STATEMENT OF CORPORATE INTENT 2020 - 2023

scion™
FORESTS ■ PRODUCTS ■ INNOVATION

Contents

Chair and Chief Executive overview

Transformation in the forestry sector and emergence of related new economic opportunities will contribute to New Zealand's future prosperity, well-being and environment.

New Zealand has strength in growing trees. That advantage, coupled with our sustainability record and our rich culture, provides one of the largest ever opportunities for the economy and for our regions.

Forestry is recognised globally as a key part of a low-carbon, biobased economy. In New Zealand we don't yet see trees as living factories. Our country must lead, not lag behind other countries in creating a new biobased primary industry sector that grows renewable resources rather than extracts raw resources from the ground.

The circular bioeconomy is becoming a global reality. We need to act nationally now, and strong government support is required if New Zealand is to gain the benefits from this global shift.

The work required for New Zealand to recover and rebuild from the impacts of COVID-19 is an opportunity to speed up our country's transition to a circular bioeconomy. That transition is core to Scion's Strategy to 2030 "Right Tree, Right Place, Right Purpose" launched in 2018, and it builds on the science Scion has been doing for over a decade.

Now is the time to accelerate this strategy. The circular bioeconomy is becoming a global reality. We need to act nationally now, and strong government support is required if New Zealand is to gain the benefits from this global shift.

Scion's focus over the next three years (2020-2023) will be to:

- Prioritise and implement the research needed to achieve our 2030 strategy's goals.
- Support regional development where trees can create economic growth and employment that has national impact.
- Support New Zealand's recovery and rebuilding from the impacts of COVID-19.
- Strengthen and expand Scion's partnerships, particularly with Māori, with emphasis on co-innovation.
- Maintain and strengthen Scion's critical and core science capability.
- Continue to invest in upgrading and building new research facilities and infrastructure that strengthen our connections with the community and businesses.

As part of developing this Statement of Corporate Intent, we updated Scion's Strategy to 2030 in January 2020 to incorporate recent global and domestic events (such as COVID-19). We also strengthened our systems to prioritise and resource the best research needed to achieve our 2030 goals. The January 2020 strategy document is available as a separate, standalone document.

Given the extreme uncertainties we face, we have modelled a number of financial scenarios, but only one year is presented while we continue to work with MBIE on a long-term funding plan. Scion will require an increase in Crown investment if it is to maintain and grow its impact for New Zealand's circular bioeconomy.

Dr Helen Anderson
Chair

Dr Julian Elder
Chief Executive

Our context

"Anything made from fossil-based materials today can be made from a tree tomorrow."

(Stora Enso)

Forestry is recognised globally as a cornerstone of a bioeconomy. A successful bioeconomy is an innovative, low-emissions economy, created through the merging of sectors and industries to ensure a sustainable supply of fibre and other products, while maintaining biodiversity and environmental protection.

Both OECD and emerging nations are adopting this approach, which uses renewable resources from the land and sea, as well as waste, as inputs to feed, fibre, industrial products and energy production.

The impact of COVID-19 on the economics of New Zealand and the globe has highlighted weaknesses in current supply chains and economic systems.

The post COVID-19 world will look very different for New Zealand. We can expect to see more onshore, as well as local/regional, manufacturing, and an increase in the domestic market and diversified exports and export markets. The reduction in certain sectors, like hospitality, tourism and education, will be significant and long term. Large numbers of people will need to be retrained and deployed to support the pivot away from 'current state'. The calls for a 'green' low carbon recovery will be louder.

New Zealand's recovery from COVID-19 is a catalyst to build back better and develop a new primary industry based on biomaterials, bioenergy, biopharmaceuticals and biochemicals. Forestry can, and should, play a key role in that.

We have this chance to significantly change the forestry sector's productivity, drive a step-change in the range of manufacturing activities onshore, realise significant economic multipliers by moving up the value chain and transition to an economy that improves the well-being of New Zealanders and our environment. These changes will help set forestry and wood processing on a better, more sustainable footing.

Scion's 2030 strategy "Right Tree, Right Place, Right Purpose", and its core objective of "Transitioning New Zealand to a circular bioeconomy", is already well aligned with the opportunity for New Zealand's post-COVID-19 economic transformation to a more resilient, productive and diverse green economy. Now is the time to accelerate this strategy.

Partnerships and supporting the regions

Partnership is critical to Scion's work with existing and emerging industry, Māori and central and local government. Through the impact of our research and development, and our partnerships, Scion will play a key role in recasting New Zealand's forest industry to create a more sustainable and distinctively New Zealand way of living in a biobased future.

As a regionally headquartered CRI, Scion is uniquely placed to support regional economic development. Scion incorporates its regional perspective across the whole forestry value chain – from research into 'nurseries of the future', planting and plant establishment regimes to suit local environments, through to wood processing and the future of biobased manufacturing. One such research area is developing distributed manufacturing, which uses technologies to more efficiently manufacture at smaller scales closer to the forestry resource in the regions.

The relationship between Scion and regional New Zealand is particularly acute in Rotorua, physically, economically and culturally. As the third largest employer in Rotorua, many people rely on Scion staff directly or indirectly for their livelihood. Scion provides a wide variety of jobs including highly skilled science jobs and a range of corporate, technical, nursery and field support roles.

Scion has strong links and strengthening partnerships with local iwi including Te Papa Tipu's tangata whenua Ngāti te Kahu, Ngāti Taeotu, Ngāti Hurungaterangi and our wider iwi of Ngāti Whakaue and Te Arawa including our neighbours from Whakarewarewa and Te Puia. Tangata whenua representatives are based in Scion's offices to foster co-innovation on research and other projects, such as Scion's near completed innovation hub and the cultural connections it will foster.

Scion's Strategy to 2030 (updated June 2020) contains a fuller narrative about our context and partnerships.

