Scion 2015

Four Year Rolling Review

Jim McLean (Chair), Dianne McCarthy, Anake Goodall, Brent Layton

July 20, 2015

Four Year Rolling Review: Scion 2015

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1. FOREWORD

The Panel would like to record its thanks to the board, management and the many staff we met with at Scion. Their support, and the positive, open and cooperative attitude that we experienced throughout the review process were all much appreciated. We were impressed by the professional standard of the information provided as well as the prompt and thorough manner in which additional information requests were handled. Given the substantial volume of material, the ease of access to and navigation of the documentation storage portal were greatly appreciated.

The logistical support provided to the Panel by MBIE staff during the three month process was also very much appreciated. We are also grateful to the many stakeholders who gave willingly of their time and expertise to assist the Panel in its deliberations.

As previous reports have noted, the provision of Four Year Rolling Reviews of the Crown Research Institutes is a useful initiative in focusing attention on the longer term performance and capacity of these Crown-owned companies. The Panel hopes that this report will add value to Scion and assist it to continue to flourish over the next four-year cycle, in addition to providing information and support for the Ministry and Government in its decision making.

Jim McLean
July 20, 2015

Panel Chair

Dianne McCarthy | Anake Goodall | Brent Layton

Panel Members

2. EXECUTIVE SUMMARY

Organisational Strength

The Review Panel considers Scion to be in a strong position organisationally, as a direct result of the leadership provided by the board and its senior management in recent years.

The Panel noted that Scion has good financial systems and controls, and is profitable despite its small size and relative lack of non-government revenues. The Panel notes Scion's developing capability in the commercialisation of opportunities.

Scion has a strong and maturing values-based culture that is understood by all staff and informs the way in which the organisation conducts itself. The Panel saw evidence of deepening succession planning, and that it is successfully recruiting top international talent into the organisation.

Scion has clear frameworks that guide its operational, planning and reporting functions. Individuals and teams spoken to by the Panel were clear on their roles in the wider organisation and how they contributed to Scion's mission, confirming the existence of effective and clear organisation-wide communication. The Scion board is considered to be engaged, visible and active, and has made effective use of the advice received from its Science Advisory and Industry Users panels in their independent reviews of Scion's Science Intermediate Outcomes over the past four years.

Further, Scion has been investing successfully in its external relationships with forest growers, processors and iwi/Māori. Stakeholders were universally complimentary about the increasing level of engagement. This, coupled with Scion's focus on the whole forestry value chain, positions Scion well to add value to the forestry sector in Aotearoa New Zealand.

The Panel considers that as a result of investments in recent years Scion is a fit-for-purpose organisation that is well positioned to meet the challenges and the opportunities ahead of it.

Strategic Challenges and Opportunities

Against this backdrop, the Panel has a number of questions relating to the current strategy.

The Panel was struck by the relatively small size of Scion and its revenues, the fact that growers and processors alike contribute very little income, that its fee-for-service model will always be only marginally profitable, and that it is heavily dependent on government funding.

This leaves the organisation, in the Panel's view, with too much reliance on relatively high risk / high return intellectual property investments to secure its future potential, and simultaneously committed to its current course of being overly focused on short term revenue opportunities in the interim based on its existing skills and capacity. The Panel considers that the establishment of an increasing level of independently sourced discretionary income should be a priority for Scion.

s9(2)(b)ii

In its favour Scion has constructive and improving relationships with stakeholders, and the organisational strengths referred to above. The Panel notes the merits of Scion's focus on the whole value chain, and concurs with the board's view on the likely future role of iwi/Māori in forestry and the opportunities that this presents.

While Scion is very well placed to add value to, and benefit from, the burgeoning Māori presence in the forestry sector, the Panel considers that it will need to consolidate and focus its current activities - and invest in them in a more targeted, intentional manner - if it is to realise these significant opportunities.

Possible Futures

On balance it is the Review Panel's opinion that there may be merit in de-emphasising some existing investments where the level of investment is high and the economic rationale is unclear at best - such as the liquid biofuels research for example - and focusing back on the potential to achieve further step change improvements in *P. radiata* breeding, silviculture and processing.

P. radiata remains the dominant timber species in Aotearoa New Zealand's production forestry and will remain so for the foreseeable future. Scion's core expertise is built around this species.

s9(2)(b)(ii)

3. BACKGROUND

Context for the rolling reviews

The 2010 Crown Research Institutes (CRI) Taskforce reforms are an integrated suite of changes designed to increase the impact and benefit of the CRIs to New Zealand. Central to the reforms is the intention to increase the CRIs focus on collaboration with, and efficient technology transfer to, the sectors and key stakeholders they serve.

Each CRI has adopted a Cabinet-approved Statement of Core Purpose (SCP) which reflects this focus and clearly articulates the purpose, outcomes and strategic role for the organisation. Scion's SCP states "*Scion's purpose is 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."* The statement further elaborates on the key outcomes, scope of operations and operating principles for Scion and it is against all of these that the Panel makes its report. The full SCP for Scion is attached as Annex 1.

To ensure CRIs continue to increase their contribution to New Zealand's economic, social and environmental well-being, the CRI Taskforce also recommended, and Cabinet agreed [CAB Min(10)43/5C refers], that the government evaluate the performance of each CRI against its SCP through a process of independent rolling reviews.

It has been agreed with the Minister of Science and Innovation that two reviews will be undertaken each year. Given that the cycle of reviewing the seven CRIs will be completed every four years, these reviews are known as the Four-Year Rolling Reviews. These reviews are described as rolling for two reasons: firstly, because they are designed to review each CRI successively, and secondly, because they will draw on an aggregation of performance-related information that is already routinely generated to inform the matrix of monitoring and assessment procedures established around the CRIs.

Purpose of the review and this report

The purpose of these reviews is to provide shareholding Ministers with insights on where each CRI's performance can be improved and assurance on where the CRI is operating effectively in delivering outcomes that contribute to New Zealand's economic, social and environmental well-being. The reviews are to include an assessment of governance effectiveness, financial viability and sustainability as well as an identification of opportunities and barriers to success. Findings from the reviews will also support CRI boards in their governance role. This report is the outcome of the fifth such review, that of Scion. The review was undertaken between March and June 2015.

Scope of the review

As outlined in the Terms of Reference for the review, each CRI's SCP provides the scope of enquiry for the Four Year Rolling Review. The review is expected to evaluate the CRI's performance and progress in delivering to the purpose, outcomes, scope of operation and operating principles in its SCP. There will also be some consideration of the likely durability of outcomes in the current economic and environmental context. The reviews are expected to evaluate factors that influence the CRI's overall success in contributing to its SCP outcomes now and into the future.

Every year each CRI, in collaboration with key stakeholders, measures and evaluates its impact on its respective sectors. The independent panel undertaking the Four Year Rolling Reviews is not expected to duplicate this work. However, based on the measures and assessment generated by the CRI, the panel should evaluate how well the CRI is contributing to the outcomes in its SCP and assess the quality of the measures used to inform that assessment.

The Terms of Reference have the following as out of scope:

- how science reviews are undertaken by the **Science, Skills and Innovation Group**; rather the science reviews may be sourced as an informational input into this project;
- measuring the performance of the CRI in delivering against individual contracts; rather the panel will evaluate how the CRI manages its contracts overall; and
- measuring the CRI's science quality; rather the panel will evaluate how well the CRI is monitoring, measuring and improving science quality.

The Review Panel and processes

Panel members were appointed to ensure an appropriate mix of experience in governance, corporate finance, economics, senior management of science organisations and organisational review. The Panel membership was Jim McLean (Chair), Anake Goodall, Dr Brent Layton and Dr Dianne McCarthy. Brief biographies for the Panel members are attached as Annex 2.

