Te Tauāki Koronga Mahi

Statement of Corporate Intent

2024–2029

ESR
Science for Communities
He Pūtaiao, He Tāngata

Cover photo: Using a handheld genome sequencer, ESR health laboratory. Source: ESR.

Presented to the House of Representatives pursuant to section 16 of the Crown Research Institutes Act 1992.

The Institute of Environmental Science and Research Limited (ESR) is a Crown research institute. It was incorporated in June 1992 and is wholly owned by the New Zealand Government. The two shareholding Ministers appoint a Board of Directors to govern the organisation. ESR has science facilities in Auckland, Wellington (Porirua and Wallaceville) and Christchurch.

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Protecting and enhancing the wellbeing of people living in New Zealand

Te tiaki me te whakarākei i te oranga o te hunga e noho ana i Aotearoa nei

Forensic anaylsis of blood pattern. Source: ESR.

The Institute of Environmental Science and Research (ESR) drives science leadership in New Zealand public health, forensics, the effects of the environment and biosecurity on human health.

We aim to enhance community wellbeing and resilience with this science. We collaborate to access the best resources and knowledge to tackle these complex issues effectively. This interdisciplinary science approach protects and enhances the wellbeing of people living in New Zealand.

Our vision is enhanced wellbeing for New Zealanders through innovating and applying our diagnostic and analytic expertise.

As a science leader, we develop solutions that provide maximum impacts for communities, including valuing mātauranga Māori. We aspire to be acknowledged as a place where Māori-led and co-designed research generates lasting partnerships and lifts impact with and for Māori.

ESR is a leader in **infectious disease surveillance** and developing solutions to protect the people of New Zealand. We strengthen New Zealand's pandemic and infectious disease preparedness and contribution to global pandemic readiness.

We keep at the forefront of rapid international developments in **genomics science**. This benefits the people and economy of New Zealand in the areas of food genomics, forensic analysis, antimicrobial resistance and infectious disease.

We provide **cutting-edge forensic science analysis and toolkits** to help identify and remove drug harm from New Zealand communities and improve justice outcomes.

We provide the research that detects and **eliminates contamination of food**, while ensuring it is safe to eat and meets global market standards.

We provide the analysis and research to ensure fresh water and groundwater **are safe to drink, while ensuring the health and vitality of the environment in the process**.

We provide the expertise that supports the **safe and secure use of ionising radiation**.

We provide **thought leadership** to ensure our science has the right impact for communities.

ESR's applied expertise lies in detecting, connecting and protecting risks to human health. This includes our strength to help foresee future challenges and potential solutions, and to scale up capabilities across public health, forensic and environmental science as it relates to human health. Our approach recognises the value of **recombinant**, **cross-sectoral and transdisciplinary skills**, and their importance in the development of comprehensive solutions.

ESR's future-focused approach, successful commercial and academic partnerships, and internationally recognised scientists enhance its capability to meet New Zealand's future challenges.

We are ESR
Science for Communities
He Pūtaiao, He Tāngata

Discovering science at the I Love Local expo in Porirua. Source: ESR.

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Te Tirohanga a te Heamana me te Tumu Whakarae

We are pleased to present ESR's Statement of Corporate Intent detailing its strategy, initiatives and performance measures for the upcoming year. It reflects our updated strategic approach and encapsulates the research efforts and outcomes of our work, while honouring Te Tiriti o Waitangi.

Expertise and collaboration

ESR is dedicated to the health, wellbeing and safety of New Zealand communities and remains committed to collaborating with stakeholders through the science, technology and innovation system. As a result, we are striving to find optimal solutions to the challenges faced by our customers, partners, government, iwi and society at large.

While our future holds challenges, our expertise and collaborative science leadership will be vital to addressing the emerging national and international threats to health and community wellbeing.

Acknowledging the significant challenges currently impacting New Zealand

The challenges facing the country are multi-faceted – economic, social, cultural, health, justice and climate-related, and we intend to use our research expertise to assist the government address these issues and improve community impacts. We will do this through using more innovative practices and utilising our diagnostic and analytic expertise to create effective solutions that empower foresight. This serves to instil confidence and optimism in the work we deliver, allowing us to continue to plan and prepare effectively for the future.

Maintaining our resilience, creativity, and adaptability is essential for navigating through these periods of change and opportunity.

Growing revenue from commercialising our intellectual assets

We recognise the importance of diversifying and building stronger revenue streams for the years ahead. While exploring avenues for new business funding, we will ensure the quality, security and timeliness of our scientific services remain uncompromised.

ESR is actively seeking to capitalise on commercial opportunities to enhance its financial stability and contribute to the economic prosperity of New Zealand.

One example of this is our subsidiary STRmix™. STRmix™ is already delivering significant financial returns for ESR and showcases our pioneering expertise in DNA analysis worldwide. Alongside STRmix™, we are working on expanding Lumi™, ESR's handheld drug detection device, developed in collaboration with the New Zealand Police. This innovative technology is already revolutionising community policing efforts and helping to prevent drug-related harm within New Zealand communities.

Lumi™ is undergoing trials with the Department of Corrections and New Zealand Customs Service, and ESR is seeking to grow its international commercial presence.

Delivering more impact for the future

The needs of our customers and partners remain a priority. Our collaborations with iwi, government agencies, universities, research centres and industry partners are important to future-proofing public health, supporting the economy and improving community wellbeing outcomes. This work is essential to lessening the impact of infectious diseases, environmental contamination and justice inequalities.

Shellfish gathering in Porirua Harbour. Source: ESR.

As a result, we remain focused on delivering the right science for detection, protection and security. This approach requires high-level systems intelligence and evaluation capability, supported by strong data analysis. By using high-performance computing, ESR is strengthening its data science capabilities allowing better use of business intelligence to highlight areas of attention.

We are actively engaging with other Crown research institutes and core agencies to increase collaboration and alignment, enabling the accuracy and availability of datasets. To ensure we are following best practice, we actively apply the New Zealand Data and Information Management Principles and the Privacy Act 2020 to mitigate ESR's risk.

Investing in our people

Our scientists and leaders are recognised for their skills, innovative thinking and collaborative spirit. Our people are instrumental in delivering economic changes and wellbeing improvements for New Zealand. We are dedicated to nurturing our workforce, through fostering the growth and development of our people. ESR is committed to empowering its people to be part of a leading scientific institution that is adaptable and responsive.

Our aspiration is to cultivate an organisation with a diverse workforce that is representative of the changing face of New Zealand. We will do this by creating an engaging and empowered workplace that offers meaningful opportunities for professional growth and development. Our aim is to create an environment where individuals find fulfilment in their work and where purpose and contribution are recognised and rewarded. We are promoting wider diversity, equity and inclusion, by removing barriers to engagement and participation.

Partnering with Te Tiriti o Waitangi, Māori leadership and mātauranga Māori

We are continuing our journey to integrate Te Tiriti principles and approaches into our organisational framework. We acknowledge we are still at the start of this process.

Our aim is to ensure our science capabilities bring tangible and holistic benefits for Māori, iwi, hapū and communities. We are actively working alongside with Māori, government entities, health sector stakeholders and justice agencies to explore how we can use our expertise to address health and justice disparities. We will continue to:

- cultivate enduring partnerships with iwi through Māori-led approaches and solutions across all our impact areas, including infectious diseases, Māori data sovereignty, DNA usage, and remediation of water and food contamination.
- create the pathways for mātauranga Māori expertise and Māori scientists and researchers to flourish, ensuring the research we undertake better delivers for New Zealand.