Scion and COVID-19 – response, recovery, rebuild

Events such as the COVID-19 global pandemic are 1 in 100-year events bringing devastating impacts. They also present 1 in 100-year opportunities to reset our direction as a nation. New Zealand post COVID-19 will transition through three distinct phases – response, recovery and rebuild. Many voices have expressed a desire to rebuild the New Zealand economy into something better than it was before - one that delivers well-being, economic growth and ensures New Zealand can meet its commitments in the Paris climate accord.

Scion has a strategy to do just that. By 2050, this strategy will see a 10-fold increase in GDP from forests and manufacturing, zero carbon emissions, erodible land being planted in permanent forests, land use that does not create water-quality issues, sustainable communities and economies in all regions. We will have a high OECD household net wealth ranking and overall, New Zealanders will have a much-improved standard of living.

Led by this strategy, Scion will support New Zealand through the COVID-19 response, recover and rebuild phases to create a better future for everyone.

Recovery Phase (June 2020 through 2022)

To support the recovery phase, Scion will expand research where possible to provide certainty and continuity as well as investing in the future.

We want to ensure the impact we deliver is well researched along the entire value chain, from gene to product. New Zealand post-COVID-19 should aspire to capture significantly more value from our forests, both harvestable and standing, and our brand of wood-based products and biomaterials be recognised and sought after internationally. We want to be exporting value, not volume, to the rest of the world.

The key will be research and innovation that is widely taken up to transition New Zealand to a circular bioeconomy.

Scion's strategy and core capabilities will ensure that:

- Both the quality and supply of trees for afforestation, and genetics and species selections, are fit for purpose.
- Nurseries use automation and remote sensing. Hygiene protocols will limit spread of disease and hands-on training will be offered for the next generation of plant propagators.
- Investment in growing the forestry resource is protected from pests, pathogens and climate change impacts, including wildfire.
- The full value of forests is recognised and in part monetised through emissions trading scheme, with science to improve our accuracy in measuring sequestered carbon and ecosystem services benefits.
- The full value of our harvested trees is extracted, including the traditional waste streams such as bark and wood chip, through innovative product and process development.
- Bioenergy replaces our dependence on fossil fuels, particularly in large industrial process heat demands.
- Communities living close to renewable forestry resources, are lifted by a distributed manufacturing model that brings the factories to the trees.
- Regions have choices and work in partnership with an adaptable product portfolio.
- Low carbon procurement is embraced by the construction industry thanks to an increase in options for engineered structural grade lumber and building products, and multilevel building projects in wood are accelerating.

Within our local community, we will leverage off the strong relationship Scion has with mana whenua and iwi neighbours. We will co-innovate with Māori; design research aligned with Māori values and deliver transformational impact in support of the Māori economic stimulus initiative.

Our innovation campus is a major infrastructure investment in Rotorua that will make a significant contribution to the national recovery and to the Rotorua economy through collaboration with agencies, industry and iwi.

Finally, we will seek capital and operational investment to build a National Bioproduct Innovation and Pilot Centre (National Biopilot) in Rotorua. This project could deliver immediate construction jobs and longer-term employment for new businesses and growth in the high-value bioproducts market.

Rebuild Phase (2021/2022 onward)

Scion's work enabling transformation in the forestry sector and development of related new economic opportunities will support rebuilding of our country in several ways: the value to New Zealand of the forests we grow will increase; our onshore processing will increase by adding value in New Zealand through expansion of the product portfolio from a tree; and training and employment in the forestry sector will increase.

To develop that portfolio of products from trees, Scion has capability from gene to product to innovate with novel germplasm and forest systems. We can design new biomaterials (bioplastics, biofibres, biochemicals, biofuels) as import substitutes and we can localise parts of the supply chain, including additive manufacturing approaches.

The final step from lab scale through pilot scale will be to partner with communities to establish mosaics of land use and industries through industrial symbiosis. Kawerau is a good example where regional growth has come from partnering of processing industries at the source of the biomass feedstock.

Scion's research to 2030 – Transitioning New Zealand to a circular bioeconomy

Scion's role in enabling New Zealand to benefit from global and local challenges and opportunities is set out in our Statement of Core Purpose and summarised in our mission statement.

Our core purpose

To drive innovation and growth from New Zealand's forestry, wood product and wood-derived materials and other biomaterial sectors, to create economic value and contribute to beneficial environmental and social outcomes for New Zealand.

Our mission

Enhancing New Zealand's prosperity, well-being and environment through trees

Kia piki te ora, te taiao me te whai rawa o Aotearoa mā te ngāherehere

To deliver our purpose and achieve great outcomes for New Zealand, nationally and regionally, Scion has defined three research impact areas to 2030. The impact areas focus where we will apply our expertise to deliver maximum impact for New Zealand.

Forests and landscapes (Impact Area 1)

To grow healthy, resilient forests that are planted primarily for their standing-forest benefits.

By 2030, social, cultural, environmental and economic benefits of these forests (exotic and indigenous) are fully valued, for example, carbon sequestration, biodiversity (niches for endangered species), erosion and flood control, enhanced water quality, recreation and tourism.

High-value timber manufacturing and products (Impact Area 2)

To grow healthy, resilient forests that produce high-value trees for manufacture into products that capture an increasing share of the global high-end market for timber.

Successful application of current and new forest models producing products for urban applications has the potential to add an extra $10 billion to New Zealand's GDP by 2030. This is made up of $7 billion in new housing builds and engineered timber applications, 50 per cent increase in new species commercial plantings, harvests and high-value applications, increased exports of processed timber and substitution for imported timber and products.

By 2030, a reduction of 2.5 million tonnes CO_2-e per annum is possible with 1.5 million tonnes increase in CO_2 capture per annum by faster growing trees and greater timber usage in urban buildings.

Biobased manufacturing and products (Impact Area 3)

To grow healthy, resilient forests that replace petrochemicals and non-sustainable materials with products from trees and other biomaterials.

