

# STATEMENT OF CORPORATE INTENT

2015–2020

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THE SCIENCE  
BEHIND THE  
TRUTH

# KEEPING PEOPLE SAFE AND HEALTHY THROUGH SCIENCE.

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

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ESR is a Government-owned Crown research institute (CRI) that delivers world-class knowledge, research and laboratory services to help New Zealand get the most out of its investment in science and innovation.

We use the power of science to help our partners and clients solve complex problems and protect people and products in New Zealand, and around the world.

It's our independent scientific advice and services that are behind the decisions that safeguard people's health, protect our food-based economy, improve the safety of our freshwater and groundwater resources and provide the justice sector with expert forensic science.

### PURPOSE

ESR's purpose is to deliver enhanced scientific and research services to the public health, food safety, security and justice systems, and the environmental sector to improve the safety of, and contribute to the economic, environmental and social well-being of people and communities in New Zealand.

### OUTCOMES

ESR provides research and scientific services and knowledge transfer in partnership with key stakeholders including government, industry and Māori to:

- Safeguard the health of New Zealanders through improvements in the management of biosecurity and threats to public health
- Increase the effectiveness of forensic science services applied to safety, security and justice investigations and processes
- Enhance protection of New Zealand's food-based economy through the management of food safety risks associated with traded goods
- Improve the safety of freshwater and groundwater resources for human use and the safer use of biowastes.

### SCOPE OF OPERATION

To achieve these outcomes ESR is the lead CRI in:

- The surveillance of human pathogens and zoonotic diseases
- Harm prevention from drugs and alcohol
- Forensic science services
- Domestic and export food safety in partnership with regulators
- The impacts of the environment on human health, including groundwater, freshwater and drinking-water quality and safe biowaste use
- Integrated social and biophysical research to support decision-making in the environmental, public health and justice sectors.

## EXECUTIVE SUMMARY

We are pleased to present ESR's 2015–2020 Statement of Corporate Intent (SCI). This SCI explains our future operating environment, our strategy, the activities we will undertake to achieve our outcomes and our five-year financial outlook.

ESR's strategy is a focused change agenda spanning three strategic themes.

- We are strengthening the core of ESR by investing in our people, improving our customer focus, growing our science capabilities and developing our information technology (IT) to meet the growing demands of our scientific data.
- We are driving growth through commercialisation, forming new partnerships and attracting new international customers for our science services, while continuing to provide world-class scientific services to our existing customers.
- We are exploring a potential step-change by monitoring and identifying how we can apply international advances in human genomics to deliver significantly improved outcomes for New Zealand's healthcare system.

The independent four-year rolling review conducted in 2014 supported ESR's strategy and the findings are being addressed through our strategic initiatives.

This SCI also outlines the activities we will undertake to contribute to the four outcomes in our Statement of Core Purpose – public health, forensic science services, food safety and water quality. A targeted investment of core funding will improve the impacts we have on all four outcomes.

- In public health we will develop our human genomics and next-generation sequencing capabilities to support our step-change strategy.
- In forensic we will continue to invest in updates of our world-leading DNA software (STRMix™) and develop new DNA capabilities that will better support criminal investigations and court decisions.
- In food safety we will continue our work on the development of bacteriophages, ensuring that New Zealand's red meat exports can continue to access the most lucrative international markets. We will also provide food safety science and research services as part of New Zealand's Food Safety Science and Research Centre.

- Our work on water and the environment will include testing rivers, streams and groundwater to find sources of contamination and we will research the safe and sustainable application of biowastes to land.

The work we do to improve food safety and water quality will be reviewed to ensure that all our activities are focused on outcomes and generate an appropriate financial return.

Our contribution to Vision Mātauranga research outcomes will be improved by building collaborative research partnerships with iwi and implementing a Māori innovation strategy.

We will continue to play a leadership role in the 'Our Land and Water' and 'New Zealand's Biological Heritage' National Science Challenges and contribute to the 'Healthier Lives' National Science Challenge.

We will continue to invest in our people – growing our science capability, developing our leadership capabilities, improving engagement and creating a positive workplace culture for all our people.

In the next five years we plan to continue to improve our financial performance. Critical to achieving this is setting our contracts with core government customers on a more sustainable basis, which is likely to remain challenging. We are also planning to increase revenue from commercialised products, new partnerships and new international customers for our science services. Profits in the next five years will be retained by ESR, allowing us to upgrade the Christchurch Science Centre, address the ageing Kenepuru Science Centre and invest in ESR's IT systems.



**Denise Church** QSO  
Chair



**Dr Keith McLea**  
Chief Executive

## OPERATING ENVIRONMENT

In the next five years our operating environment will be characterised by changing customer expectations, opportunities in newly emerging markets, increasing competition, and the need for greater commercial expertise.

### CUSTOMER EXPECTATIONS

Our customers' operating environment is also dynamic and we recognise the importance of responding to customers' needs in an agile way.

In addition to maintaining strong customer relationships at the operational level it is important that we develop a deeper understanding of the outcomes and impacts that our customers and their stakeholders want to achieve. This will inform longer-term collaborative planning, future product development and service delivery.

We will continue to investigate new and innovative ways of configuring our products and services. The joint screening laboratory we operate with the New Zealand Customs Service at Auckland Airport is a good model for working more closely with our customers to better meet their needs.

We have a high reliance on government customers who are operating in an environment of tight financial constraints.

### EMERGING MARKETS

We will continue to increase our presence in the food safety market and explore potential opportunities both domestically and overseas.

We are already delivering science work in the Pacific and aim to become the key provider of scientific advice for Pacific island nations. We take a multidisciplinary approach that assists projects aimed at providing safe drinking water and improved wastewater management, hygiene and sanitation.

We will use our membership of FoodHQ and involvement in the Food Safety Science and Research Centre to increase collaboration with other scientific research organisations.

We will continue to leverage our capability to investigate and analyse complex social issues using our social science expertise. Recent research into preventing family violence has led to additional opportunities for work in this area.



### INCREASING COMPETITION

Competition is increasing in some business areas, such as workplace drug testing. We have reinvigorated the workplace drug testing function and reviewed where best to position our services in the marketplace.

### COMMERCIAL EXPERTISE

We are embedding the key elements necessary for successfully expanding our commercial activities. While building our commercial expertise we will continue to identify and work with trusted partners, such as KiwiNet and The Icehouse, which bring additional commercial expertise and create value from our intellectual property.

Our strategy was thoroughly refreshed in 2014 to address the challenges and opportunities in our operating environment.

The refreshed strategy will ensure that ESR is fit for the future – providing better support for our customers, improving the delivery of outcomes, contributing to the national science and innovation system and improving ESR's financial sustainability. We will retain our current science capabilities while adopting a more commercially focused business model to improve financial performance.

The strategy comprises three strategic themes:

### **Strengthen the core**

Investing in the right mix and calibre of people, infrastructure, systems and processes while optimising productivity and improving customer orientation and performance.

### **Drive growth**

Driving growth through commercialisation, forming new partnerships and attracting new international customers for our science services while continuing to provide world-class scientific services to our existing customers. Reducing forecast capital expenditure and releasing capital through real estate growth.

### **Achieve step-change**

Leveraging our expertise in health science by exploring a national health intelligence platform that will support us taking an active role in building the infrastructure for omics<sup>1</sup> technology applications for the benefit of the national healthcare system.

### **STRENGTHEN THE CORE**

We will strengthen the core of ESR, becoming a more customer-focused organisation with improved staff engagement, enhanced science capability, strengthened internal systems and processes, more efficient overheads and better IT.

We will work closely with current and potential customers to better understand their needs and tailor our services to meet those needs on a financially sustainable basis. We will take a more strategic approach to managing our relationships with partners and key stakeholders to ensure that we have a strong reputation for excellence and service. This is partly about remaining valued and competitive as a service provider, but is also about ensuring that customers see how our science-based services can help them to achieve and improve their outcomes.

The quality of our staff is crucial to our organisational success. We will continue to develop leadership capabilities across

ESR and improve the engagement of all our people. We will build a higher-performing and customer-oriented organisational culture.

Our newly developed science strategy will ensure that our science remains relevant, credible and vibrant. The science strategy will ensure our science evolves to meet current and future customers' requirements. The strategy outlines how we will encourage innovation, develop our science capabilities, explore opportunities, engage with customers and invest in science that makes a difference for New Zealand.

Internal systems and processes will continue to be strengthened. We will introduce stronger project management and investment processes to oversee all investments, including capital expenditure, commercialisation activities and the strategic allocation of core funding. At the same time we will focus on streamlining our cost structure.

