

Te Tauāki Koronga Mahi  
**Statement of Corporate Intent**  
**2023–2028**



**Ka tiaki, ka whakapiki hoki a ESR i te oranga  
o te tangata e noho ana ki Aotearoa.**

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**ESR protects and enhances the wellbeing  
of people living in New Zealand.**

**Tautohua**  
**DETECT**

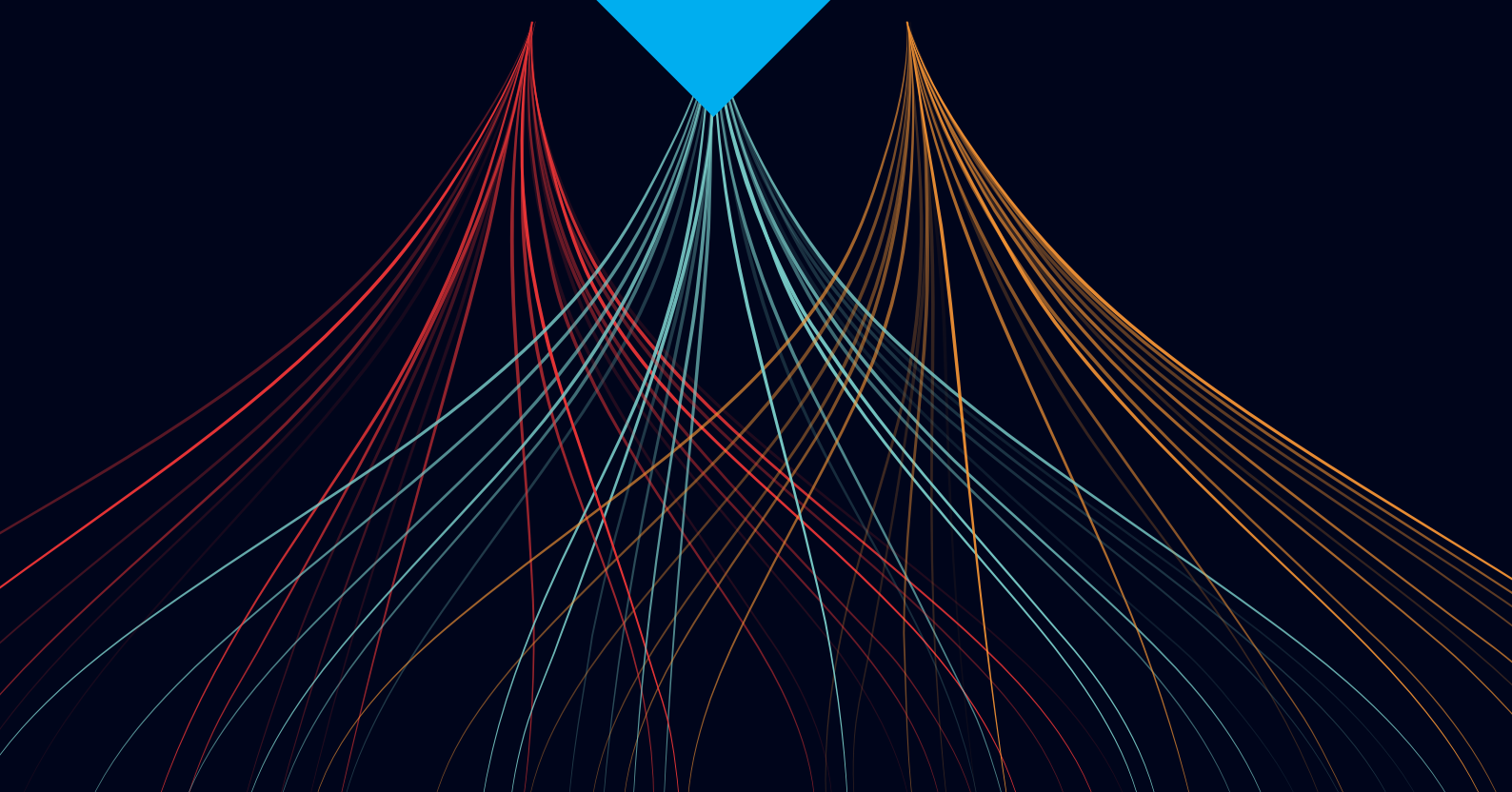
IDENTIFY emerging issues by  
recognising the interconnection  
between people, animals,  
plants and their shared  
environment

**Tiakina**  
**PROTECT**

KEEPING communities  
healthy and safe by delivering  
comprehensive and  
connected wellbeing  
outcomes

**Tūhonotia**  
**CONNECT**

PARTNERSHIPS that  
facilitate a whole system  
approach to wellbeing



# Protecting and enhancing the wellbeing of people living in Aotearoa New Zealand

**ESR has a science leadership role in public health, forensics, environment and biosecurity. Combining and applying expertise from our rich array of health, forensic, food, water and radiation sciences, and working with strategic partners, enables communities to thrive and prosper.**

Our vision is that ESR will be at the forefront of attaining the lowest burden of crime, environmental contamination and infectious diseases for Aotearoa New Zealand while honouring Te Tiriti.

**As a science leader**, we recognise that solutions which provide maximum positive wellbeing impact for communities are enabled by 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 identifying infectious diseases and developing solutions to protect the people of Aotearoa New Zealand. We strengthen pandemic and infectious disease preparedness and contribution to global pandemic readiness.

We provide **world-class genomics science** for the benefit of people and the economy in the areas of food genomics, forensic analysis, antimicrobial resistance, and infectious disease.

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

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

We provide the analysis and research to ensure **water is safe to drink** and to improve the health and vitality of our waters.



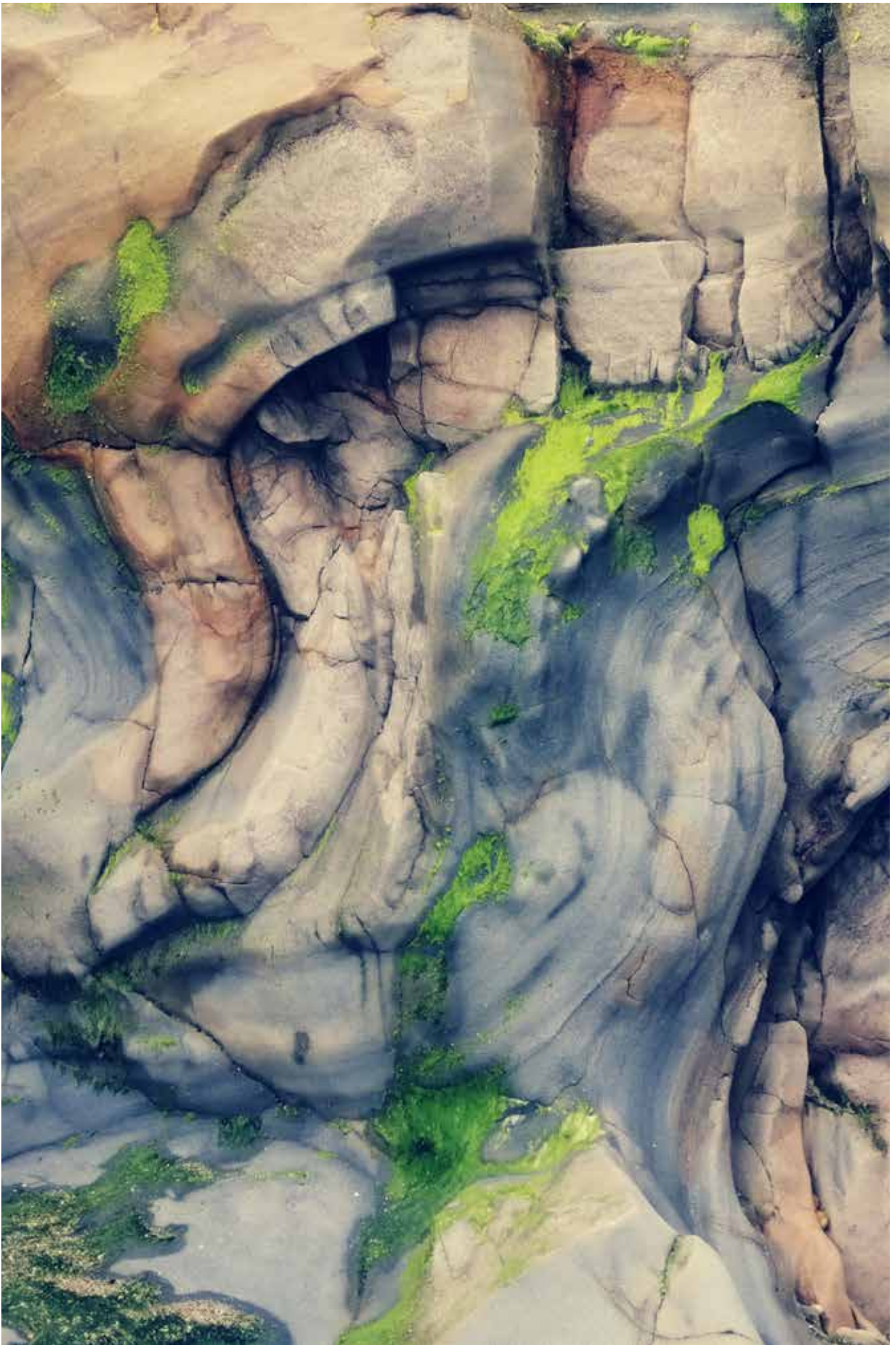
We provide the expertise that supports the **safe and secure use of ionising radiation**.