The Panel reviewed any potential conflicts of interest that members may have in relation to this process. While there were no direct conflicts identified it is noted that at the time this review began Anake Goodall was a director and shareholder in NXT Fuels Ltd (formerly Aquaflow Bionomic Corp.) which has interests in the potential for biofuel production in the New Zealand context. His directorship in this company had been vacated before the review was completed. Relevant indirect issues were managed throughout the review process.

The Panel was appointed by the Ministry of Business, Innovation and Employment (MBIE) in March 2015 and it first convened by teleconference on 19th March 2015. Panel members were then provided with a range of background material from both MBIE and Scion. Further

material was provided by Scion upon an information request conveyed during the Panel's first visit to Scion on 7-10 April. The full list of information provided to the Panel throughout the review is detailed in Annex 3.

In undertaking the review, the Panel sought to be:

a. future focused: while taking account of the performance over the previous four years, spending the majority of effort on understanding the position of Scion for the future.

b. independent: working closely with Scion and MBIE but remaining independent of both to ensure the Panel's report reflects a genuinely independent assessment.

c. objective: the review sought to be objective and as far as possible evidence-based; it also sought to be open minded and 'let the facts and the numbers speak for themselves';

d. interactive: the Panel consulted with members of the Scion board and senior management team during the review and Scion had the opportunity to view and comment on matters of factual accuracy in the draft report before it was finalised;

e. discreet: the Panel, respecting the candour and openness of all who participated in the review – including external stakeholders – undertook to preserve confidentiality and ensure no statements in this report are directly attributable to individuals or specific organisations; and

f. efficient: the Panel aimed to be efficient in its engagements with Scion and keep compliance costs to a minimum.

The Panel met initially with the Chair and board of Scion, the CEO, the CFO/Company Secretary and the GM Research and Investments on 26th March 2015 to initiate the review. Additionally, the Chair of the Panel and the Chair of the Scion board communicated by telephone over the course of the review period.

From 7th - 10th April, the Panel was on site at Scion in Rotorua and spent three days meeting with the Chief Executive, senior management, science leaders, Māori Focus Group, Future Leaders Group and a selection of other staff. The Panel also toured the Red Stag Sawmill in Rotorua. The Panel returned to Rotorua on the 4th and 5th May to meet with a number of key stakeholders, and further stakeholder meetings took place in Wellington on the 7th May and the 18th and 19th May.

Telephone and teleconference discussions were held with a number of stakeholders when face to face meetings were impracticable. The full list of those the Panel met with, or spoke to, is provided in Annex 4.

4. SCION DELIVERY AGAINST SCP

4.1 Context for assessment

Within the boundaries of its SCP, a CRI's performance is measured against two key deliverables:

1. The impact of its research in relation to economic, social or environmental benefits for Aotearoa New Zealand; and
2. The financial performance of the CRI.

The Panel provides below its assessment of the current performance of Scion in delivering against its SCP within the context of the current operating environment for CRIs.

Scion is unique among the Crown Research Institutes; its core activities are predominantly focused on the forestry and wood processing sector, and to a growing extent on advanced manufacturing and the biomaterials sectors. There are 1.7 million hectares of plantation forests in New Zealand, 100,000 hectares less than there was 5 years ago. Nearly one third of the plantation forests are in the Central North Island, in close proximity to Scion's headquarters in Rotorua. A bit over a third are elsewhere in the North Island and the balance, about 30 percent, is in the South island.

The species is highly concentrated. Approximately 90 percent of the plantation area is in *P. radiata*. Another 6 percent is in Douglas fir with the balance in eucalypts, cypress firs and other exotic species.

Forestry and wood processing, which incorporates solid woods (sawmills, remanufacturers), wood fibre (pulp & paper, packaging, biomaterials) and energy from forest biomass, are important economic activities, especially in regional areas. There are over 22,000 people employed in the industry and it is the third largest export earner with receipts of $5.3 billion in 2014.

The industry used to be heavily vertically integrated with the major processors owning not only the processing plants but also the forests. The industry is no longer dominated by vertically integrated corporations. Māori own 40 percent of the land under plantation forestry, largely as a result of settlement agreements with the Crown for breaches of the Treaty of Waitangi. Offshore investors, mainly North American pension funds, own approximately 65 percent of the forests, and much of these forests are on Māori land. There are, however, a significant number of owners of smaller forests and farm woodlots.

4.2 Purpose

All CRIs are required to undertake research to contribute to New Zealand's economic growth and environmental and social prosperity. In particular, Scion's purpose, as outlined in its SCP, is 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.*

The Review Panel notes that a CRI's Statement of Core Purpose defines the areas that a CRI may choose to conduct research in but that they are not required to focus on all areas described in the SCP. This report proposes that the Scion board consider reducing investment in some areas and focusing greater resources on areas closer to its core expertise and comparative advantage, being specifically in the area of *P. radiata* genetics. The Panel is of the view that this approach is likely to produce the greatest positive impact for the industry and the nation.

4.3 Outcomes

Scion will fulfil its purpose through the provision of research and transfer of technology and knowledge in partnership with key stakeholders including industry, government and Māori to:	
• increase the value and productivity of these industry sectors to the New Zealand economy through improved forestry practices and production systems and increased diversification of New Zealand's biological industry base to meet current and future global market needs.	*Scion has generated improvement in forestry practices and production systems. It has contributed to modest changes to the diversity of New Zealand's forest industry. Efforts to improve the productivity of P. Radiata as a crop slowed during the 1990-2010 period and are currently being reviewed. This species is by far the most dominant in the plantation forestry estate and will remain so*

	for the foreseeable future.
• protect and enhance market access and improve risk management in the forestry industry.	*Scion is strong in this area and has good capability to meet industry's needs.*
• s9(2)(b)(ii)	s9(2)(b)(ii)
• enhance New Zealand's opportunity to benefit from forestry-based ecosystem services to improve both the global market position of industry and the environmental sustainability of forestry production in New Zealand.	*Scion's activities have contributed to the forestry industry having the license to operate. While a lot of work is going on is this area, benefits are hard to measure, and attribution to Scion is difficult to quantify.*

4.4 Scope of operation

To achieve these outcomes, Scion is the lead CRI in the following areas:	
• sustainable forest management and tree improvement. • forestry biosecurity and risk management and mitigation. • wood processing, wood-related bioenergy, waste streams and other biomaterials. • forestry and forestry-based ecosystem services to inform land-use decision making.	*Scion is demonstrably the lead in these four areas and is actively focused on, and invested in, fulfilling its lead role.*

Scion will work with other research providers and end-users to contribute to the development of the following areas:	
• biosecurity land, soil and freshwater management.	*Landcare Research / Manaaki Whenua may be the lead CRI in this area but there are linkages.*
• climate change adaptation and mitigation.	*Yes.*
• indigenous forestry.	*Yes, as evidenced by Scion's native nursery and Northland projects, and other projects such as in Central North Island and East Coast. projects.*