We will optimise our IT investments so we are better able to support new and existing customers, maintain our business systems, and enhance our ability to transfer knowledge and technology to end-users.

The successful delivery of our services has become inextricably linked with technology as science evolves from the workbench to the workstation. We will develop a modern and robust core platform capable of supporting systems of national significance, improve access to vast amounts of data, adopt high-performing technology platforms that enable our science services, and ensure the optimal investment of resources in IT.

### **DRIVE GROWTH**

We will continue to commercialise our intellectual property, form strategic partnerships to achieve greater scale, launch new services and grow existing services.

Early results from the commercialisation of our world-leading DNA software (STRMix™) have been promising and we expect sales to increase. We are also commercialising other products including bacteriophages and 'Prove It'<sup>2</sup>. For all commercialisation projects we will follow a stage-gate commercialisation process and look to supplement our own funds with co-funding.

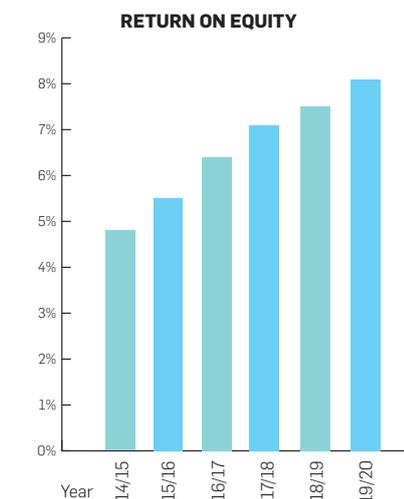
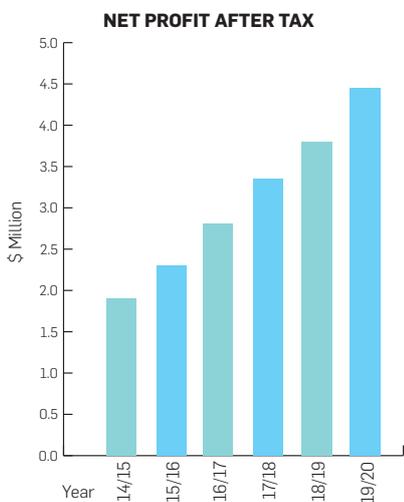
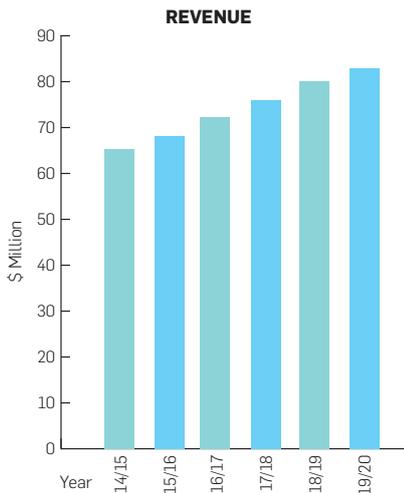
We will also seek to take advantage of partnership opportunities relevant to our strategic direction. In some of the sectors in which we work (such as the food sector) there are multiple, complementary sources of expertise. This means that the best value for NZ Inc will be delivered to customers through multilateral partnerships with other CRIs, universities, local authorities, health authorities and others. We will build collaborative partnerships to deliver better results for customers in different sectors and apply commercial assessments to all new work.

Our property strategy will assess the current configuration of our sites to ensure that we have excellent facilities that support our world-class science and best meet customers' needs. In Christchurch we are consolidating from two locations into one property, releasing capital and avoiding the need for expensive earthquake strengthening. A broad range of options is being considered for addressing the ageing facilities in Kenepuru, including rebuilding on the current site and subdividing surplus land, shifting elsewhere within the region, and potentially co-locating with other CRIs.

Revenue, net profit after tax (NPAT) and return on equity are forecast to increase in the next five years. We have made provision for addressing the Kenepuru science facility in 2018/19. To continue to increase NPAT and return on equity following this significant investment, we plan to identify other opportunities for commercialisation and generate revenue from our step-change strategy.

<sup>1</sup> Omics refers to a field of study in biology ending in -omics (such as genomics). Omics characterises and quantifies groups of biological molecules to determine aspects such as the structure, function and dynamics of an organism or organisms. The term omics also describes recent advances in high-throughput technologies that could be used to lower costs and provide faster analyses of relevant omics data, as well as enable greater possibilities in delivering science-based benefits.

<sup>2</sup> 'Prove It' is ESR's meat species identification capability to inform the determination of animal(s) of origin. The capability accommodates analysis of fresh to highly processed products.



**ACHIEVE STEP-CHANGE**

International advances in human genomics now provide a wide range of new opportunities to improve patient outcomes, improve quality and reduce healthcare costs significantly.

New Zealand is behind many countries in its research efforts and policy thinking on how to apply these advances to the healthcare system. Although New Zealand does not have the scale to adopt a leading position in this field, it can become a fast follower of international scientific advances. This approach will contribute to the 'A Better Start' and 'Healthier Lives' National Science Challenges.

We plan to build on our strengths in health through the health intelligence platform. This will require building expertise and services across more diseases, partnering with additional organisations that have complementary knowledge and skills, and ensuring that ESR has greater reach at the regional level. We are exploring the potential for ESR to initiate a national health intelligence platform by 2017.

In addition, we will partner with other key players in the industry to progress the human genomics debate in New Zealand. We recognise that this is a long-term commitment and that the financial benefits may be some years away, but in the immediate future our work will include:

- Engaging with key stakeholders to build partnerships at the senior level
- Hosting a genomics summit in 2016
- Contributing to the national debate on the provision of omics-based healthcare services to New Zealanders
- Attracting expertise in omics to provide advice and drive our strategy in this area.

**FOUR-YEAR ROLLING REVIEW**

In 2014 a four-year rolling review assessed our performance against our Statement of Core Purpose. The review findings supported the strategy refresh and have been addressed through our strategic initiatives as discussed above.

## STRATEGIC INITIATIVES

The strategic initiatives we will implement in year two of our strategic roadmap are outlined in the table below.

STRENGTHEN THE CORE	INITIATIVES PLANNED 2015/16	OUR GOALS
<p><b>High-performing, customer-centric organisation</b></p>	<p>Build a customer-centric culture Engage with key customers to understand how to work together better Raise staff engagement Implement excellence in leadership and management Invigorate ESR's strategy 2017–2021</p>	<p><b>Engaging staff</b></p>
<p><b>More commercial programmes</b></p>	<p>Transform police programme business processes</p>	
<p><b>Greater focus</b></p>	<p>Implement science strategy</p>	<p><b>Embedding customer centricity in all we do</b></p>
<p><b>Leverage corporate centre</b></p>	<p>Cost imperative overhead review Long-term IT infrastructure solution Explore informatics platform</p>	
<b>DRIVE GROWTH</b>		
<p><b>Real estate strategy</b></p>	<p>Restructure real estate</p>	<p><b>Addressing legacy investment</b></p>
<p><b>Commercial activities</b></p>	<p>Revenue growth Grow STRmix™ and international business Renew New Zealand Police service level agreement</p>	
<p><b>Focus on health</b></p>	<p>Significant new health customer Deliver additional services to Ministry of Health</p>	<p><b>Growing our revenue</b></p>
<p><b>Partnerships</b></p>	<p>Implement opportunities through environmental science partnerships Engage with Māori</p>	
<b>ACHIEVE STEP-CHANGE</b>		
<p><b>Human genomics</b></p>	<p>Take the lead in advancing the human genomics discussion in New Zealand</p>	<p><b>Developing our strategy in human genomics</b></p>

## OUTCOMES AND IMPACTS

### OUTCOME 1: PUBLIC HEALTH

**Safeguard the health of New Zealanders through improvements in the management of biosecurity and threats to public health**

#### IMPACTS

- ✔ The burden of illness and communicable diseases is reduced
- ✔ Human biosecurity risks are reduced
- ✔ Risks to human health from radiation are mitigated
- ✔ Ability to respond to communicable disease outbreaks is improved
- ✔ Safer medicines through pharmaceutical testing
- ✔ Decisions on complex public and environmental health issues are better informed

### OUTCOME 2: FORENSICS

**Increase the effectiveness of forensic science services applied to safety, security and justice investigations and processes**

#### IMPACTS

- ✔ Criminal investigations are supported by independent, reliable evidence
- ✔ Better forensically informed court decisions
- ✔ Findings by Coroners are supported by reliable toxicology
- ✔ Drug and alcohol dependency of offenders is reduced

### OUTCOME 3: FOOD SAFETY

**Enhance protection of New Zealand's food-based economy through the management of food safety risks associated with traded goods**

#### IMPACTS

- ✔ New Zealand's reputation for high-quality food exports is maintained and enhanced
- ✔ Foodborne risks to human health are reduced
- ✔ Episodes and outbreaks of foodborne illness are diagnosed and mitigated

### OUTCOME 4: WATER AND THE ENVIRONMENT

**Improve the safety of freshwater and groundwater resources for human use and the safer use of biowastes**

#### IMPACTS

- ✔ New Zealanders have assurance that drinking water is safe
- ✔ Improvements in rivers, streams and groundwater quality are informed by scientific analysis
- ✔ Safer use of biowastes
- ✔ Environmental threats to human health from chemicals, microbes and physical contaminants are mitigated

### Outcome 1: Safeguard the health of New Zealanders through improvements in the management of human biosecurity and threats to public health

#### IMPACTS

Our work contributes to improved public health by reducing the harm and costs of infectious diseases.