We provide the research that provides **social systems** thinking to ensure our science has the right impact for communities.

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

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

**We are**  
**E/S/R**  
 Science for Communities  
 He Pūtaiao, He Tāngata



# Ngā Ihirangi

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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.

ISSN: 1179-4418 (print version)

ISSN: 1178-8275 (online version)

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Published June 2023.

# Te Tirohanga a te Heamana me te Tumu Whakarae **Chair and Chief Executive's overview**

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**We are pleased to present ESR's Statement of Corporate Intent for 2023–2028. Using science to lead the improvement of community health and wellbeing in Aotearoa New Zealand is at the heart of everything ESR does.**

Our vision is that ESR will be at the forefront of attaining the lowest burden of crime, environmental contamination and infectious diseases for Aotearoa New Zealand while honouring Te Tiriti.

ESR is fully and actively supportive of the reform objectives signalled by Te Ara Paerangi – Creating New Futures, Valuing Our People, Building System Agility and Embedding Te Tiriti and will continue to engage constructively in the transformative process. We will continue to generate and engage in opportunities for system-wide collaboration with Māori, iwi and hapū, other Crown agencies, universities, and communities as exemplified by our infectious disease platform Te Niwha.

Our expertise and collaborative science leadership will be vital to addressing the emerging national and international threats to health and community wellbeing. We will continue to demonstrate resilience, endurance, innovation, and flexibility to meet these challenges, while operating in a time of uncertainty and change. We will also prepare for the challenges that will face our communities through our future focused applied science research and delivery approach.

A vital part of achieving our aspirations and objectives is that ESR is a science entity where mātauranga Māori is equally valued. This approach will generate uniquely Aotearoa New Zealand solutions that will effectively address current and future wellbeing and equity challenges. We will continue to provide leadership within the science sector in championing this shift.

We continuously refresh our organisational strategy to keep pace with, and where possible pre-empt, the changing environment in which we operate, in line with our vision. This Statement of Corporate Intent outlines our updated strategic approach, and the investments and opportunities that ESR will pursue to achieve our aspirations and vision for Aotearoa New Zealand.

## **Partnership with Māori for Māori**

ESR is deeply committed to our partnership with Māori. However, we are still early in our journey of embedding Te Tiriti principles and approaches into our organisational framework, as well as building enduring partnerships with iwi and hapū to ensure that our scientific endeavours realise material and holistic benefits for those communities.

We will continue to:

- reflect and work to transform our organisational tikanga and approach to embed Te Tiriti;
- build and enhance Māori participation, strengthen capability through cultural understanding, and seek to resource more Māori scientists and expertise in mātauranga Māori science in a culturally safe environment;
- build on our He Wai Māpuna programme and Te Niwha platform as exemplars for ESR of a new way of science endeavour working with Māori for Māori;
- partner with the Pūhoro STEM Academy to grow and advance Māori science leadership and capability.

## **Recognition as an exemplar of a thriving people-centred workplace**

Our people are at the heart of our organisation. To deliver our future state as a leading science organisation that is responsive and agile, we will support our workforce to grow and develop so that ESR has flexible capability and capacity to support our communities with the challenges they face now and in the future.



To address complex societal challenges, ESR's workforce will be supported to explore new opportunities, be recognised and valued for its diversity of thought, innovation and enabling of Māori and Pasifika, by removing the barriers that limit engagement and participation. We will continue to develop a strong people-centred workplace through focusing on diversity, equity and inclusion; improving our leadership confidence and competence; and continuing our focus on health, safety and wellbeing.

We will also continue to refine and shape ESR's cultural capability and competency to ensure ESR is an accountable, safe and responsive organisation. Our aspiration is to have a workforce that is representative of the New Zealand working population (with a particular focus on increasing the proportion of Māori and Pasifika staff) and a workplace that is engaging, empowering and provides meaningful challenges and opportunities to grow and develop.

### **Collaborative science solutions that make a difference**

ESR's applied expertise lies in our core mission of detecting, connecting, and protecting – and through that our strength to foresee future challenges and potential solutions. This approach contributes to high-level systems intelligence and evaluation as well as enabling critical data analysis. ESR continues to grow and

strengthen our data science skills and capabilities to draw intelligence for our work. We continue to work with other CRI's and core agencies on creating consistency and availability of datasets and to apply the New Zealand Data and Information Management Principles where appropriate.

As well as our recognised international leadership in many areas, ESR is also recognised as an effective co-leader, co-innovator, and finder of synergies with partners. Our effective collaborations and partnerships with iwi, key government agencies, universities, research centres and industry partners are key to future-proofing public health, supporting the economy, and improving community wellbeing outcomes.

At a local level we continue to work closely with Ngāti Toa Rangatira at Kenepuru in offering community youth outreach activities, co-designed research initiatives, and employment opportunities for local iwi scientists. This includes close collaboration on the development of ESR's build design for our Kenepuru site, in which Ngāti Toa Rangatira have invested considerable effort to generate a future space for partnership and collaboration.

These and many other collaborations enhance ESR's contribution to lessening the impact of disease, environmental contamination, and justice inequalities on community wellbeing here and around the world.

## Investment and focus for the future

ESR's investment in future-focused research programmes and world-leading research staff generates technologies and intelligence to address future challenges to New Zealand's wellbeing.

During the period of this SCI ESR will continue to increase the use of genomics across our science domains and strengthen data science and artificial intelligence capabilities as key enablers to expand ESR's cross-platform research. We are also looking to extend our science capabilities in health-related climate change research by taking a 'disaster microbiology' approach, with an increased focus on environmental effects and climate-sensitive infectious diseases.

Technology is a foundation that underpins much of the infrastructure required to drive a science institution such as ESR. Balanced and appropriate investment in the necessary e-infrastructure will further lift our ability to create and roll out data visualisation and dashboards to enhance real-time surveillance and integrated decision-making. Creating new genomic datasets and pipelines that are underpinned by strong security and governance processes will also benefit the Research, Science and Innovation (RSI) system by improving access to data, increasing knowledge sharing and accountability, and building increased trust in ESR's science.

Through our research and stakeholder partnerships, we look to build on the commercial successes of ESR's ground-breaking and award-winning products Lumi™ and STRmix™. Developing and deepening innovation and commercialisation pipelines is essential for achieving new commercial pathways, supported by robust commercial infrastructure, which will enable us to deliver more impactful outcomes for communities nationally and internationally.

As the challenges that science institutions are expected to address become more complex, systemic and global in nature, through sophisticated horizon scanning ESR seeks to detect new challenges before they arrive and invest in new science solutions before they are needed. However, the most important factor for long-term success will be investment in our people, especially our future leaders. We look forward to continuing and growing our collaboration with iwi, the Government, university and commercial partners to deliver on the vision, purpose, objectives and intent outlined in this SCI.



**Professor Sarah Young**  
Board Chair

A handwritten signature in black ink, appearing to read 'S Young'.



**Peter Lennox**  
Chief Executive Officer

A handwritten signature in black ink, appearing to read 'P Lennox'.





## Tō mātou tirohanga matawhānui, whāinga matua, kaupapa me ngā aronga pānga nui

# Our vision, mission, purpose and impact areas

**Our vision is to be at the forefront of attaining the lowest burden of crime, environmental contamination and infectious diseases for Aotearoa New Zealand while honouring Te Tiriti.**

### Our mission

We **Detect**, **Connect** and **Protect** allowing communities to thrive and prosper through combining and applying expertise from our rich array of health, forensic, food, water and radiation sciences.

### Our purpose and impact areas

**Our purpose** is to ensure that we protect and enhance the wellbeing of people living in Aotearoa New Zealand through:

- Impact for **Māori**.
- Effective infectious disease identification, prevention and response for **healthier communities**.
- Forensic leadership that prevents, detects and resolves crime and drug harm and provides leadership in radiation safety for **safer communities**.
- Integrated health, water and environmental science to deliver **cleaner water and environment**.

- Preventing and detecting food contamination for **safer food and mahinga kai**.

### The science we deliver in these impact areas

ESR leads research, science delivery and commercial opportunities from integrated, multi-disciplinary science (including recombinant science where applicable) in the following domains:

- Public health and biosecurity.
- Forensic related to safety, security and justice.
- Environmental safety of freshwater and groundwater.
- Environmental food safety risks.
- Radiation security.

We continue to increase our use of genomics across ESR's science domains, while strengthening our data science. We are extending our science capabilities in health-related climate change research by taking a 'disaster microbiology' approach, with an increased focus on environmental effects and climate-sensitive infectious diseases. We are also putting greater focus on integrating data science and artificial intelligence as key enablers as we expand ESR's cross-platform research.





Ngā āhuatanga rāwaho ka whai pānga mai ki tō mātau taiao whakahaere – ngā angitu rautaki

## External factors influencing our operating environment – Strategic opportunities

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**The challenges that science institutions are expected to address are becoming more complex, multifaceted, systemic, and global in nature, for example, equity in health and justice, climate action and climate-related health and social equity issues. These challenges offer strategic opportunities for ESR as responses need to be both immediate and visible, as well as provide impact in the longer term.**

Through sophisticated horizon scanning, and drawing on the expertise of our Strategic Science Advisory Panel (SSAP) ESR seeks to anticipate and detect new

challenges, thereby being able to invest in new science solutions before they are needed. The factors outlined below influence our thinking as we continuously update ESR's strategy to ensure optimum focus and performance. This will ensure we build on the gains we have made from our response to the pandemic, and strengthen ESR's overall organisational sustainability and resilience, and ensure we grow into an authentic Te-Tiriti-partnered CRI. This will enhance our capability to predict and provide solutions to community wellbeing impacts caused by infectious diseases, and changing climate and weather disruptions. ESR is a globally connected science organisation and constantly looks to strengthen our alliances. International linkages are being forged with a number of science organisations, including the Peter Doherty Institute for Infection and Immunity in Australia and the National Research Institute for Agriculture, Food and the Environment in France.