The potential is to create by 2030 an extra $30 billion to New Zealand's GDP, including $2 billion in fuel and plastics substitutions (imports) and $15 billion in exports due to new bioproducts and fibre-based materials, new cropping forests and manufacturing processes, as well as several hundred jobs in the regions and 10 million tonne contribution in reduction in CO_2-e.

Transitioning New Zealand to a circular bioeconomy

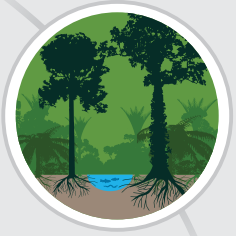
Māori forestry futures

- Strong treaty-based science partnerships
- More effective utilisation of Māori land
- Increased high-value bioeconomy opportunities for Māori

Transformational bioindustries

- Distributed manufacturing for regional growth
- New industry opportunities from biomaterials
- Biofuels for transport and industrial use – fossil fuel substitution
- Biorefineries extracting value from waste and purpose grown cropping trees

Indigenous forforestry



- Increased planting of native trees
- Improved ability to grow quality native trees
- Planted indigenous forests for native timber and biomaterials

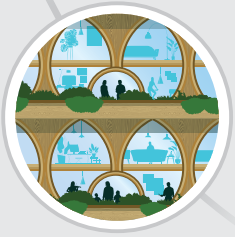
Biomaterials

- Biobased plastics and biochemicals used in manufacturing and for export
- Sustainable smart packaging

Forest ecosystem services

- Forestry improving biodiversity and water
- Carbon sequestration for climate change mitigation
- Enhanced wellbeing

Sustainable circular urban communities



- Increased use of timber in commercial and residential construction
- Wood innovation for engineering and architectural applications
- Enhanced human health and well-being from urban forests

Risk and biosecurity

- Protecting our forests and $7 billion of exports from pests, disease, fire and climate change
- Protecting natural heritage from kauri dieback, myrtle rust and other risks

Improving plantation forestry

- Increased value from land managed for timber and fibre
- Improved forest productivity in a changing climate
- Digital automation-enabled forest management
- Improved health and safety

We have further elaborated and grouped the research we will do under our three impact areas into eight **research themes:** two themes per impact area and two cross-cutting themes that are critical to the success of all three impact areas.

Impact Area (IA)	Research theme	Goal	Description
IA1: Forests and landscapes To grow healthy, resilient forests that are planted primarily for their standing-forest benefits	Indigenous forestry	Enhancing indigenous forests by leveraging plantation forestry technologies and knowledge	Learning to grow indigenous trees at pace and scale economically, increase success rate and improve understanding of and management of planted indigenous forests to improve indigenous forest outcomes and opportunities
	Forest ecosystem services	Capturing and optimising the environmental and social benefits of forests	Understanding, defining and valuing the processes and services forest ecosystems provide to improve environmental outcomes (e.g. water and air quality, carbon sequestration, biodiversity, erosion control) and human well-being (e.g. recreational use)
IA2: High-value timber manufacturing and products To grow healthy, resilient forests that produce high-value trees for manufacture into products that capture an increasing share of the global high-end market for timber	Improving plantation forestry	Transforming productivity, diversity and resilience of plantation forests for future timber needs	Ensuring plantation forestry evolves to deliver higher value timber and new value timber from more productive and diverse forests, with emphasis on the needs of future communities and forest function
	Sustainable circular urban communities	Developing biobased options to build sustainable circular cities and communities	Developing environmentally sustainable urban systems, including improved timber products for structural and architectural applications; rethinking wastewater and other infrastructure design and developing urban (small-scale) forests
IA3: Biobased manufacturing and products To grow healthy, resilient forests that replace petrochemicals and non-sustainable materials with products from trees and other biomaterials	Transformational bioindustries	Crafting distributed manufacturing and biorefineries to create thriving regions	Developing and scaling up technologies to transform biomass (including fibre, purpose grown trees and waste) into bioenergy, high-value chemicals and other biocomponents at industrial scale, with a focus on distributed and regional manufacturing, industrial symbiosis and redesigning supply chains
	Biomaterials	Designing biomaterials to create products for sustainability-conscious consumers	Creating New Zealand biofibre, biochemicals, and other biomaterials to be used to create sustainable bioproducts and packaging (including for use in modern design and fabrication solutions (e.g. 3D/4D printing, mass customisation, blockchain provenance tracking)
Cross-cutting	Risk and biosecurity	Managing risk to protect and enhance New Zealand's bioeconomy resources	Improving biosecurity and climate risk mitigation management and technologies to maintain and enhance forest productivity and product realisation. Developing tools and advice to overcome societal and regulatory barriers hindering the transition to a circular bioeconomy
	Māori forestry futures	Ensuring forestry and bioeconomy research integrates Māori perspectives and benefits Māori	Building science and research partnerships with Māori with a focus on enhancing Māori use of land and forestry resources to realise the economic, social, environmental and cultural opportunities of the circular bioeconomy

Scion's research themes.

Scion's Strategy to 2030 (updated June 2020) document contains more detail on the impact areas, associated research themes, and the milestones needed to achieve the overarching 2030 impacts Scion's work will contribute to.

Partnerships to deliver impact

For our strategy to succeed in creating meaningful impact for New Zealand requires meaningful long-term partnerships. Delivery of impact (more forests being planted to protect land or sequester carbon, or more exports of high-value timber or energy from trees replacing fossil fuel) can only be achieved through robust partnerships across all players along the innovation pathway adapting science to achieve a business, social or environmental outcome.

Building powerful co-innovation partnerships with Māori

Co-innovation with all sector partners is an important aspect of this as is strengthening integration with Mātauranga Māori. Scion is developing a **Māori Forestry Roadmap** aimed at implementing a co-innovation model with Māori that will ensure te ao Māori is at the heart of research and ensuring that mana, mauri, mahi and moni are integrated alongside the use and protection of Mātauranga Māori. Scion will build science and research partnerships with Māori with a focus on enhancing Māori use of land and forestry resources to realise the economic, social, environmental and cultural opportunities of the circular bioeconomy.