We're committed to ensuring our science capabilities are guided by Māori-led aspirations. By centring Māori leadership, we aim to create mutually beneficial outcomes and strengthen our partnership with Māori.

Our commitment to meeting future challenges

By ensuring New Zealand is ready to respond to significant events, such as a major cyclone or global pandemic, we will continue to grow our use of tools such as genomics, our surveillance ability and to bolster capabilities in data science and artificial intelligence. Given the pace of change, ESR will be more solution-focused, to accelerate response and delivery, while broadening its interdisciplinary research efforts.

This interdisciplinary approach contributes to the development of tools such as digital twins that, when combined with the growing discipline of disaster microbiology, enable improved analysis and response to the environmental impacts of climate-sensitive infectious diseases. Our use of digital twins modelling is also a growing area of interest in relation to water potability, both in New Zealand and across the Pacific.

The use of technology is a cornerstone of our institutional framework. With prudent investment in essential e-infrastructure, ESR's capability in developing and deploying data visualisation tools and dashboards is increased, allowing real-time surveillance and integrated decision-making capabilities.

Expanding our innovation and commercialisation approach is essential for forging new economic pathways. Through our commercial research efforts and stakeholder partnerships, we aim to build on the successes of ESR's pioneering products, Lumi™ and STRmix™.

As challenges continue to evolve on a global scale, we remain focused on ESR being a trusted and customer-centric organisation. We extend our gratitude to our iwi and mana whenua partners, government agencies, universities, commercial collaborators, and Ministers for their dedication and involvement.

Together, we will bring to life the strategy and aspirations outlined in this Statement of Corporate Intent.

Professor Sarah Young
Board Chair

Peter Lennox
Chief Executive Officer

Section 1:
Our Strategic Science
Tā mātou pūtaiao rautaki

DNA strand. Source: iStock.com

Magnified diagram of *campylobacter* bacteria. Source: iStock.com

Our strategic science
Tā mātou pūtaiao rautaki

Why ESR's science matters

The Institute of Environmental Science and Research (ESR) is the New Zealand government research agency dedicated to the health, wellbeing and safety of people living in New Zealand. We develop and apply world-leading science to monitor disease, test food and products, safeguard New Zealand's water, support the justice sector and more.

We operate throughout New Zealand, the Pacific and across the world, providing a range of science services to support:

- public health, including disease surveillance, pandemic preparedness, antimicrobial resistance and monitoring of climate change on the microbiome[1]
- provision of forensic science to the justice sector, including scene examinations, DNA analysis and toxicology expertise
- food and product safety testing to protect New Zealanders from food-borne illnesses, while assessing biosecurity risks and reviewing import health standards for food products entering the country
- safeguarding of water and the environment and ensure New Zealand's water management systems promote healthy communities
- radiation science, including provision of specialist advice, training and monitoring services to manage risks and impacts for New Zealand.

These services are funded through major contracts with the Ministry of Health, New Zealand Police, Ministry of Foreign Affairs and Trade, Ministry for Primary Industries and others.

ESR provides essential scientific research and support to these agencies, allowing rapid and efficient responses to local, national and international events. ESR played a critical role in responding to the COVID-19 pandemic, and more recent examples include working with health agencies to prevent the spread of measles, responding to the Queenstown cryptosporidiosis outbreak, and continued monitoring of drugs and COVID-19 in wastewater.

We are building engagement with New Zealand communities and shaping our organisational capability and systems, to allow for greater participation and

1 Microbiome is defined as the collection of bacteria, fungi, viruses and their genes that naturally live on our bodies and inside us. It is an essential interface between the body and the environment and can affect health and responses to environmental changes.

partnership. ESR's science capabilities enable support to iwi-led research to develop and protect their taonga and data, embodying the principles of manaakitanga and kotahitanga. By prioritising partnership with Māori and integrating mātauranga Māori, we aim to create meaningful impact.

ESR is also extending science capabilities in health-related climate-change research by taking a 'disaster microbiology' approach. This entails examining how both natural and man-made disasters (for example, a cyclone, earthquake or oil spill) can affect the microbiome and the possible impacts on people and ecosystems after an event. This can be in the form of assessing water quality and monitoring for exposure to infectious diseases, such as leptospirosis and cholera, along with adapting to detect shifts prompted by climate change, such as the emergence of vector-borne illnesses.

ESR's forensic expertise continues to evolve at the leading edge of forensic science and informs forensic inquiry, systems and institutions both in New Zealand and internationally. Our expertise supports the New Zealand Police with wide ranging forensic and drug investigative science including the Forensic Investigative Genetic Genealogy pilot. We are also assisting Forensic Science Queensland with specialised case work and technical advice post their Commission of Inquiry in 2022. Our forensic biology team peer reviews good practice for organisations such as the Australian Federal Police, and we undertake forensic investigative training for organisations such as the New Zealand Defence Force Joint Military Police Unit.

Our radiation experts work with both the private and public sectors to provide advice, services and research capability on public, occupational and medical exposure to radiation. ESR also provides radiation safety training, performance assessments of radiation protection equipment, and measurement of naturally occurring low-level radiation and radioactivity.

We are proactively developing and deepening innovation and commercialisation pipelines essential for achieving new commercial pathways, supported by robust commercial infrastructure. This allows us to deliver more impactful outcomes for communities nationally and internationally.

We have a role in shaping the future workforce by actively engaging in training the scientists of tomorrow. We are supporting the development and capability of our scientists, while encouraging students and new graduates, by providing research opportunities. This includes supervising students, taking on interns and participating in educational initiatives to nurture the next generation of scientific talent.

By evolving our capabilities and innovating our science, we will deliver better outcomes for our impact areas. The development of capability for increased use of augmented intelligence applications and improving the uptake of data science are two areas of focus. In the longer term, we expect our investment in these and other fields to deliver innovative product solutions with potential commercial opportunities.

Science, innovation and technology system

Science, innovation and technology are critically important for economic productivity. The Government has announced reviews of the science system that will potentially affect the current form of all Crown research institutes (CRIs) including ESR. The Science Advisory Group is focusing on institutions, funding, advanced technology and commercialisation, workforce and connectedness with government as a commissioner, funder and user of science. This focus is one that ESR supports to ensure the best science research and service outcomes for New Zealand.

Wastewater laboratory, Kenepuru Science Centre. Source: ESR.

The University Advisory Group is also focusing on important areas. It is considering the effectiveness of the current university system, including the Performance-Based Research Fund, ways to best achieve equity for all learners, including Māori, Pasifika and disadvantaged learners, and the role of international education.

As an early collaborator with the Pūhoro STEMM Academy, ESR already actively participates in achieving equity for all learners, in particular to grow and advance Māori science leadership and capability. In addition, we partner with universities to train postgraduate students and help develop the workforce of the future.

As part of the review process, we look to ensure the unique science research, surveillance and service delivery that we undertake for health emergency preparedness and response and our forensic science research and service for the justice sector are optimised. This will let us support and deliver public services that are efficient, effective and responsive to all who need and use them.

Responding to the current operating environment

Economic resilience

Our skilled workforce drives innovation and knowledge creation, anticipating the challenges and opportunities that may arise. We focus on adaptability, resilience and forward thinking.