Using our reference laboratory information, the Notifiable Diseases Database and the information collected from laboratories, our scientists collect, collate and analyse data and intelligence on a wide range of diseases present in New Zealand, including influenza, gastroenteritis and hepatitis.

This extensive surveillance allows us to identify and characterise individual strains and cases of disease, track any changes in them, detect outbreaks and assess the effectiveness of control measures, including vaccines. With early detection, hazards and diseases can be mitigated and sometimes prevented altogether.

The impacts of our work are to:

- Reduce the burden of infectious diseases
- Improve the ability to respond to infectious disease outbreaks
- Improve human biosecurity
- Mitigate the risks to human health from radiation
- Improve the safety of medicines
- Improve safety through workplace drug testing
- Improve the understanding of complex and challenging public and environmental health issues.



#### ACTIVITIES

To achieve these impacts our scientists:

- Operate New Zealand's notifiable disease surveillance system (EpiSurv)
- Study the epidemiology of infectious diseases
- Prepare the annual Notifiable Diseases Report
- Conduct microbial identification and characterisation, including genomic analysis
- Maintain New Zealand's Reference Culture Collection of medically important bacteria
- Provide accredited reference laboratory services
- Coordinate national outbreak investigations on behalf of the Ministry of Health
- Plan for surge capability and capacity in the event of a major crisis
- Provide radiation testing, advice, training, calibration, regulatory support and dosimetry services
- Test the safety of medicines and other therapeutic products against international quality and safety standards, including testing to identify counterfeit and adulterated medicines

- Provide workplace drug testing services
- Assist decision-makers to address challenging problems that involve high levels of complexity and uncertainty.

We provide public health science services to central government under contracts with the key government health and biosecurity agencies. These contracts enable us to deliver core health science services at local and community levels to district health boards (DHBs), public health services and local government.

Our partnerships are centred on the DHB-based public health units, university collaborators, research partners in primary care, the Health Research Council and the United States Centers for Disease Control and Prevention. In the future we will look to strengthen and broaden our partnerships with DHBs, the primary care sector and provider partners.

## PLANNED INITIATIVES

To improve public health outcomes we will continue to:

- Lead the SHIVERS (Southern Hemisphere Influenza and Vaccine Effectiveness, Research and Surveillance) project, which is increasing the understanding of the burden of influenza and how to prevent its spread around the world. New Zealand's influenza season often predicts what will happen in the Northern Hemisphere, so New Zealand is an ideal location to collect, collate and analyse high-quality data to share with health agencies around the world
- Develop the capability to detect new and rare infectious agents using a new type of DNA sequencing technology (next-generation sequencing). This technology allows for massively parallel sequencing of DNA. In the past a single test could only sequence one small part of a genome but now we can obtain millions of sequences covering many different genomes at once
- Develop bioinformatics capabilities relating to bacterial pathogens including outbreak investigation, antimicrobial resistance and population analysis
- Investigate viral metagenomics and identify new viral pathogens affecting animal and human health
- Develop our capability in human genomics.

Initiatives relating to health information systems include:

- Full integration of the notifiable disease surveillance system with health sector clinical information systems
- Enhancements to our laboratory information management system (STARLIMS Health), including mobility, new tests, analytics and improved reporting.

## PERFORMANCE MEASURES

<b>Impact indicators</b>	<ul style="list-style-type: none"><li>• Results of the burden of disease and health surveys are improved</li><li>• Increases in the number of influenza vaccines administered</li><li>• Immunisation rates of eight-month-olds (target 95%)</li><li>• Rheumatic fever is reduced by two-thirds by 2017</li><li>• Improved ability to respond to unexpected events</li></ul>
<b>ESR performance indicators</b>	<ul style="list-style-type: none"><li>• 100% of time-critical turnaround times are met</li><li>• Ministry of Health rates ESR's support for responses as 'Good'</li><li>• Ministry of Health satisfaction with ESR services</li><li>• Laboratory result report delivery times reduced by 20%</li><li>• 95% of Ministry of Health's project brief milestones and deliverables met</li></ul>

### Outcome 2: Increase the effectiveness of forensic science services applied to safety, security and justice investigations and processes

#### IMPACTS

We support justice sector goals relating to reducing crime, delivering a trusted and internationally respected justice system, protecting New Zealand's security and improving the efficiency of the justice system.

We deliver forensic services 'from the crime scene to the courtroom' compliant with the international quality accreditation requirements of the Laboratory Accreditation Board of the American Society of Crime Laboratory Directors (ASCLD/LAB).

Through the development of mutually agreed end-to-end processes with our justice sector partners, the timeliness of forensic services delivered to New Zealand Police and to the courts is paramount.

The impacts of our work are:

- Criminal investigations are supported by highly reliable, independent evidence
- Early elimination of the innocent and the inclusion of suspects
- Better forensically informed court decisions
- Reduced drug and alcohol abuse of offenders
- Inquiries by Coroners are supported with reliable toxicology.



#### ACTIVITIES

We provide forensic services to the justice sector including New Zealand Police, courts, the New Zealand Customs Service, Coroners, pathologists and prisons.

To achieve these impacts our scientists:

- Attend crime scenes, including clandestine methamphetamine laboratories and firearms scenes, and identify, interpret and collect evidence
- Provide analytical expertise in DNA, trace evidence, toxicology and drugs
- Maintain New Zealand's DNA Profile Databank
- Provide expert evidence in court
- Perform the drug and alcohol testing of offenders participating in the Alcohol and Other Drug Treatment Court pilot scheme.

We work with clients from multiple sectors and organisations to provide testing services for alcohol, illicit drugs and certain legal drugs that have the potential to impair performance. Our testing may indicate that an employee's ability to carry out their duties safely is compromised, presenting a danger not only to the employee but also potentially to work colleagues and the public.

#### PLANNED INITIATIVES

To improve forensic outcomes we will continue to develop and progress our scientific capability and expertise. New developing capabilities include:

- The development of forensic DNA capabilities and specialist expertise in DNA interpretation, particularly in the interpretation of mixed DNA samples obtained from crime scenes. As a result we have been better able to support criminal investigations by identifying up to four individual DNA profiles from a mixed sample. We have earned a reputation as a world leader in this field and are partnering with agencies in Australia and the United States to provide specialist services
- Identifying the tissue sources of biological fluids and cells with specific and sensitive new technologies such as RNA analysis and cell-specific fluorescent labelling methods, enabling both the definitive identification of cell types of forensic significance and the separation of specific cell types in mixed case samples prior to DNA profiling

- Exploring opportunities in the area of massively parallel DNA sequencing techniques to maintain our position as a world leader in forensic DNA analysis, including the prediction of physical characteristics of alleged offenders based on the DNA sequences obtained from case samples, leading to faster identification of alleged offenders
- Developing advanced crime scene recording and expert evidence presentation tools. The tools apply scene-scanning technology to record locations of evidence in a way that allows people (such as jurors) to visit a virtual crime scene and clearly see the relationships between items of evidence, and make complex forensic evidence easier to understand. These technologies will lead to faster crime scene investigations, a simplified capture of accurate data, better presentations of key issues to the jurors, and a more efficient delivery of evidence at trial, saving time and cost. We are examining opportunities to commercialise the technology.

We will focus on businesses involved in commercialisation and innovation for competitive advantage in international markets.

We will continue to invest in our IT systems to better meet the casework requirements of criminal investigations and the wider needs of the justice system. This investment will improve our ability to meet customer needs, and our capability to interface with external systems.