4.5 Operating principles

Scion will:	
• operate in accordance with a statement of corporate intent and business plan that describes how Scion will deliver against this statement of core purpose, and describes what the shareholders will receive for their investment.	*Yes. Operates in accordance with SCI and business plan. SCI provides MBIE and Ministers with the information they require. All observed processes and systems to obtain this information are well constructed.*
• meet its obligations as a Crown Company and remain financially viable, delivering an appropriate rate of return on equity.	*Scion meets its obligations as a Crown Company and its financial performance has improved over recent years. Scion reinvests with the agreement of its shareholders.*
• develop strong long-term partnerships with key stakeholders, including industry, government and Māori, and work with them to set research priorities that are well linked to the needs and potential	*Scion enjoys increasingly strong relationships with all key stakeholders and is respected for it progress in recent years.*

of its end users.	
• maintain a balance of research that both provides for the near-term requirements of its sectors and demonstrates vision for their longer-term benefit.	*Yes to near-term requirements but the Panel questions whether its longer term vision for the sector has been well defined.*
• transfer technology and knowledge from domestic and international sources to key New Zealand stakeholders, including industry, government and Māori.	*Strong on this in relation to their core forestry activities in the domestic market but not so strong in relation to international IP beyond traditional forestry areas.*
• develop collaborative relationships with other CRIs, universities and other research institutions (within New Zealand and internationally) to form the best teams to deliver its core purpose.	*Strong locally and quite good for forestry business internationally but less strong for new products internationally.*
• provide advice on matters of expertise to the Crown.	*MBIE confirmed that this is being done to the Crown's satisfaction.*
• represent New Zealand's interests on behalf of the Crown through contribution to science diplomacy, international scientific issues and/or bodies as required.	*Yes.*
• seek advice from scientific and user advisory panels to help ensure the quality and relevance of its research.	*Yes. The Panel has some comments about how Scion might use these panels more effectively in future.*
• establish policies, practices and culture that optimise talent recruitment and retention.	*There is clear evidence that Scion's policies and practices are succeeding in recruiting New Zealanders, attracting very well qualified international candidates and retaining talent.*
• enable the innovation potential of Māori knowledge, resources and people.	*Good appreciation of the sector and its opportunity, and has some very good connections, but programmes are mostly at an early stage.*

• maintain its databases, collections and infrastructure and manage the scientific and research data it generates in a sustainable manner, providing appropriate access and maximising the reusability of data.	*Yes.*
• seek shareholder consent for significant activity beyond its scope of operation.	*The Panel is not aware of any instances where Scion has not complied with this requirement.*

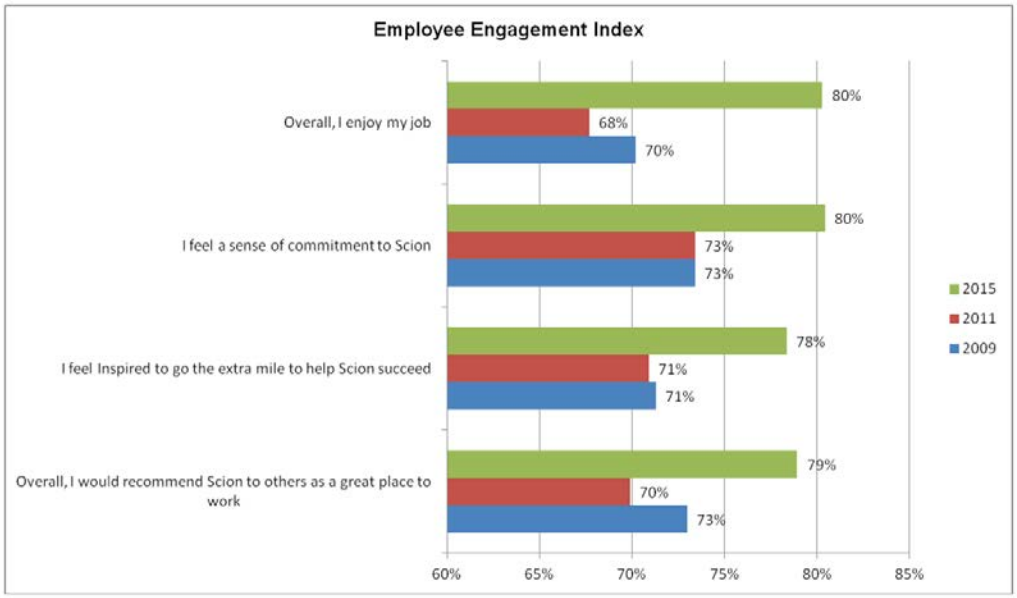
5. ANALYSIS OF KEY ISSUES

5.1 Leadership, Culture, and People Development

There were many positive features observed around the leadership of Scion, the culture within the organisation, people management and the commitment to staff development through a number of targeted leadership training programmes. Board, management and staff are to be highly commended.

The board is very active and clearly visible to, and engaged with, staff at all levels. The organisation is very ably led by the Chief Executive who clearly has the respect of staff, stakeholders and the industry. Currently there are 299 FTE, approximately 7% of whom indicate that they whakapapa to an iwi, a balanced gender ratio, and some 25 different nationalities represented on staff. There is a good understanding and alignment of company strategy and values across the organisation; financial management and reporting is of a high standard; relationship with stakeholders is on a good basis; engagement with industry is very good, and a proactive Māori Focus group has been established. Morale is very high across all groups within Scion as measured by a climate pulse survey conducted earlier this year. Completion rate was 99% and an employee engagement index of 80% was achieved.

Scion – Employee Engagement Index 2015



A People, Performance and Culture Plan has been in operation since 2011. It was established to provide a clear organisational focus on the people, performance and cultural developments required to achieve Scion's strategic framework, and examine the ways in which leaders now and for the future can be identified, supported and developed. Performance reviews and the setting of KPIs for individual staff and teams were of a high quality and seen as both valuable

and valued. A new set of values has been adopted including *Ingenuity, Collaboration, Excellence and Manaakitanga.*

A key emphasis during the 2014/15 year has been on further development and refinement of the Leadership Framework, and the development of the Future Leaders Programme in particular. This programme was launched in September 2014 and is designed for tier 4 roles and below to support the development of staff who have been identified as being capable and with a career aspiration to progress to a more significant leadership responsibility in the short to medium term. The Panel met with a selection of participants all of whom were very positive about the benefits of the programme and the opportunities it offered for future career development. These very positive views were shared by external parties, including MBIE.

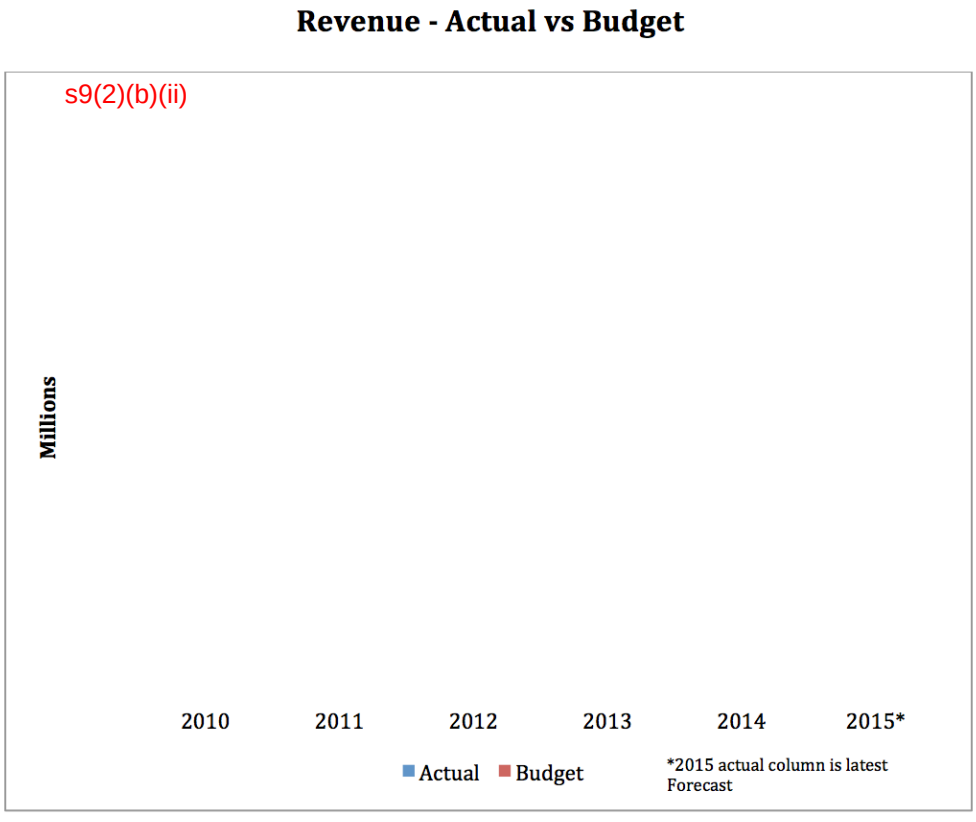
It was clear to the Panel that there is a demonstrated high commitment from the board and management in growing the careers of promising staff in a manner that will also contribute to Scion's future strategy and success, and also to recruiting promising younger international scientists.