Scion will continue to build on and increase the existing partnerships it has with the sector through workshops, joint planning, two-way partnerships, including with iwi organisations, and to extend these partnerships to key influential end-users such as in housing and transport.

The Ministry of Business, Innovation and Employment's (MBIE) Vison Mātauranga funding programme will be a key enabler of partnerships with Māori and building capability for co-innovation.

Innovating with industry

Commercialisation remains an important focus for Scion. Scion has been developing new industry partnerships across the forestry and wood processing value chain and creating opportunities for adding value to these partners.

To foster entrepreneurial thinking and lead to future innovator founders of new technologies, we have kicked off 'Innovation Jumpstart', an internal accelerator programme. Working with internal and external mentors we are progressing five propositions from idea to pitch leveraging pre-seed accelerator funding support from MBIE.

Scion has applied for government funding to build and operate a **National Bioproduct Innovation and Pilot Centre ('National Biopilot')** at Te Papa Tipu Innovation Park. The proposed National Biopilot is a key next step in advancing Scion's ability to partner with private sector companies, innovators and iwi to create impact.

Biopilots are facilities that contain specialised equipment to manufacture beyond lab-scale to test and de-risk new product innovations and work out how to scale them up to commercially viable levels. Biopilots build a bridge between science and commercial manufacturing by decreasing financial risk and time to market thus increasing confidence for investors in new innovations. The National Biopilot will be an industry and partner facility to help expand existing biobased industries and create new ones.

The National Biopilot's key value is the multiplier effect it will have by unlocking new biobased manufacturing opportunities and jobs for forestry and manufacturing in New Zealand. The facility will create direct jobs and is an investment that will continue to pay off in the future as it moves forestry (and other agricultural biomass resources) up the value chain with new products, new companies, and new jobs. Based on overseas examples, the National Biopilot could create over 10,000 new jobs[1] and increase the original value of the log or waste stream by a 1000x multiplier.

Scion has more active partnerships to deliver impact. Scion's Strategy to 2030 (updated June 2020) contains more detail on our partnerships with industry, Māori, the science research community here and overseas, the Government and how Scion's work contributes to our partners' strategic objectives.

[1] **Key reference:** Regional Economic Development Ministers were briefed on the strategic rationale for this National Biopilot infrastructure through the Forestry Ministerial Advisory Group in June 2019: https://www.mpi.govt.nz/dmsdocument/34011-strategic-rationale-for-a-bio-pilot-plant-hub-for-new-zealand

A stronger Scion

Delivering on our Strategy to 2030 to create meaningful impact for New Zealand requires a strong organisation.

Sustainable revenue sources to support critical science capability

Importantly Scion must ensure it has the right core science capability to deliver the research New Zealand needs. To do that, we need to understand who the research beneficiaries are and their ability to provide the levels of revenue needed to support the capability and the research required. Appendix 1 outlines Scion's core science capabilities and identifies the 'users' and beneficiaries of the research those capabilities deliver.

Scion's revenue is secured from a mix of sources. These sources include government (science and other) funding mechanisms that rely on short- (less than a year) and longer- (longest at seven years) term contracts for service revenue, and royalty and other returns from utilisation of knowledge generated within Scion.

However, undertaking science and innovation and providing nationally important capability is a long-term business hence Scion will continue to focus on building sustainable revenue sources so it can continue to provide science and innovation of international standing and deliver on its core purpose outcomes. The level of revenue we see as fundamental to our delivery of this strategy is shown in the financials section.

Scion intends to continue efforts to secure funding for our research from the primary beneficiaries of that research. This is in line with the Government's draft *Research, science and innovation strategy*. In practice this means that Scion will:

- Prioritise its SSIF funds towards strategic New Zealand benefit research. This includes research which is: (i) of public good (where a clear end user cannot easily be identified); (ii) is of benefit to an industry that does not yet exist in New Zealand; (iii) too risky or long-term to be funded by existing industry. It may also be leveraged to attract industry funding.
- Ensure contestable science funding, such as the Endeavour Fund, is used to extend high-priority research beyond what is possible with SSIF funding rather than being the primary funding source for critical capability funding. Contestable funding may be used for novel research that clearly fits with our strategy while recognising that the research may not continue to be funded beyond the term of the contestable funding contract.
- Undertake research where clear end users can be identified if those beneficiaries fund the research. Scion will look to apply this to both private sector beneficiaries as well as research that supports specific government operations (for example, biosecurity, fire research, carbon analysis for the Government's climate change reporting).

We recognise that we will need to actively shift our revenue sources to align with this strategy. In addition to the long-term funding solution being worked on with MBIE (which is included in the financials) we are progressing discussions with existing industry on developing a more viable approach to funding their needs as beneficiaries.

Our financial planning also includes building up additional revenue source over future years in the order of $10 to 12 million for the science related to biotic and abiotic risks. Programmes such as biosecurity and fire activities are ones that do not naturally fit with an MBIE Endeavour type funding mechanism. Currently the long-term fire programme is an MBIE Endeavour programme that ends in 2021. We will engage with government departments, regional councils and organisations like the Insurance Council to explore long-term solutions to maintaining these capabilities and programmes.

Cultivating a culture of innovation, collaboration and continuous improvement

Scion's greatest resource is its people. Ensuring we have the right people, doing the right things and enabling them to do their best work is critical to success. Scion's "People, Culture and Safety Plan 2019-2023" supports the delivery of Scion's strategic direction in line with its Statement of Corporate Intent. The plan is designed to ensure Scion has the right employees it needs to meet current and future business and client demands and defines how we will deliver on:

- The safety and well-being of all workers engaged through Scion.
- An organisational approach (structure) and network that support the delivery of Scion's strategic objectives.
- Assessing and supporting current and future workforce capacity and capability requirements.
- Defined career pathways to enable long-term development, progression and succession planning.
- Articulating and embracing leadership and staff behaviours that support our values and promote the desired organisational culture and working experiences.
- Creating an organisational orientation to Māori engagement and stakeholder management as a key capability.
- People practices (systems, policies, procedures and programmes) that ensure organisational effectiveness, consistency and positive working experiences.