## PERFORMANCE MEASURES

<b>Impact indicators</b>	<ul style="list-style-type: none"> <li>• Reduction in violent crime (target 20%)</li> <li>• Reduction in total crimes (target 15%)</li> <li>• Offences against a person are resolved in 30 days (target 90%)</li> <li>• Reduction in reoffending</li> </ul>
<b>ESR performance indicators</b>	<ul style="list-style-type: none"> <li>• 90% of DNA samples are processed within 30 days</li> <li>• 70% of DNA samples are linked to a person</li> <li>• 33% of DNA samples are linked to other crimes</li> <li>• 100% fulfilment of contractual obligations under the service level agreement</li> <li>• Police satisfaction with ESR's timeliness and quality of service (90%)</li> </ul>

### Outcome 3: Enhance protection of New Zealand's food-based economy through the management of food safety risks associated with traded goods

#### IMPACTS

We provide advisory, monitoring and diagnostic services and research to the Ministry for Primary Industries, the Ministry of Health and the food industry to develop interventions that avoid, mitigate and respond to foodborne hazards.

Our expertise spans bacterial, viral, chemical, physical and radiological hazards in food. We have extensive national and international collaborative networks and access to a suite of tests accredited against international standards to help find out how, where and when food contamination has happened as well as identify the type of contaminant and its source.

The impacts of our work are:

- Improved integrity and reputation of New Zealand's primary product exports
- Reduced risks to human health from contaminated food
- Episodes of illness and outbreaks caused by contaminated food are rapidly diagnosed and mitigated.



#### ACTIVITIES

To achieve these impacts our scientists:

- Develop methods specifically to meet the food safety requirements for overseas market access for New Zealand's primary product exports
- Develop methods that mitigate food safety risks and spoilage
- Conduct research and provide consultancy services to mitigate on-farm and in-plant sources of food contamination
- Detect foodborne pathogens and chemical hazards (including radiological hazards) present in foods and clinical samples
- Provide an effective emergency response to foodborne outbreaks
- Use human health surveillance to understand the epidemiology of foodborne illnesses
- Develop early warning methods to identify emerging foodborne hazards
- Provide information on levels of essential nutrients, trace elements and contaminants in New Zealand's food supply by assisting the Ministry for Primary Industries to conduct the New Zealand Total Diet Survey

- Assist regulatory and emergency decision-making with sound, independent scientific evidence
- Provide information for better national, regional and global policy.

We will continue to work with other providers in New Zealand's science sector to deliver solutions, including the Ministry for Primary Industries, Massey University through FoodHQ, AgResearch,ASUREQuality, Plant & Food Research and the Cawthron Institute. Through these collaborations we will seek to provide food safety science and research services as part of New Zealand's Food Safety Science and Research Centre.

We have also developed international relationships with leading organisations, including the United States Department of Agriculture and the Chinese Cereals and Oils Association.

## PLANNED INITIATIVES

To improve food safety outcomes we will continue to:

- Develop biocontrol products and diagnostic tools that can reduce the risk of bacterial contamination during food processing. A continued area of focus will be the six pathogenic Shiga toxin-producing *Escherichia coli* (*E. coli*) strains (STEC) for which the United States has declared zero tolerance through its export beef microbiological requirements
- Develop mitigation strategies for organisms of relevance to the export and domestic food sectors. This includes the continued advancement of our research on naturally occurring novel antimicrobials against foodborne pathogens including *Campylobacter*, which is a major cause of gastroenteritis in New Zealand
- Develop rapid detection and sub-typing assays for foodborne microorganisms based on the patented multiplex ligation-dependent probe amplification approach, together with our international partner MRC-Holland
- Develop the STECleanz® phage<sup>1</sup> to include all prohibited STEC strain types to improve the integrity and reputation of red meat exports
- Work to support better authentication of the source and quality of New Zealand products. We will continue to support the Ministry for Primary Industries with support for investigations into food quality issues and reassurance to customers through our 'Prove It'<sup>2</sup> capability
- Develop an assay for rapid subtyping of *Listeria* to support the seafood and dairy industries as part of a seafood safety project funded through the Ministry of Business, Innovation, and Employment.

## PERFORMANCE MEASURES

<b>Impact indicators</b>	<ul style="list-style-type: none"> <li>• Increased value of primary industry exports (the Ministry for Primary Industries' goal is to double primary industry exports by 2025)</li> <li>• Enhanced integrity, assurance and reputation of New Zealand's primary products</li> <li>• Reduced biological risk</li> </ul>
<b>ESR performance indicators</b>	<ul style="list-style-type: none"> <li>• Deliver 80% of Ministry for Primary Industries' contract project work before end of the financial year</li> <li>• Ministry for Primary Industries' satisfaction with ESR's support for responses</li> <li>• Turnaround time for support to Ministry of Health for outbreaks of foodborne illnesses</li> <li>• % of export radiation certificates issued within required timeframes for export</li> <li>• Meet project milestones and deliverables (target 95%)</li> <li>• % increase in revenue</li> </ul>

<sup>1</sup> A bacteriophage (phage) is a virus that infects and replicates in a specific bacterium and kills it in the process.

<sup>2</sup> 'Prove It' is ESR's meat species' identification capability to inform the determination of animals of origin. The capability accommodates the analysis of fresh to highly processed products.

### Outcome 4: Improve the safety of freshwater and groundwater resources for human use and the safer use of biowastes

#### IMPACTS

We provide scientific advice and expertise on the management of drinking water, fresh water, groundwater, wastewater and biowaste to health authorities, local and central government, industry and communities.

Our work includes the surveillance and reporting of drinking-water quality, scientific advice on health and environment public policy, research on water quality issues related to drinking water and recreational waters, and information systems' management.

Our scientists also work with other science partners that together form the Centre for Integrated Biowaste Research (CIBR) on the sustainable management of the biowaste component of waste sent to landfills in New Zealand.

The impacts of our work are:

- New Zealanders have assurance that drinking water is safe
- The quality of rivers, streams and groundwater is improved
- Safer use of biowastes
- Environmental threats to human health from chemicals, microbes and physical contaminants are mitigated.



#### ACTIVITIES

To achieve these impacts our scientists will:

- Support the surveillance and reporting of drinking-water quality by the Ministry of Health
- Provide the Ministry of Health and DHBs with analysis, advice and risk assessments in relation to environmental, water, wastewater and hazardous substance issues
- Use internationally recognised approaches for public health risk assessments of microbial (bacterial and viral) and chemical hazards in water
- Develop and use new, internationally recognised methods for the detection of human pathogens and chemical hazards present in water, sediment, soil, biowastes and wastewater
- Conduct research to characterise contaminant pathways from land into and through groundwater and surface water systems, and the connections between these systems

- Conduct research to manage the safe and sustainable use of biowastes, such as biosolids and grey-water resources
- Research the impacts of hazards in the environment on human health (including air quality, contaminated land and common chemicals)
- Monitor radiation levels in Pacific islands as part of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO).

We lead and participate in several groundwater research projects in collaboration with other CRIs and universities, and we are an active participant in work to fully integrate freshwater research in New Zealand in partnership with iwi and Māori. We play a leadership role in the 'Our Land and Water' and 'Biological Heritage' National Science Challenges.

## PLANNED INITIATIVES

To improve outcomes relating to water and the environment we will continue to:

- Assess measures of groundwater assimilative capacity for the key water contaminants of nitrates and microbial pathogens. These measures are used in water management by regional councils and district councils to evaluate options for the disposal of water and waste. We will increasingly partner with engineering firms to provide solutions to and options for issues that local authorities face in this area, which requires a wide range of interdisciplinary skills continuing to explore the safe and sustainable application of biowastes to land
- Develop a microbial early warning system for rapidly assessing groundwater health and identifying of potential contaminant causes
- Develop a low-cost molecular method for targeting microbial identification in mixed samples such as groundwater, wastewater and food
- Analyse and report data from the monitoring of drinking-water supplies in New Zealand in the form of an annual report for the Ministry of Health
- Provide advice to DHBs and local authorities on the investigation and management of issues related to air, land and water quality
- Collaborate with Pacific island governments to support improved local water and sanitation services and infrastructure
- Develop our skills in environmental genomics, including metagenomics-based approaches, to understand microbial communities in water, determine sources of contamination, and identify potential associated health risks
- Work with the University of Canterbury, Environment Canterbury, Christchurch City Council and other partners to aid the recovery of water quality and safety in Canterbury.

