

Scion Annual Report 2008



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From the Chairman

Dr Russ Ballard

The 2007/08 year has seen excellent results for Scion, both financially and in terms of our ability to make a significant impact for the New Zealand community, through the delivery of our science. Over the past year we exceeded budget expectations and are proud to be posting a net profit of \$1.113 million, which is a significant turnaround in financial performance for the company.

We have achieved this success through the hard work and dedication of our people, and through the implementation of a business strategy that targets challenges and opportunities of national and global importance.

The success enjoyed by Scion has occurred against a backdrop of massive global change and a challenging business environment, both of which have impacted on the approach we have taken during the past year.

Changing global and national environment

New Zealand forestry planting and investment remain extremely low, despite the importance of forests in mitigating climate change and supplying growing overseas markets. Potential growers are looking for greater clarity with regard to climate change policy and carbon trading, before committing to investment in the industry. This uncertainty and poor returns for forestry exports, resulting from the high New Zealand dollar and increased freight costs, coupled with higher returns from competing land uses, are driving the deforestation of New Zealand's commercial forest estate. These pressures are forcing the forestry industry to retrench and refine its operations.

During the past year, we have seen an extraordinary rise in interest and commentary, from both policy makers and the New Zealand community, around greenhouse gas reduction, rising oil prices and emissions trading. Scion is well positioned to contribute to the resolution of some of the issues facing New Zealand in these areas.

Scion's research strategy is based on a vision of the New Zealand economy underpinned by the use of renewable resources. By actively leading the way in critical research and development areas such as the diversification of our traditional forest resource into new value chains and land use options such as bioenergy technologies and biomaterials development, our science outcomes are now enabling New Zealand to position itself to effectively deal with global issues. Scion has an important role to play in bringing these opportunities to fruition through our technical leadership and partnerships with the existing forestry sector and emerging new sectors.

Partnerships

We are reaping the benefit of strong, functional partnerships that help our science to move along the innovation pathway and find application in the commercial world. Over the past year we have brought a new bioplastic product to market and our modified zeolite, that removes phosphorus from lakes, is also on track to becoming commercially available.

Early in the year, we completed a review of the effectiveness of our unincorporated joint venture (UJV) involving Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), known as Ensis. While the science collaboration proved successful in terms of bringing together stronger teams to work in forestry sciences and forest product development, the administrative and funding complexities associated with the UJV were proving costly and difficult to resolve. As a result of our review, both parties decided to reintegrate the Ensis teams back into their parent organisations to provide simpler, less costly organisational structures, while ensuring that the benefits of working together will continue into the future under a new collaboration agreement which has replaced the UJV.

Our domestic partnerships with forestry sector groups and those involved in the development of new biomaterials and sustainable futures continue to flourish. These partnerships now reflect the principal way we do business at Scion.

Funding

It is gratifying to see our foresight being rewarded by positive financial returns and growing recognition for the unique skills we offer as an organisation. The strength of our capability has been recognised by our key stakeholders and reinforced by the significant investment we received from the Government and key industry partners to continue our work in areas of national importance - bioenergy, climate change mitigation, carbon trading and life cycle management.

While the business of running a science organisation continues to present many unique challenges, we are gratified to see progress on stable funding and negotiation processes through the Foundation for Research, Science and Technology. We look forward to working with the Foundation as a stable funding contributor as we build on the successes achieved to date.

Our improving financial position now means we can look forward to implementing a business plan for the next three years that includes significant reinvestment into areas of science that will continue to yield benefits for New Zealand.

Scion's strategic direction

Scion's mission is to contribute to the sustainable economic transformation of New Zealand by demonstrating leadership and innovation in:

- Sustainable Design this is a central science area that runs through all of Scion's activities, and is positioned to support government objectives in response to global challenges.
- New Forests and Forest Science this science area builds on our heritage and strengths in forestry sciences as the importance of forests is increasingly recognised.
- Bioproduct Development this science area looks to the future by finding ways to extract new products from New Zealand's renewable resources.

Government emphasis on environmental sustainability means that forestry and the emerging industrial biotechnology sector have a key role to play in supporting the objectives outlined in Scion's business strategy. Our focus is to build sustainability factors into all economic activities so New Zealand can become a leading proponent of sustainability and therefore an attractive country in which to invest.

People

The past year has seen many organisational changes and increasing demands on many fronts as our science teams are called to work on high profile and sometimes controversial projects. It is a credit to our management and staff that they can deliver such a strong financial performance in the face of these challenges. I particularly thank Scion's Chief Executive Officer, Dr Tom Richardson, and his executive team, who have provided strong and positive leadership during this challenging year.

The Board has been an effective, coherent and happy group over the past couple of years, which has ensured the challenges faced by the organisation have been worked through rationally and consistently with the executive team. I would particularly like to recognise the significant contribution made over several years by our departing Board members, Temuera Hall and Margaret Emerre.

Dr Tom Richardson

As we look back over the 2007/2008 year, with its national emphasis on climate change policy and sustainable economic development, Scion finds itself in a position of being in the right place at the right time. This is no accident.

For the past three years, we have invested in developing frameworks, our own capability and our partnerships, for sustainable land use, renewable energy and climate change response. Our strong financial performance this year largely reflects our growing contributions and leadership in these areas to support national policy development and implementation, and commercial opportunities.

At the same time, we have continued to work closely with the private sector to develop technologies and tools that improve short-term performance and underpin longer-term growth.

Operational highlights

Several major outcomes related to New Zealand's bioenergy options were delivered this year. The first was a situation analysis on New Zealand's biomass resources that identified promising options for bioenergy production now and into the future (see page 8). This report was closely followed by a feasibility study that demonstrated the viability of using New Zealand-grown trees to produce transport fuels for use nationally (see page 8). Both of these studies illuminated ways for New Zealand to reduce its dependence on fossils fuels, achieve greater energy self-sufficiency and substantially reduce our greenhouse gas emissions through the use of non-food crops.