## Science sector reforms

ESR fully supports the vision for Aotearoa New Zealand's research, science and innovation system as outlined in Te Ara Paerangi. ESR has a continued focus on workforce development and funding for national research priorities.

To give effect to the principles of participation, partnership and protection as outlined in Te Tiriti o Waitangi, we recognise that our, leadership, culture and behaviours, and research portfolios must continue to embed mātauranga Māori, expand Māori-led research pipelines, such as ESR's He Wai Māpuna research programme, and facilitate greater Māori partnership that will empower Māori aspirations for hauora, Te Taiao, kai and the justice system.

ESR continues to actively explore opportunities for greater collaboration across the research, science and innovation system, including as part of the Wellington Science City initiative. This includes considering how we can share resources and locations given the unique nature of certain aspects of ESR's scientific expertise and services (for example, ESR's forensic science and radiation services). In the interim we are continuing to invest in upgrading ESR's laboratories.

## New Zealand's health system reforms and changes

The setting up of the new health bodies Te Whatu Ora and Te Aka Whai Ora as well as the Public Health Agency and reshaped Ministry of Health create new opportunities for ESR to actively build and create science outputs that deliver meaningful health and wellbeing impacts for communities.

ESR will continue to work with Te Whatu Ora, Te Aka Whai Ora, and the Public Health Agency on health research priorities and to ensure a long-term sustainable and resilient infectious disease response system.

We will continue with our co-host, the University of Otago, to grow and embed Te Niwha. Our work with iwi Māori to establish Te Niwha is an active demonstration of a partnership committed to Te Tiriti principles. We are indebted to our Te Niwha co-directors for leadership on this journey to create a new operating model, which sets the basis to transform how infectious disease research is funded to ensure impact for those communities most affected by infectious disease.

As part of the health and disability sector transformation, a draft operating model for New Zealand's Lead Public Health Laboratory is being designed. Our expertise in public health surveillance, lifting infectious disease response, and investment in and support of New Zealand's public health surveillance systems places ESR in a strategic position to be New Zealand's lead national Public Health Reference Laboratory. We continue to engage across the health sector on designing the operating model for New Zealand's lead Public Health Laboratory to provide scientific and clinical leadership to the laboratory science system network.

## Climate change and environmental sustainability

A changing climate requires an integrated, systems thinking approach to address climate change effects and longer-term impacts, especially as they relate to the interconnections between people, animals, plants and their shared environment. It is essential that we understand the impacts on communities as it relates to emerging infectious diseases, water and food safety and security, and the overall health of people and the environment.

Through our strategic partnerships with the Ministry of Foreign Affairs and Trade in the Pacific, we continue to support Pacific countries on health and water quality systems that are resilient to climate change. We continue to work in Kiribati, Palau, Tonga and other Pacific neighbours, with a particular focus on water quality, water resources and the impact of climate change.

Cyclone Gabrielle has demonstrated that Aotearoa New Zealand can be better prepared to be more resilient to severe weather events, and ESR is working more closely with MetService to determine what impact these may have on human health and water purity. ESR is also bringing its science expertise to provide solutions regarding the impacts of contaminated silt and potable water on communities, the environment, and the economy. ESR believes that a 'disaster microbiology' approach to respond to natural and other disasters is a useful framework approach to determine the microbe impact and consequently the human impact.

To further build capacity and capability in this area, we have created a dedicated Science Leader – Climate Health Impacts role to help ESR shape a holistic approach to coordinate climate change focus and contributions. We aim to be thought leaders in

addressing the health impacts that a changing climate has on public health and the wellbeing of our communities.

## Water reform

With the ongoing reforms to how water is managed in New Zealand, ESR continues to use its water expertise to support Taumata Arowai (New Zealand's water services regulator) and the Ministry for the Environment's goals for water management in Aotearoa. Our expertise in groundwater and freshwater science will be critical for helping understand the health and environmental effects of a changing climate on New Zealand's water resources, and will underpin and further strengthen regulatory reform and the overall management of these resources.

## Data governance and the effect of the Digital Data Strategy, including Māori Data Sovereignty

How data is sought, stored, used and protected is growing in complexity due to the integration of data systems, protection of privacy, and data sovereignty issues. The growth and use of artificial intelligence (AI) is generating new challenges for society and how science is used and interpreted. The ethical and sustainable use of data and AI is paramount. We have become a signatory of the Algorithm Charter for Aotearoa New Zealand to demonstrate our commitment to the responsible use of AI and are developing a Responsible User of AI framework to ensure we fulfil our commitment and maintain public trust. We have also established a dedicated data science team to work across our science domains, to ensure good practice is applied consistently.

We have developed a Data Strategy that provides our north star for our approach to managing our data as a taonga, how we govern our data in partnership and how we give meaningful effect to Māori data sovereignty. ESR also continues to fully participate in the pan-CRI Māori data sovereignty governance group to create a collective pan-CRI framework designed with Māori to inform best practice principles for using, securing and protecting Māori owned data.



## Systems security, governance and processes

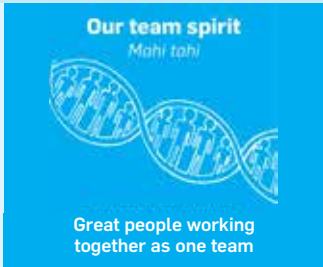


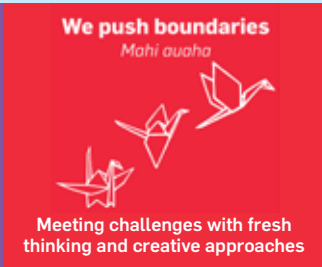





Technology is a foundation that underpins much of the infrastructure required to drive a science institution such as ESR. Technological change and appropriate investment in these areas is crucial to support a rapidly changing technological environment and better equip ESR to pursue new opportunities for greater response and resilience.

Balanced and appropriate investment in the necessary e-infrastructure will further lift ESR's ability to create and roll out data visualisation and dashboards to enhance real-time surveillance and integrated decision-making. Creating new genomic datasets and pipelines that are underpinned by strong security and governance processes will also benefit the Research, Science and Innovation (RSI) system by improving access to data, increasing knowledge sharing and accountability, and building increased trust in ESR's science. System security is paramount and we maintain a strong focus in continuously lifting resilience against cyber attacks.



# Te rautaki a ESR i runga whārangi kotahi

## ESR's strategy on a page

|   |  |  |   |   |   |
|---|--|--|---|---|---|
| <b>Vision</b>                                   | The Institute of Environmental Science and Research (ESR) will be at the forefront of attaining the lowest burden of crime, environmental contamination and infectious diseases for Aotearoa New Zealand while honouring Te Tiriti.  |  |   |   |   |
| <b>Establishment</b>                            | ESR was created in 1992 when New Zealand's Department of Scientific and Industrial Research (DSIR), founded in 1926 was configured into Crown Research Institutes (CRIs). As a CRI we play a critical national role in public health and forensics and are a key contributor to Aotearoa New Zealand's environment and biosecurity protection. |  |   |   |   |
| <b>Purpose</b>                                  | ESR protects and enhances the wellbeing of people living in Aotearoa New Zealand.  |  |   |   |   |
| <b>Mission</b>                                  | We <b>Detect, Connect</b> and <b>Protect</b> allowing communities to thrive and prosper through combining and applying expertise from our rich array of health, forensic, food, water, and radiation sciences.   |  |   |   |   |
| <b>Values</b>                                   |  <p><b>Our team spirit</b><br/>Mahi tahi</p> <p>Great people working together as one team</p>   |  <p><b>Our quality counts</b><br/>Mahi rangatira</p> <p>Standing out through our excellence and world class expertise</p> |  <p><b>We do the right thing</b><br/>Mahi pono</p> <p>Upholding integrity and independence no matter what</p> |  <p><b>We push boundaries</b><br/>Mahi auaha</p> <p>Meeting challenges with fresh thinking and creative approaches</p> |   |
| <b>Output areas / Organisation structure</b>    | ESR generates research, service delivery and commercial opportunities from recombinant science in the 5 following domains:   |  |   |   |   |
|   | 1. Public Health & Biosecurity.  | 2. Forensic related to safety, security, and justice.  | 3. Environmental Safety of freshwater & groundwater.  | 4. Environmental Food safety risks.   | 5. Radiation security.  |
| <b>Objectives</b>                               | To deliver greater impact with and for Māori and to be a leading Te Tiriti-partnered CRI.  | Recognition as an exemplar of a thriving people-centred workplace.   | Reshaping ESR Science to provide integrated thought leadership in the health, environment, and justice sectors.   | Growing sustainable partnerships to provide innovative community focused science solutions / commercialisation.   | Strengthening business systems and processes to increase efficiency with regards to security, governance, and sustainable activities. |
| <b>Outcomes</b>                                 | Increased Māori partnership, participation, leadership and mātauranga Māori in research, delivering greater impact with and for Māori.   | A thriving people-centred workplace that embraces Te Tiriti.   | Increased trust and value in ESR's science and applied research through delivered thought leadership and collaboration.   | Reduced health, justice and environmental inequities and improved wellbeing for communities through innovative applied community focused science.   | Increased long-term organisational and system sustainability and resilience through innovation, collaboration and system security.    |
| <b>Strategic pillars</b>                        | <b>Understanding our value</b><br>Growing our innovation and influence through understanding and responding to our customers, communities, and Iwi needs.  | <b>Building our team</b><br>Being an employer of choice with a healthy work environment encouraging growth and wellbeing.  | <b>Shaping our future science</b><br>Enabling foresight to foster relevant co-designed trans-formational research and service delivery for communities.   | <b>Increasing our impact</b><br>Providing prioritised and integrated research that secures outcomes and impacts positively upon the economy.  | <b>Building stronger foundations</b><br>Embedding, upgrading, and strengthening our infrastructure, systems, and processes.           |
| <b>Strategic foundation</b>                     | Actively enabling Te Tiriti, Māori leadership and Mātauranga Māori as an integral part of ESR applied science/delivery for future wellbeing and equity challenges.   |  |   |   |   |
| <b>Impact areas</b>                             |  Māori  |  Healthier communities  |  Safer communities   |  Safer food  |  Cleaner water and environment                   |
| <b>Next 1–3-year acceleration opportunities</b> | 1. Mātauranga Māori led and partnered research.<br>2. Infectious disease monitoring.   |  | 3. Health-related impact of climate change.<br>4. Artificial intelligence.  |   | 5. Forensic commercialisation.  |
| <b>MBIE outcome performance measures</b>        | <ul style="list-style-type: none"> <li>Science publications quality &amp; impact.</li> <li>Total revenue/FTE.</li> </ul>   |  | <ul style="list-style-type: none"> <li>Technology transfer &amp; commercialisation collaborations.</li> <li>Commercial revenue/FTE.</li> </ul>  |   | <ul style="list-style-type: none"> <li>Demonstrating ESR's commitment to Māori.</li> </ul>  |