By increasing its capabilities in whole genome pathogen sequencing and data management across environmental health sectors, ESR is poised to address future pandemics and climate-related issues. This readiness is essential for New Zealand's preparedness against outbreaks such as measles, highly pathogenic avian influenza and respiratory syncytial virus. By bolstering our surveillance and prediction capabilities, we can mitigate the potential impact on New Zealand's health-care services and the economy.

Managing the impacts of water quality on human health

ESR's water scientists have a vital role in safeguarding New Zealand's drinking water, groundwater, recreational water and wastewater from pathogens and contaminants. They detect and manage risks and provide essential guidance to health authorities, local and central government, industry and communities.

We prioritise solving the impacts of water contamination on communities, by providing advisory services on drinking water infrastructure and management in New Zealand and across the Pacific.

After the Cyclone Gabrielle-induced floods in February 2023, we responded to requests from iwi and local councils in Gisborne to test sites affected by floodwaters for contamination, such as faecal indicators and heavy metals. This testing provided crucial data for understanding silt contamination, assessing public health risks, and determining the suitability of silt for agricultural use.

Water testing at Barkers Creek. Source: ESR.

In early 2024, we launched a new website, making ESR's research outputs, dashboards and services much more accessible. This initiative streamlines public access to health intelligence data, enhancing information dissemination and decision-making processes.

Supporting Police to reduce crime

ESR is the sole provider of critical forensic services to the New Zealand Police and works closely with the New Zealand Customs Service on illicit substance screening. We have a significant role in reducing crime, by supporting law enforcement efforts with our expertise and collaborative initiatives, both in New Zealand and with our regional neighbours, the Australian Federal Police, Queensland Police and the Tasmanian Police.

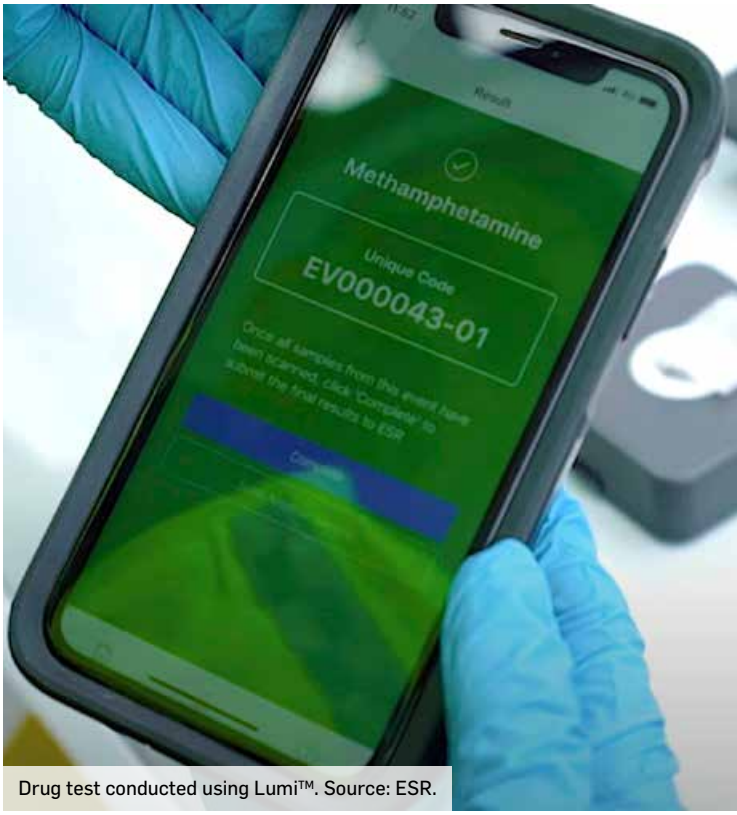
Working with the New Zealand Police, ESR is dedicated to advancing forensic capabilities by conducting research and developing innovative technologies. These efforts aim to stay ahead of evolving criminal methods and to enhance investigative techniques.

Improving public health

ESR provides integrated health services to support identification, prevention and control of communicable diseases and other significant emerging disease threats. The services include:

- population monitoring based on disease notifications, testing and surveys
- early warning systems for the health sector and communities
- outbreak and emergency response and pandemic preparedness
- robust, timely evidence and expert technical advice to support public health planning
- health information systems and services for data acquisition, management, integration and enablement
- specialist diagnostic national lead laboratory services
- services that improve, promote and protect environmental public health.

Each service draws on the inputs of multiple data sources, including laboratory testing, data interpretation, analysis and contextualisation of results, to support and inform public health planning and response.



Drug test conducted using Lumi™. Source: ESR.

ESR's pandemic response and subsequent development in health data and digital areas represent significant growth and a leap forward in New Zealand's public health information systems and digital health infrastructure. These developments have not only addressed immediate public health needs but also laid the groundwork for a more resilient and innovative health sector.

Fiscal discipline

ESR's revenue relies primarily on Crown funding, to undertake its public-interest science research and delivery. This is done through grant funding and service-level contracts. To deliver our work, we continually seek to elevate our performance through strategic partnerships and investments.

We proactively identify and capitalise on commercial opportunities to improve financial resilience of ESR and bring economic benefit to New Zealand.

Our goal is to ensure financial sustainability and to have the flexibility to pursue our strategic objectives while also managing risk responsibly. ESR's investment in future-focused research programmes aims to align with the private sector, utilising a commercial approach to augment business operations and funding options.

Partnering for success

We continue to address the needs of partners and ensure the expertise of all parties is used to deliver solutions that meet or exceed expectations. We do this through actions such as:

- providing world-leading research expertise and knowledge
- investing in national and international accredited laboratories for forensics and radiation analysis
- developing specialist research platforms to bring the right expertise together and build stronger research infrastructure.

Ongoing, strong relationship management forms a crucial part of ESR's current and future work to build more collaborative programmes that benefit New Zealand communities and encourage the exploration of commercial opportunities.

An example of how ESR manages its relationships is our participation the SHIVERS research programme. SHIVERS is an international programme led by the Centers of Excellence for Influenza Research and Response (CEIRR) Network.

The CEIRR Network is made up of seven United States-based centres, with each centre supporting multiple research projects both domestically and globally. ESR is part of the St Jude Children's Research Hospital Cluster (SJCEIRR), which is made up of seven international sites including research groups from Hong Kong, Singapore, Chile, Colombia, Egypt/Lebanon and Israel.

Being part of this diverse research pool is beneficial for ESR on a number of levels. It enables our researchers to grow our international influence by participating and engaging with other related experts, while also providing access to funding to the value of approximately $US33.9 million over seven years.

Who we partner with

We constantly work to lift our performance through investment and strategic partnerships to deliver improved outcomes for New Zealanders. Working in partnership with like-minded organisations helps us to deliver long-term, sustainable solutions to safeguard the health and wellbeing of the people we serve. We actively seek opportunities to engage with government agencies, CRIs, iwi, tertiary institutions and the private sector.