Creating an environment that facilitates delivering our business

Creating the right environment for our work and staff remains important to Scion. This includes continuing to invest in

world-class science equipment and facilities and the information technology systems expected of an organisation operating in the 21st century.

An important feature of improving our environment to deliver on our strategy is continuing to enhance the Te Papa Tipu Innovation Park where currently we have 29 tenants.

To complement the park, Scion is jointly developing an innovation hub with support from the Bay of Plenty Regional Council and Rotorua Lakes Council. Completion is due in the second half of 2020. The innovation hub will attract more aligned businesses into the heart of Scion and further encourage communication and co-innovation. Our aim is to ensure that the Scion environment is open to all cultures and reinforces Scion's organisational values - collaboration, ingenuity, manaakitanga and excellence.

The proposed National Biopilot, once funded, would be an important additional facility for co-innovating with industry partners and improving the science to impact pathway.

Prioritising our research

To fulfil our core purpose to deliver benefit for New Zealand, Scion needs to focus on the work where we can make the biggest difference. To help prioritise the research Scion will undertake to deliver its Strategy to 2030, we have developed a strategic assessment model to evaluate the fit of proposed research with Scion's strategy. The model is based on and modified from one used by other organisations, including in the private sector.

The model contains six strategic drivers:

Driver	**Capability**
Rationale	Matching the right and best people to the research needed to deliver on Scion's Strategy to 2030 will help ensure Scion is able to deliver excellent and relevant science that has meaningful impact.
Driver description	We will ensure that Scion is at the forefront of science and innovation by focusing our activity in areas that are critical for the delivery of Scion's strategy or that support national capability. New activity should advance capability through targeted investment in people and infrastructure to ensure that we enhance our ability with others to deliver on our strategy.

Driver	**Innovation/creativity**
Rationale	Scion's Strategy to 2030 aims to enable a new and better future for New Zealand using trees and other biomaterials. Such progress will only be achieved if our science is innovative and excellent.
Driver description	Ensure our vision is enabled and progressed through creativity, agility in Scion's key themes and impact areas. Lead New Zealand at the frontier of science relating to a circular bioeconomy through demonstrated excellence in science and invention. Demonstrate connectedness through global and local collaboration with others to avoid reinvention and gain access to complementary skills.

Driver	**Impact**
Rationale	Our science is of most use if it makes a difference and brings benefit to New Zealand. This is a key part of our (and all CRIs') core purpose. We take a deliberately broad view of benefit and impact to help ensure New Zealand can capture the full value of the research we do, particularly in the support of the recovery from COVID-19 and the building of a better future.
Driver description	Create impact for New Zealand that is measured by economic, social and environmental impact, through our policy or strategy advice, and/or technology transfer through partners and our science. Demonstrate the value Scion has achieved to a variety of audiences, including iwi, industry, government, public or international partners.

Driver	**Contribution to Māori**
Rationale	Māori are tangata whenua in Aotearoa and at Te Papa Tipu Innovation Park. They have cultural and spiritual connections to the land and environment. They are major forestry owners. Success in everything we do requires working with Māori.
Driver description	To enhance Māori futures through their unique resources, ensuring we create opportunities by building enduring Māori partnerships and driving co-innovations, using a Māori lens.

Driver	**Great place to work**
Rationale	Our staff will deliver great research and impact if they are engaged and satisfied at work.
Driver description	Enabling positive employment experience through practical and value-adding solutions that align with Scion's strategic direction and organisational imperatives.

Driver	**Efficiency and effectiveness**
Rationale	Scion, like all organisations, has finite human and financial resources. Being focused and making the best use of those resources ensures we can deliver maximum benefit for New Zealand.
Driver description	Create a more effective organisation through improvements in processes, systems and infrastructure, while anticipating future organisational direction and consideration of best practice approaches, to deliver ongoing efficiencies.

Each research programme will be scored against each of the six drivers and cross-checked against a prioritised list of outcomes that we are trying to enable for New Zealand to stress test the prioritisation.

The entire process will identify programmes of research as ones that:

- are critical to delivery of impact,
- are important to maintaining core capability,
- should only be carried out if someone will fund them, and
- those that are not well aligned with our strategy and should be wound down.

Performance targets 2020 - 2021

Scion will measure its performance against the outcomes and operating principle in its Statement of Core Purpose using the following set of indicators.

Financial indicators

For the financial year ending 30 June	2019/20 Forecast	2020/21 Target
Operating margin[1]	16.7%	11.4%
Operating margin per FTE	$29,410	$19,361
Quick ratio[2]	1.57:1	1.08:1
Interest coverage[3]	N/A	N/A
Operating margin volatility[4]	21.3%	22.3%
Forecasting risk[5]	3.9%	3.8%
RoE before investment	8.8%	1.2%
RoE NPAT[6] (after investment)	8.7%	1.2%
Revenue growth	3.5%	(3.9%)
Capital renewal[7]	2.3x	1.9x

Explanatory notes to table:

1 Operating margin: EBITDAF ÷ revenue, expressed as a percentage and per FTE (EBITDAF is earnings before income tax before depreciation, amortisation and fair value adjustments).

2 Quick ratio: (current assets = inventory – prepayments) ÷ (current liabilities – revenue in advance).

3 Interest cover: EBITDAF ÷ interest paid.

4 Profit volatility: the standard deviation of the past 5 years' profit, scaled by average profit.

5 Forecasting risk: 5-year average of return on equity, less forecast return on equity.

6 Return on equity: NPAT ÷ average shareholders' funds, expressed as a percentage (NPAT is net profit after tax). Shareholders' funds include share capital and retained earnings.