# Ō mātou whāinga rautaki

## Our strategic objectives

### Our strategic objectives are what we intend to achieve for ESR in the longer term.

We have identified five key strategic objectives for ensuring ESR is a resilient and sustainable research led organisation that delivers on our impact areas. They also align with the themes that have emerged from Te Ara Paerangi, and address the priorities set out in the shareholding Minister's Letter of Expectations for ESR. The outcomes we are seeking to meet these objectives are outlined in the next section, and our current actions to deliver on these objectives and outcomes, aligned with our measures of progress, are in the sections following.

### Our strategic objectives

|   |  |   |   |   |
|---|--|---|---|---|
| To deliver greater impact with and for Māori and to be a leading Te Tiriti-partnered CRI. | Recognition as an exemplar of a thriving people-centred workplace. | Reshaping ESR Science to provide integrated thought leadership in the health, environment, and justice sectors. | Growing sustainable partnerships to provide innovative community focused science solutions / commercialisation. | Strengthening business systems and processes to increase efficiency with regards to security, governance, and sustainable activities. |
|---|--|---|---|---|

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

We will build models of engagement and shape our organisational capability and systems to allow for greater participation and partnership with and for Māori while providing ESR's staff with the tools, skills and confidence to engage in ways that acknowledge,

respect and recognise the unique position of Māori as tāngata whenua.

Our aim is that the way we work will recognise and respect the principles of Te Tiriti o Waitangi. We are aware of the inequities for Māori in the fields in which we apply our science and our ambition is that every aspect of ESR's organisational capability and capacity will facilitate genuine partnership to deliver impact for Māori.



We will ensure that the data generated through ESR's activities is applied to science and service delivery to address wellbeing and equity challenges. We seek to apply data sovereignty principles to data generated, honouring the cultural taonga of that data so we can build sustainable research pipelines and partnerships that meet the needs of iwi.

We have made progress with embracing a 'with Māori for Māori' research approach, such as our He Wai Māpuna programme and outreach programmes (such as Te Hāpai Ō and He Ō Uta, He Ō Tai). We know we have more work to do to lift ESR's cultural capability and become a research partner of choice to Māori by enabling Māori leadership and participation.

### **Recognition as an exemplar of a thriving people-centred workplace**


Our people are at the heart of our organisation. To deliver our future state as a leading science organisation that is responsive and agile, we will support our workforce to grow and develop so that ESR has flexible capability and capacity to support our communities with the challenges they face now and in the future.

To address complex societal challenges, ESR's workforce will be supported to explore new opportunities, and be recognised and valued for its diversity of thought and innovation, by removing the barriers that limit engagement, participation and partnership. We will deliver the right skills and an innovation mindset at the right time, improve pathways for attracting and retaining critical skills and enable greater resource and knowledge sharing across the research, science and innovation system for greater impact.

We will continue to develop a strong people-centred workplace through focusing on diversity, equity and inclusion; improving our leadership confidence and competence; designing and delivering initiatives to support improved engagement and empowerment; identifying and celebrating our employee's unique strengths to build strong and cohesive teams; and continuing our focus on health, safety and wellbeing that delivers to changing individual and organisational circumstances and needs.

We will also continue to refine and shape ESR's cultural capability and competency to ensure ESR is an accountable, safe and responsive organisation.

Our aspiration is to have a workforce that is representative of the Aotearoa New Zealand working population (with a particular focus on increasing the proportion of Māori staff in our workforce, along with Pacific peoples and other under-represented ethnicities) and a workplace that is engaging, empowering and provides meaningful challenge and opportunities to grow and develop.

 We will continue to develop a strong people-centred workplace through focusing on diversity, equity and inclusion.

### **Reshaping ESR Science to provide integrated thought leadership in the health, environment, and justice sectors**

We are transforming our science by expanding our capabilities in genomics, data and computational science and artificial intelligence. This will increase our ability to detect early patterns and signals in data that will further improve our ability to identify emerging issues and help us create meaningful, timely and co-designed innovative research responses and solutions for greater impact.

Generating greater thought leadership across ESR's impact areas includes not only improving wellbeing outcomes across the impact areas we deliver to, but also considering how we use and share ESR's resources for the benefit of the wider research, science and innovation system.

For example, we have made significant progress in using genomics as an enabler across ESR's impact areas by taking a multi-omics approach (where possible). This is a vital enabler to address equity issues in the justice and health sectors.

We are working with strategic partners and stakeholders to explore the development and implementation of a national genomics data platform. This will increase Aotearoa New Zealand's pathogen surveillance, ensure equitable access to, and delivery of, human health outcomes, and promote greater research collaboration in research projects that are focused on precision healthcare and environmental monitoring.



ESR is also investigating how the breadth of our forensic sciences expertise can best be used to create new strategic collaboration through the Joint New Zealand Police/ESR Innovation Governance Group and our partnership with the Evidence-Based Policing Centre (EPBC). This integrated leadership focuses on seeking innovative new tools such as Lumi™ to improve outcomes for communities from drug harm and improve justice outcomes.

We are also exploring other opportunities for collaboration with the justice sector internationally, including expanding our forensic capability to extract eDNA from mixed biological samples to offer new evidence and insights, and support a more targeted approach to investigative processes to help resolve crime in the trade of protected species in Aotearoa New Zealand and internationally.

Our radiation scientists provide technical expertise to support the safe and secure use of ionising radiation. Our experts work with a wide range of private and public sector clients to provide advice, services and research capability on public, occupational, and medical exposure to ionising radiation safety.

ESR supports the New Zealand government to meet its international obligations under various treaties and conventions such as the Comprehensive Nuclear-Test-Ban Treaty and the Treaty on the Non-Proliferation of Nuclear Weapons. We are also assisting with the

ongoing development of radiation safety, security and emergency preparedness within the Caribbean, South East Asia and various Pacific Island States.

ESR is also building on its science leadership so that Aotearoa New Zealand can be better prepared to be more resilient to severe weather events such as Cyclone Gabrielle. By applying a 'disaster microbiology' approach ESR looks to:

- Understand the potential health risk of silt, provide clear communication of any dangers, and furnish evidence to support urgent agricultural decisions.
- Work with Māori communities to meet their needs, especially around silt and water public health risks.
- Coordinate in-house national expertise across Public Health, Water and Food contamination, Iwi-led science delivery, and science translation to build community resilience.
- Join Intelligence and Surveillance with the Laboratory system to sustain New Zealand's ability to respond to potential threats, quickly and effectively.

We continue to explore new partnership and collaboration opportunities in the health, environment and justice areas both in Aotearoa New Zealand and the South Pacific. Climate change and issues of climate-related health research are a big focus area for ESR, specifically as it relates to emerging infectious diseases and reducing inequities in this area.

### **Growing sustainable partnerships to provide innovative community focused science solutions / commercialisation**

We recognise that in an increasingly connected and technologically advancing world, research participation and partnerships help us adapt and respond to emerging issues and deliver solutions and results to extend innovation.

Increased sustainable and enduring partnerships help create improved impact pathways, knowledge sources and data, as well as opportunities for public good and commercialisation that aim to continuously improve wellbeing outcomes.

With ESR's broad areas of expertise and its focus on science for communities, we are proactively engaging with Māori, government, health sector, and justice agencies on how we can best use our expertise to address health inequities, health-related climate

challenges and further reduce drug harm and improve justice sector outcomes.

We are developing strategic partnerships, such as with the Peter Doherty Institute for Infection and Immunity in Australia, to combat existing and emerging infectious diseases. We are also expanding ESR's wastewater epidemiology programme to further build on the insights gained about overall community health.

We are also exploring how we can partner with the health sector to increase investment in critical public health surveillance infrastructure and systems, which will enable greater resilience and support.