Our main relationships include:

- government departments and agencies, in particular:
  - Ministry of Business Innovation and Employment
  - Ministry for the Environment
  - Ministry of Foreign Affairs and Trade
  - Ministry of Health and Health New Zealand[2]
  - Ministry for Primary Industries
  - New Zealand Customs Service
  - New Zealand Police[3]
- other CRIs:
  - AgResearch
  - Callaghan Innovation
  - GNS Science
  - Manaaki Whenua – Landcare Research
  - National Institute of Water and Atmospheric Research
  - Plant and Food Research
  - Scion
- universities, including local and international institutions
- iwi and pan-Māori organisations and mātauranga Māori experts
  - Pūhoro STEMM Academy
- local government, academic and research institutions and communities:
  - territorial authorities
  - non-governmental organisations and not-for-profit organisations
- international government agencies, research organisations and universities, such as:
  - Food and Agriculture Organization
  - Forensic Science South Australia
  - International Atomic Energy Agency
  - National Institutes of Health
  - National Institute of Justice
  - St Jude Children's Research Hospital
  - United States Centers for Disease Control and Prevention
  - World Health Organization.

2 Provide critical public health surveillance infrastructure and systems.

3 ESR supports police through the provision of forensic services that supports and informs investigations, resolutions and justice outcomes.

Wastewater sample. Source: ESR.

Testing in ESR's food chemistry laboratory. Source: ESR.

Our strategic approach
Tā mātou aronga rautaki

Our 'Strategy on a Page' outlines our approach to successfully deliver on the outcomes in our Statement of Core Purpose, focusing on our primary role in the most efficient and effective way.

The strategy has the following main elements:

- ESR's **vision** and **purpose**
- **domain outcomes** (the necessary requisite domains of organisational performance success over the medium to long term)
- **strategic focus areas** (what we will focus on in the short-to-medium term to deliver on our domain outcomes)
- our **values**.

ESR – STRATEGY ON A PAGE

Treaty of Waitangi
Enabling Te Tiriti, Māori leadership and mātauranga Māori

Vision

Enhanced well-being for New Zealanders through innovating and applying our diagnostic and analytic expertise

Purpose

ESR protects and enhances the well-being of people living in New Zealand.

Domains Outcomes (5-8 years)

Science for innovation
Developing new and innovative diagnostic tools

Science for detection, protection and security
Surveillance and technology for detecting infectious disease, pathogens in food and water, forensics and drug detection

Partnerships for stronger science
We are a trusted partner and work productively across the sector to accelerate and communicate our science for Aotearoa New Zealand

Science for sustainable health
We provide solutions and prepare New Zealand for resilience to future health and wellbeing challenges

Scientists of the future
Developing and supporting our current and future scientists to advance their capabilities and build an agile, collaborative and adaptable workforce

Strategic Focus Areas (1-3 years)

- To deliver greater impact with and for Māori and be a leading Te Tiriti-partnered CRI
  Impact: Increased Māori partnership, participation and leadership
- Public health emergency preparedness and response
  Impact: Reduced mortality and impact on the health system from disease and contamination
- Climate change – health impacts
  Impact: Informed intelligence to reduce the impact of climate change on human health
- New technology impacts especially AI and data science
  Impact: Informed technology uptake and use to improve intervention decision making
- Building partnerships both international and domestic
  Impact: Enhanced aligned science capability to deliver innovative solutions with global reach
- Diversified and stronger revenue streams
  Impact: Diversified revenue sources on commercial terms that ensure financial profitability
- Accelerate workforce development and opportunities
  Impact: A strong capable workforce that enables ESR to thrive and prosper

Values

ESR's Enteric Reference Laboratory, Wallaceville. Source: ESR.

Delivering our strategy

Ko te whakatinana i tā mātau rautaki

Our domain outcomes

Science for innovation – developing new and innovative diagnostic tools.

Leverage scientific research and innovation to create cutting-edge diagnostic instruments and methodologies. Within this domain, ESR aims to pioneer advancements in diagnostic technology, encompassing scientific disciplines such as **molecular diagnostic assays**, **aptamer-based detection systems**, **3D microfluidic cell culture** and **data analytics**. The strategic goal is to develop diagnostic tools that are not only accurate and reliable but innovative, addressing unmet needs in our domains of work and pushing the boundaries of what is currently possible.

Science for detection, protection and security – surveillance and technology for detecting infectious disease, pathogens in food and water, forensics and drug detection.

Leverage scientific expertise and technological innovations to address complex challenges related to detection, protection and security in ESR's core areas of health, forensics, food safety and water quality. This involves the use of novel approaches in **molecular diagnostics**, **detection systems**, **data science** and **surveillance**, which safeguard communities through timely response to events and ensure the safety of critical resources such as food and water.

Partnerships for stronger science – we are a trusted partner and work productively across the sector to accelerate and communicate our science for New Zealand.

Position ESR as a trusted partner and work collaboratively with stakeholders to accelerate the pace of scientific advancements by **leveraging partnerships** to address pressing issues and contribute to New Zealand's economic, social and environmental wellbeing. Through collaborative efforts, ESR seeks **to generate knowledge**, **innovation** and **evidence-based solutions** to help build a resilient and adaptable research system capable of effectively addressing current and future challenges.

Science for sustainable health – we provide solutions and prepare New Zealand for resilience to future health and wellbeing challenges.

Conduct research and develop solutions that address the health challenges facing New Zealand. ESR aims to **identify and mitigate environmental health risks**, enhance disease surveillance, and use science and innovation to help build a healthier, more resilient and sustainable future for New Zealand, ensuring the wellbeing of current and future generations.

Scientists of the future – developing and supporting our current and future scientists to advance their capabilities and build an agile, collaborative, and adaptable workforce.

Build a talented, motivated and adaptable scientific workforce capable of driving innovation, advancing knowledge and addressing the evolving needs and challenges of society. ESR actively invests in encouraging and developing the next generation of scientists and improving equity for all learners. As an early collaborator with the Pūhoro STEMM Academy we contribute to the growth and advancement of Māori science leadership and capability. We partner with universities to train post graduate students and help develop the workforce of the future. Through continuous support, development and collaboration, ESR aims to **empower its scientists by harnessing diverse perspectives and expertise to tackle complex challenges** effectively and make meaningful contributions to scientific research and discovery.

Strategic focus areas

To ensure effective delivery of these domain outcomes, ESR has identified six main focus areas and one overarching area for the next one to three years.

1. Public health emergency preparedness and response

Provide thought leadership, capability and science excellence to ensure long-term sustainable and resilient readiness and response systems for infectious disease, food and ionised radiation safety and impacts of the environment on human health.

Activities to support this focus area include:

- advancing our position as a centre of excellence for surveillance and digital and data-informed foresight and ensuring cross-sector understanding of ESR's capability
- aligning disease intelligence and surveillance with the laboratory system, to sustain New Zealand's ability to respond to potential threats, quickly and effectively
- providing technical expertise to support the safe and secure use of ionising radiation
- co-hosting Te Niwha (the Infectious Diseases Research Platform) with the University of Otago, to take an integrated, holistic approach into researching infectious diseases and health responses
- monitoring water quality, including quantitative microbial risk assessment, to assess the risk of recreational water use and to understand the association between pathogens and indicators; supporting Pacific countries with health and water quality; researching the impacts of land use on groundwater quality and the removal of nitrate from shallow groundwater using enhanced denitrification.

2. Climate change – health impacts

Develop the capability and systems to inform the future impact of climate change on drinking water aquifers, types and strains of infectious disease, and transmissible animal disease, to mitigate the impacts on human health.

Activities to support this focus area include:

- developing strategy, capability and differentiation of ESR, alignment with international partnerships, building on surveillance expertise to address emerging health threats from climate change
- using digital twins modelling to generate scenarios of the impact of sea level rise on freshwater aquifers in the Pacific.

ESR wastewater surveillance data. Source: ESR.