## PERFORMANCE MEASURES

<b>Impact indicators</b>	<ul style="list-style-type: none"> <li>• Drinking water compliant with standards</li> <li>• No further decline in the quality of our freshwater and groundwater</li> <li>• Increase the composting, use and treatment of organic waste currently disposed of to landfill</li> </ul>
<b>ESR performance indicators</b>	<ul style="list-style-type: none"> <li>• Respond to requests for advice from the Ministry of Health and public health units within the timeframes agreed for analysis and advice services</li> <li>• Meet 95% of agreed milestones in the Ministry of Health environmental health contract</li> <li>• Increased project work related to environmental health in the Pacific (target of two new contracts signed)</li> <li>• Provide water quality advice and advanced analytical services to at least 80% of regional and unitary councils each year to assist them in improving recreational water quality</li> <li>• Meet project milestones and deliverables (target 95%)</li> <li>• % increase in revenue</li> </ul>

We are committed to working closely with Māori to advance the four research themes identified in Vision Mātauranga

### INDIGENOUS INNOVATION

Contributing to economic growth through distinctive research and development

### TAIAO

Achieving environmental sustainability through iwi and hapū relationships with land and sea

### HAUORA/ORANGA

Improving health and social wellbeing

### MĀTAURANGA

Exploring indigenous knowledge and research, science and technology



In recent workshops we conducted a stocktake of our current activities that support Vision Mātauranga and identified additional opportunities to conduct research with Māori.

We have developed a good reputation for collaboration with Māori, particularly on health- and water-related research projects. Māori participation in research has usually relied upon the relationships of individual scientists with iwi. We need to work on developing formal collaborative research partnerships with iwi and our corporate capacity to anchor and develop these high-level relationships.

In the immediate future we will identify and work closely with one iwi to establish a strong relationship and a blueprint for future engagement with iwi.

In 2013 a review conducted by Severne and Associates entitled Te Kai o Te Rangatira looked across our business to explore the potential to engage and deliver to Māori and Māori businesses across our four outcome areas. We will develop a Māori innovation strategy using this review as the basis.

## OUR PEOPLE

Because ESR is a knowledge-based business our people are essential to our success. Our organisational culture and capabilities underpin the ability to deliver on our strategy.

We have a strong reputation that enables us to recruit highly talented and well qualified staff. Our long-term success relies on developing our science capability, providing strong leadership and developing and sustaining a high-performing, customer-focused culture.

### SCIENCE CAPABILITY

The Chief Scientist and the Science Strategy Team conduct biennial capability reviews to ensure we have the science capabilities and skill base to meet current and future needs.

We maintain relationships with universities, other CRIs and scientific research societies and will promote new collaborations that support our outcomes. We develop joint studentship opportunities, encourage active participation in national and international conferences and encourage staff to undertake meaningfully aligned PhD studies.

We encourage and support scientists who have new ideas for science, particularly those at earlier stages of their careers, by funding their research through our Pioneer Fund.

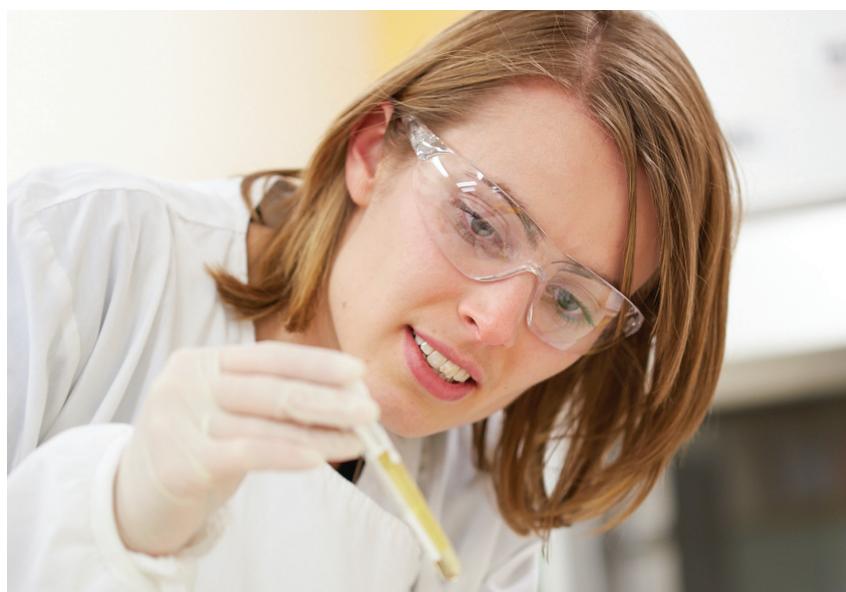
### LEADERSHIP

Strong and effective leadership supports a high-performance organisation, enabling us to achieve our growth agenda and respond to changing demands. It is critical that we invest in the development of leadership capabilities at all levels and link this to talent management and succession planning.

A leadership programme has been launched to enhance leadership skills and improve engagement.

Individual goals will be clearly linked to business group plans that support our strategic direction, ensuring that every employee knows how their work contributes.

High performance will continue to be rewarded through the Planning for Success performance appraisal and development system. Outstanding performance is recognised through our annual ESR Excellence Awards.



### WORKPLACE CULTURE

The actions of all of our people will continue to be guided by our shared values:

- **Independence** – our objective findings and expertise provide the confidence to inform and support just and fair decisions across all of society.
- **Excellence** – we continually work to improve the quality of our work across all areas of our organisation. We always look for ways to better serve our customers.
- **Integrity** – we act ethically and are honest and open with each other. We keep our promises. Our actions speak louder than our words.
- **Valuing people** – we respect and value each other's expertise and cultural heritage. We listen to, respond to and anticipate the needs of our customers, suppliers, partners and peers.

The four-year rolling review panel noted that our people have a strong commitment to, passion for and pride in their work. To ensure our staff are engaged and identify strongly with ESR the development of a unifying vision and a refreshed set of values is underway.

### INFORMATION TECHNOLOGY

The successful delivery of our science services has become inextricably linked with technology as science has evolved from the workbench to the workstation. This evolution, combined with the exponential increase in the storage space required to support human genomics science, will require significant change within our IT systems, information management and governance.

We will develop a modern and robust core platform capable of supporting systems of national significance, improve access to vast amounts of data, adopt high-performing technology platforms that enable our scientific services and ensure the optimal investment of resources in IT.

We will also modernise our corporate systems and enhance IT service levels.

Our IT Strategy and Action Plan outlines our plan for enhancing five key technology platforms.

- Laboratory Information Management Systems (LIMS) Platform
- Forensic Platform
- Surveillance Platform
- Informatics Platform
- Core Business Systems.

### PROPERTY AND FACILITIES

We maintain science facilities at five sites to support our customers. The facilities are located in Auckland, Wellington and Christchurch.

The overarching goals of our strategy are to:

- Determine the most efficient and effective site use to meet business needs
- Ensure that facilities support the specialised scientific capabilities required for excellent customer service
- Apply whole-of-life asset management practices to ensure that the assets remain robust and reliable to support our core business functions and long-term strategic science goals.

In Christchurch we are consolidating from two locations into one property, releasing capital and avoiding the need for expensive earthquake strengthening. A broad range of options is being considered for addressing the ageing facilities in Kenepuru, including rebuilding on the current site and subdividing surplus land, shifting elsewhere within the region, and potentially co-locating with other CRIs.

### INTELLECTUAL PROPERTY

We have policies and procedures in place relating to the access, use, maintenance, enhancement, exploitation and transfer of intellectual property and know-how.

These policies and procedures ensure effective product and service development and the effective management of intellectual property and maximise the application of the results of research and technological developments, including transfers to end-users and other third parties for the benefit of New Zealand.

We are undertaking a review of our policy to ensure that the policy is congruent with our strategy.

General principles and procedures relating to the intellectual property, research and benefits of research held by ESR (other than national databases and reference collections) meet the requirements of the Transfer Agreement between ESR and the Crown.

### NATIONAL REFERENCE COLLECTIONS

On behalf of the Ministry of Health, we manage the New Zealand Reference Culture Collection (Medical section). We also assist other CRIs, universities and laboratories by providing access to the cultures in the collection on a cost-recovery basis. We will provide access to the reference collection except where access is clearly not to the benefit of New Zealand.

The costs of collection, archiving and maintenance will be recovered only to the extent that they have not been paid for from public funding. Costs for retrieval of information from databases and reference collections will be recovered where a third party wishes to obtain large portions of information from a database or reference collection for direct commercial use. In this case we reserve the right to negotiate a copyright, royalty or licence fee.