We are growing our capacity in 'disaster microbiology' to take a holistic approach to response, recovery and resilience efforts that will further improve public health, food safety and environmental outcomes through sustainable and safe land use and restoration. The strength of our partnership approach with Māori for Māori was recently demonstrated through iwi affected by Cyclone Gabrielle proactively seeking advice from ESR on silt contamination and asking ESR to assist in managing the silt impact on marae and elsewhere.

We have several Memorandum of Understanding and collaboration agreements in place with New Zealand universities. We are working to develop overarching, longer-term agreements for cooperation in areas of mutual interest and future focus. We are developing a strategy that will broaden ESR's *Extending Research Capacity* programme that will broaden links to other CRIs and universities to increase resource sharing and sustain long-term benefits.

Through our research and stakeholder partnerships, we look to build on the commercial successes of ESR's ground-breaking and award-winning products Lumi™ and STRmix™. Developing and deepening innovation and commercialisation pipelines is essential for achieving new commercial pathways supported by robust commercial infrastructure that will enable us to deliver more impactful outcomes for communities nationally and internationally.

### **Strengthening business systems and processes to increase efficiency with regards to security, governance, and sustainable activities**

We need to have the right mix of research infrastructure, science capabilities, organisational systems and

governance that will allow ESR's people and science to flourish for increased resilience and sustainability.

Our aim is to ensure that as a science organisation we have the systems, processes and decision-making that grow the organisation and ensure that ESR is sustainable and resilient. We are strengthening our data security to ensure that we retain the trust of our critical partners and stakeholders. We see significant opportunities for improving public health surveillance technology through co-funded investment arrangements and we are exploring these options with our key stakeholders.

ESR's Technology Roadmap is a key instrument to ensure that our technology investment decisions provide our scientists with the most appropriate technologies to support ESR's wellbeing outcomes.

Our joint GNS-ESR Enterprise Resource Planning system Workday is a key component for improving business support systems to deliver our science. Embedding increased functionality will allow us to advance and improve several critical workstreams that will help us manage business risks and better support our people and research with fully integrated systems that promote quality and excellence through informed decision-making. This collaborative business system approach drives down costs and improves business system efficiencies across the two CRIs.

The Protective Security Requirements (PSR) Programme is a framework that outlines the Government's expectations for security governance and for personnel security, facilities- and process-related physical security, and information security. As a scientific organisation, it is critical that ESR has information, personnel and physical (facility and process) security that manages our risk and provides protection from potential threats. Through implementing protective security requirements to mitigate the security risks we face, ESR is better able to protect our information, facilities, and people, and maintain our reputation as a provider of quality, world-class scientific research and services.

Through our Project Management Office (PMO) we look to further strengthen our project decision-making and management to ensure that our investments deliver the maximum impact on time and on budget.



## Ō mātou putanga Our outcomes

**In order to meet our strategic objectives we have identified five organisational and system outcomes, which are the anticipated changes in capability and capacity we expect to see in the next 3–5 years.**

These are the areas where we are focusing our efforts to best position ESR for the future. We will empower our people, expand collaboration through participation, partnership and knowledge, further lift research capability and capacity and ensure governance, systems and processes support the right e-infrastructure.

### The changes we want to see

The following diagram articulates the five outcomes we expect to see over the longer term, which will result from the mix of science and organisational inputs and activities we intend to deliver.

|  |  |   |   |  |
|--|--|---|---|--|
| Increased Māori partnership, participation, leadership and mātauranga Māori in research, delivering greater impact with and for Māori. | A thriving people-centred workplace that embraces Te Tiriti. | Increased trust and value in ESR's science and applied research through delivered thought leadership and collaboration. | Reduced health, justice and environmental inequities and improved wellbeing for communities through innovative applied community focused science. | Increased long-term organisational and system sustainability and resilience through innovation, collaboration and system security. |
|--|--|---|---|--|

### **Increased Māori partnership, participation and leadership**

- Māori exercise more influence and control over their research priorities of interest. ESR partners to develop and participate with iwi to protect their taonga and data, and delivers solutions through greater integration of research with communities, and enables ownership of wellbeing outcomes by communities.
- ESR is known as a science organisation that is a proactive facilitator and enabler of Māori-led research with the relevant flexibility as a committed research partner that supports longer-term research on issues of specific interest to Māori.

### **A thriving people-centred workplace that embraces Te Tiriti**

- An organisation that creates more pathways for Māori to participate in, and advance, science excellence through the diversity of ideas, that embeds mātauranga Māori, and promotes integrated and connected approaches to generate research excellence.
- A workforce that is representative of the Aotearoa New Zealand working population, and a workplace that is engaging, empowering and provides meaningful challenges and opportunities to grow and develop.
- All ESR staff are empowered and supported to proactively engage and participate in culturally appropriate and safe ways that respect tikanga and mātauranga Māori, and that demonstrate authentic partnership and commitment to Te Tiriti o Waitangi, and empowering ESR's Māori researchers to focus on innovation.

### **Increased trust and value in ESR's science and applied research**

- Integrated and balanced research programmes, projects and services that will continuously improve ESR's science quality and thought leadership, and deliver increasing technology and knowledge transfer.
- Strengthened collaboration to deliver innovative science solutions for communities that increase long-term resilience and sustainability for both ESR and the wider RSI system.
- ESR's profile and reputation as a trusted science organisation continues to grow nationally and internationally through the delivery of comprehensive and connected science solutions of increasing and enduring benefit.

### **Reduced health, justice and environmental inequities**

- ESR's science and science-led services support the strategic outcomes of the health, environment and justice sectors. Our contribution to resilient health, environment and justice systems will include enhanced and integrated genomic platforms and toolkits and real-time monitoring using data science and artificial intelligence to mitigate and prevent infectious disease, reduce drug harm, and environmental contamination. We actively seek opportunities to lead in our areas of expertise and contribute to national research priorities through national and international strategic collaborations that generate better connectedness and participation through the sharing of resources and knowledge for the enduring benefit of communities and the RSI system. Our science contributes to removing inequity in those impacted by infectious disease, and the justice system and environmental degradation.
- Continue to grow commercialisation opportunities. For example, ESR's investment in STRmix™ to increase the range of products to decode complex DNA, and investing in Lumi™ to expand into new markets and further enhance Lumi's™ capabilities for greater effectiveness in removing drug harm, are examples of research to commercialisation innovation that deliver improved outcomes for communities.

### **Increased long-term organisational and system sustainability and resilience**

- ESR continues to be a sustainable and respected science organisation. We continue to review, flex and invest to increase sustainability and resilience that ensures we have the right resources and infrastructure to ensure success. We seek to grow ESR's research and commercial opportunities, to increase our global presence and increase national and international co-funding opportunities.
- ESR's Strategic Science Investment Funding percentage grows by demonstrating that rebalancing research and funding priorities for forensics, human and environmental health would enable the government to invest in future resilience, and get a greater return on its investment.



## Ō mātou aronga

# Our areas of focus

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### Our science and research

To deliver on our outcomes and strategic objectives our science and research is focused on:

- Integrated research and services in health, environment and forensics that provide iwi and hapū with confidence and support their aspirations for hauora, wai, kai and whenua.
- Genomics approaches for the faster and more accurate surveillance of pathogens to reduce health, food and environmental harms to improve wellbeing outcomes through robust and informed decision-making and prevent and mitigate infectious diseases.
- Genomics, data science and artificial intelligence tools to improve justice outcomes and reduce justice inequities.
- Water systems (groundwater, surface water resources, and wastewater) are sustainably managed and the quality of these is improved.
- Data visualisation tools and insights that support our goal to establish data science models using state-of-the-art algorithms to underpin decision-making, inform policy settings and improve data visualisation and real-time monitoring tools for end-users.

### Our science direction and investment

To achieve greater impact for Māori, healthier and safer communities, safer food and cleaner water and environment, our investment in research is focused on the following funding streams:

- Transformative science and research for pioneering and 'blue sky' research projects and exploring new technologies.
- Community-aligned science for projects and services that provide a direct pathway to science solutions for communities.
- Strategically aligned science and research for projects that maximise value and strategic position across the Forensic, Health, Food, Water and Environment impact areas.
- Commercially aligned science and research for projects that can deliver new commercial products, or services.

### Our acceleration investment opportunities

To deliver greater impact we have identified five acceleration opportunity areas to focus our investment over the next one to three years:

- Mātauranga Māori led and partnered research.
- Infectious disease monitoring.
- Health-related impact of climate change.
- Artificial intelligence.
- Forensic commercialisation.

### Our science pathways to impact

Our science impact pathways describe the specific research pathways/areas where we are focusing our efforts through our research inputs and activities to achieve impact. Our four **pathways to impact are:**

- **Creating impact for communities:** ESR's science is focused on delivering impact for communities. This aligns with the expectations of Te Ara Paerangi, which seeks to have greater community involvement and engagement in determining science priorities. This impact pathway encourages the involvement of communities in our science-building experience and connections for our scientists.
- **Point-of-need monitoring and testing capability:** The miniaturisation and commoditisation of technology will have profound effects on the science we perform. New ways of sampling and testing will alter how we deliver our science as exemplified by Lumi™. This impact pathway ensures that however the data we require is produced, whether by ourselves or other agencies, we are able to deliver innovative solutions for the needs of our communities.
- **Health-related climate change research and services using cross-capability projects to increase impact:** Similar expertise is directed across ESR's different domains. This is seen in genomics, data science and microbiology. We aim to harness this expertise, binding different capabilities together, interweaving skills, and creating new and enduring innovation bridges. This will encourage more cross-programme, cross-platform multidisciplinary projects to solve iwi, government, sector and agency challenges and support national research priorities.
- **Data science solutions and visualisation:** The value of the research we do lies in the insights and advice that we provide through the data we analyse. We need to collect, transform, analyse, integrate, model, and present our data in formats that meet the needs and expectations of our communities. This impact pathway is aimed at ensuring ESR is at the

forefront of data science approaches across all our areas of work, to become a standard part of project development.