Environmental research has attracted increased support from industry over the past year, through the newly formed Future Forest Research (FFR) partnership. FFR now counts 65 members representing the forestry sector, regional councils, research institutes and educational organisations. The venture supports a large research programme over a broad range of important issues. We are excited about the opportunities presented by this partnership and value the closer working relationships it offers.

Scion continues to provide much of the science needed to identify and enhance the diverse benefits of forests while maintaining the productive capacity of our forest estate. This year we developed productivity indicators that will enable the sustainability of important soil resources in planted forests to be quantified and monitored for the first time. This and other advances in the area of biodiversity values will eventually provide a holistic approach to reporting on the sustainability of planted forests.

In the manufacturing arena, our new technologies continue to provide opportunities for firms to increase their competitiveness. New Zealand sawmillers have achieved significant operational benefits from our A-grader technology, a stress grading machine that uses sound waves to measure timber stiffness at high speed. Over the past year we have continued to work closely with our partners Falcon Engineering Ltd to expand markets for this technology. After displaying the A-grader at two trade shows in the United States, Falcon Engineering Ltd recently installed a demonstration model in a North American sawmill as a further step towards entering this promising market.

Some science and technology options for the future create debate and Scion's role is sometimes to provide scientific information to enhance that discussion. Genetic engineering (GE) is one such technology. Although this research is opposed by some, as evidenced by the vandalism of our GE field trial in 2008, Scion continues to undertake the research necessary to inform public debate and maintain New Zealand's options for the future. Scion's GE trial has been successfully completed and was the most comprehensive, independent scientific field trial of genetically modified trees in New Zealand. The results of the trial revealed no evidence of deleterious environmental impact from the trees and no evidence of genes being transferred from the trees to other organisms (see page 16).

These projects illustrate the role that some of our science is playing here at home; others are highlighted throughout this report. It is a pleasure to note that much of our success has been achieved through better relationships and more strategic partnering with a growing range of organisations, both nationally and internationally. Building these partnerships has been an organisational focus for the past few years and it is making our science better and our impact greater. The partnerships are also enriching for all of us who are involved at Scion.

Reshaping Ensis

A major focus for the year has been the reintegration of our Ensis activities back into Scion management and reporting structures. An organisation-wide effort to get this process right has resulted in the positioning of Scion on a more solid platform. Our involvement with CSIRO is well placed to continue via our collaboration agreement and builds on the close relationships formed during the Ensis unincorporated joint venture period.

Financial

The 2007/2008 year has been a period of strong financial performance. In 2007/08, Scion achieved a net group profit of \$1.113 million on total revenue of \$41.710 million. This was a \$1.563 million improvement on the previous year and the highest in many years. The net profit showed a favourable variance of \$1.110 million when compared to a budget of \$0.003 million profit. Nearly all areas of the business improved on their budget targets.

Scion's total revenue of \$41.710 million was a favourable variance of \$22.975 million compared to a budget of \$18.735 million. This was due largely to changes in the accounting treatment for business transacted through Ensis last year and also points to real improvements in productivity and output.

The group operating result included committed organisational investment in Beacon Pathway Limited (\$200,000) and Radiata Pine Breeding Company Limited (\$118,000).

Scion has made a considerable investment in its people in 2007/08, contributing \$604,000 to supporting staff with postdoctoral study, sabbaticals, student stipends, tertiary training and leadership development. Scion is committed to investing in developing our future capability in order to ensure the long-term sustainable performance of the organisation.

Net cash flows from operating activities were \$4.318 million, compared to \$3.217 million in the previous financial year. The improved operating cash flow is a result of better profitability and ongoing strong cash management. The improved operating cash flow has allowed Scion to reduce its bank debt from \$1.370 million last year to a cash positive position of \$1.968 million at 30 June 2008. The positive outcome puts Scion in a good position to make substantial investment in capability and infrastructural assets as outlined in our approved three-year business plan to 2011.

An ongoing focus on accruals and debt collection has been maintained with revenue accruals and long outstanding debtor balances remaining at very low levels.

Te Papa Tipu Properties Ltd, the subsidiary company established by Scion in 2004 to manage the land on its Rotorua campus, has continued to incur expenses during the year in relation to the development of the North Drive Estate. The development now has two cornerstone lessees and discussions with further tenants are under way. One of the existing tenants, PF Olsen Group Ltd, opened their new head office in December 2007. This was an important milestone for PF Olsen Group Ltd and Scion as we both see the benefits of a closer proximity between research and development activities, and end users. Kaingaroa Timberlands are nearing completion of their new head office building on the North Drive Estate which is slated to open in late 2008.

The close of this financial year finds Scion performing strongly and with many achievements to celebrate - areas that we invested in previously are now growing rapidly, we are very well positioned to support the needs of the New Zealand Government and business sectors, and a positive financial platform means we can now initiate significant investments in bolder science, new infrastructure and new staff.

This year has been a great success for Scion and like most successes, ours has many contributors.

Our science and support staff have both delivered our committed work programmes (often under severe time pressure to support government programmes) and developed exciting new science offerings that have gained support from our partners. Along the way, staff have challenged management's thinking on organisational change programmes and then contributed positively to their development. Scion is better positioned as a result of this openness, and I thank all staff for their commitment to Scion and for their support this year.

Finally, I wish to extend an enormous vote of thanks to my executive team. The reshaping of Scion this year has meant that each of them has shouldered significant additional workloads for much of the year and has frequently been asked to step into less familiar roles. It is because of their willingness to accept these challenges that Scion has reached so many of its goals and finds itself so well positioned.

