impacts, based on land, ocean and space observations, for key sectors, including aviation and transport, primary production, tourism, infrastructure and energy, conservation and emergency response within New Zealand and the Pacific. • Development of decadal scale climate system forecasts, projections, key thresholds and tipping points to inform adaptation to climate change.
Carbon cycle and atmospheric change	• Support the management of atmospheric change through the measurement and monitoring of atmospheric constituents, quantifying the sources and sinks of greenhouse gases, and measurement of terrestrial and oceanic carbon cycling, including ocean acidification. • Development and verification of carbon sequestration technologies and carbon emission mitigation approaches.
Fisheries and Aquaculture	• Support fisheries management through the surveying, monitoring, modelling, assessment and differentiation of stocks, from the tropics to Antarctica. Mitigate impacts of fishing and advance ecosystem-based management approaches. • Development of sustainable sea-based aquaculture production, commercial scale land-based culture technologies and production, broodstock development and genetics, hatchery techniques and animal husbandry, with a focus on high value species.
Environmental Observations	• Maintain national environmental monitoring networks and development and engineering of sensor technologies and the collection, analysis and application of remote sensing data.
Supercomputing	• Operation of nationally advanced supercomputing capability, data storage, AI and cloud services, collaborating with REANNZ to provide the wider Science, Innovation and Technology system access to supercomputing.
Measurement Standards	• Ensure that New Zealand's units of measurement meet the international System of Units, enabling business to comply with regulations and maintain consumer confidence and trust.

The New Zealand Institute for Earth Science will collaborate with the other CRIs in the following areas:

Food Safety and Health	• Interfaces between food safety and human health, including foodborne disease and risk management, contaminants in drinking water, groundwater and freshwater systems, One Health approaches and cross-domain threats.
Natural Hazards and Risks	• Hazard impacts, multi-hazard approaches and adverse events across sectors and emergency management.
Aquaculture, Seafood and Fisheries	• Integrated aquatic ecosystems and sustainability and environmental aspects of production.
Climate & Weather	• Interfaces between environmental modelling, climate change, weather and climate forecasting and land-use impacts.
Biosecurity	• Cross domain and integrated approaches to biosecurity threats and biosystematics across environments, including pathogen detection, antimicrobial resistance monitoring, and biosafety through integrated One Health approaches.
Climate Change	• National mitigation, adaptation and resilience, including greenhouse gas emissions and the carbon cycle, impacts on biodiversity across domains, climate-health research environmental surveillance, and community resilience strategies.
Conservation, Biodiversity and Ecosystem Services	• Development of national biodiversity and conservation approaches and environmental management.
Soil, Freshwater and Nutrient Modelling	• Catchment management, water quality and environmental health, particularly in relation to rural and urban development.
Environmental Health and Risk Science	• Monitoring and risk assessment, as well as environmental reporting, across terrestrial, freshwater and marine environments, including chemical, biological, radiological and explosive threat detection, preparedness and response to protect population health and national security.
Technologies for Energy Efficiency and Security of Supply	• Collaboration on energy options, materials and infrastructure.
Social Science	• Integrated approaches to social science, community engagement and policy development, bridging biophysical and social science.
Collections and Databases	• Biosystematics, data curation, data sharing, and infrastructure.
Supercomputing and Advanced Technologies	• Digital infrastructure and data analytics including AI. • A system-wide approach to development and use of advanced technologies, including via an Advanced Technology PRO.
Vision Mātauranga	• Enabling the innovation potential of Māori knowledge, resources and people.
Building an effective SI&T System	• Approaches to knowledge transfer, commercialisation capability and infrastructure development.

DIRECTORY

Board of Directors

David Smol (Chair)
Mary-Anne Macleod (Deputy Chair)
Dr Anne Barnett
Professor Chris Bumby
Paul Connell
Peter Landon-Lane
Bruce Parkes
Paul White

Chief Executive

James Palmer

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www.gns.cri.nz