### Research programmes and projects

ESR's research programmes, are funded by the Strategic Science Investment Fund (SSIF) and re-investment of returns from commercial activities, and are made up of one or more projects that are complementary and/or connected to achieve the programme's overall objectives.

ESR has the following research and science-led service programmes:

- **Māori-led research** through ESR's He Wai Māpuna programme and other outreach programmes aimed at supporting Māori leadership, and creating Māori-led research pipelines that are important to Māori and will achieve equitable outcomes in areas of interest.
- **Genomics programme** that creates genomic toolkits and techniques that will further expand surveillance capability and ESR's ability to detect and address complex issues in forensic sciences, epidemiology, precision health, food safety, environmental and water science by creating fresh insights and intelligence.
- **Data science and artificial intelligence** aimed at creating frameworks, which are improving user-centric data technologies and tools to develop digital twins that users can interact with to experiment into the future, in order to gain insights about actions that need to be taken today to achieve the best outcomes.
- **Wastewater-based epidemiology** (antimicrobial resistance, drugs in wastewater, pathogen detection).
- **Water and environment quality** (groundwater and surface water, and biowaste management).
- **Forensic sciences** (robust and comprehensive forensic expertise, services, and research and development).
- **SHIVERS research** (influenza, COVID-19 and respiratory virus research).
- **Antimicrobial surveillance and research** that will improve our understanding of the genetic elements of organisms that influence and spread antimicrobial resistance and communicable diseases.

## Cross-Strategic Science Investment Fund platform research delivery

ESR receives SSIF funding for research across three platforms:

- Human and environmental health.
- Forensic science.
- Infectious diseases (from 2023).

Last year, we significantly increased our SSIF funding (more than 17%) in cross-platform research.

We continue to prioritise investment in cross-capability research projects and service offerings to close knowledge gaps, and increase relevance and impact. Integrated multi-disciplinary and cross-sector research is vital for transformative research that will support ESR's future sustainability and resilience.

In FY24 our SSIF funded research projects are focused on the areas of environmental, forensic, health and Māori impact.

| Impact area              | Project   |
|--------------------------|---|
| Data Science             | Digital Twins: enabling true data-driven decision making.   |
| Environment              | Groundwater Health Index – from data to decision making, the next frontier.   |
| Environment/Māori Impact | Groundwater in a warming world: Assessing resilience, threats and implications for groundwater and reliant communities in Aotearoa. |
| Environment/Māori Impact | Ōhanga Āmiomio – Tikanga led modelling of reduction and resource recovery from human waste and wastewater.                          |
| Forensic                 | Biosensing of illicit drugs in oral fluid – for workplace and roadside testing (Project extension – years 3 and 4).                 |
| Forensic                 | Forensic genetic genealogy: future focus.   |
| Forensic                 | Forensic Science and the Gender Diverse Community.  |
| Forensic/Māori Impact    | Psilocybe werarua – is there magic in this mushroom?  |
| Health                   | Real time surveillance of Legionella through metagenomics.  |
| Health/Māori Impact      | Expanding knowledge on health of recreational fisheries – Te Awarua o Porirua as a study case.                                      |
| Health/Māori Impact      | A novel equitable programme for mapping meningococcal carriage in Aotearoa.   |
| Health/Māori Impact      | Developing a rapid, low-cost assay for point-of-need pathogen detection.  |

## Strong data science and artificial intelligence capability

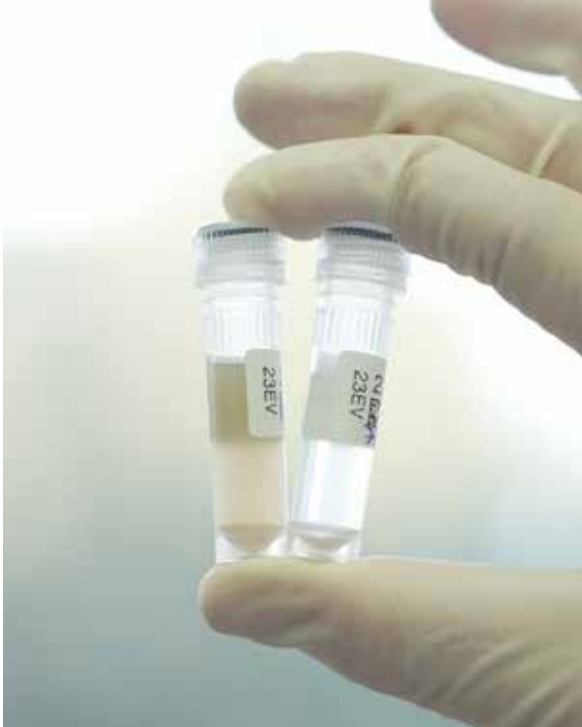
We are continuing work to strengthen data governance practices around ethics, approaches to algorithms and artificial intelligence that will support ESR's strategic direction and capability for real-time data and intelligence. We have built an enterprise data science team that works as a horizontal pillar supporting the

core sciences and also as a vertical pillar that leads strategic research, such as digital twins and image processing on mobile devices.

We are focusing on:

- Investing in our new modern data platform that helps us better integrate our data and allows scientists to experiment with data in ways not possible before, and to generate new insights and collaboration





opportunities. This platform complements our High Performance Compute capability, which is core to our genome sequencing and complex data modelling.

- Engaging with universities in Aotearoa and internationally building collaboration, including joint data science research initiatives, and we have taken on our first PhD student and Masters students.
- Building enabling governance and Māori data sovereignty principles and practices into the DNA of how we work. This includes embedding the pan-CRI developed Māori data sovereignty principles into our work and becoming a signatory to the Algorithm Charter for Aotearoa New Zealand. This Charter informs ESR's data strategy and further informs ESR's Responsible Use of Artificial Intelligence Framework, which is integral for maintaining confidence and trust in ESR's science.

### **Excellence in research collaboration**

Our activities are focused on:

- Generating innovation and creating increased opportunities for user-centric co-design to improve frontline responsiveness, especially about health-related climate issues. This includes developing clinical metagenomics databases and programmes, using cost-effective infrastructure and methodologies, to provide essential tools that support how infectious diseases are managed.
- Continuously nurturing and improving our partnership and collaboration approaches by ensuring our partnerships align with ESR's science strategies, especially in the areas of genomics and data science to support ESR's future science direction and strategic objectives.

- Creating new training and research opportunities for ESR's early career researchers by increasing our links with other science organisations and CRIs. This will further lift their skills, support career growth and provide opportunities to further broaden their skills and access to resources and infrastructure. It will also allow us to retain critical knowledge and promote ESR as a research environment that is known for its excellence and thought leadership.

### **Influential national and international partnerships and Māori-led research pipelines**

Everything we do at ESR aims to deliver science that benefits communities. To do that, we work with a broad range of national and international collaborators such as iwi, science organisations, universities, health providers and government agencies.

For ESR, the principle of partnership means:

- Acknowledging the importance of mātauranga Māori and embedding a partnership and participation approach that will help spark new science and partnership impact pathways.
- Having the systems, processes and cultural capability to help drive a partnership and innovation mindset across ESR's work.
- Growing resilience and sustainability through enduring national and international partnerships.

Te Niwha is a new model of working and governance with the University of Otago (as joint co-host) and key Māori partners that aims to take an integrated, holistic approach to reduce inequities in infectious diseases and health responses. The Te Niwha Infectious Diseases Platform outlines a comprehensive approach to research and response in Aotearoa New Zealand, focusing on partnership and collaboration with Māori and our most vulnerable communities, and a commitment to the principles of Vision Mātauranga and Te Ara Paerangi.

We will ensure that as we develop and refresh new science strategies for ESR, these will support the platform plan objectives of Te Niwha.

Through our relationship with Pūhoro STEMM Academy, we are refining our new training and teaching opportunities for Pūhoro to maximise the value of this essential relationship. With approximately two percent of Māori represented in the sciences, ESR is committed to providing potential career pathways and



opportunities to and for rangatahi that will support the government's long-term goal of developing Aotearoa New Zealand's RSI workforce offering.

ESR's He Wai Māpuna programme continues to expand with the focus remaining on strengthening relationships and growing ESR's Māori-led research. Establishing these relationships is essential to help shape and develop new research pipelines.

Each of our partners has a different focus based on their unique environment and whānau aspirations. We will work to nurture and develop a mutual understanding of what is important to our partners and what ESR researchers and scientists are able to offer, in order to undertake co-designed research and services that will make a real difference.

Impact for the community is our focus, and living the principles of manaakitanga (hospitality and care) and kotahitanga (collaboration) guides our relationships.

Our track-record and expertise in biowaste research is supporting our iwi collaborators with the aspirations for their rohe. This includes working on an iwi-led enquiry for investigating the beneficial reuse of wastewater for establishing manuka – a key taonga species – while also improving water quality.

### **Strong commercialisation infrastructure and Developed innovation and commercialisation pipelines**

ESR's focus is on strengthening our commercialisation pathways. A critical enabler is the infrastructure that supports this.