Corporate Governance

Scion's Board of Directors is appointed by its shareholding Ministers, the Minister of Research Science and Technology, and the Minister of Finance. All members of the Board are independent. The responsibility of the Board is to guide and monitor the business of Scion and its subsidiaries including:

- adopting policies of corporate conduct (including Risk Management and Delegations of Authority) and ensuring that systems and procedures are in place to carry out those policies
- reviewing and approving Scion's Statement of Corporate Intent and Strategic Business Plan
- adopting annual operating and capital budgets
- monitoring performance against key objectives and budgets on a monthly basis
- evaluating the performance of the Chief Executive Officer, and
- evaluating the effectiveness of the Board.

The Board operates in accordance with Scion's Constitution. It has seven directors which meet 11 times over the year. The Chief Executive Officer, Chief Financial Officer and Company Secretary attend all meetings. The Board may retain independent advisers, including independent legal counsel or other experts, as it deems appropriate.

The Board has two standing committees, the Audit and Risk Committee and the Remuneration and Organisation Committee.

The function of the Audit and Risk Committee is to assist the Board in discharging its responsibilities regarding financial reporting, regulatory conformance and matters of risk management. The Committee is the liaison point for internal and external Auditors, assesses the performance of financial management, reviews audit findings, the annual financial statements and interim financial information, and has oversight of compliance with statutory responsibilities.

The Committee is composed of no less than three directors appointed by the Board on the recommendation of the Chairman. While the Chairman of the Board is an ex-officio member of the Committee and has full voting rights, he is not Chairman of the Audit and Risk Committee.

The objective of the Remuneration and Organisation Committee is to assist the Board in the establishment of remuneration and organisation policies and practices, and to assist the Board in discharging its responsibilities relating to the appointment, remuneration setting and review of Scion's Chief Executive Officer and other senior executives. The Committee also reviews and makes recommendations to the Board on development and succession planning, training and development plans, and incentive plans.

The Committee is composed of no less than three members of the Board, appointed by the Board from time to time. While the Chairman of the Board is an ex-officio member of the Committee and has full voting rights, he is not Chairman of the Remuneration and Organisation Committee.

The Chief Executive Officer and Company Secretary attend all committee meetings and all directors are entitled to attend all committee meetings. Each Committee establishes annual work plans and undertakes an annual review of its objectives and responsibilities, and its terms of reference. Each Committee also makes regular reports to the Board.

The Board's risk management policy and procedures involve formal reporting by management of the most significant risks Scion is exposed to, and the Board regularly monitors management of those risks. There is also regular monitoring and reporting on actions against recommendations made by external auditors.

Ensis Governance

Ensis, the unincorporated joint venture (UJV) between a wholly owned subsidiary of Scion, Scion Australasia Limited and CSIRO FFP Pty Limited (a wholly owned subsidiary of Australia's Commonwealth Industrial and Scientific Research Organisation - CSIRO), ceased operating as of 1 January 2008. This UJV has now been replaced with a collaboration agreement between Scion and CSIRO that enables the two parties to work together more easily to support the Australasian forestry and forest product sectors where large teams are required.

The Ensis Liaison Board undertook an overall governance role of the unincorporated joint venture. The Liaison Board comprised six members: two CSIRO corporate executives, two Scion board members, the Director Ensis Investment of CSIRO, and the Scion CEO. While the Scion CEO was also the CEO of Ensis, the Scion CEO position on the Liaison Board was left vacant. The Liaison Board met bi-monthly.

Ensis was managed by an executive team comprising the Chief Executive and senior executives. The Ensis Chief Executive reported to the Ensis Liaison Board.

Scion's Benefit to New Zealand

In 2005, Scion adopted a strategy for providing the science needed to build a stronger bio-based economy for New Zealand. The past year has produced many prominent highlights borne directly from this strategy. As Government policy evolves to meet challenges associated with renewable energy, sustainable land use and climate change, the value and relevance of Scion expertise is increasingly evident.

1. Renewable energy

"...New Zealand, like the rest of the world, faces two major energy challenges. The first is to respond to the risks of climate change by reducing the greenhouse gases caused by the production and use of energy. The second is to deliver clean, secure, affordable energy while treating the environment responsibly..."

The New Zealand Energy Strategy to 2050 – Ministry of Economic Development, October 2007

Scion supports government strategy by providing expertise on creating energy from renewable biomass.

Bioenergy options for New Zealand

Scion completed the first stage of the Bioenergy Options for New Zealand project by producing a situation analysis of the various biomass resources and technologies available to New Zealand. This project is part of the EnergyScape programme, a collaboration between Scion, the National Institute of Water and Atmospheric Research (NIWA), CRL Energy Ltd, Industrial Research Limited (IRL) and the Institute of Geological and Nuclear Sciences (GNS Science), aimed at finding ways for New Zealand to meet its target of sustainable, carbon-neutral energy by 2050.

The Bioenergy Options report identified a viable plan of action that would enable the country to meet the targets for heat, power and transport largely through bioenergy derived from forests. The study showed that purpose-grown forest crops on marginal lands offer the most practical means of producing sufficient biomass to meet New Zealand's transport fuel and heat energy needs on a national scale, without compromising food production.

Transport fuels from woody biomass

A feasibility study completed by Scion and its partners in the New Zealand Lignocellulosic Bioethanol Initiative (AgResearch, Carter Holt Harvey and US-based Verenium) reviewed the infrastructure, technology and economics of a transportation biofuel industry in New Zealand. This study showed no major technical or input barriers to producing large volumes of ethanol from New Zealand-grown softwood feedstocks.