We will not dispose of any national database or reference collection without the prior written consent of shareholding Ministers, and will immediately notify shareholding Ministers if, in the Board's view, we cannot reasonably maintain the integrity, security and quality of any national database or reference collection. We will remain responsible for the reference collection until after shareholding Ministers have notified the Board of their determination regarding the future maintenance of, or access to, the database or reference collection.

We will advise shareholding Ministers in a timely manner of any disputes over access to, or the use of, the reference collection held by us. Under the terms of the Transfer Agreement, shareholding Ministers can appoint a person with relevant expertise to decide the matter. Any such decision will be binding on ESR.

## CORE FUNDING

### Core funding allows ESR to invest in science that can make a difference for New Zealand.

Research projects are assessed by the Strategic Science Team based on science merit, ability to deliver impact and contribution to our sustainability.

We are investing in projects that underpin the development of our genomics capabilities.

#### RESEARCH THAT SUPPORTS OUTCOMES

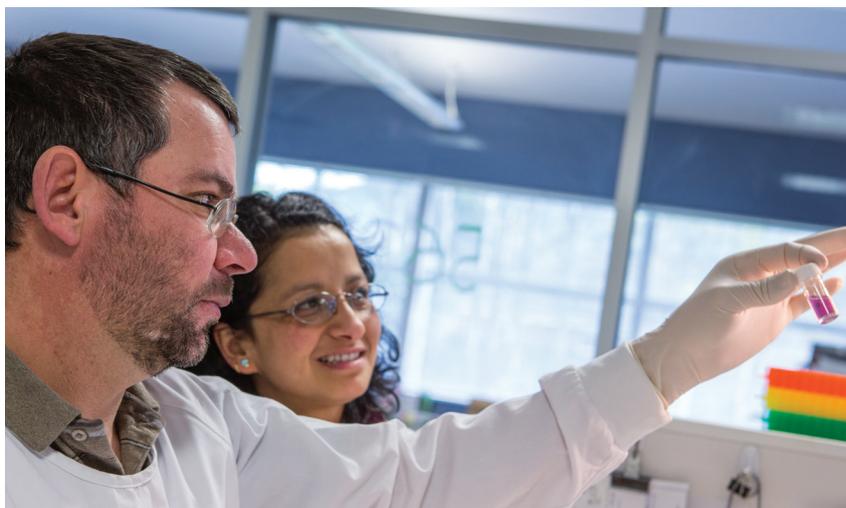
Areas in which we are currently investing core funding to drive better outcomes include investigating bacteria and viruses, developing surveillance tools, modelling solutions for forensic science, advancing molecular tests for authenticating meat products and developing groundwater modelling methodologies.

#### STRATEGIC PROJECTS

Two strategic projects are currently being funded – the development of bioinformatics and statistics capabilities at ESR and a bacterial genomics project for implementing next-generation sequencing to better support the Ministry of Health and improve public health outcomes.

#### PIONEER FUND

The Pioneer Fund was established to provide a seed fund for testing ideas that might not be funded through regular budget channels. The small amount of funding (up to \$50,000 per project) allows scientists to investigate innovative ideas that could be of financial benefit to ESR. Projects are selected based on science merit, alignment with strategy and potential revenue.



#### CORE FUNDING REVIEW

The Ministry of Business, Innovation and Employment is currently reviewing core funding to explore ways that maximise its effectiveness and impact. The review will assess:

- The performance of core funding
- How core funding fits within the wider science system
- The allocation and relative distribution of core funding
- Core funding and Vision Mātauranga outcomes.

## MEASURING PERFORMANCE

### NON-FINANCIAL PERFORMANCE MEASURES

		2015 forecast	Target 2015/16
<b>End user collaboration</b>	Revenue per FTE from commercial sources	\$24,600	\$29,600
<b>Research collaboration</b>	Publications with collaborators	65	65
<b>Technology and knowledge transfer</b>	Commercial reports per scientist FTE	0.45	0.45
<b>Science quality</b>	Impact of scientific publications (measured using Web of Science citations for the previous calendar year)	3.1	3.1
<b>Financial indicators</b>	Revenue per FTE	\$171,500	\$182,100
	Commercial revenue	\$9.4m	\$11.1m

Performance measures relating to the outcomes for forensic, health, food and water are included in the respective outcome sections of this report. We also monitor our performance against the generic CRI performance indicators.

### FINANCIAL PERFORMANCE MEASURES

Our five-year financial plan has been prepared based on capital expenditure and revenue growth assumptions that are congruent with our strategic direction.

#### REVENUE

Revenue is forecast to grow from \$68.2m in 2015/16 to \$82.8m in 2019/20 as a result of commercialising our intellectual property, forming new partnerships and attracting new international customers for our science services. As two of our clients provide 60% of ESR's revenue (Ministry of Health and New Zealand Police) we will continue to broaden our revenue base to mitigate commercial risks.

#### OPERATING EXPENDITURE

Operating expenditure is budgeted to increase from \$58.9m in 2015/16 to \$67.8m in 2019/20. Operating expenditure budgeted in the out-years reflects the activities needed to drive revenue growth.

#### PROFITABILITY

NPAT is forecast to increase from \$2.3m in 2015/16 to \$4.5m in 2019/20. We expect to achieve a return on equity of 8% by 2019/20.

### BALANCE SHEET MANAGEMENT

The major items of capital expenditure reflect our property strategy. This includes reinvesting in the Christchurch Science Centre starting in 2017/18 and addressing the ageing facilities in Kenepuru in 2018/19 and 2019/20.

#### CASH FLOW

ESR continues to have strong operating cash flows. No debt is required at this stage to fund the capital investment programme to strengthen the core science delivery and support future growth and new business initiatives.

#### DIVIDEND

It is not anticipated that ESR will be in a financial position to have funds available for distribution due to the planned reinvestment in IT and property.

#### RISKS

The main financial risks are that actual revenue may differ from that forecast, actual property costs may differ from current estimates, and no allowance has been made for any transition or ongoing expenditure should ESR adopt an IT infrastructure as a service solution.

## FINANCIAL PERFORMANCE MEASURES

	Forecast 14/15	Budget 15/16	Plan 16/17	Plan 17/18	Plan 18/19	Plan 19/20
Revenue (\$000s)	65,290	68,227	72,266	75,911	80,062	82,824
Revenue Growth	–	4.5%	5.9%	5.0%	5.5%	3.5%
<b>Operating Results (\$000s)</b>						
Operating Expenses	56,952	58,946	62,660	64,139	66,490	67,766
EBITDAF	8,338	9,281	9,606	11,771	13,572	15,058
Depreciation and Amortisation	5,814	6,304	6,245	7,335	8,430	8,938
EBIT	2,523	2,976	3,361	4,437	5,142	6,120
Net Profit after Tax	1,903	2,297	2,484	3,367	3,808	4,498
Total Assets	59,846	64,848	67,992	74,704	79,417	85,247
Closing Shareholders' Funds	40,469	42,765	45,250	48,617	52,426	56,923
Capital Expenditure	7,479	7,519	7,954	9,634	16,180	10,685
Capital Expenditure % to Revenue	11.5%	11.0%	11.0%	12.7%	20.2%	12.9%
<b>Liquidity</b>						
Current Ratio	1.1	1.2	1.2	1.2	1.0	1.2
Quick Ratio (Acid Test)	1.0	1.0	1.0	1.1	0.9	1.0
<b>Profitability</b>						
Return on Equity	4.8%	5.5%	5.6%	7.2%	7.5%	8.2%
Return on Total Assets	4.3%	4.8%	5.1%	6.2%	6.7%	7.4%
Operating Margin	12.8%	13.6%	13.3%	15.5%	17.0%	18.2%
Operating Margin per FTE (\$)	21,907	24,776	26,103	31,815	37,183	41,481
<b>Operational Risk</b>						
Profit Volatility	–	7.6%	7.3%	14.9%	20.2%	23.5%
<b>Coverage</b>						
Interest Cover	N/A	N/A	N/A	N/A	N/A	N/A
<b>Growth/Investment</b>						
Capital Renewal	1.3	1.2	1.3	1.3	1.9	1.2
Dividend	–	–	–	–	–	–
<b>Financial Strength</b>						
Gearing (Debt/Debt Equity) %	N/A	N/A	N/A	N/A	N/A	N/A
Equity Ratio (Equity/Total Assets) %	67.2	66.8	66.3	65.8	65.6	66.4
Cash and Short-Term Deposits (\$M)	5.2	7.3	8.3	11.9	7.6	6.6
Debt (\$Ms)	–	–	–	–	–	–

## APPENDIX 1: BUSINESS POLICIES

We operate in accordance with the purpose and principles as stated in the Crown Research Institutes Act 1992 and have statutory obligations under other acts, including the Companies Act 1993 and Crown Entities Act 2004. Significant services are performed for New Zealand Police under the Land Transport Act 1998 and the Misuse of Drugs Act 1975.