5.2 Financial Viability and Sustainability

The Panel received all the financial information it required. This included information from the systems Scion uses for its management and oversight reporting, as well as information specifically sought by the Panel. It is clear from the ease with which the Panel's requests were met that these systems are operating well and are flexible for present and future needs.

There has been no recent Office of the Auditor General report covering Scion, but from the recent management letters from EY, as part of the annual audit, no concerns about the prudential control of Scion were evident. Everything the Panel saw suggests financial management and reporting is of a high standard.

A key component of financial stability for Scion is its ability to grow revenue and to perform accurately to budget. Overall, Scion has managed to grow modestly in a difficult business environment. In recent years, budgeting and forecasting have aligned more closely to actuals than in the past.



Scion is very dependent upon continuation of a high proportion of its revenues from government sources as can be seen from the following graph and table. Revenues from all government sources -, including other CRIs - make up approximately 80% of turnover. This leaves approximately $10 million of revenue from industry.

Management has been successful in obtaining some security for a proportion of these revenues through accessing the forest growers' levy and through establishing in recent years very good customer and industry relationships.

2015 Revenue by Source (Forecast)

s9(2)(b)(ii)

Overall, however, industry revenue at less than 20% is low and this represents a risk to Scion. The board and management have successfully managed this dependence on fee-for-service activities by prudent cost control and by consistently achieving an operating margin of 12% of revenues.

The Panel notes that the trend in recent years has been for the share of Scion's total revenue from domestic and international commercial sources to increase, from a small base of approximately $8 million to $10 million, largely through the forest owners' levy. This is insufficient to materially change Scion's dependence on government sourced revenues.

NZ$000	2011	2012	2013	2014	2015
Direct Government	s9(2)(b)(ii)				
Sub Contracting and Local Authorities					
Domestic Commercial					
International Commercial					
IP and Other Revenue					
Total Scion Revenue					

Source: Scion

The table below gives the percentage contributions of various sources of revenue for each CRI in 2014 according to a classification of revenue provided to the Panel by MBIE. In Scion's case, and presumably for the other CRIs, the non-government revenues include amounts from other sources that are not from industry. These data do not fully reconcile with the time series data in the previous table, which was provided to the Panel by Scion, the relatively low share of Scion's revenue in 2014 coming from sources other than the government when compared with the two other biological based CRI's – AgResearch and Plant & Food Research – is much more than a statistical artefact. According to MBIE the non-government share of Scion's revenue in 2014 was 36.9% whereas the corresponding percentages for AgResearch and Plant & Food Research were 63.6% and 43.7% respectively.

2014 revenue splits	Core Funding	Contestable Funding	Other Government Funding	*Sub-Total Direct Government*	Sub-contracting	Domestic Commercial	International Commercial	IP and Other Revenue	*Sub-Total Non-Direct Government*	Total
AgResearch	24.3%	12.1%		*36.4%*		48.7%	0.0%	14.9%	*63.6%*	100.0%
ESR	12.5%	3.6%	64.0%	*80.1%*	1.4%	9.0%	4.2%	5.3%	*19.9%*	100.0%
GNS Science	35.5%	20.4%	11.8%	*67.7%*		22.9%	9.4%	0.1%	*32.3%*	100.0%
Landcare	44.3%	13.5%	16.6%	*74.4%*	9.7%	13.1%	2.8%		*25.6%*	100.0%
NIWA	34.7%	18.1%	25.6%	*78.4%*	2.2%	16.5%	2.9%	0.0%	*21.6%*	100.0%
Plant & Food	36.0%	15.4%	4.9%	*56.3%*	5.9%	19.1%	3.4%	15.3%	*43.7%*	100.0%
Scion	36.9%	19.8%	6.4%	*63.1%*	5.6%	27.4%	2.5%	1.4%	*36.9%*	100.0%
All CRIs	**31.3%**	**14.7%**	**15.2%**	***61.3%***	**2.9%**	**25.6%**	**3.1%**	**7.2%**	***38.7%***	**100.0%**

The low proportion of commercial revenues, and reliance on fee-for-service science, brings into question the sustainability of the Scion business model. Scion faces some added disadvantages compared to the other commercial CRIs. It is arguably too small, or at least too small for the range of activities it undertakes, given the inevitable level of overheads it is required to incur by its owners and stakeholders. It has low royalty, or other recurring free cash flow. The SCI is expecting this to be $3 million, or about 5% of revenue by 2020. This compares with AgResearch and Plant and Food Research with 15% of revenues at present and rising.

Management and the board recognise the dilemma faced by Scion in this regard. Central government funding from all sources is expected to remain tight. Contestable funding is potentially more at risk than in the past with intensive bidding from universities and other CRIs. There is $4.5 million of grant funding to be contested in the next year. National Science Challenges (NSCs) provide some opportunities but additive income from this source is expected to be relatively modest. There is also a danger in the Panel's view that the drive

to obtain science revenue from the NSCs risks being out of alignment with Scion's Statement of Core Purpose and strategic plan. This potential for distraction, and the temptation to chase readily available fee-for-service income that matches existing organisational capacity, would risk – in the Panel's view – a loss of focus from the larger opportunities.

On the positive side, more than a third of Scion's revenue is core funding and part of this has been successfully utilised for strategic commercial arrangements that are attractive to industry by providing funds that leverage their own contributions.

These factors indicate a fairly high risk profile for Scion's future revenues and growth prospects. Scion's strategy to mitigate this is to invest in the development of new commercial products, the majority of which are biomaterials, that exploit new proprietary intellectual property developed by Scion scientists, as well as seeking fee or matching revenue from other sources.

Scion is anticipating growth in royalties during the period of the next SCI. This growth is based on existing products in the pipeline with the single most important development currently being commercialised by a development partner. The chart below shows the expected returns.

Projected Royalty Income

s9(2)(b)(ii)

For Scion to transition to a more sustainable business model the returns from commercial biomaterials and intellectual property would need to be significantly higher relative to its total revenues. The Panel is of the view this needs to be in the order of 20% of total revenues, or about $10 million per annum, compared with the 2020 forecast of $3 million.

Scion approaches this challenge with a number of disadvantages. At its scale of about $50 million of turnover, of which $17 million is directed to biomaterials and energy, Scion is a small CRI and a small research organisation in these areas in global terms. This means the quantum of investment in any area of endeavour will also be small relative to the scientific and commercial challenges, and to the worldwide competition. It can be assumed that other researchers and development enterprises will be competing in the same space and doing so with much greater resources. In the Panel's view it will be difficult for Scion to achieve a large impact with this strategy.

The Panel's view is that early-stage projects would benefit from a greater and earlier degree of collaboration at both the scientific and commercial levels. Early partnering with complementary players from around the world would be beneficial. Exposure to some of the increasingly successful angel and venture capital players in New Zealand (and from abroad) offers the opportunity for private financing and the commercial diligence and urgency that private money brings.