3. New technology impacts especially artificial intelligence and data science

Identify, develop and use cutting-edge technology applications and tools to create innovative solutions for communities. Develop the capability for increased use of augmented intelligence applications and improve the uptake of data science to provide intelligence analysis to support current and future-focused decision-making.

Activities to support this focus area include:

- advancing data science insights, services and capacity, drawing on capability across ESR, strengthening delivery across science and research areas, and progressing partnership, consultancy and commercialisation opportunities
- expanding our forensic capability to extract eDNA from mixed biological samples
- research on the manufacturing and ballistic capability of 3D printed firearms
- growing a pipeline of commercial products based on current research under way in emerging technologies such as aptamers and advanced cellular systems.

4. Building partnerships both international and domestic

Build strongly aligned domestic and international partnerships that open professional pathways, strengthen science capabilities and capacity and enhance ESR's reputation. We build partnerships for stronger science.

STRmix™. Source: ESR.

Activities to support this focus area include:

- exploring opportunities for collaboration with the justice sector internationally
- boosting our relationships with the Joint New Zealand Police–ESR Strategic Governance Group to enhance co-design and explore opportunities such as the use of aptamers
- supporting the Government to meet its international obligations under various treaties and conventions
- helping with the ongoing development of radiation safety, security and emergency preparedness within the Caribbean, South-East Asia and various Pacific Island states
- building our research and science future connectedness with universities by developing memorandums of understanding with the Universities of Auckland, Waikato, Otago and Wellington.
- exploring opportunities with like-minded institutions, such as the Peter Doherty Institute for Infection and Immunity in Melbourne, Australia.

5. Diversified and stronger revenue streams

Being financially sustainable is a critical area of focus. Ensure our core government service contracts deliver the desired rate of return and explore opportunities for new research funding. Actively build a portfolio of private sector and local community clients that diversifies our revenue sources and builds sustainable financial performance. Develop and deepen our innovation and commercialisation pipelines to increase commercial product development.

Activities to support this focus area include:

- negotiating service-level contracts with our partners on a fully costed basis
- exploring new opportunities for revenue with the private and local government sectors
- expanding our Lumi™ investment to further strengthen and shape our commercialisation pathways
- reviewing adjacent software market opportunities based on our STRmix™ products.

6. Accelerate workforce development and opportunities

Develop promotion practices and formal career paths to support career development and workforce retention. Build a workforce that is agile, collaborative and adaptable, by creating an environment that is rewarding

Drug lab testing at Mount Albert Science Centre. Source: ESR.

and valued, and, as part of the science training system, help develop the workforce of the future.

Activities to support this focus area include:

- accelerating workforce development by determining our aspirational culture and desired capabilities based on future science, partnership excellence and innovation needs
- undertaking the actions outlined in ESR's Kia Toipoto Action Plan
- supporting the Early Career Researchers group to develop a community within ESR for those at the beginning of their careers
- increasing our focus on developing competent and confident leaders
- deepening student and research collaboration with Pūhoro STEMM academy and universities to build the scientists of the future.

Overarching strategic focus area

ESR's goal is to ensure its practices honour and acknowledge Te Tiriti o Waitangi. We acknowledge the disparities faced by Māori in the areas where our scientific work is applied. Our ambition is for every facet of our organisational capability and capacity to foster authentic partnerships, aimed at delivering meaningful outcomes for Māori.

To deliver greater impact with and for Māori and be a leading Tiriti-partnered CRI

ESR is dedicated to strengthening its organisational capability and systems to encourage greater partnerships with Māori. This means acknowledging and actively equipping ESR staff with the tools, skills, and understanding. Prioritising Māori thought leadership enables greater impact and outcomes.

Work to support this focus area includes:

- developing and applying Māori data sovereignty principles to all data generated, honouring the data as taonga and allowing us to build sustainable relationships to meet the needs of iwi
- providing the science capabilities to iwi-led research through our He Wai Māpuna and outreach programmes
- refreshing our Māori impact strategy, *He Putaiao, He Tangata,* to lift our cultural capability and become a research partner of choice to Māori.

Section 2:
Our performance story

Tā mātou kōrero mō
te whakatutukitanga

Bacterial culture of *Streptococcus pneumoniae*. Source: ESR.

Source: iStock.com

Our system level performance

Tā mātou whakatutukitanga i te taumata o te pūnaha

Across the science, technology and innovation system, all CRIs are monitored by a common set of performance measures. These measures are intended to provide consistency across all the CRIs.

The current set of system-level metrics is noted in the table below.

Indicator	Measure	Reporting frequency
End-user collaboration	Revenue per full-time equivalent (FTE) from commercial sources	Quarterly
Research collaboration	Publications with collaborators	Quarterly
Technology and knowledge transfer	Commercial reports per scientist FTE	Quarterly
Science quality	Impact of scientific publications	Annually
Financial indicators	Revenue per FTE	Quarterly

At the end of each quarter, ESR reports the results of each measure to the Ministry of Business, Innovation and Employment, which then presents the report to ESR's shareholding ministers.

Core System performance measures

Performance measure	Purpose	FY23 Actual	FY24 Forecast	FY25 Target
End-user collaboration: Revenue per full-time employee (FTE) from commercial sources	Domestic and International commercial revenue targets for end-user collaboration (revenue per FTE from commercial sources) and the knowledge exchange indicator (commercial reports per FTE) reflect commercial research activity.	$173,813	$165,000	$179,000
Financial indicators: Revenue per FTE	Amount of revenue per FTE.	$219,900	$222,000	$236,000
Research collaboration: Publications with collaborators	These refer to publications prepared in collaboration with authors at other New Zealand institutes and/or international authors.	81	≥85	82
Technology and knowledge transfer: Commercial reports per scientists FTE	Technology transfer refers to the process of conveying results stemming from scientific and technological research to the marketplace along with associated skills and procedures. It is an intrinsic part of the technological innovation process.	0.18	≥0.39	≥0.39
Science quality: Impact of science publications	Impact of science publications (measured using Web of Science database citations for the previous calendar year).	4.5	4.5	4.5

**Calculated for a calendar year, although reported as of 30 June 2025, this result will be calculated for a calendar year (1 January to 31 December 2024).*

If ESR anticipates that it will not achieve its performance targets, the Board will provide early advice to shareholding Ministers. This advice will include details of the reason for the expected shortfall and the remedial actions being put in place to remedy the situation.

Radiation testing. Source: Dean Mackenzie Photography.

Testing for methamphetamine using Lumi™. Source: ESR.

Our operational performance
Tā mātou whakatutukitanga ā-mahi

ESR's work programme key performance indicators (KPIs) are aligned with its strategic focus areas and the specific impacts it is seeking to achieve. The KPIs provide evidence of ESR's strategic and operational work programme, documenting its expected performance on an annual level.

To ensure we are on track during the year, we will complete quarterly monitoring of the KPIs and report both to the Ministry of Business, Innovation and Employment and the shareholding Ministers. The table below lists the metrics we will be monitoring and reporting on for 2024 to 2029.