While ethanol made from corn or sugar cane is already used as a transport fuel in many parts of the world, there is a growing need to utilise non-food resources, such as trees and grasses. Rapid progress is now being made globally to bring cellulosic biofuels (or second-generation biofuels) towards commercial reality. Scion envisages a biofuel sector that uses biorefineries to break down woody biomass into sugars, which are then fermented and distilled into ethanol or other fuels, such as biobutanol. Other conversion options include gasification and pyrolysis. These technologies will enable the conversion of forest tree biomass to biofuels in ways analogous to other cellulosic feedstocks, while avoiding competition with food crops.

Purpose-grown energy crops

Scion completed a project funded by the Sustainable Farming Fund to demonstrate how woody biomass could be produced by growing short-rotation crops on marginal land in New Zealand. The study focused on willow, which is already used overseas as a dedicated energy crop, mostly to fuel municipal heating plants producing heat and power. An advantage of this species is its coppicing ability, meaning that it will abundantly resprout from cut stems, utilising the existing root system. The collaborative study between Scion, HortResearch and Pure Power suggests that the development of a willow biomass industry has the potential to play an important role in regional energy supply.

Creating energy from waste

The escalating cost of waste disposal is one of the pressing issues facing New Zealand sawmills. In addition, sawmills are faced with increasing energy costs from timber drying and running machinery. In light of these two issues, Scion completed a study to assess a number of different options for a sawmill to generate electricity and heat on-site, utilising their excess process residue. The analysis was based on detailed modelling of electricity and heat demand, matched with residue availability at the sawmill. The study identified a number of viable pathways for on-site electricity and heat generation by the industry.

Connecting globally

Scion CEO, Dr Tom Richardson, was one of a 10-strong New Zealand delegation presenting at the United States Government-hosted Washington International Renewable Energy Conference (WIREC 2008). Dr Richardson addressed the conference before participating in a panel discussion on the role of forestry in renewable energy and the corresponding issues of economics, environment and sustainability. The delegation included New Zealand's Associate Minister of Energy, the Hon. Harry Duynhoven, and representatives from the Ministry of Economic Development (MED), Ministry of Transport (MoT), Ministry of Agriculture and Forestry (MAF), and the Foundation for Research, Science and Technology (FRST).

Acting locally

Scion contributes key technical expertise to an Energy Efficiency and Conservation Authority (EECA)-driven initiative aimed at converting heating systems in schools from coal burning to wood pellets. By taking this approach, schools are demonstrating to their students the viability of making environmentally-friendly energy choices.

The successful conversion of several Rotorua schools to the carbon-neutral boiler systems has given this nationwide programme tremendous impetus. Over the past financial year, Scion led the conversion of four further schools in the Bay of Plenty area: Galatea Primary School, Edgecumbe College, Otumoetai Intermediate School, and Te Puke Intermediate School. These boiler conversions involved modifying the combustion characteristics, fuel handling and fuel storage facilities of their existing boilers.

The resulting pellet-fired systems allow automated boiler operation with low ash outputs and produce cleaner emissions from sustainable fuel. Since the successful conversion of these boilers, Scion has been asked to convert another five boilers in the Waikato district, one in the Bay of Plenty and one in Auckland, illustrating the growing success of this programme.

2. Climate change

"...Societies have a long record of managing the impacts of weather/climate-related events. Nevertheless, additional adaptation measures will be required to reduce the adverse impacts of projected climate change and variability..."

Climate Change 2007: Summary Report – International Panel on Climate Change, November 2007

Scion supports government strategy by understanding the vital role of forestry in mitigating climate change.

Nobel Peace Prize honour shared

A Scion scientist has shared in a Nobel Peace Prize for his contribution to building knowledge of human-induced global warming. For the past five years, Dr Peter Beets has provided expertise on forestry carbon stocks and land use change to the Intergovernmental Panel on Climate Change (IPCC). The IPCC was established by the United Nations in 1988 in response to growing international debate about the risks of anthropogenic climate change.

The 2007 Nobel Prize was awarded to the IPCC jointly with former US Vice-President and climate change activist, AI Gore. The IPCC in turn presented Peter with a certificate honouring his role. The Panel comprises 2,500 scientists and researchers from more than 130 nations, the majority of whom work for the Panel on a voluntary basis.

Contributing to the global debate

A highly significant output in the global policy arena was achieved with the publication of "*Forest Biotech and Climate Change*" in the June issue of Nature Biotechnology (vol. 26, p. 615). This letter, co-authored by Scion scientist Dr Christian Walter, outlines the potential for applying biotechnology to plantation forests. It argues that forest biotechnology in a plantation context is a primary tool to sustainably mitigate global warming and deforestation, while helping to meet growing needs for biofuels and wood products. This letter makes a high-profile contribution to the biotechnology debate in New Zealand, and the international research and policy communities.

Understanding the economics of carbon

Scion completed a major report for MAF looking at how management of New Zealand's planted forests could change to effectively manage carbon sequestration and carbon-price risk. With the introduction of an official carbon market in New Zealand, an incentive has potentially been created for forest owners to manage their planted forest estates for carbon sequestration. This study provides a basis for understanding how current knowledge and management models, which were developed to aid timber production, can be updated to effectively represent planted forest management incorporating carbon. Results of the study were used to identify core knowledge gaps and provide a research plan for addressing these gaps.

Supporting national collaborations

Scion is a founding member of the New Zealand Climate Change Centre, a new organisation formed to facilitate collaboration between research providers with expertise relating to resource management in a changing environment. The purpose of this multi-agency initiative is to enhance New Zealand's capacity to anticipate, mitigate and adapt to, climate change.