This can help screen opportunities and identify and terminate quickly those that will not provide high returns. Given the small residual proportion of intellectual property that Scion will retain in any successful commercial product, overall returns need to be high.

If the board accepts that significantly higher returns are needed from products, then Scion will need to continue its increased investment into greater capacity in the areas of market intelligence, business and market analysis, and business development. A high degree of confidence would be needed to pursue this path away from Scion's traditional strengths.

The degree of change (and risk) this entails for Scion should not be underestimated. A new product innovation and development organisation is an entirely different one to the predominantly grant-funded and fee-for-service business that Scion is currently. It could be argued that Scion has little inherent capability to succeed with this model. This is a matter for the Scion board and managers to judge.

In this environment what are Scion's choices? Its goal is to drive innovation in those sectors described in the SCP and to be financially viable. So its primary measure remains the impact it can have in the sectors it serves. Where can it have greatest impact?

Its current strategy is to build its fee-for-service revenues in forestry and biomaterials and develop free cash flows from new IP-intensive products largely in biomaterials. The board and management have shown this model can maintain financial viability, in the short term at least, and this is demonstrated by the sound financial results and strong balance sheet in recent years.

An alternative model - favoured by the Panel - would be to concentrate more resources on the forestry part of Scion's business s9(2)(b)(ii)
significantly (representing, say, $10 million of revenue or two thirds of resources). The test for the board to determine is whether approximately this scale of resources added to the Intermediate Outputs (IO) directed towards maximising returns to the forestry and wood processing sectors can deliver much greater impact than the current spread of resources. This

makes sense if there is a higher potential impact to be gained from changes to wood properties and forest economics, than there is to returns from biomaterials and liquid biofuels.

Revenue Source by Type by IO (2015 Forecast)

s9(2)(b)(ii)

If Scion were to reintegrate breeding and germplasm development, and continue its focus on forestry practices and solid wood processing, there is scope for a change to the business model and the level of impact Scion has on the forestry industry and New Zealand economy.

s9(2)(b)(ii)

s9(2)(b)(ii)

The Panel notes that Scion's predecessors, through the application of concentrated and sustained scientific effort, were instrumental in developing *P. radiata* as one of a small number of economically viable plantation tree species and the development of plantation forestry as an economic activity. Although the Panel has not located quantitative estimates, it has no doubt the research by the predecessors of Scion was of great benefit to New Zealand's economy as a whole, and especially to the regional economies of the North Island.

The Panel heard, from the Science Advisory Panel and some scientists with expertise in plant breeding and knowledge of *P. Radiata,* of the potential to improve significantly the efficiency of production and value of output of *P. radiata* by a further period of concentrated and sustained research on developing the species through plant breeding. The feedback received suggests that further very material improvements in total factor productivity of the forestry industry – the value of output relative to the opportunity cost of the inputs – could be achieved within modest time periods; and that there is still plenty of potential for science to improve the economics of *P. radiata* as a plantation species and its contribution to the economy of New Zealand, as noted in the GCFF programme.

While the Panel accepts that more research and enquiry would be needed to confirm this conclusion, it believes the potential significance to Scion and to New Zealand warrants this further work being undertaken.

s9(2)(b)(ii)

s9(2)(b)(ii) The Panel recognises the potential for alternative species in the mid- to long terms, but believes the highest impact utilisation of Scion's existing plant breeding capacity will continue to be from *P. radiata*.

The Panel believes that the application of Scion's considerable scientific expertise and its ability to attract and manage scientific personnel and programmes of very high quality would be essential for success. In addition, Scion would be able to leverage its activities by applying some of its core funding to this research activity.

s9(2)(b)(ii)

The Panel also recognises that New Zealand law currently makes it difficult to experiment with gene modification and limits the ability to introduce genetically modified organisms into the environment and these techniques would be key to achieving some of the potential productivity improvements in *P. radiata*, or other species. A change in the law would assist in exploiting the potential of *P. radiata*, and other species.

Despite the difficulties, however, the Panel considers that the size of the potential prize for Scion, for the forestry industry, for the New Zealand economy and its regions - and especially the central North Island - is such that it warrants serious investigation and pursuit.

The Panel also considered a third business model of merging Scion with another CRI or other entity. This would lead to savings in overheads, but would also add further risks. In particular Scion's clarity of purpose in forestry would be diminished. The Panel saw no support for this option from stakeholders.

Scion is presently in a sound financial position, with reasonable cash reserves. The five year forecast anticipates maintaining a cash balance, albeit smaller than now, but incurring no debt. Scion is planning to do this while allowing for planned capital expenditure of $37 million. A balance sheet review of all CRIs was undertaken two years ago. This review recommended Scion maintains no structural debt but use its balance sheet to invest in new developments when appropriate. This is anticipated where the investment can be assured of utilising the returns to repay debt quickly.

The Panel concurs with the balance sheet review. With the current uncertainty surrounding future revenues it may be prudent to hold higher cash reserves to allow time to mitigate any unplanned revenue shortfalls. An example of needing more reserves might be the likely loss of funding for some forestry fire related work in an NSC. It would be reasonable to expect that alternative industry funding may be secured rather than curtailing the work. This may take some time and the resources would sensibly be maintained from Scion cash until an alternative was found.

The Panel concluded that:

- Scion's financial management, systems, prudential control, and reporting appear to be of high standard and fit for purpose;
- There are risks to the current business model and alternatives should be considered by the board and management; and in particular
- With a focus on maximising its impact on Aotearoa New Zealand's forest sector and economy, Scion might usefully:
    - s9(2)(b)(ii)
    - materially de-emphasise fee for service income,
    - s9(2)(b)(ii)
    - materially increase its investment in improvements in genetics focused on producing better feedstocks for existing industry uses.

5.3 Working with Iwi/Māori

The Review Panel considers that Scion has correctly identified the scale and type of opportunities represented by the iwi/Māori sector. It has established solid early stage relationships with both care and intentionality, and is using relatively modest initial projects as vehicles to build and deepen these trust-based interactions.

Significant Opportunities

The Panel received and heard clear and consistent statements from the Scion board and management as to the strategic importance of Māori entities in the forestry sector in future years, noting that Māori currently own ~40% of exotic forestry land and are expected increasingly to establish interests in the forests on those lands over time.

The Panel saw references to potentially an additional one million hectares of Māori land that could be committed to forestry in the future if the economics were sufficiently attractive and the other enabling factors were in place. Scion also reported positive sentiments from representatives from Iwi leaders in this context.

However, and similar to other Māori owned land, multiple ownership issues are likely to make any aggregation and availability of such lands a slow and disjointed process. It is worth noting that the Māori Land Court's progress with dealing with Māori land interests generally is very slow due to resourcing constraints. It may be that enthusiasm in this area should be tempered accordingly. Equally, these structural issues represent another area where Scion could play an effective advocacy and coordination role with the government agencies identified in its Te Papa Tipu Māori Plan.

It also appears from discussions with Māori forest land holders that there is emerging demand from them for assistance assaying their forestry resources and framing their future investment and management options, including ways to aggregate different holdings with different attributes into larger logical economic blocks. Additionally, Māori owners will want to increase their own in-house forestry and financial skills as their participation in all facets of the industry increases.

Scion might consider how it could further assist in the development of these capabilities, in coordination with other agencies and groups. While probably continuing to require the application of discretionary funding for some time yet, such investment is likely to consolidate the high levels of trust and confidence already being witnessed, and also provide valuable information about the forward investment and management intentions of Māori forest land holding groups.