7 Capital renewal: capital expenditure ÷ depreciation expense + amortisation expense.

Organisational performance indicators					
Indicator name	Measure	Frequency	2019/20 Target	2019/20 Forecast	2020/21 Target
End user collaboration[1]	Revenue per FTE ($) from commercial sources	Quarterly	$69,479	$60,257	$53,067
Research collaboration[1]	Publications with collaborators	Quarterly	≥90	≥100	≥100
Technology and knowledge exchange excellence[1]	Commercial reports per scientist FTE	Annual	>2.0	1.5	1.5
Science quality[1]	Mean citation score	Annual	2.6	3.0	3.3
Financial indicator	Revenue per FTE ($)	Quarterly	$151,275	$176,012	$169,190
Stakeholder engagement[2]	Percentage of funding partners and other end users (number and per cent) that have a high level of confidence that Scion sets research priorities relative to the forest industry and biomaterials sector	Biennial	>85%	>85%[3]	No survey planned for this year
	Percentage of national and international research providers (%) who have a high level of confidence in Scion's ability to assemble the most appropriate research team	Biennial	>85%	>85%[3]	No survey planned for this year
	Percentage of relevant end users (%) who have adopted knowledge and/or technology from Scion	Biennial	>90%	>90%[3]	No survey planned for this year
Māori economic development	Partnerships (number and value) established with Māori entities to support economic development through the forest industry	Quarterly	n>10; >$1.5 m	n>10; >$1.5 m[3]	n>15; >$2 m
Accelerated commercialisation	Technologies in Scion's pipeline (number and co-investment ($)); projects that progress to the business case stage (case studies)	Quarterly	25 & $400,000; Cases ≥4	17 & $329,938; Cases ≥2	25 & $400,000; Cases ≥4
People and culture	Staff engagement	Annual	>75%	>75%	>75%
	Staff retention – staff turnover	Annual	12%	12%	12%
	Health and safety – serious harm events	Annual	0	0	0
	Staff diversity – percentage of permanent staff of Māori descent	Annual	8%	10.0%	11.0%
	Gender neutral – pay equity (Median – total compensation, unexplainable differences below <5%)	Annual	New target for 20/21	5%	<5%

[1] Generic indicators as required by MBIE across all CRIs are at the Scion Group level.
[2] Data previously provided from the MBIE-commissioned biennial external client survey, July 2018. From 2019/20 Scion will replace the MBIE Stakeholder Survey with a formal survey mechanism to capture key stakeholder feedback.
[3] Forecast number remains target. No reliable forecast can be established until the year has been completed and where applicable the survey has been done.

Financial reporting

Financial performance and position

During financial year 2019/20 a joint MBIE/Scion working group has been working on a long-term funding solution. The next step in that work programme was an independent science review of our strategy. Unfortunately, as a result of COVID-19, this has not been able to progress, and the joint working group has not been able to complete its work. Because of the delay, we are presenting a one-year financial projection only because projections beyond that are dependent on completing this process. Projections as at June 2020 against current capability suggests a shortfall in funding beyond the coming year (FY 2020/21) of at least $6.5 million per annum. The outcome of the science review and the working group completing its process will inform this further. At that point, we will apply the prioritisation process outlined in this Statement of Corporate Intent.

This projection assumes the building of a pilot scale manufacturing facility providing scale up testing facilities for the processing of biobased materials. The plans assume design work for this facility in 2020/21. Importantly, while the financial plan allows for the cost of maintaining and replacing existing lab scale facilities, it assumes that the design and build of the pilot scale facilities will be fully funded and as such are not included in capital allowances, cashflow and fixed asset increases in the plan below.

For the financial year ending 30 June	2019/20 Forecast	2020/21 Target
Total Revenue	$57,556	$55,325
EBIT[1]	$5,017	$738
Total assets	$60,092	$60,219
Capital expenditure	$11,000	$7,893
Dividend	$0	$0
Equity ratio[2]	77.4%	77.8%
Gearing[3]	0.0%	0.0%

Explanatory notes to table:

1 EBIT: earnings before interest, financial lease charges and tax, and after committed business development expenditure and technology service expenditure.

2 Equity ratio: average shareholders' funds ÷ average total assets.

3 Gearing: interest-bearing debt ÷ interest-bearing debt + shareholders' funds, expressed as a percentage.

Revenue

Revenue for the 2020/21 year is budgeted at $55.3 million, down $2.2 million or 3.9% compared with 2019/20 forecast. The reduction is almost exclusively from commercial revenue and reflects a full year of industry having less capacity to invest in research as they recover from the impact of COVID-19. The budget assumes COVID recovery funding received in 2019/20 will be received in 2020/21 also.

For future years, we have modelled revenue growth in particular to sustain our core capability that is no longer supported by MBIE contestable funding. We also will be relying on a bounce back in commercial revenue as some industry partners begin to recover. This will be revisited once the science review is complete, as the working group progresses its work and as more certainty develops around our future revenue streams.

Operating expenditure

For many reasons, not least of which has been COVID-19, costs have been managed very tightly in the forecasted 2019/20 year. The budget for 2020/21 assumes this tight cost management will be maintained with cost movements mainly reflecting movement in project delivery costs. In future years we will need to resume our processes for maintaining systems and assets that we have had to defer. No change in staffing levels has been assumed.

Balance sheet

Scion's science is capital intensive and requires an ongoing investment in scientific equipment and facilities to support revenue growth, be financially sustainable and to deliver research outcomes and impact that meet the needs of our stakeholders.