Learning from international partners

Scion entered into a collaboration with Argentina's Instituto Nacional de Tecnología Agropecuaria (INTA) to study the impacts of climate change on southern hemisphere beech (*Nothofagus*) forests. The focus of the joint research is on understanding the physiological response of the species across a wide range of climatic conditions. Spatial models based upon physiological and environmental processes will be developed to predict future scenarios for beech in both countries. Both research groups are developing approaches to establish new *Nothofagus* forests on unforested sites, as one potential option to mitigate climate change impacts.

This project provides an opportunity for Scion to study beech growth responses in climate zones far outside New Zealand norms. The result will be more robust climate-based models to predict growth responses under future climate scenarios. The collaboration builds on the long-standing relationship between New Zealand and Argentina, established through their common membership of the Montreal Process since 1995.

3. Sustainable land use

"...Sustainability lies at the heart of who we are as a nation and the face we show to the world. We have a long and proud history of caring for and enjoying our environment. Becoming a leader in new sustainable technologies and finding smarter ways of doing things gives us the chance of transforming our economy and improving our quality of life, as well as protecting the environment..."

New Zealand's climate change solutions: An overview – Ministry for the Environment, September 2007.

Scion supports government strategy by providing knowledge and tools for measuring and managing environmental impacts.

A primary goal is to ensure the development of products and processes that add economic and social value, without causing harm to the environment.

Measuring footprints on the environment

Scion is using Life Cycle Analysis (LCA) methods to calculate the environmental impact of different building materials in New Zealand. A large research project undertaken for MAF involves the development of datasets for New Zealand building materials using LCA studies of timber and other types of construction. The results of this project, in combination with the MAF-funded greenhouse gas footprinting research for the forestry sector, will provide the basis for fair comparisons of different building materials such as timber, steel, concrete and plasterboard. This scientifically-robust data will be particularly valuable in the future, when limits pertaining to carbon dioxide emissions and embodied energy could be included in the New Zealand Building Code.

Learning by burning

Scion and CSIRO fire researchers conducted a series of large experimental burns in Canterbury last summer to improve understanding of fire behaviour on steep slopes. With tremendous support from numerous rural fire agencies, this research involved setting alight privately-owned scrub on Torlesse Station in Canterbury. As part of the same project, Scion also participated in similar burn experiments conducted by CSIRO bushfire scientists in South Australia. These experiments form a key part of a six-year research project known as "Project FuSE" investigating the behaviour of fires in scrub land vegetation. Project FuSE is a collaborative research project between CSIRO and Scion, supported by the Australian Bushfire Cooperative Research Centre (CRC).

Measuring organic systems in real time

The Titrimetric Off-Gas Analyser (TOGA) is a technology developed by Scion scientist, Dr Daniel Gapes. It measures biological activity in a controlled environment, evaluating how micro-organisms function in different conditions. A new modification to this system allows fluids and organic material, such as wastewater or bioethanol fermentations, to be directly analysed using an in-liquid probe. This innovation enables TOGA to hold a clear competitive advantage over other instrumentation systems through continuously monitoring live biological environments over time.

This year, Daniel attended BIO2008 in San Diego to explore the commercialisation potential for this system. He was one of four New Zealand scientists sponsored by the Ministry of Research, Science and Technology (MoRST) in a programme aimed at giving up-and-coming researchers exposure to commercial biotechnology.

Joining forces in global biosecurity

Scion scientists, working in collaboration with HortResearch, were contracted by the United States Department of Agriculture (USDA) to assist with the eradication of light brown apple moth in

California, using a method called "mating disruption". The project evaluated different formulations of the female pheromone, which is used as a low-toxic alternative to pesticides and works by reducing the likelihood of successful mating. This research collaboration reflects international recognition of Scion's expertise in aerial application, grid system testing, biosecurity and pest control research.

Understanding the fate of waste

Scion scientist, Dr Gerty Gielen, completed her PhD this year with a study focused on the impact of pharmaceutical residues on the environment. After medication is ingested by users, residual drugs enter the sewage system and will eventually enter the environment after varying levels of treatment.

To measure the fate and effect of these pharmaceutical residues, Gerty developed a method to quantify their levels in sewage and in soil irrigated with treated sewage. She then measured the toxicity of pharmaceuticals to microbes in general. Her results showed a small but significant level of drug residues in soil and that microbes living in these soils are acclimatising to them.

Improving water quality

Scion continues to work closely with Matamata-based company, Blue Pacific Minerals Ltd, in the development of the modified zeolite product. The volcanic mineral has been modified to enhance its natural ability to absorb phosphorous. When applied to a lake bed, the modified zeolite product acts as a sediment cap, absorbing and trapping the harmful nutrient. Monitoring results from a trial in Rotorua's Lake Okaro reveal a 40-60% reduction in phosphorous levels following the application of modified zeolite in September 2007.

Developing environmentally-friendly products

Scion and Mulford Engineering Plastics have produced one of New Zealand's first eco-friendly bioplastic products for use on a large scale. The Biopeg® is a robust fastening product for outdoor use that holds erosion matting in place. This unique product design is being marketed worldwide through Maccaferri Ltd, a recognised world leader in soil stabilisation systems.

The peg and washer are made from different mixes of natural, renewable and degradable materials that decompose into water, carbon dioxide and humus. Decomposition occurs at different rates for each part. At least 30% of the product weight consists of natural or bio-based additives sourced in New Zealand. The eco-friendly plastic material was developed by Scion in combination with Clariant (New Zealand) Ltd.

Understanding consumer perceptions

A three-year research project was completed this year as part of the "Impacts of New Technology Portfolio" funded by FRST. The purpose of the project was to investigate the social acceptability of existing and new wood-modification and bioplastics technologies. Researchers identified the driving factors behind acceptable amounts and types of chemical modification of decking and shopping bag products, for different stakeholder groups within New Zealand. This work continues Scion's contributions in the areas of acceptance of controversial technologies and community engagement processes.