The Panel considers that in future rotations Māori are likely to be interested in augmenting exotic plantations with areas of indigenous species for timber, riparian protection, and honey and rongoa (medicinal) production. These alternative crops would by definition reduce the area dedicated to plantation forestry over time unless new areas are added to the iwi/Māori forest estate. Against this, the Panel heard from overseas investors who were interested in

developing long term forestry investments in partnership with tangata whenua. Given the potentially pivotal role the existing and possible future Māori interests might have on the sector, the Panel considers that these intentions could usefully be more closely modeled and monitored. Scion might even consider brokering conversations between the parties.

Impact and Māori Revenue

Consistent with other Scion stakeholders, there appeared to be relatively little investment by iwi groups into Scion thus far.

While the Panel appreciates that these re-emergent, settling and post-settlement entities are both conservative and preoccupied with fundamental organisational development issues, they are going to require expertise and advice if the promise of a greater Māori presence in forestry is to be realised.

Such a transformation will require coordinated and sustained investment if it is to be achieved in the nearer term. The Panel notes the involvement of Ministry of Primary Industries (MPI) and Te Puni Kōkiri (TPK) in Scion's recent hui, but is unclear on the level of strategic alignment between it and those Ministries, or indeed MBIE itself. The Panel considers that Scion could take a lead role in any coordination efforts.

To the extent that strong relationships can be built with these communities, and they invest increasingly in the forests on their own lands, there is significant potential both to ensure best industry practices are adopted by Māori and to reinforce Scion's position as a preferred service provider to Māori forestry interests.

However, the Panel considers that both the impact and revenue opportunities available to Scion in the long run will only be realised if greater focus is brought to its activities and investments in the iwi/Māori sector. Specifically, the Panel is of the view that there needs to be explicit identification of those entities and issues that are likely to have the largest positive impact on the future of Māori forestry, and a clearer prioritisation of those opportunities in both work programmes and the applicaton of discretionary funding. It would be expected that, over time, meaningful revenue opportunities for Scion would then flow from these genuinely value adding services. The Panel considers that the establishment of this more targeted, intentional approach to the available opportunities should be a priority.

Internal Capacity

The Panel was impressed with the focus and commitment of those Scion staff involved in the Māori Focus Group who had active connections and research interests with Māori entities. These ranged from early stage work with communities around potential plantations of indigenous species, such as tōtara, to the opportunities to consolidate forestry land holdings at the hapū level to consideration of ecosystem services.

As for the management of commercialisation issues at the senior management level, the Panel was clear on how kaupapa Māori issues were mapped against the theory of the organisational chart. However, like the management of commercialisation, the lines of control and

coordination were far from clear in practice. The Panel did not find evidence of a clearly understood single strategic approach to the Māori sector amongst the General Managers or their teams, or clarity between staff as to their relative roles and contributions to the wider organisational kaupapa Māori objectives. This was in contrast to the impressive clarity around individual roles and contributions in most other areas of Scion's work, as noted elsewhere in this report.

Nor was it possible to identify from the board papers a clear stream of advice against an agreed work plan at the governance level. Tellingly, none of the iwi/Māori stakeholders interviewed by the Panel - while unanimously positive about Scion's increased accessibility and helpfulness - nominated a clear view of Scion's positioning or how they fitted into that.

The Panel considers that clarifying the focus and accountabilities for these issues, and raising their visibility, will be essential to realising Scion's potential in this space.

Summary

Based on the materials seen by the Panel, and the range of interviews undertaken, the Panel agrees with the broad statements as to the likely significant position of Māori in the country's future forestry sector, and therefore to Scion's own future. The Panel believes that Scion's focus on the iwi/Māori sector is warranted.

Reflecting the integrity of Scion's approach to relationships to date, Māori consider Scion to be "honest brokers" of forestry-related advice and are increasingly looking to it as their principal adviser when dealing with commercial advisory companies. Scion is accordingly well placed to grow the commercial advisory aspect of its services to Māori. It is also likely to have increasing opportunities to act as a coordinator of related initiatives by other government agencies, such as MPI and TPK.

However, the Panel was left with the view that there are currently no integrated analyses or active work plans underpinning the 'Māori strategy' across the organisation. For example, the Panel was unable to find evidence of a single shared database of relevant information being used by the General Managers in the context of their respective functions. A shared understanding of Māori landholders and landholdings, registers of existing Crown forestry licenses and their expiry dates, and discussions with Māori landowners as to their future intentions relating to establishing ownership interests in the forests and the likely timeframes for those transitions would seem fundamental when the organisation is committed to ensuring that responsibility for kaupapa Māori issues is embedded and shared across Scion.

The Panel considers that Scion is very well placed to add value to, and benefit from, the burgeoning Māori forestry sector, but that it will need to consolidate its current activities and invest in them more rigorously and more strategically if it is to realise these opportunities.

5.4 Scion's Regional Presence

The Panel heard from various parties that the presence of Scion in the Rotorua area is important to the town and its economy, and is highly valued by stakeholders.

Scion employs highly qualified individuals with diverse backgrounds and interests from a range of countries internationally. This diversity and the associated benefits to the local economy are considered positively by the local community.

The Panel also saw evidence of the local council leveraging the expertise at Scion to advance related initiatives and opportunities, such as the attraction of tertiary institutions to Rotorua and utilising Scion's commercial skills and connections in regional economic development initiatives, for example.

Another directly associated benefit is the developing cluster of industry bodies and the expansion of the innovation park alongside the Scion campus, in turn establishing a critical mass of expertise and organisational capacity.

It is clear to the Panel that Scion's location close to the centre of the forestry industry is a significant advantage to it, its principal stakeholders, and the local community alike.

5.5 Science Advisory and User Panels

Following a key recommendation of the CRI Task Force Report (2010) Scion established a Science Advisory Panel and an Industry User Panel. As specified in recommendation 4 of the Task Force report, the panels' purpose is to provide CRI boards with an independent view of the science being undertaken, its quality and relevance; and the effectiveness of its transfer to end users. The panels established by Scion have met annually for four years and considered all of Scion's Science Intermediate Outcomes:

The review schedule, set by the board in consultation with the panel chairs, was:

2011: IO2 (Solid Wood Processing) and IO3 (Wood Fibre, Biopolymer and Biochemical Products)

2012: IO1 (Maximise the value and productivity of commercial forests)

2013: IO4 (Increase New Zealand's energy security through the expanded utilisation of forest biomass for energy)

2014: IO5 (Protect and enhance market access and improve risk management in the forest industry including for forest health and preparedness for biosecurity incursions, fire and climate change). In addition, aspects within IO6 (Licence to operate) that relate to the main theme under IO5 were also included.

The typical format has been for the individual panel meetings to be scheduled to coincide with the board's strategic planning session in November of each year, and the panels report directly to the board at the end of their assessment. Management responds to the panels' recommendations at the ensuing board meeting, and the board Chair writes formally to the panels mid-year to outline progress.

Science Advisory Panel

Overall the board and management have felt this panel has worked well. The process has gone through some modification over time as a move was made from a standing committee with a consistent chair to a more frequent use of invited topic experts. The latter appears to have resulted in more "challenging conversations" and delivered greater value to Scion. On the basis of the panel's reports, Scion has been taking steps to monitor, measure and improve its science quality. The Panel was presented with compelling evidence showing significant increases in publication rates in high impact international journals and in citation rates.

Feedback from the Science Advisory Panel supported this view, and strongly emphasised the need to bring in expert advisors. It felt however that it was only able to gain a "rapid snapshot" as it was not given enough time to deliberate (being on site at Scion only once per year for 1-2 days) and it felt the quality of the pre-review material it received was "variable". The suggestion was to deliver more depth in advance so the panel could be more focused when on site and thus provide a more valuable analysis and feedback. Additionally, the lack of time spent with the Industry Users Panel was seen as a "missed opportunity".