Policies and procedures are in place to ensure we meet all of our statutory obligations. Our business policies include:

- Risk management
- Shareholder consent for significant transactions
- Dividends
- Information to be disclosed
- Databases and collections
- Health and safety
- Intellectual property
- Information management.

## APPENDIX 2: STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

### REPORTING ENTITY

ESR is a Crown Entity incorporated and based in New Zealand. Its registered office is 34 Kenepuru Drive, Porirua.

ESR is a Crown research institute that provides specialist scientific services and research, particularly to the health and justice sectors.

### BASIS OF PREPARATION

The financial statements are Parent (ESR) and Group financial statements. The subsidiary of ESR is a dormant non-trading entity; consequently there is no difference between the financial statements of the Group and those of the Parent.

The financial statements have been prepared in accordance with the requirements of the Crown Entities Act 2004, the Crown Research Institutes Act 1992, the Companies Act 1993 and the Financial Reporting Act 1993.

The financial statements have been prepared on the basis of historical cost, except for financial instruments as identified in the specific accounting policies and accompanying notes.

The financial statements are presented in New Zealand dollars and all values are rounded to the nearest thousand dollars (\$000).

### CHANGES IN ACCOUNTING POLICIES

Accounting policies have been applied on a basis consistent with the prior year.

### STATEMENT OF COMPLIANCE

These financial statements have been prepared in accordance with New Zealand Generally Accepted Accounting Practice. They comply with New Zealand equivalents to International Financial Reporting Standards (NZ IFRS) and other applicable financial reporting standards, as appropriate for profit-oriented entities. These consolidated financial statements comply with International Financial Reporting Standards.

The Group has adopted the External Reporting Board Standard A1 Accounting Standards Framework (For-profit Entities Update) (XRB A1). XRB A1 establishes a for-profit tier structure and outlines the suite of

accounting standards that entities in different tiers must follow. The Group is a Tier 1 entity. There has been no impact on the current or prior year financial statements.

### ADOPTION STATUS OF RELEVANT NEW FINANCIAL REPORTING STANDARDS AND INTERPRETATIONS

The Group has elected not to early adopt any of the new standards and amendments to existing standards that have been issued as at 30 June 2015 but are not yet effective. It is not anticipated that standards not yet effective will significantly affect the financial statements of the Group with the exception of NZ IFRS 15.

### NZ IFRS 15

NZ IFRS 15 addresses recognition of revenue from contracts with customers. It replaces the current revenue recognition guidance in NZ IAS 18 Revenue and NZ IAS 11 Construction Contracts and is applicable to all entities with revenue. It sets out a five-step model for revenue recognition to depict the transfers of promised goods or services to customers in amounts that reflect the considerations to which the entity expects to be entitled in exchange for those goods or services. The Group has yet to assess NZ IFRS 15's full impact. The Group will apply this standard from 1 July 2017.

### ACCOUNTING ESTIMATES AND JUDGEMENTS

The preparation of financial statements in conformity with NZ IFRS requires judgements, estimates and assumptions that affect the application of policies and reported amounts of assets, liabilities, income and expenses. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates.

Management's judgements, which have the most significant effect on amounts recognised in the financial statements, are found in 'Revenue' and 'Employee benefits'.

### Revenue

The Group uses the stage of completion method in accounting for its fixed price contracts to deliver scientific services. The stage of completion method requires the Group to estimate the services performed to date as a proportion of the total services to be performed. The stage of completion is calculated and reviewed monthly, and significant variances are investigated to ensure that the stage of completion estimate is reasonably in line with the overall project plan, estimated completion date and prior measurements of progress.

### PRINCIPLES OF CONSOLIDATION

#### Subsidiaries

The consolidated financial statements incorporate the assets and liabilities of all subsidiaries of ESR as at 30 June 2015 and the results of the operations of all subsidiaries for the year then ended.

Subsidiaries are those entities controlled, directly or indirectly, by the Parent. Subsidiaries are consolidated from the date on which control is transferred to ESR. They are de-consolidated from the date that control ceases.

The acquisition method of accounting is used to account for the acquisition of businesses by the Group. The cost of an acquisition is measured as the fair value of the assets given, equity instruments issued and liabilities incurred or assumed at the date of exchange. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date, irrespective of the extent of any non-controlling interest. The excess of the cost over the fair value of the Group's share of the identifiable net assets acquired is recorded as goodwill. If the cost of acquisition is less than the Group's share of the fair value of the identifiable net assets of the subsidiary acquired, the difference is recognised directly in the statement of profit or loss and other comprehensive income.

## PROPERTY, PLANT AND EQUIPMENT

Items of property, plant and equipment are initially recorded at cost, and subsequently at cost less accumulated depreciation and impairment. The cost of property, plant and equipment includes the value of the consideration given to acquire the assets and the value of other directly attributable costs that have been incurred in bringing the assets to the locations and condition necessary for their intended use.

The carrying amounts of property, plant and equipment are reviewed at least annually to determine if there is any indication of impairment. Where an asset's recoverable amount is less than its carrying amount, it will be reported at its recoverable amount and an impairment loss will be recognised.

Losses resulting from impairment are reported in the statement of profit or loss and other comprehensive income.

Realised gains and losses arising from the disposal of property, plant and equipment are recognised in the statement of profit or loss and other comprehensive income in the periods in which the transactions occur.

Depreciation is charged on a straight-line basis at rates calculated to allocate the cost of an item of property, plant or equipment, less any estimated residual value, over its estimated useful life, as follows:

Type of asset	Estimated useful life
Land	Not depreciated
Freehold buildings	20 – 50 years
Leasehold improvements	10 years
Plant, equipment and vehicles	3 – 10 years
IT equipment and internal software	3 – 10 years

## INTANGIBLE ASSETS

### Computer software

Items of computer software that do not comprise an integral part of the related hardware are treated as intangible assets with finite lives. Intangible assets with finite lives are recorded at cost, and subsequently recorded at cost less any accumulated amortisation and impairment losses.

Amortisation is charged to the statement of profit or loss and other comprehensive income on a straight-line basis over the useful lives of the assets (between 3 and 10 years).

### Customer contracts

The intangible asset 'customer contracts', represents the fair value of future revenue streams from customer contracts acquired under business combinations. The initial recognition of the intangible asset is stated at fair value. Subsequent to initial recognition, acquired intangible assets are stated at initially recognised amounts less accumulated amortisation and any impairment. Amortisation of acquired intangible assets is made according to the straight-line method over their estimated useful lives, not exceeding 10 years.

### Research and development costs – internally generated intangible assets

Expenditure on research is expensed when it is incurred.

Development expenditure incurred on an individual project is capitalised if the process is technically and commercially feasible, future economic benefits are probable and ESR intends to and has sufficient resources to complete the development of and to use or sell the asset.

Any expenditure capitalised is amortised over the period of expected future sales from the related project from the point the asset is ready for use.

## IMPAIRMENT OF NON-FINANCIAL ASSETS

Assets that are subject to amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which an asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of the asset's fair value less costs to sell and value in use. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units).

## TAXATION

The income tax expense for the period is the tax payable on the current period's taxable income based on the national income tax rate for each jurisdiction. This is then adjusted by changes in deferred tax assets and liabilities attributable to temporary differences between the tax bases of assets and liabilities and their carrying amounts in the financial statements, and unused tax losses.

Deferred tax assets and liabilities are recognised for temporary differences at the tax rates expected to apply when the assets are recovered or liabilities settled. The relevant tax rates are applied to the cumulative amount of deductible and taxable temporary differences to measure the deferred tax asset or liability. An exception is made for certain temporary differences arising from the initial recognition of an asset or a liability. No deferred tax asset or liability is recognised in relation to temporary differences if they arose in a transaction, other than a business combination, and at the time of the transaction did not affect either accounting profit or taxable profit or loss.

Deferred tax assets are recognised for deductible temporary differences and unused tax losses only if it is probable that future taxable amounts will be available to utilise those temporary differences and losses.

Deferred income tax assets are recognised to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilised.