During 2019/20 Scion has largely progressed the construction of its Innovation Hub. As was discussed in last year's SCI, beyond this underlying capital spending requirement Scion must now plan to renew and develop some of its most significant strategic assets, notably our wood processing workshops and our nursery facilities. The 2020/21 budget allows for the construction of the next stage of nursery upgrades and the design of our wood processing workshops with the cost of construction allowed for in out years.

Cash flow and dividend

The budget for the 2020/21 year contemplates an operating cash flow of $5.1 million, down from a forecast $10.1 million due to the reduction in profitability. No dividend is planned.

Risks

As has been highlighted earlier in the document the joint working group needs to complete its process to inform future

revenue levels. This may mean that Scion would need to adjust its cost structure to maintain financial sustainability. As mentioned this will need to result in a re-prioritisation of where Scion applies its resources.

Risk also exists in relation to the biopilot scale manufacturing facilities being funded. Failure to get this funding will have an impact on revenue in future years, and we believe the impact will be very significant in terms of supporting New Zealand transitioning to a more sustainable and biobased economy.

APPENDIX 1: Core and critical capability

To deliver on our impact areas and research themes, Scion undertakes work in a variety of ways through our own capability, joint programmes with others, collaboration with international partners and the like. The following table (across two pages) outlines the capability that Scion sees as core to its ability to deliver. The table also highlights who the beneficiaries are of these core capabilities.

Key capability	Areas of primary focus	Value proposition	Government operations/ regulation	Public good	Industry/sector good
Plant science - forest species	Breeding forest plant species (genetics, biotechnology)	Genetic improvement for desired traits and better resilience (biotech required for most significant improvements)	Biosecurity/ resistance to pests and disease	Climate mitigation and resilience	Improved and fit-for-purpose trees
	Propagating forest plant species (germplasm, tissue culture, nursery)	Seedlings/clones can be grown at pace and cost effectively with increased survival rates			Tree and forest health; cost efficiencies and effectiveness
	Whole plant physiology (endogenous symbionts, nutrition, development, reproduction, phenotyping, non-destructive tools)	Understanding whole plant performance delivering designed and healthy trees into value chains			Improved tree survival and quality; fit-for-purpose trees
Understanding forest ecosystems	Biotic forest dynamics (soil, microbiomes, understorey crops)	Understanding the holistic interactions between soil, trees and other species to improve tree growth and forest productivity, including in a changing climate			Improved forest health and productivity
	Abiotic forest dynamics (carbon cycling and sequestration, water flows, nutrient cycling)	Understanding the role of forests in carbon sequestration and water management (quality and quantity), particularly to mitigate and adapt to climate change	Carbon sequestration understanding and management	Climate mitigation; Water quality	Improved forest health and productivity
	Remote sensing (phenotyping, forest health, pest/disease understanding, geospatial science)	Management of forests at scale through the integration of digital and sensing technologies (critical given the size, spread and diversity of forests)	Forestry resource understanding; carbon and ETS management; biosecurity		Forest understanding and management; cost efficiencies and effectiveness
	Silviculture (includes forest management, digital forestry and harvesting, robotics and automation)	Improved management to increase forest productivity, improve tree health and wood quality, and enhance worker safety	Health and safety		Improved forest productivity and management; health and safety
	Forest resilience (disease, pest, fire and other climate risks)	Protects forest resources and enhances productivity	Biosecurity; fire management (FENZ); conservation	Protect climate mitigation (carbon sequestration) and other ecosystem services; protect native tree species; protect amenity value	Forest resource protection
	Social and cultural benefits of forests	Understanding the non-monetary value of forests so they can be factored into decision making	RMA and environment regulatory decisions	Non-economic services	
	Integrating forestry (includes value chain economics and land use integration and decision making)	Efficient optimised management through linking together all parts of the value chain from 'seedling' to 'forester/farmer' to 'forest' to 'factory' to 'user/consumer'		Optimised land use (for economic and non-economic benefits)	Efficient and effective value chains

Key capability	Areas of primary focus	Value proposition	Government operations/ regulation	Public good	Industry/sector good
Materials and manufacturing from trees and biomass (timber, biomaterials)	Wood science, wood modification and timber engineering	Timber to meet the demands of modern architectural and engineering uses	Building code support	Climate mitigation (concrete/steel substitution)	Improved products; new products
	Novel and functional biomaterials (includes bioplastics, biochemicals, microbes and bioenergy)	Materials refined or made from wood and biomass constituents can replace fossil fuel-based materials in existing and new products	Zero-Carbon Act/ mitigation targets; economic development	Climate mitigation (fossil fuel substitution)	Improved sustainability and value; new products; new industries
	Packaging	Sustainable, durable, fit-for-purpose and 'smart' packaging solutions for New Zealand products	Government regulations and standards		Improved sustainability and value (including loss prevention); trade access
	Manufacturing processes for biomaterials (extrusion, additive manufacturing, pyrolysis, biorefineries, fermentation, engineering)	New biomaterials can only be useful if they can be processed in existing or novel manufacturing techniques, including distributed and symbiotic systems	Economic development	New knowledge	Enabler for environmentally sustainable products
	Waste processing and recycling (biodegradation, wastewater)	Processing, engineering and recovering waste to create value and reduce environmental impact	Waste management	Less waste and environmental pollution	Value-recovery
Enabling capabilities	Māori co-innovation	Cultural and social connections to forests, critical for breeding and propagation of indigenous trees; management of Māori land; development of value-add industry using Māori owned forestry resource	Treaty of Waitangi obligations	Treaty of Waitangi obligations	Māori business development
	Data science	Data science allows us to fully realise the richness of mega-scale datasets by utilising machine learning to unlock the hidden patterns	Supports resource understanding	Supports resource understanding	Supports resource understanding
	Techno-economics	Pathways to add value and identify and address commercial challenges			Efficient and effective value chains
	Molecular and biological chemistry	Analysis of all materials and alignment to metabolic pathways and plant and microbial materials		Supports resource understanding, new knowledge	Supports resource understanding, new knowledge

APPENDIX 2: Other matters required by the CRI Act 1992

Information to be reported to shareholders
Scion will provide information that meets the requirements of the:

- Crown Research Institutes Act 1992 (the Act);
- Companies Act 1993;
- Financial Reporting Act 1993;
- Crown Entities Act 2004; and
- New Zealand Institute of Chartered Accountants (NZICA) with regards to Generally Accepted Accounting Practice (GAAP).