Industry Users Panel

Many of the comments made by the Science Advisory Panel were shared by the Industry Users Panel. The key issue for the latter however appears to be one of logistics – getting the right people on the panel and finding the time to do the work. The second issue was while the scientists presenting were very enthusiastic about their science, industry struggle at times to understand it and relate to industry needs.

Overall, however, there was a very positive view of Scion; in particular, the strong leadership evident at the top of the organisation and the recent employment of excellent younger scientists was applauded. Industry wants to continue to engage strongly with Scion and support its scientists to deliver value to industry.

Future Focus

All of Scion's Science Intermediate Outcomes have been considered by the Panels, and board and management believe it is now timely to review the process and determine if it should continue as is or be modified. At its February meeting, the board considered three future options; abandon the process entirely, continue the current process, or move to focused discussions on specific topics where expert independent input would assist planning and allocation of investment.

The Review Panel agrees with board and management's preference to adopt the third option and believes it would be preferable to take a specialist rather than a generalist approach; that is, bring together a panel of individuals who can contribute some expert thought and wisdom to a particular project (for example, traceability in the supply chain or big data) that might not be available currently within Scion's board or management.

Reviews are powerful and valuable if the advice received is insightful. The collective wisdom of expert science and industry advisors working individually on a particular topic, or together on a common project, would lead to a more focused discussion. The Panel believes that this

approach would challenge Scion to think hard about its approach to its science and the relevance and impact of its work. Further, meetings of these groups need not be constrained by an 'annual timing', but rather could be scheduled to address particular projects as and when the need arises.

Annexes

Annex One: Scion Statement of Core Purpose

SCION
Statement of core purpose

SCION
Next generation biomaterials

Purpose

Scion's purpose is 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.

Outcomes

Scion will fulfil its purpose through the provision of research and transfer of technology and knowledge in partnership with key stakeholders, including industry, government and Māori, to:

- increase the value and productivity of these industry sectors to the New Zealand economy through improved forestry practices and production systems and increased diversification of New Zealand's biological industry base to meet current and future global market needs
- protect and enhance market access and improve risk management in the forestry industry
- increase renewable energy production and energy security by growing New Zealand's ability to produce sustainable bioenergy and liquid biofuel products
- enhance New Zealand's opportunity to benefit from forestry-based ecosystem services to improve both the global market position of industry and the environmental sustainability of forestry production in New Zealand.

Scope of operation

To achieve these outcomes, Scion is the lead CRI in the following areas:

- sustainable forest management and tree improvement
- forestry biosecurity and risk management and mitigation
- wood processing, wood-related bioenergy, waste streams and other biomaterials
- forestry and forestry-based ecosystem services to inform land-use decision making.

Scion will work with other research providers and end-users to contribute to the development of the following areas:

- biosecurity land, soil and freshwater management
- climate change adaptation and mitigation
- indigenous forestry
- industrial biotechnology and high-value manufacturing.

NEW ZEALAND'S CROWN RESEARCH INSTITUTES

November 2010

Operating principles

Scion will:

- operate in accordance with a statement of corporate intent and business plan that describes how Scion will deliver against this statement of core purpose, and describes what the shareholders will receive for their investment
- meet its obligations as a Crown Company and remain financially viable, delivering an appropriate rate of return on equity
- develop strong, long-term partnerships with key stakeholders, including industry, government and Māori, and work with them to set research priorities that are well linked to the needs and potential of its end-users
- maintain a balance of research that both provides for the near-term requirements of its sectors and demonstrates vision for their longer-term benefit
- transfer technology and knowledge from domestic and international sources to key New Zealand stakeholders, including industry, government and Māori
- develop collaborative relationships with other CRIs, universities and other research institutions (within New Zealand and internationally) to form the best teams to deliver its core purpose
- provide advice on matters of its expertise to the Crown
- represent New Zealand's interests on behalf of the Crown through contribution to science diplomacy, international scientific issues and/or bodies as required
- seek advice from scientific and user advisory panels to help ensure the quality and relevance of its research
- establish policies, practices and culture that optimise talent recruitment and retention
- enable the innovation potential of Māori knowledge, resources and people
- maintain its databases, collections and infrastructure and manage the scientific and research data it generates in a sustainable manner, providing appropriate access and maximising the reusability of data sets
- seek shareholder consent for significant activity beyond its scope of operation.

This statement provides key guidance to the Scion board for developing its statement of corporate intent, which sets out Scion's strategy for delivering against its core purpose. Scion's performance will be monitored against the outcomes and operating principles in this statement.

New Zealand Government

Annex Two: Panel Member Profiles

Jim McLean (Panel Chair)

Jim is Chair of a number of companies including Hill Laboratories, Aroa Biosurgery Mesynthes Ltd, Prevar Ltd, Pictor Ltd, Food Innovation of New Zealand Ltd, and Information Tools Ltd. He was formerly Chair of Plant and Food Research 2009-2011 and Chair of HortResearch Ltd 2006-2009, and Deputy Chair of the Foundation for Research, Science, and Technology from 2006 to 2011. He was also a Director of Genesis Research and Development Corporation Ltd (New Zealand's first listed biotech company) and a Partner in Ernst and Young for 11 years. Jim has a BSc (Hons) in Chemistry and a post graduate degree in accounting.

Anake Goodall

Anake is currently a Director of Meridian Energy and PledgeMe Ltd. He is a past member of the Environmental Protection Authority, and a member of the Te Waihora Co-Governance Group and the Canterbury Earthquake Recovery Review Panel. He is also the Chair of the Ākina Foundation and the Hillary Institute of International Leadership, and on the establishment board of special character school Tē Pā o Rākaihautū. Anake has previously been the Chief Executive Officer of Te Rūnanga o Ngāi Tahu and before that was responsible for managing all aspects of Ngāi Tahu's Treaty settlement process. Anake has a Master of Public Administration from Harvard's Kennedy School of Government and a BA and MBA from Canterbury University. He is a New Zealand Harkness Fellow.

Dr Brent Layton

Brent is a former senior fellow and Chief Executive of the New Zealand Institute of Economic Research. He has been a Director and Chairman of organisations as diverse as banking and finance, health, scientific research, electricity, food processing, transport and information technology. He has held director positions in geological and nuclear sciences, agricultural research and horticultural research and also biotechnology. Brent was made an Officer of the New Zealand Order of Merit for his services to business management in 1996. He became a Fellow of the Institute of Directors in 2003. As an economic consultant Brent's work has spanned macro and microeconomics and corporate finance. Much of his work has involved regulatory economics and responses to regulatory change. In 2009, Brent chaired the Ministerial review of the performance of the electricity market. He is currently the Chair of the Electricity Authority and Swimming New Zealand. Brent has a BCA, BA (Hons) and PhD in economics and economic history. He is also a qualified gemmologist and alumni of the Gemological Institute of America.

Dr Dianne McCarthy

Di was the Chief Executive Officer of the Royal Society of New Zealand (2007-14), and formerly a Professor, Pro-Vice Chancellor (Equal Opportunities) and Associate Dean Faculty of Medical and Health Sciences at the University of Auckland. She currently sits on the Council of the University of Auckland and holds a number of directorships including Powerhouse Ventures Ltd and the Cawthron Institute. She was previously on the board of AgResearch and is now on the board of the Dodd-Walls Centre for Photonic and Quantum Technologies. Di is a trustee of the Malaghan Institute of Medical Research, a member of the Steering Group for the New Zealand Women in Leadership Programme, and a member of the KEA World Class New Zealander network. She was made an Officer of the New Zealand Order of Merit in 2008 for her services to education, a Companion of the Royal Society of New Zealand in 2015 for services to science, and her qualifications include a BA, BSc, MSc (Hons) and PhD.