Strategic Focus Area	Impact	Performance measure	Target 2024/25	Target 2023/24	Frequency
To deliver greater impact with and for Māori and be a leading Tiriti-partnered Crown research institute	Increased Māori partnership, participation and leadership	Percentage increase in the number of iwi co-designed research projects	≥ 20%	≥ 20%	Annual
		Percentage of Strategic Science Investment Fund funding allocated to projects led by and co-designed with Māori	≥ 20%	≥ 20%	Annual

Strategic Focus Area	Impact	Performance measure	Target 2024/25	Target 2023/24	Frequency
Public health, emergency preparedness and response	Reduced mortality and impact on the health system from disease and contamination	Percentage of surveillance delivered to the health sector on time for all notifiable diseases	90%	New	Annual
Climate change – health impacts	Informed intelligence to reduce the impact of climate change on human health	Deliver an artificial intelligence (AI) powered digital twin to decision-makers focusing on climate resilience, ensuring its usability and long-term sustainability.	30 June 2025	New	Annual
New technology impacts, especially AI and data science	Informed technology uptake and use to improve intervention decision-making	Number of organisations partnered with, to develop AI powered tools to enable their decision makers.	5	New	Annual
Building partnerships, both international and domestic	Enhanced aligned science capability to deliver innovative solutions with global reach	Percentage of international proposals accepted	80%	80%	Annual
		Percentage of external research bids successfully achieved	≥15%	≥15%	Annual
Diversified and stronger revenue streams	Diversified revenue sources on commercial terms that ensures financial profitability	Percentage growth in commercial revenue above FY25 Budget	≥5%	New	Annual
Accelerate workforce development and opportunities	A strong capable workforce that enables ESR to thrive and prosper	Annual Gallup Engagement result	3.9	New	Annual
		Annual Gallup Satisfaction result	3.6	New	Annual

ESR scientists conducting radiation training. Source: ESR.

Our people and business systems
Ā mātou tāngata me ā mātou pūnaha pakihi

To achieve our research aspirations and maintain our service delivery, we are continuing to build a strong, capable workforce and to implement business systems and processes to meet the challenges of ESR's diverse work programme.

Workforce development

At ESR, we are developing a responsive, collaborative and adaptable workforce for both the organisation and the wider science community. To support this, we are creating an environment that is rewarding and valued. Examples include:

- undertaking the actions outlined in ESR's Kia Toipoto Action Plan to ensure staff are valued through fair remuneration by reducing ESR's organisational pay gap
- acknowledging the value of ESR's people by developing promotion practices and formal career paths that support career development and workforce retention
- supporting the Early Career Researchers group to develop a community within ESR for those at the beginning of their careers. The group provides career support through the sharing of ideas and creating opportunities for professional and personal development, career progression and networking within ESR and other CRIs
- increasing our focus on developing competent and confident leaders
- refreshing our values and behaviours to ensure alignment with ESR's aspirational culture and to determine desired workforce capabilities based on future science, partnership excellence and innovation needs.

We are seeking to grow our cultural competence and improve diversity through activities such as:

- continuing our commitment to cultural awareness and unconscious bias knowledge through training programmes that will equip our staff to be successful in developing culturally respectful and accountable practices
- increasing organisational diversity with a particular focus on Māori. We are also targeting Pacific peoples and other under-represented groups, and supporting greater inclusion through a programme where we identify and celebrate everyone's unique strengths

- reviewing our recruitment practices and building pathways into ESR, focusing on the actions identified in our Kia Toipoto Action Plan.

To track our progress on workforce development, we have a series of metrics we monitor and report on:

- headcount and number of full-time equivalents
- people turnover and length of service
- average sick leave
- engagement survey results
- employee breakdown, including ethnicity, average age, gender and role classification
- gender representation in management
- gender pay gaps
- promotions and secondments
- health and safety notifications, events and near misses.

This information will be reported in the next ESR annual report.

Health, safety and wellbeing

We support our people to have a meaningful work–life balance, to proactively look after their physical and mental wellbeing, to increase their sense of belonging through employee-led networks and to seek professional support through our employee assistance programme.

We also encourage staff to participate in safety and wellbeing initiatives, which are important in growing ESR's health and safety and wellbeing programmes. This will bring about accountable, evidence-based change to ensure ESR's people are protected from harm and will embed robust and responsible practices across all areas of ESR's science and business areas.

Risk and assurance

Effective risk management and assurance activity are both critical to successfully delivering our strategy.

The important scientific work we do at ESR is accompanied by various risks and uncertainties. Taking appropriate risks is a normal part of doing business and, at ESR, we actively understand and manage our risk so we can successfully pursue opportunities and achieve our objectives. Risk and assurance are integrated at ESR and are about keeping people safe by following established policy, processes and guidance. We have an enterprise-wide approach to risk management where day-to-day responsibility occurs at a strategic, operational and project level. The risk management framework is based on good practice, in line with the Australia/New Zealand Risk Management Standard (AS/NZS ISO 31000).

Our Board-led Risk and Assurance Committee meets four times a year to support the Chief Executive and help the Board discharge its responsibilities related to risk management, internal control, emerging environmental, social, and corporate governance issues and the financial accounting and reporting of ESR. The Risk and Assurance Committee also reviews coverage of the annual assurance plan, to ensure it is risk-based, before recommending it to the Board for approval.

Property

In looking to the future, we recognise that operational change needs to be planned for. To ensure ESR has the facilities to deliver high-quality analysis and research, a property programme is in place to guide the redevelopment of our worksites.

A new 3,850 square metre laboratory facility is being constructed to replace end-of-life buildings on the Kenepuru campus. The new building will include 1,500 square metres dedicated to laboratories and a forensic service centre. It will increase ESR's capability in emerging areas of science, technology and research and facilitate multi-science collaboration.

The building concept was created through a joint process with Ngāti Toa Rangatira. This has resulted in a design that reflects our shared values and environmental focus, as well as encouraging closer engagement with our local community.

The new building is a Green Star accredited site that will incorporate various environmental features to reduce carbon emissions. It will be durable and resilient, ensuring a long life with a low impact on the environment.

Sustainability and carbon reduction

At ESR, sustainability includes environmental, social, economic and cultural sustainability. Our promise is to work towards a healthy and prosperous New Zealand and Pacific across each of these pillars. To help identify our sustainability priorities, we committed to Agenda 2030 for Sustainable Development and the United Nations Sustainable Development Goals. We talked to our staff and stakeholders about what

Microplastics found in beach environment. Source: stock.adobe.com

sustainability issues were most important to them and where they believed ESR could have the most positive impact.

As part of our sustainability goals, we are also working to reduce our carbon footprint as an organisation, with efforts under way to benchmark our emissions profile. We have recently worked with Toitū Envirocare, to confirm our carbon reduction baseline year as being 2019. Other actions underway include:

- trialling monitoring software, to identify where we can reduce waste to landfill, and repurposing assets that would otherwise be destroyed
- starting an e-waste programme via the All-of-Government IT hardware offering
- implementing Mevo, an alternative to car ownership, rental cars and taxis.

We will also develop relationships with other government agencies and specialists to build on the all-of-government approach and will play our part in responding to climate change.

Information technology systems, data security, governance and processes

Technology serves as the cornerstone in supporting much of the infrastructure essential for running a scientific institution like ESR. Given the rapid pace of technological advancements, investing appropriately in technological evolution is vital for ensuring ESR remains adaptive and responsive to emerging opportunities.

Striking a balance in investing in e-infrastructure is crucial to bolster ESR's capacity for developing and deploying data visualisation tools and dashboards, thereby enhancing real-time surveillance and integrated decision-making capabilities.

Moreover, the creation of new genomic datasets and pipelines, fortified by robust security and governance protocols, will yield benefits for the research, science and innovation system. This includes improving data accessibility, fostering knowledge sharing and accountability, and enhancing trust in ESR's scientific endeavours.