We are undertaking the following activities to boost ESR's commercialisation infrastructure and develop innovation and commercialisation pipelines:

- Expanding our Lumi™ team (an important infrastructure asset) that will further strengthen and shape ESR's commercialisation pathways and developing enhanced validation processes for Lumi™ Drug Scan to support market expansion.
- Reviewing our STRmix™ commercialisation approach to ensure that these valuable forensic software tools continue to be financially resilient and sustainable.
- Boosting our relationships with the Joint NZ Police/ ESR Strategic Governance Group to further enhance opportunities for co-design and exploring new opportunities such as the use of aptamers.
- Building a genomics service design to expand ESR's ability to better identify opportunities and fund new or existing research areas that cannot be funded by SSIF alone.
- Growing a pipeline of commercial products based on current research underway in emerging technologies such as aptamers and advanced cellular systems, such as organ-on-a-chip.

### **Our people and systems**

In order to achieve our research aspirations and service delivery we need a strong capable workforce equipped with the skills to address the challenges our diverse communities face.

#### **A people-centred workforce**

ESR's focus is on continuing to develop our people-centred workforce through the following activities:

- Promoting, facilitating and empowering participation in sustainability and health, safety and wellbeing initiatives to mature ESR's sustainability and health

and safety and wellbeing programmes. This will drive accountable, evidence-based change to ensure ESR's people are protected from harm and embed robust and responsible sustainability practices across all areas of ESR's science and business practices.

- Undertaking the actions outlined in ESR's Kia Toipoto Action Plan to ensure ESR's staff are valued through fair remuneration by reducing ESR's organisational pay gap and acknowledging the value of ESR's people by developing promotion practices that support career development and workforce retention.
- Reviewing our recruitment practices and building pathways into ESR, focusing on the actions we identified in our Kia Toipoto Action Plan. We recently launched ESR's Early Career Researchers group to develop a community within ESR for those near the beginning of their careers to provide career support through sharing ideas regarding relevant issues and create opportunities for professional and personal development, career progression and networking within ESR and other CRIs. Early career has a wider definition than factors such as age, level of educational training or work experience.

### **A culturally capable and competent organisation**

ESR's focus is on continually developing the capability of our people through the following activities:

- Continuing our commitment to building cultural awareness and implicit bias knowledge through training programmes that will equip ESR's 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.
- Increasing our focus on developing competent and confident leaders.

### **Effective systems, processes and practices**

ESR's focus is on improving our internal systems, processes and practices through the following activities:

- Enterprise-wide portfolio work programme activity that is underway to align prioritisation, management of resources, investment and optimisation of our overarching portfolio of work to our long-term strategic direction. This includes developing new

processes and reviewing our enterprise systems and risks to evaluate accountable, effective and efficient decision-making.

- Project management is strengthened 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.
- Investment management, prioritisation and governance practices are robust and support integrated decision-making through ethical and sustainable investment choices in our people, infrastructure and science to generate the best value for Aotearoa New Zealand within ESR's operating context and constraints.
- Investment in data security and governance to ensure that the infrastructure that supports our science and service is robust and flexible, maintaining the trust and confidence of those who use ESR's data for critical analysis, intelligence and decision-making. This includes implementing Snowflake, a modern data platform that allows us to do more with our data in a safe and governed environment, which includes data warehousing, data bases for our research data, 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 will continue to uplift our Protective Security Requirements (PSR) maturity through the delivery of a cross-organisational work programme that has been developed following the PSR capability maturity model self-assessment and the completion of two external reviews of physical and personnel security at ESR.



## Ngā mahi ka tukua e mātou

# What we will deliver

Our key performance indicators are aligned with our strategic objectives.

### Strategic objective:

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

| Performance measure   | Measure purpose and intention   | FY24 target | FY23 target | Reporting frequency |
|---|---|-------------|-------------|---------------------|
| Percentage increase from FY22 baseline in the number of co-designed research projects with iwi        | The purpose of this measure is to demonstrate growth in ESR's investment in a pipeline of impactful Māori research.                     | ≥ 20%       | ≥ 12%       | Reported annually   |
| Percentage of SSIF funding allocated to projects led by and co-designed with Māori                    | The purpose of this measure is to demonstrate growth in ESR's investment in a pipeline of impactful Māori research.                     | ≥ 20%       | ≥ 12%       | Reported annually   |
| Percentage satisfaction of key partners with our approach and delivery of the He Wai Māpuna programme | This measure shows that a pipeline of co-designed research programmes and relationships are developed to achieve enduring partnerships. | ≥80%        | New measure | Reported annually   |

Strategic objective:

**Reshaping ESR Science to provide integrated thought leadership in the health, environment, and justice sectors**

| Performance measure  | Measure purpose and intention   | FY24 target | FY23 target     | Reporting frequency |
|--|---|-------------|-----------------|---------------------|
| <b>Percentage increase in SSIF investment in multi-disciplinary, cross-platform research projects from FY23 baseline</b> | This measure demonstrates ESR's ability to take a holistic approach to solving problems by integrating innovation and thought leadership to detect issues, connect at the right time and protect communities. It also demonstrates ESR's ability to move from siloed thinking to greater collaboration internally and externally. | ≥10%        | Amended measure | Reported annually   |
| <b>Establish an integrated enterprise data science practice approach across ESR's science domains by 30 June 2024</b>    | An integrated data science practice and approach are critical for delivering fresh insights, closing knowledge gaps and creating opportunities for new research that will grow research excellence.   | Achieved    | New measure     | Reported annually   |
| <b>Number of international proposals submitted and accepted</b>  | This measure demonstrates ESR's collaboration and raises awareness of ESR on the international stage. The ability to successfully secure international funding for research will increase impact and develop transformative science.  | ≥3          | ≥3              | Reported annually   |
| <b>Overall success rate of external research bids</b>  | The ability to secure external funding is an indication of the quality and impact of ESR's research. Only the best applications are awarded funding. The success of this measure also indicates whether ESR's systems and processes adequately support ESR's scientists and science direction.                                    | ≥15%        | ≥15%            | Reported annually   |

**Strategic objective:**

**Recognition as an exemplar of a thriving people-centred workplace**

| <b>Performance measure</b>  | <b>Measure purpose and intention</b>   | <b>FY24 target</b>                         | <b>FY23 target</b>                         | <b>Reporting frequency</b> |
|---|--|--|--|----------------------------|
| <b>Percentage of ESR's current permanent staff who have participated in a minimum of two foundational cultural capability courses</b> | The purpose of this measure is to equip ESR's staff to be successful in developing culturally respectful and accountable practices.  | ≥55%                                       | ≥50%                                       | Reported quarterly         |
| <b>Establish employee diversity baseline and monitor</b>  | This measure will help provide evidence that ESR is committed to being a fair and equitable employer by ensuring that biases are identified and eliminated in the workplace. It will also provide insights into whether ESR's D&I initiatives or work programme is delivering results. This measure will form part of a further suite of measures to be developed that will provide insights into diversity and equity, including pay equity measures. | Improving against the established baseline | Improving against the established baseline | Reported annually          |
| <b>ESR's gender pay gap continues to reduce against the 2022 baseline of 15.6%</b>  | The purpose of this measure is to track the reduction in the gender pay gap as outlined in ESR's Kia Toipoto Action Plan.  | Improving against the established baseline | New measure                                | Reported annually          |
| <b>ESR continuously improves against the annual WorkSafe New Zealand SafePlus audit</b>   | This measure tracks ESR's health, safety and wellbeing maturity as assessed by an independent audit.   | Establish baseline                         | New measure                                | Reported annually          |

**Strategic objective:**

**Growing sustainable partnerships to provide innovative community focused science solutions / commercialisation**

| <b>Performance measure</b>   | <b>Measure purpose and intention</b>   | <b>FY24 target</b>                                    | <b>FY23 target</b> | <b>Reporting frequency</b> |
|--|--|---|--------------------|----------------------------|
| <b>The portfolio of drugs able to be accurately detected by Lumi™ analysis increases</b>                       | This measure ensures that the Lumi™ product increases its usefulness and commercial appeal through broader application of use. | ≥3  | New measure        | Reported annually          |
| <b>The accuracy rate of drugs detected by Lumi™ analysis increases through six-monthly performance updates</b> | This measure ensures that the Lumi™ product increases its usefulness and commercial appeal through increased accuracy.         | 2 improved performance updates delivered to customers | New measure        | Reported annually          |

**Strategic objective:**

**Strengthening business systems and processes to increase efficiency with regards to security, governance, and sustainable activities**

| <b>Performance measure</b>  | <b>Measure purpose and intention</b>   | <b>FY24 target</b>      | <b>FY23 target</b>      | <b>Reporting frequency</b> |
|---|--|-------------------------|-------------------------|----------------------------|
| <b>ESR's cyber security maturing rating is maintained or enhanced</b>             | This is an enduring measure. ESR assesses its cyber security maturity rating across five areas: Identify, Protect, Detect, Respond and Recover. Quarterly assessments are provided to the Board. The cyber security rating provided is the difference between two ratings at a point in time. The average percentage increase (or decrease) across the five criteria is reported as the score. | Improving or maintained | Improving or maintained | Reported annually          |
| <b>ESR's project governance and management practices are enhanced</b>             | This measure will help give ESR insight into how project management and governance practices are maturing as assessed against best practice.   | Establish baseline      | New measure             | Reported annually          |
| <b>ESR's total corporate emissions of CO<sub>2</sub>e are effectively managed</b> | The purpose of this measure is to track ESR's total CO <sub>2</sub> e over time to identify whether ESR's sustainability initiatives are making a difference.  | Not increasing          | Establish baseline      | Reported annually          |







# Ngā Āpitianga

## Appendices

### Appendix 1: Ko ngā inenga matua whānui a Hīkina Whakatutuki me Ministry of Business, Innovation and Employment generic performance indicators