Annex Three: List of information provided to the panel

DOCUMENT / INFORMATION	
A. Understanding the business	
1. Statement of Core Purpose	
2. Statement of Corporate Intent	
3. Copies of the detailed workings for the 5 year SCI Budget	
4. Annual Reports	
5. Quarterly and six-monthly reports	
6. YE management accounts for the past 3 years and any reconciliation to the year-end financial statements.	
7. SCION Balance Sheet Review	
8. SCION Stakeholder Survey 2013, 2014, 2015	
9. Key Stakeholders list	
10. SCION Organisation Charts	
B. Business structure overview	
1. A brief memo providing an overview of each of SCION's business units, the activities undertaken, their capabilities (including technological platforms and R&D specialisations) and the market(s) that they serve.	
2. A brief memo providing an overview of each of SCION's subsidiaries, associates and JVs with a brief description of the activities undertaken, SCION's equity stake (%), revenue ($) and assets ($) and governance.	
3. For each business unit, subsidiary, associate and JV a brief memo on:	
a. what resources are engaged in core science?	
b. what resources are engaged in applied research? and	
c. an estimate of the % of the entity's resources devoted to each of the above two categories.	
C. Management accounting process	
1. A copy of the last review of the company's financial systems	
2. A copy of the latest review of the company's computer systems.	
D. Historic management accounts	
1. A breakdown of SCION revenue for the last 5 years by business unit and location including the following revenue categories:	
i. from non-MSI Central Government	
ii. from other CRI / Universities / Local Government	
iii. commercial (NZ) with a breakdown by customer and location	
iv. commercial (international, with a breakdown by customer and location]	

DOCUMENT / INFORMATION	
v. IP income	
vi. other	
2. A contracted revenue maturity profile breakdown.	
3. Expenditure trends for the last 5 years by major categories of expenditure.	
4. Detail of capital injections from and distributions to the Crown have been made over SCION life (dates and $ amounts).	
5. Details on the realignment of SCION core funding.	
E. Forecasts	
1. Latest forecasts of revenue for the next 5 years broken down into the categories in D1 above.	
2. What are the key assumptions underlying the above forecasts?	
F. Investments	
1. A list of planned Capex and other investments (type and $ amount) for each of the next five years.	
2. IP Register & valuations	
3. Current value of assets	
G. Key governance documents	
1. A copy of any strategic reviews undertaken of SCION in the last five years.	
2. A copy of the risk register.	
3. A copy of the legal register.	
4. Details of the Board self-assessment process.	
5. Details of strategic planning days.	
H. Personnel	
1. A headcount breakdown by location and type (management, basic science, engineering, support staff).	
2. Detail of areas of science and engineering specialisation and excellence.	
3. The annual turnover rate of professional staff for the last 5 years by group.	
4. A bell curve of the years since graduation for all professional staff.	
5. A breakdown of the term (years) to retirement of professional staff.	
6. Information on current industrial disputes if any.	
7. Information on redundancy agreements.	
8. Succession planning documents.	
9. Details of the processes in place within universities in regards to recruiting PhDs and how these are managed.	
10. Staff satisfaction survey results.	
11. Benchmarks of SCION salaries against comparable institutions.	
12. Staff management strategies around managing changing priorities and staff development.	

DOCUMENT / INFORMATION	
13. Utilisation Rates of staff across the organisation.	
I. Outcomes	
1. Paper stating the key desired outcomes of the government that SCION is contributing to and the evidence available that SCION outputs are having a significant effect on the desired outcomes.	
2. Documents reporting on the assessment of outcomes; reviews or evaluations of outcomes.	
3. Reviews evaluating how contracts are managed overall both internally and externally.	
4. Senior management response to reviews undertaking – including details of what management has learnt from these reviews and taken forward.	
5. Measurements of how well SCION is monitoring, measuring and improving its science quality.	
6. Case studies of SCION projects.	
7. End of programme reviews (and mid-programme reviews).	
J. KPIs	
1. Internal KPIs that are not published but provided internally to the Board and senior management.	
2. Studies around SCION's contribution to economic growth.	
3. Time series of KPIs.	
K. MBIE documents	
1. Report of the CRI Taskforce.	
2. MBIE Vision Mātauranga.	
3. SCION bidding history.	
4. 2013 Letter of expectations from Minister.	
L. **Additional documents requested by the panel**	
1. Board of Directors profiles.	
2. Business unit memos.	
3. Executive management team profiles.	
4. Scion Annual Report 2014 financials.	
5. Scion Annual Report 2014 highlights.	
6. Scion SCI 2014.	
7. Scion strategy and operating plan 2014-15.	
8. MSI reports for stage gate process for commercialisation.	
9. Breakdown of ownership of trees.	
10. Decision of ownership trust.	
11. Breakdown of where money is coming from and where it's flowing to.	
12. Buckets of money with relationships – picture needed.	
13. Audit.	

DOCUMENT / INFORMATION	
14. Future leaders content.	
15. Customer results survey.	
16. Biopolymer Network Limited	
17. Business case for dewatered wood (Radiata substitute for hard wood)	
18. External reviews of the programme and commercialisation.	
19. Internal reviews of the programme and commercialisation.	
20. Commercial revenue.	
21. Science Advisory and User Panel reports 2011-2014, together with management and board responses.	
22. All Board papers for the February 2015 meeting.	
23. A random sample of Board papers.	
24. Board papers on “commercialisation”.	
25. Scion publications on “ecosystem services”.	

Annex Four: Stakeholders interviewed by the Panel

Name	Position
Scion	Executive Management Team
s9(2)(a)	Chief Executive Officer
	General Manager, Research and Investments
	General Manager, Manufacturing and Bioproducts
	General Manager, Forest Science
	General Manager, People and Performance
	Chief Financial Officer and Company Secretary
	General Manager, Business Development

Scion	Staff members
s9(2)(a)	Scion Māori Leadership Group
	Leadership Cohort 1
	Leadership Cohort 2
	Leadership Cohort 3
	Future Leaders Group

Name	Position	Organisation
s9(2)(a)	GM Science Investments Science Investments; Senior Sector Manager Science Investments; National Manager Biological Industries	MBIE
	Chair Managing Director	Forest Owners' Association Research and Development Committee Timberlands Limited
	General Manager, Research and Development	FOA Research Committee (including FFR/STIMBR)
	Chief Science Advisor	MPI
	Chief Executive Officer	Biopolymer Network Ltd
	Chief Executive Officer	Rotorua Lakes Council/MfE Waste Minimisation Fund
	Chief Executive Officer	Radiata Pine Breeding Company Ltd
	Global Manager, Woodforce	Sonae/Tableros
	Chair Chair	Solid Wood Innovation Radiata Pine Breeding Company
	General Manager	Juken New Zealand Ltd
	Chief Executive Officer	P F Olsen
	Chief Executive Officer	Lignotech Developments
		Ngāti Porou
	Chief Executive Officer	Ngāti Tūwharetoa Holdings Ltd
	Chief Executive Officer	Ngāti Whare Holdings Ltd

s9(2)(a)	Chief Executive Officer	OTPP New Zealand Forest Investments Ltd
	Chief Executive Officer	Callaghan Innovation
	Chair Senior Project Leader	Scientific Advisory Panel UK Forest Research
	Chair Managing Director	Industry Users Panel Blakely Pacific NZ
	Chair	Biopolymer Network Ltd
	Sawmill Manager	Red Stag Timber Ltd
	Mayor	Rotorua Lakes Council
	Chief Executive	Carter Holt Harvey, Pulp Paper and Packaging (now owned by Oji)
	Chief Executive	Pacific Edge Biotechnology Ltd