## CASH AND CASH EQUIVALENTS

Cash means cash on hand, demand deposits and other highly liquid investments in which ESR has invested as part of its day-to-day cash management. The following definitions are used in the statement of cash flows:

- Investing activities are those activities relating to the acquisition, holding and disposal of fixed assets and investments.
- Financing activities are those activities that result in changes in the size and composition of the capital structure of ESR and this includes both equity and debt not falling within the definition of cash. Dividends paid in relation to the capital structure are included in financing activities.

- Operating activities are the principal revenue-producing activities and other activities that are not investing or financing activities.

#### **TRADE AND OTHER RECEIVABLES**

Trade receivables are stated at their estimated realisable value after providing against debts where collection is doubtful. An estimate of the value of doubtful debts is made based on a review of debts at year end. Bad debts are written off in the periods in which they are identified.

#### **INVENTORIES**

Stocks of consumables and work in progress are stated at the lower of cost and net realisable value. Cost is determined on a first in, first out basis.

#### **TRADE AND OTHER PAYABLES**

These amounts represent the best estimate of the expenditure required to settle obligations arising from goods or services provided to ESR prior to period end. These amounts are unsecured and are usually paid within 30 days of recognition. Liabilities and provisions to be settled beyond 12 months are recorded at their present value.

#### **EMPLOYEE BENEFITS**

##### ***Wages, salaries and annual leave***

Liabilities for wages and salaries, including annual leave, that are expected to be settled within 12 months of the reporting date, are recognised in respect of employees' service up to the reporting date and are measured at the amounts expected to be paid when the liabilities are settled.

Obligations for contributions to defined contribution retirement plans are recognised in the statement of profit or loss and other comprehensive income as they fall due.

##### ***Long service leave, retirement leave and service leave***

The liability for long service leave, retirement leave and service leave is recognised as an employee benefit liability and measured as the present value of expected future payments to be made in respect of services provided by employees up to the reporting date. Consideration is given to the expected future salary levels, experience of employee departures and periods of service. Expected future payments are discounted using market yields at the reporting date for Government

bonds with terms to maturity and currency that match, as closely as possible, the estimated future cash outflows.

#### **LEASES**

Finance leases transfer to ESR, as lessee, substantially all the risks and rewards incidental to ownership of a leased asset. The initial recognition of a finance lease results in an asset and a liability being recognised at amounts equal to the lower of the fair value of the leased asset or the present value of the minimum lease payments. Each lease payment is allocated between the liability and finance charges so as to achieve a constant rate of finance charge over the term of the lease. Property, plant and equipment acquired under a finance lease are depreciated over the shorter of the assets' useful lives and lease terms.

Leases in which a significant portion of the risks and rewards of ownership is retained by the lessor are classified as operating leases. Payments made under operating leases (net of any incentives received from the lessor) are charged to the statement of profit or loss and other comprehensive income on a straight-line basis over the periods of the leases.

#### **BORROWINGS**

Borrowings are initially recognised at fair value, net of costs incurred. Borrowings are subsequently measured at amortised cost. Any differences between the proceeds (net of transaction costs) and the redemption amount is recognised in the statement of profit or loss and other comprehensive income over the period of the borrowing using the effective interest rate method.

Borrowings are classified as current liabilities unless ESR has an unconditional right to defer the settlement of a liability for at least 12 months after the balance date.

#### **SHARE CAPITAL**

Ordinary shares are classified as equity. Incremental costs directly attributable to the issue of new shares or options are shown as appropriate in equity as a deduction, net of tax, from the proceeds.

#### **REVENUE**

##### ***Sales of goods and services***

Revenue is earned by ESR in exchange for the provision of outputs (services) to third parties.

Revenue from the supply of services is measured at the fair value of the consideration received. Revenue from the supply of services is recognised in the accounting periods in which the services are rendered, by reference to the stage of completion of the specific transactions assessed on the basis of the actual services provided as a proportion of the total services to be provided. Any revenue for which services have not been supplied as at the reporting date but for which payment has been received is deferred within the statement of financial position as revenue in advance.

##### ***Core funding***

ESR receives core funding from the Government in order to perform scientific research activities. Core funding (Government grants) is recognised in the statement of profit or loss and other comprehensive income when the requirements under the grant agreements have been met.

##### ***Interest income***

Interest income is recognised in the statement of profit or loss and other comprehensive income on a time proportion basis, using the effective interest rate method.

#### **FOREIGN CURRENCY**

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which the entity operates. The Group financial statements are presented in New Zealand dollars, which is ESR's functional and presentation currency.

Foreign currency transactions are recorded at the foreign exchange rates in effect at the dates of the transactions. Monetary assets and monetary liabilities denominated in foreign currencies are translated at the rates of exchange ruling at the end of each reporting period. Non-monetary assets and non-monetary liabilities denominated in foreign currencies that are measured at fair value are translated to the functional currency at the exchange rate at the date that the fair value was determined.

### **GOODS AND SERVICES TAX**

Items in the statement of profit or loss and other comprehensive income and statement of cash flows are disclosed net of Goods and Services Tax (GST). All items in the statement of financial position are stated net of GST with the exception of receivables and payables, which include GST invoiced.

### **DIVIDENDS**

A provision is made for the amount of any dividend declared on or before the end of the financial year but not distributed at balance date.

### **FINANCIAL INSTRUMENTS**

The designation of financial assets and financial liabilities by ESR into instrument categories is determined by the business purposes of the financial instruments, the policies and practices of management, the relationships with other instruments and the reporting costs and benefits associated with each designation. The designations applied by ESR are reflected in the financial statements.

#### ***Financial assets***

The Group classifies its financial assets as loans and receivables and at fair value through profit and loss. Management determines the classification of its financial assets at initial recognition.

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are included in current assets, except for those with maturities greater than 12 months after the reporting date. These are classified as non-current assets. ESR's loans and receivables comprise 'trade and other receivables' and 'cash and cash equivalents' in the statement of financial position.

Regular purchases and sales of financial assets are recognised on the trade-dates – the dates on which the Group commits to purchase or sell the assets. Financial assets are derecognised when the rights to receive cash flows from the investments have expired or have been transferred and the Group has transferred substantially all the risks and rewards of ownership. Loans and receivables are carried at amortised cost using the effective interest method.

The Group assesses at each reporting date whether there is objective evidence that a financial asset or a group of financial assets is impaired.

#### ***Financial liabilities***

Financial liabilities held by ESR include trade and other payables and derivatives.

Such financial liabilities are recognised initially at fair value less transaction costs and subsequently measured at amortised cost using the effective interest rate method. Financial liabilities entered into with durations less than 12 months are recognised at their nominal value.

#### ***Derivatives***

Derivative financial instruments are recognised both initially and subsequently at fair value. They are reported as either assets or liabilities depending on whether the derivative is in a net gain or net loss position. ESR does not use hedge accounting, and as such derivatives are classified as held-for-trading financial instruments, with fair value gains or losses recognised in the statement of profit or loss and other comprehensive income. Such derivatives are entered into for risk management purposes.

## APPENDIX 3: DIRECTORY

### **DIRECTORS**

Denise Church – Chair  
Marion Cowden – Deputy Chair  
Professor Bill Denny  
Tahu Potiki  
Dr Helen Darling  
John O'Hara

### **CHIEF EXECUTIVE**

Dr Keith McLea

### **SENIOR LEADERSHIP TEAM**

Dr Graeme Benny, General Manager, Health  
Dr Keith Bedford, General Manager, Forensic  
Dr Libby Harrison, General Manager, Environmental Science  
Hamish Findlay, General Manager, Commercial & Business Development  
Celia Wellington, General Manager, People and Communications  
Steve Pyne, Chief Information Officer  
Bryan Lau Young, General Manager, Business Services

### **REGISTERED OFFICE**

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Fax: +64 4 914 0769  
www.esr.cri.nz

### **AUDITOR**

Chris Barber of PricewaterhouseCoopers on behalf of the Auditor-General

### **BANKER**

ANZ Bank New Zealand Limited

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Christchurch 8540  
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Fax: +64 3 351 0010

### **NATIONAL CENTRE FOR BIOSECURITY AND INFECTIOUS DISEASE (NCBID) – WALLACEVILLE**

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### **MT ALBERT SCIENCE CENTRE**

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**THE  
SCIENCE  
BEHIND  
THE TRUTH.**

**Wt**

Workplace  
drug  
testing

**Fo**

Food  
science

**Ws**

Water  
science

**Hs**

Health  
science

**Sg**

Social  
science

**Fs**

Forensic  
science

**Rs**

Radiation  
science