In recognising the paramount importance of system security, we maintain a steadfast commitment to continuously enhancing resilience against cyber threats.

Data governance, the Digital Data Strategy and Māori data sovereignty

ESR's approach to managing data and artificial intelligence (AI) reflects a commitment to ethical and sustainable practices and to upholding principles of Māori data sovereignty and Māori partnership.

The complexity surrounding the acquisition, storage, use and safeguarding of data has increased significantly, driven by the integration of data systems, privacy protection and issues of Māori data sovereignty. The proliferation and application of AI presents novel challenges for society and the interpretation of scientific findings. Ensuring the ethical and sustainable use of data and AI is of utmost importance.

To demonstrate our commitment to responsible AI use, last year we became a signatory to the Algorithm Charter for Aotearoa New Zealand. Additionally, we are developing a framework for responsible use of AI, to uphold our commitment and preserve public trust. A dedicated data science team has been established to ensure consistent application of best practices across our scientific domains.

Our data strategy is the guiding principle for managing data as a taonga, outlining our approach to governance in partnership and our commitment to honouring Māori data sovereignty. Furthermore, ESR actively engages in the pan-CRI Māori data sovereignty governance group. This contributes to the development of a collective framework designed with Māori input, aimed at establishing best practice principles for the use, security and protection of Māori-owned data.

Other internal business systems

In addition to the items above, we are also working to improve other internal business systems through the following activities:

- developing an enterprise-wide portfolio work programme to align prioritisation and management of resources, along with investment and optimisation of our overarching portfolio of work to our long-term strategic direction
- strengthening project management using a portfolio, programme and project maturity framework to promote greater collaboration and increase delivery performance. Integrated and increased project management capability will underpin how we manage and deliver change to maximise value and impact
- using investment management, prioritisation and governance practices to support integrated decision-making and appropriate investment choices in our people, infrastructure and science
- investing in data platforms, to allow us to do more with our data including data warehousing, research databases, and a data lake where scientists can experiment with data. We are also investing in laboratory information management to further improve our responsiveness and ability to meet future public health needs.

ESR scientists looking at forensic evidence at Mount Albert Science Centre. Source: ESR.

Section 3: Appendices
Ngā Āpitihanga

Safe drinking water. Source: iStock.com

Appendix 1: Subsidiary
Pakihi turuki

Subsidiary	Principal activity	Interest held (%)
STRmix™	Forensic software that helps resolve complex mixtures of human DNA.	100

Appendix 2: Financial projections
Ngā matapae ā-ahumoni

Revenue

ESR's financial performance in FY24 is 4 per cent higher than the previous financial year, with improved earnings from core contracts and commercial operations.

Following growth over the previous two financial years, revenue from services provided to the Ministry of Health and administered by the Public Health Authority in support of COVID-19 response efforts is expected to materially reduce in FY25.

ESR also projects reductions from other government contracts, commercial operations and research as project funding comes to an end through FY24 and FY25.

Given the current fiscal environment, FY25 revenue has intentionally been budgeted at a conservative level, with no speculative unqualified revenue included in ESR's projections. This is considered an appropriate position with current pressures reducing certainty on future revenues. ESR does, however, hold a pipeline of potential future revenue sources not included in the budgeted numbers.

ESR is anticipating modest growth in revenues from FY26, reflecting improved research earnings, the more sustainable terms incorporated into core government contracts, and increase in commercial earnings underpinned by the projected sale of STRmix™ forensic biology software locally and internationally. ESR also plans expansion of its Lumi™ forensic drug-detection hardware/software into international markets.

Note: reference to financial projections in this commentary exclude ESR's research revenues from the Te Niwha Infectious Disease Research Platform, which ESR administers, as these numbers distort financial metrics and comparison, particularly over FY24 and FY25.

Expenditure

Operating expenses are budgeted to decrease in FY25, driven particularly by the reduction noted above in service delivery of the Ministry of Health COVID-19 response activity, as this transitions to a more business-as-usual basis for pandemic support.

To mitigate inflationary pressures on costs, the organisation is actively reviewing contracts to ensure adequate margins are achieved.

ESR has also instigated a number of programmes to review opportunities for organisation-wide cost efficiencies, led by the Senior Leadership Team.

Depreciation and occupancy costs are forecast to increase in FY27 with the completion of the redevelopment of ESR's Wellington Region Kenepuru Science Centre.

Investment

Approval to proceed with the redevelopment of the Kenepuru Science Centre was received from ESR's shareholding Ministers in January 2024, along with their approval to raise new capital via Crown equity injection under a share subscription agreement. Initial demolition works were completed in early June 2024, with handover to the main contractor undertaken. The new facility is expected to be completed and occupied in 2027.

Cash Flow

The capital contribution noted above for the Crown contribution to funding the redevelopment of the Kenepuru Science Centre consists of $25 million, approved by Cabinet and held by The Treasury.

This funding, existing cash reserves and forecast operating cash flows are anticipated to be adequate to support the planned investment incorporated into this SCI, with some recourse to short-term debt facilities anticipated in FY26.

Risk

There is uncertainty associated with ESR's revenue and cost forecasts. Financial performance is also underpinned by the sustainability of terms to ESR's core government contracts. As well, there are funding pressures on commercial and research revenues from existing contestable and new sources of revenue.

Mitigation against these risks includes ESR having budgeted only qualified revenues in its current budget, as noted earlier. As also noted, ESR holds a pipeline of new revenue sources from increased investment in science capabilities and capacity and increased commercial revenues.

ESR will continue to actively monitor and respond to known and emerging financial risks.

Dividend

In determining surplus funds for distribution, the ESR Board will give consideration to factors including the organisation's medium- and long-term capital investment requirements. ESR notes shareholding Ministers expectations that given the medium-term capital pressures across CRIs, Ministers do not expect dividend payments for the 2024–25 financial year (as outlined in the shareholding Ministers' Letter of Expectations for 2024–25). As all available cash surpluses are required to fund the redevelopment of the Kenepuru Science Centre, no dividend payments are projected to be made over this SCI period.

Financial performance indicators
Ngā Tūtohu Whakahaere Pūtea

The table below presents ESR's key financial performance indicators for the three-year period FY25–FY27:

Financial performance indicators	FY25 Budget	FY26 Forecast	FY27 Forecast
Revenue ($000s)	108,612	113,911	121,481
Revenue growth	-14.5%	4.9%	6.6%
Revenue per FTE ($000)	236	242	258
Operating results ($000s)			
Earnings before interest, tax, depreciation and amortisation	5,949	7,990	12,139
Net profit after tax	738	828	1,059
Liquidity			
Quick ratio (acid test)	1.9	0.8	0.8
Profitability			
Return on equity	0.9%	0.9%	1.2%
Operating margin	5.5%	7.0%	10.0%
Operating margin per FTE ($)	12,900	17,000	25,800
Operational risk			
Profit volatility	6.8%	17.9%	36.3%
Growth / investment			
Capital expenditure ($000)	30,781	46,110	19,595
Capital renewal	4.6	6.1	2.1
Dividend	–	–	–
Financial strength			
Gearing (debt* / debt and equity)	3.8%	11.4%	18.5%
Equity ratio (equity / total assets)	67%	64%	60%
Cash reserves ($m)	33.6	4.1	4.3
Debt * ($)	–	8.0	17.0

**Lease liabilities*

Appendix 3: ESR Policy and Procedure Statement

Ngā tauākī kaupapahere me ngā hātepe a ESR

Accounting policies

A summary of our accounting policies is included in our Annual Report. The current Annual Report can be found on the website:

www.esr.cri.nz/news-publications/2023-annual-report

Dividend policy

The Board will notify the shareholding Ministers, within three months of the end of each financial year, of:

- the amount of dividend (if any) recommended to be distributed to shareholding Ministers the percentage of tax-paid profits that the dividend represents; and
- the rationale and analysis used to determine the amount of the dividend.