4. Forestry

"...The forestry sector makes a major contribution to New Zealand's economy and environment. It is also critical to New Zealand's response to the challenge of climate change. Forestry delivers many environmental benefits and these can help us both build a more sustainable economy and adapt to climate change..."

New Zealand's climate change solutions: An overview – Ministry for the Environment, September 2007.

Scion supports government and industry strategy by providing solutions that add value to the forestry sector.

New partnership grows in strength

Future Forests Research Ltd (FFR) was established by Scion and the New Zealand forest industry to drive major expansion in forestry research activity. In the past year a Board of Directors, chaired by Phil Taylor of Blakely Pacific, and Chief Executive, Russell Dale, were appointed. FFR's increasing membership totals 65 across all its research themes.

The new industry/research partnership got off to a strong start by attracting a funding commitment of more than \$20 million from Government and forest growers. This funding will enable more research into increasing the productivity and quality of plantation forestry to generate economic wealth for New Zealand, and at the same time provide environmental benefits.

Tools for defining sustainable forest management

Scion has identified key indicators of forest productivity for New Zealand based on data from trials established throughout the country. The need for these productivity indicators arose from New Zealand's commitment to developing sustainable forest management practices. This commitment is realised through government involvement in international forestry agreements such as the Montreal Process and the forestry sector's adoption of forest certification. The productivity indicators on any given site will reveal whether forest management practices are maintaining, enhancing or reducing productive capacity.

The key soil indicators of productivity for radiata pine are soil carbon to nitrogen ratio, total soil nitrogen, total soil phosphorous, depth of top soil and porosity.

New software developments

A new product was released by ATLAS, Scion's software development group, this year to help forestry companies better plan their harvesting operations. ATLAS Harvest Scheduler enables better management of crew and harvest unit selection, tracking harvest unit area depletion and control of log products from the forest. Initially developed for Hikurangi Forest Farms Ltd (HFF), a medium-sized forestry company based in Gisborne, the Harvest Scheduler software represents a vast improvement on existing systems. Since using Harvest Scheduler, HFF are now better able to carry out forecasting of company revenues, crew scheduling and log production planning.

Technology development in forest machinery

ATLAS Technology has been working in co-operation with SATCO Ltd designs, a New Zealandbased company that manufactures and exports heavy-duty logging attachments for excavators and purpose-built forestry machines. Together they are developing bucking optimisation software to work with SATCO's 325 softwood processor head. The new automated system will define how a felled tree is cut into logs for maximum value recovery, while still allowing current productivity rates to be maintained. A prototype was completed in June and field trials are now under way.

Stress grading technology goes offshore

The A-grader is a stress grading machine that uses sound waves to measure timber stiffness at high speed. Developed by Scion in conjunction with Taranaki-based Falcon Engineering, the technology has proven its worth in New Zealand sawmills and is attracting the attention of overseas producers. Over the past year Scion has continued to work in partnership with Falcon Engineering Ltd to expand markets for the A-grader. A demonstration model has recently been installed in a United States sawmill as a further step towards entering the promising North American market.

5. Biotechnology research

"...Achieving development with care requires smart and flexible ways of thinking and working. To develop the biotechnology sector we need to foster our science and research base, build on our strengths and facilitate links that will promote investment and commercial growth..."

New Zealand Biotechnology Strategy – Ministry of Research, Science and Technology, May 2003

Scion supports government strategy by providing world-class expertise in plant biotechnology, particularly as it relates to cell wall development in plants.

International partnership brings benefit to New Zealand

Scion and ArborGen have cemented a highly positive relationship by combining resources, skills and unique technologies. This collaboration, coupled with ArborGen's recent acquisition of Horizon2 (now known as ArborGen NZ), provides Scion with a direct path to one of New Zealand's primary potential end-users of research results in marker- and gene-assisted selection and forest biotechnology.

ArborGen provides key enabling technologies important for New Zealand such as:

- the *Pinus radiata* Expressed Sequence Tag (EST) database (the world's largest conifer EST database)
- large gene-set microarrays
- large-scale *P. taeda* tree transformation and field trials for gene testing, and
- key genetic constructs and know-how relating to wood chemistry in conifers.

In turn, Scion provides:

- genetic and scientific resources
- gene selection and biotechnological tree improvement tools
- gene testing enabling technologies and know-how, and
- *P. radiata* field trial and environmental impacts tools and knowledge.

A key achievement of the partnership over the past year is the application of microarray technology to select new gene targets for their roles in wood formation and wood properties in pine.

Exploring genetic modification

Scion's field trial of genetically modified trees reached a milestone this year, when the current stand of experimental pine was cut down following final data collection. The experiment has entered a new phase with trees now being left to compost on site. Further data will be collected from the decomposing material as part of the ongoing assessment of potential environmental impacts.

This research trial was installed in Rotorua in 2003 with the express purpose of assessing the impacts, if any, of transgenic trees on the environment. The trees were modified with genes known as "reporter and selection genes" and genes related to reproductive development. These genes have distinct qualities that allowed their behaviour to be traced by scientists as the trees grew.

Results to date from the live material show no evidence of environmental impact from the trial and no evidence of gene transfer to other organisms. The results of this successful trial will make a valuable contribution to the ongoing discussion on genetic modification in New Zealand.