All Crown research institutes are required to report performance against the following measures.

| 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           |

### Core generic performance measures

These generic performance measures are designed to provide consistency across all **Crown research institutes**.

| Government priorities  | Strategic objectives                         | Performance measure   | Purpose   | FY22 Actual | FY23 Forecast | FY24 Target |
|--|--|---|---|-------------|---------------|-------------|
| Growing investment in research, science, and innovation  | Strengthening business systems and processes | <b>End-user collaboration:</b> 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.                  | \$164,000   | \$210,000     | \$207,000   |
|  |  | <b>Financial indicators:</b> revenue per FTE  | Amount of revenue per FTE.  | \$211,000   | \$238,000     | \$238,000   |
| Increasing the diversity and quality of the research science and innovation workforce, including growing excellence and collaboration in research activity | Reshaping ESR Science                        | <b>Science quality:</b> impact of science publications                                      | Impact of science publications (measured using a web of science citations for the previous calendar year).  | 4.25        | 4.0           | 5.4         |
|  | Reshaping ESR Science                        | <b>Research collaboration:</b> publications with collaborators                              | These refer to publications prepared in collaboration with authors at other New Zealand institutes and/or international authors.  | 65          | 80            | ≥85         |
|  | Reshaping ESR Science                        | <b>Technology and knowledge transfer:</b> 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. | 0.20        | 0.39          | ≥0.39       |

## Appendix 2: Financial projections

### Revenue

ESR's revenue performance in FY23 is consistent with the previous financial year, following growth from FY22 in support of the Ministry of Health COVID-19 response efforts. There are also improved earnings from other core contracts, commercial operations and research activity.

Pandemic response activity for the Ministry of Health is expected to continue at current levels through FY24 as this work transitions to a business-as-usual footing. This drives a fall in ESR's total FY25 revenue of 3.6% with a corresponding adjustment in cost for a similar margin.

ESR is anticipating modest growth in other revenues from FY24, reflecting improved research earnings (including influenza research and the effect of ESR co-hosting the Infectious Disease Research Platform with the University of Otago), the more sustainable terms incorporated into core government contracts and improved commercial earnings underpinned by the sale of STRmix™ forensic software in North America, Europe, and Australasia with product development continuing and new markets being established. There is also planned expansion of the Lumi™ forensic software into international markets, beginning with Australia.

### Expenditure

Operating expenses are budgeted to increase in FY24 reflecting continued investment in ESR's staff capacity, focused on an uplift in science capability and targeting increased spending across IT infrastructure, security, and health and safety. To mitigate inflationary pressures on costs, the organisation is actively reviewing contracts to ensure adequate margins are achieved.

As noted above, a reduction in service delivery is forecast for FY25, in line with the transition of the Ministry of Health COVID-19 response activity to a more business-as-usual basis.

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

ESR has also instigated a number of programmes to review opportunities for both short- and longer-term cost reduction, led by the Senior Leadership Team and being implemented across the whole organisation.

### Investment

Although awaiting overall project approval to proceed and funding from the Shareholding Ministers, the Developed Design for the redevelopment of the Kenepuru Science Centre is due to be completed in July 2023. Initial demolition works are planned to commence as soon as the redevelopment project Detailed Business Case is approved. The new facility is expected to be completed and occupied in 2026.

ESR completed a successful replacement of its Enterprise Resource Planning (ERP) and Human Resource Management (HRM) systems, with core system implementation completed in FY22 and Phase 2 functionality was implemented during FY23. The selected system is Workday, a cloud-based Software-as-a-Service system, and this requires system configuration and implementation costs to be largely expensed as incurred. This accounting treatment impacts on the post-tax profit forecast for FY23.

The SCI also provides for investment in ESR's Laboratory Information Management Systems (LIMS) across FY24 and FY25, and continued investment in the renewal of scientific plant and equipment, and other infrastructure.

### Cash Flow

Funding of the redevelopment of the Kenepuru Science Centre includes a \$25m capital contribution from the Government, approved by Cabinet and held by Treasury. Given substantial construction inflationary pressures incurred by delays in receiving approval to proceed, ESR has requested additional support from the Government to enable it to proceed as planned. This revised additional 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 debt facilities anticipated in FY26.

### Risk

There is uncertainty associated with ESR's revenue forecasts. The SCI assumes growth in research revenues from existing contestable and new sources, supported by increased investment in science capabilities and capacity, as well as increased commercial revenues from sales of STRmix™ and Lumi™ software dependent on ongoing product and market development. Financial performance is also underpinned by the sustainability of terms to ESR's core government contracts.

The continuing challenges facing the Wellington construction industry are not expected to resolve quickly and present some ongoing risk to the costs associated with development of the Kenepuru Science Centre.

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. 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.

## Ngā Tūtohu Whakahaere Pūtea / Financial performance indicators

The table below shows the key financial performance indicators for the five-year period FY24–FY28.

| Financial performance indicators                             | FY24<br>Budget | FY25<br>Forecast | FY26<br>Forecast | FY27<br>Forecast | FY28<br>Forecast |
|--|----------------|------------------|------------------|------------------|------------------|
| <b>Revenue (\$000s)</b>                                      | 131,197        | 126,480          | 131,404          | 139,876          | 144,475          |
| Revenue Growth   | 0.7%           | -3.6%            | 3.9%             | 6.4%             | 3.3%             |
| Revenue per FTE (\$000)                                      | 238            | 240              | 247              | 261              | 258              |
| <b>Operating Results (\$000s)</b>                            |                |                  |                  |                  |                  |
| Earnings Before Interest, Tax, Depreciation and Amortisation | 8,143          | 10,817           | 12,168           | 15,078           | 15,245           |
| Net Profit after Tax   | 1,514          | 2,720            | 2,827            | 1,669            | 1,998            |
| <b>Liquidity</b>   |                |                  |                  |                  |                  |
| Quick Ratio (Acid Test)                                      | 2.2            | 1.3              | 0.9              | 0.9              | 0.9              |
| <b>Profitability</b>   |                |                  |                  |                  |                  |
| Return on Equity   | 2.3%           | 3.3%             | 3.1%             | 1.8%             | 2.1%             |
| Operating Margin   | 6.2%           | 8.6%             | 9.3%             | 10.8%            | 10.6%            |
| Operating Margin per FTE (\$)                                | 14,800         | 20,600           | 22,900           | 28,100           | 27,200           |
| <b>Operational Risk</b>                                      |                |                  |                  |                  |                  |
| Profit Volatility  | 32.9%          | 18.8%            | 19.7%            | 17.2%            | 12.2%            |
| <b>Growth/Investment</b>                                     |                |                  |                  |                  |                  |
| Capital Expenditure (\$000)                                  | 21,200         | 43,880           | 32,667           | 5,300            | 5,356            |
| Capital Renewal  | 2.9            | 5.5              | 4.1              | 0.7              | 0.4              |
| Dividend   | -              | -                | -                | -                | -                |
| <b>Financial Strength</b>                                    |                |                  |                  |                  |                  |
| Gearing (Debt*/Debt and Equity)                              | 4.4%           | 3.3%             | 2.9%             | 2.6%             | 2.3%             |
| Equity Ratio (Equity/Total Assets)                           | 66%            | 70%              | 65%              | 65%              | 71%              |
| Cash reserves (\$m)  | 32.4           | 14.5             | 3.7              | 4.0              | 5.4              |
| Debt* (\$)   | 2.9            | 2.7              | 2.5              | 2.2              | 1.9              |

\* Lease liabilities

## Appendix 3: Subsidiary

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

## Appendix 4: Ngā tauākī kaupapahere me ngā hātepe a ESR / ESR policy and procedure statements

### 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/home/about-esr/corporate-publications/2022-annual-report](http://www.esr.cri.nz/home/about-esr/corporate-publications/2022-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
- 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
- the obligations of the Directors under the Companies Act 1993 and other statutory requirements.

Before making a decision 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% 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% 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
- 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 5: Matters required by the 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   | 2022/23 | 2023/24 | 2024/25 |
|--------------|---------|---------|---------|
| Equity ratio | 0.59:1  | 0.66:1  | 0.70:1  |

### 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 2022 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 2022, was \$60.62 million.

# Directory

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**ESR has science facilities in Auckland, Wellington (Porirua and Wallaceville) and Christchurch.**

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

## **Mt Albert Science Centre**

120 Mount Albert Road, Sandringham, Auckland 1025  
Private Bag 92021, Auckland 1142, New Zealand

## **Registered office: Kenepuru Science Centre**

34 Kenepuru Drive, Porirua 5022  
PO Box 50348, Porirua 5240  
T +64 4 914 0700

## **Wallaceville Science Centre**

66 Ward Street, Wallaceville,  
Upper Hutt 5018  
PO Box 40158, Upper Hutt 5140,  
New Zealand

## **Christchurch Science Centre**

27 Creyke Road, Ilam, Christchurch 8041  
PO Box 29181, Christchurch 8540, New Zealand

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### **Auditor**

PricewaterhouseCoopers  
on behalf of the Auditor-General

### **Banker**

ANZ Bank New Zealand Limited

### **Solicitor**

Buddle Findlay

# Science working for New Zealand

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



[www.sciencenewzealand.org](http://www.sciencenewzealand.org)

4,400

SMART AND  
PASSIONATE PEOPLE

54

SITES ACROSS  
NEW ZEALAND

6,000

SCIENCE PROJECTS  
EACH YEAR

40

NATIONALLY SIGNIFICANT  
DATABASES & COLLECTIONS