In determining surplus funds for distribution, the Board each year will give consideration to:

- the organisation's medium- and long-term capital investment requirements;
- the organisation's projected profitability and cash flows;
- the ongoing financial viability of the company, including its ability to repay debt;
- the ability of the organisation to react to revenue shocks outside its control, and still maintain and enhance the capability of its people and facilities; and
- the obligations of the Directors under the Companies Act 1993 and other statutory requirements.

Before deciding on payment of a dividend, the Board will consider the above factors and consult with the shareholders.

Significant transactions policy

The Board will obtain the prior written consent of shareholding Ministers for any transaction or series of 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 per cent of the company's total assets (prior to the transaction), whichever is the lesser.

The Board will also obtain prior written consent of shareholding Ministers for any transaction or series of transactions with a value equivalent to or greater than $5 million or 30 per cent of the company's total assets (prior to the transaction) involving:

- acquisition, disposal, or modification of an interest in a joint venture or partnership, or similar association;
- acquisition or disposal, in full or in part, of shares or interests in a subsidiary, external company or business unit;
- transactions that affect the company's ownership of a subsidiary or a subsidiary's ownership of another entity; and
- other transactions that fall outside the scope of the definition of the company's core business or that may have a material effect on the company's science capabilities.

Appendix 4: Matters required by the Crown Research Institutes Act 1992

Ngā take e herea ana e te Crown Research Institutes Act 1992

Ratio of shareholders' funds to total assets

The Institute of Environmental Science and Research's forecast ratio of shareholders' funds to Adjusted Tangible assets is as follows.

Subsidiary	2023/24	2024/25	2025/26
Equity ratio	0.58:1	0.67:1	0.64:1

Activities where shareholder compensation is required

Where the Government wishes ESR to undertake activities or assume obligations that will result in a reduction of the organisation's profit, or net worth in terms of investment in research, the Board will seek compensation sufficient to allow the organisation's position to be restored.

No requests for compensation are currently under consideration.

Other matters specifically requested by the shareholder

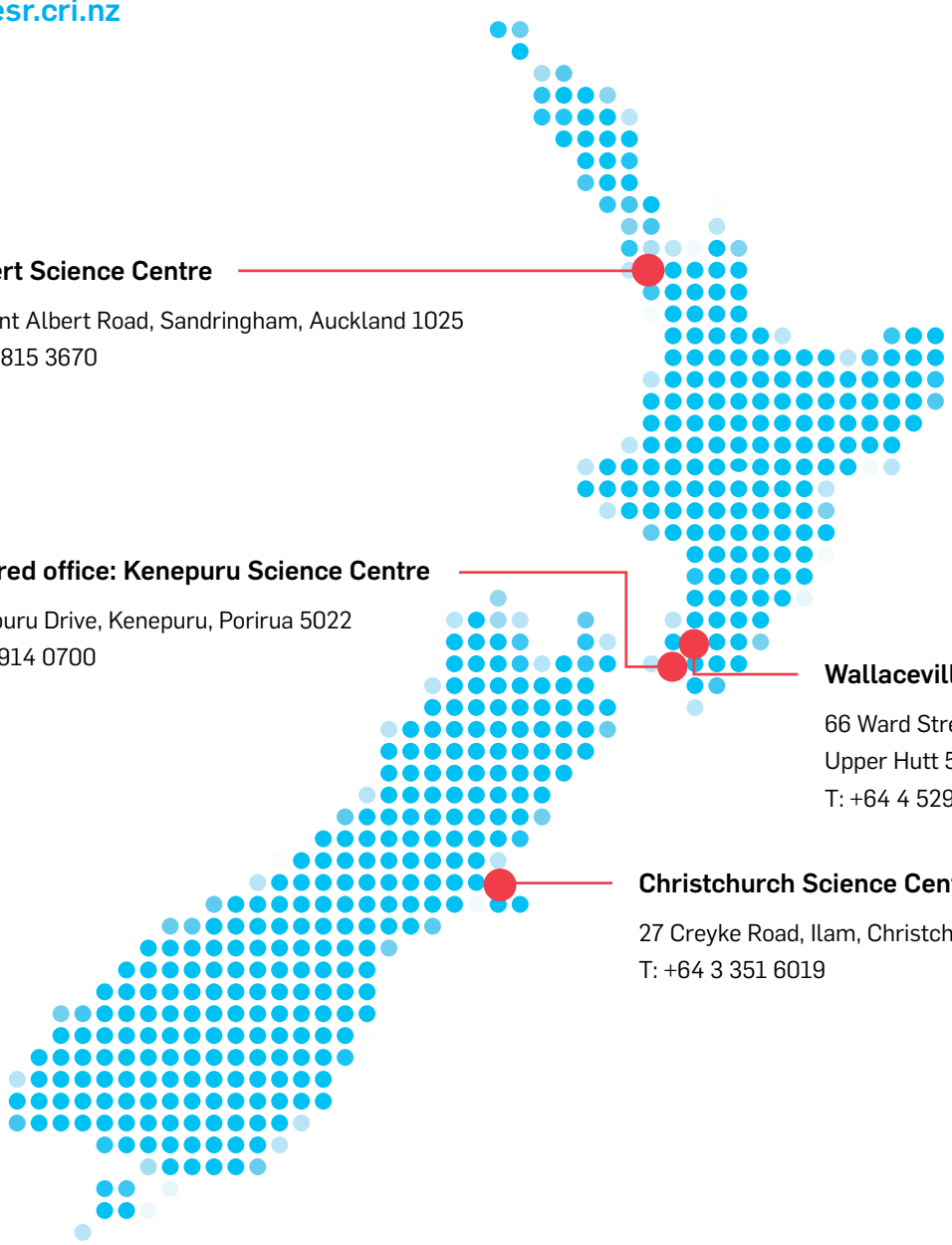
Section 16(3) of the Crown Research Institutes Act 1992 requires ESR to furnish an estimate of the current commercial value of the Crown's investment.

ESR's Board has conducted a review of the commercial value of the Crown's investment in the company. In this regard, the Board is satisfied that the net asset position (or total shareholders' funds) as at 30 June 2023 is a fair and reasonable indication of the commercial value of the Group. The net asset position, as shown in accordance with the company's accounting policies for 30 June 2023, was $60.7 million.

Directory
Whaiaronga

ESR's science centres are located in Auckland, Wallaceville and Kenepuru (Wellington region) and Christchurch.

www.esr.cri.nz



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Science New Zealand

SCIENCE WORKING FOR AOTEAROA NEW ZEALAND

The Crown Research Institutes (CRIs) proudly work, individually and collectively, to create a more prosperous, sustainable and innovative Aotearoa New Zealand.

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ESR
Science for Communities
He Pūtaiao, He Tāngata

GNS SCIENCE
TE PŪ AO

Manaaki Whenua
Landcare Research

NIWA
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