Science breakthrough in understanding wood density

Scion has made an important breakthrough in gene-assisted selection for wood density in pine species. The finding by Dr Sheree Cato is scientifically significant because it is a rare example of balancing selection in which two slightly different copies of the same gene are required for the effect - in this case, improved wood density. Such evidence for balancing selection has seldom been demonstrated in outcrossing plants such as pine. This finding also has commercial significance because it provides a marker for selecting genotypes with 1-5% greater wood density. Scion has filed two provisional patents on this gene, a dehydrin involved in drought responses.

Contributing to international debate

Scion's Dr Elspeth McRae contributed to the OECD International Futures Project on "*The Bioeconomy to 2030: Designing a Policy Agenda*". Her report presented two scenarios for industrial biotechnology to 2030, exploring how new forms of manufacturing may evolve and impact the future. The report assumes that industrial biotechnologies will have a critical role in political and economic stability in the 21st century, both in developing and developed countries, and will provide smart ways to help combat man's impact on the planet.

Encouraging dialogue

Scion and Te Aroturuki (a national Maori advisory group) have joined with the Environmental Risk Management Authority (ERMA) to promote improved dialogue between hapu/iwi and scientists around controversial technologies. Scion recently presented an overview of the Te Aroturuki process to Maori National Network members who attended the "*Tikanga and Technology*" hui in Wellington. The process incorporates a step-by-step guide (toolkit) that encourages scientists to take into account Maori values and incorporate outcomes for Maori from their research.

6. Finally...

KAREN benefits Scion partnerships

Scion was involved with the development of the Kiwi Advanced Research and Education Network (KAREN) during the "Proof of Concept" phase and was able to use the network as soon as it went live. The KAREN network had an immediate impact on Scion's collaborative relationship with CSIRO, allowing the deployment of improved information sharing facilities and providing more reliable communications and higher quality video conferencing.

The KAREN network is now core to Scion's networking infrastructure and it supports communications between sites in Rotorua and Christchurch. KAREN has allowed scientists to exchange larger datasets quickly and effectively within the organisation and with external research groups. The presence of the KAREN network allows Scion to participate in new international collaborations that would have been difficult and perhaps impossible prior to KAREN being available.

Patents filed

Scion filed two new patent applications over the past financial year. These are related to DNA markers for increasing radial growth and wood density/cell wall thickness in trees. Ongoing applications included the filing of a PCT (Patent Cooperation Treaty) application for the Enhanced Dewatering patent.

National phase applications were made for both the Wood Plastic Pellet and the Wood Composite Product patents. A successful mill trial took place last year using Scion's new polymer system that binds MDF fibres for making wood plastic composites. This was a critical milestone for commercialising the technology.

BioPolymer Network Ltd, of which Scion is a one-third shareholder, has also filed PCT applications for biofoams and harakeke patent applications.

Scion's investment of the Capability Fund continues to be based across the three core themes:

- building a knowledge-intensive, biobased materials economy
- building a vibrant and competitive forest products industry
- sustaining the foundations of a viable forestry and plant fibre sector.

1. Building a knowledge-intensive, bio-based materials economy

Lignin biodesignz

Lignin in its various forms is a component part of many programmes in Scion. As such, lignin is a key part of fibre development programmes, condensed lignin-based chemicals arising from pulping operations, plant biotech initiatives and bio-plastics initiatives. Scion aims to bring all this knowledge into a centralised base and, more strategically, focus on lignin as a material in its own right, as a key product of lignocellulosic biorefineries. The research is directed at ways to capitalise on natural lignin, originally designed for the New Zealand Lignocellulosic Bioethanol Initiative and aligns with our collaborative research plans with VTT – the Technical Research Centre of Finland.

In the first part of this two-year programme, scientists have successfully modified lignins by reactive extrusion and the products are now being characterised. For the first time *Pinus radiata* cells have been grown successfully in a lab-scale bioreactor. Naturally-occurring enzymes with the potential to modify lignin have been extracted. Options to induce useful chemical changes to the lignin starting material have been identified.

Ultimate success for this programme will be the development of a reactive lignin product.

New bioproducts from pulp and paper biorefineries

Scion is developing new bioproduct opportunities to extend product options for the pulp and paper industry, and thereby extract greater value from poorly used fractions of wood. The project targets the production of chemical intermediates from the conversion of lignin, hemicelluloses and carbohydrate degradation products.

Outcomes from the first year of this two-year programme include extraction of potentially useful chemicals prior to conventional pulp processing. The second stream of the project is to develop thermo-chemical conversion technologies to transform kraft lignins into chemical intermediates suitable for adhesives or resins.

Capability Funding has been used in these projects to help develop new scientists, support an MSc student from Waikato University and strengthen a collaborative relationship with *Ecole Francaise de Papeterie et des Industries Graphique* in Grenoble, France.

Matauranga and science

Scion's plant-based biomaterials programme combines aspects of traditional Maori knowledge with Western science, to research fibres sourced from three native plant species. The goal is to identify if any of these fibres can be used in new biomaterial applications.

In the first year of this two-year funded programme, scientists have identified sites of various sources of Kie Kie, Ti Kouka (cabbage tree) and Pingao, and made progress on extracting and characterising the fibres from leaves. This project explores differences in fibre characteristics between traditional methods of fibre harvest and extraction, and that of Western science. This Capability Funded project follows on the path to success of the harakeke project, and will create new knowledge in New Zealand fibres, their characteristics and the ways traditional and modern processing can impact on those characteristics.

Underpinning this work is the development of key Maori partnerships. There is significant potential for this work to evolve into commercial opportunities for the benefit of all New Zealanders.

Life Home Project

Scion has initiated a Life Home Project to develop an Assessment Criteria Framework that incorporates social, functional, economic and environmental indicators for the home environment, into an operational tool. The purpose of this tool is to help build social and economic values into material, and create more positive outcomes for homeowners and their homes. Wellbeing indicators for homes have been developed through a series of focus groups. These indicators are now being evaluated along with standard physical performance criteria for an Assessment Criteria Framework.