The following information is made available to enable our shareholders to make an informed assessment of Scion's performance:

- A Statement of Corporate Intent (SCI) which sets out Scion's strategy for delivering against its core purpose and the company's financial and non-financial performance targets. The draft SCI is due not later than one month before the start of the financial year (31 May).
- An Annual Report containing sufficient information to allow an informed assessment to be made against the performance targets in the SCI. This report includes comments on our core business and how we communicate our science, financial statements (including audit report), and a report from the Directors to the shareholders. The Annual Report is to be provided within three months of the financial year ended 30 June. A public Annual General Meeting is to be held no later than six months after balance date and not later than 15 months after the previous AGM.
- A Half-Yearly Report containing unaudited financial statements (including comparatives of the same period in the previous year) and major highlights during the period. The Half-Yearly Report is due within two months of the first half of each financial year ended 31 December.
- A Quarterly Report containing information such as unaudited financial statements (including current quarter and year-to-date budgets and a forecast for the financial year ended 30 June). The Quarterly Report also includes financial performance measures and progress towards meeting non-financial performance targets. The Quarterly Report is currently requested within one month of each financial quarter ended 30 September, 31 December, 31 March, and 30 June.
- Any other information relating to the affairs of the company, as reasonably required by shareholders, under section 20 of the Act and section 45B of the Public Finance Act 1989.

Accounting policies. Scion adopts generally accepted accounting practice in New Zealand as prescribed by the External Reporting Board. The accounting policies for the measurement and reporting of financial performance, movements in equity, financial position, and cash flows are detailed in Scion's Annual Reports available at www.scionresearch.com

Dividend policy. In determining the amount of ongoing dividend (if any) recommended to be distributed to the Shareholders, consideration will be given to:

- providing for capital investment requirements and consideration as to whether there is a need for capital injection from Shareholders;
- Scion's working capital requirements;
- the ongoing financial viability of Scion, including the ability to repay debt;
- the need to comply with Bank Covenants;
- the obligations of the directors under the Companies Act 1993 and other statutory requirements;
- resilience against fluctuations in the demand for Scion's services;
- the need to ensure the maintenance of scientific capability through the provision of scientific technology, equipment and science capability building.

Any dividend would be paid within three months of the financial year-end.

Commercial value of the shareholders' investment
Section 16(3) of the Act requires the Scion Group to furnish an estimate of the current commercial value of the Crown's investment.

The Scion Board is satisfied that the net asset position (or shareholders' funds) as at 30 June 2019 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 2019 was $42.7 million.

Activities where shareholder compensation would be required
The Board would look to seek compensation from the shareholders in the following circumstances:

- Where the shareholders instruct Scion to undertake activities or assume obligations that would result in a reduction of the company's profit or net realisable value.
- Where the Board may consider undertaking strategic investments for the wider benefit of the New Zealand public, involving financial outlays beyond those incorporated within the company's Statement of Corporate Intent or financing capabilities.

No request for compensation is currently being sought from the shareholders. At this time no such investment has been identified, nor have any financial projections for such investment been included in Scion's 2019/20 Statement of Corporate Intent.

Other matters specifically requested by the shareholder
There are no other matters that have been specifically requested by the shareholders.

Profile

New Zealand Forest Research Institute Limited	Trading as Scion
Ownership	Crown owned entity (established under the Crown Research Institutes Act 1992).
Head Office	49 Sala Street, Rotorua
Postal Address	Private Bag 3020, Rotorua 3046
Web address	www.scionresearch.com
Governance	Shareholder-appointed Board: Chair, Helen Anderson (2018); Directors Greg Mann (2017), Barry O'Neil (2012), Colleen Neville (2014), Stana Pezic (2017), Jon Ryder (2016), Steve Wilson (2016)
Executive Management	Chief Executive, Julian Elder; Chief Operating Officer, Bart Challis; Chief Innovation and Science Officer, Elspeth MacRae; General Manager People, Culture and Safety, Adriana Botha; General Manager Marketing and Partnerships, Arron Judson; General Manager Māori Forestry Futures, Hemi Rolleston; GM Finance and Corporate Services, Rob Trass
Staff	320 full-time-equivalent staff at three sites: Rotorua (285), Christchurch (32), Wellington (3) as at 30 June 2020
Vision	Prosperity from trees - Mai i te ngahere oranga
Core Purpose	To drive innovation and growth from New Zealand's forestry, wood product and wood-derived materials and other biomaterial sectors, to create economic value and contribute to beneficial environmental and social outcomes for New Zealand
Values	Ingenuity, Collaboration, Excellence, Manaakitanga
Reporting	Financial and non-financial performance against SCI targets is reported to the Shareholder quarterly and to the public via a six-month and annual report
Shareholder Funds	Total book value of $42,687 million at 30 June 2019

Shareholdings

Company	Company type	Scion shareholding %
Te Papa Tipu Properties Limited	A land holding subsidiary	100.00
Biopolymer Network Limited	An incorporated joint venture	14.56
WQI Limited (T/A Solid Wood Innovation)	An MBIE-industry partnership in wood processing. WQI Limited is in voluntary liquidation and is not trading.	5.05
Terax Limited Partnership	A limited partnership to commercialise the Terax technology	50.00
Terax (2013) Limited	The General Partner in Terax Limited Partnership	50.00
Sala Street Holdings Limited	Holds Scion's 50% share in both Terax (2013) Limited and Terax Limited Partnership	100.00

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www.scionresearch.com

July 2020

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trading as Scion

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

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