Over the past year Scion has increased its capability in Life Cycle Management, which is now being used in several nationally strategic studies and social science. This project has to date included three papers presented in international forums and led to the consolidation of a relationship with a large building company in New Zealand.

Nanocrystallography

Two Scion scientists tested a new theoretical framework to study the assembly of cellulosic nanocrystals in biological systems. This small and highly targeted project was focussed on developing new capabilities in using the Australian-based Synchrotron and establishing a New Zealand presence in the joint New Zealand-Australian facility.

Novosphingobium nitrogenifigens Y88 paired end sequencing

In 2007, Scion produced its first draft genome sequence from the bacterium *Novosphingobium nitrogenifigens*, a nitrogen fixing bioplastic accumulating organism. Capability Funding has since been used to better understand the genetic configuration. This research has been both a useful outcome for ongoing work in Scion's industrial biotechnology activities and has enhanced Scion's capabilities in bioinformatics.

2. Building a vibrant and competitive forest products industry

Extracting water from wood

Scion has developed, patented and tested at laboratory stage a technology that rapidly removes water from wood without creating many of the issues associated with thermal drying. This has the potential to revolutionise the drying of *Pinus radiata*; one of the most important operations in wood processing. To determine the true potential and impact of the technology, Scion has used Capability Funding to bring together the key skills such as engineering, industrial design and project management, to take the project from laboratory to pilot operation.

Increasing value in the forestry and biomaterials sector

Understanding and quantifying the non-timber values of forests is of increasing importance in order to aid in decision making around forest and land use. Such knowledge will also provide tools for the increasing number of non-traditional forest owners, like regional councils and Maori, and to better focus research efforts towards achieving desired outcomes.

Scion is undertaking a two-year project to develop a mechanism for assessing these nontraditional forest values and incorporating them into decision making. The former is being achieved by enhancing and growing Scion's capability in resource economics. The latter, by building a value chain model to identify critical opportunities for adding value to the forest and bio-based industries.

The project has focussed on three areas to date:

- A value chain model of the forest and bio-based industries is being developed and has already identified bottlenecks in the supply chain, such as harvesting.
- Estimates of the value that recreational users (walkers and mountain bikers) place on planted forest attributes are being identified, using Whakarewarewa Forest in Rotorua as a test case.
- Understanding how carbon values will influence planted forest management. The expansion of these skills has enabled Scion to support a number of government initiatives associated with the Emissions Trading Scheme.

Harvesting technology

Harvesting plays a critical role in forestry. In a single operation, years of investment in growing can be realised or destroyed. Scion has undertaken a Capability Fund project to enhance capability in harvesting, human productivity and performance. There have been three streams to this project:

- Development of adaptive *Pinus radiata* stem prediction functions for mechanised harvesting heads in order to improve recovery.
- Developing vision systems for grapple skidders in order to improve worker productivity and skid site safety.
- Developing systems to analyse worker performance in hazardous situations.

Outcomes include a stem prediction function which is now being trialled in a commercial harvesting head (see page 15); development of a 2-D vision system for a skidder, and development of wearable monitoring systems that enable analysis of worker performance and output in remote and hazardous situations. This unique wearable system has helped identify ways to enhance productivity and is also being used as a training tool by the Forest Industries Training and Education Council (FITEC) and the Accident Compensation Corporation (ACC). It is now also being trialled for application in rural firefighting applications.

Genetics and environment

A critical and yet unanswered question for tree breeders is: is there significant variation in performance of *Pinus radiata* clones across different sites? The answer could address forest managers' concerns about predicting performance of different clones on their site, based on how they perform on another. A small Capability Funded programme was initiated to answer this critical question and to ensure maximum value could be gained from trials established in 2001.

Dehydrins and water stress in plants

The focus of this project was to develop methods to express and purify a dehydrin protein in pines. This technique would enable better understanding of why dehydrins are important in determining wood characteristics and the effects of diversity and natural selection on the functional role of dehydrins. The project was strongly focussed on developing the skills and leadership potential of a young scientist in an area of growing significance both to Scion and its partners. Two dehydrin proteins have been successfully purified and prepared for comparative testing.

3. Sustaining the foundations of a viable forestry and plant fibre sector

Induced resistance

Induced resistance is a novel mechanism for increasing trees' resistance to pathogen attack by priming the natural defence mechanisms within the plant. This approach may prove to be a safer and more environmentally-friendly way to improve tree health than the application of chemical controls. The initial focus of this Capability Funded programme has been to investigate and manipulate the processes and mechanisms of induced resistance that function in *Pinus radiata* and *Eucalyptus globulus*. This programme is both of broad interest to the forest growing industry, and is also helping to build and strengthen capability in forest protection science.

Physiological factors in fish

Freshwater environments are under increasing risk of degradation by factors such as pollution and global climate change. These factors are likely to impact New Zealand's unique freshwater fish fauna. Capability Funding has been used to examine blood characteristics of native New Zealand fish species. In a comparative study of eels and bully species, scientists noted possible evidence of the loss of adaptive potential and genetic bottlenecks – information of considerable national and scientific significance. This project has helped Scion enhance its knowledge and skills and also to better assist with biomonitoring work addressing environmental issues associated with land use.

Understanding wood formation

Scion is using Capability Funding to develop a plant model system for wood formation. This will create new human capabilities and opportunities for accelerated discovery in the area of functional genomics, specifically as they apply to fibre development. This is a key part of Scion's strategy in designing fibres for specific end-use applications. The immediate focus on *Arabidopsis* (a model organism commonly used in biological sciences) better positions Scion to strengthen its international collaborations. This project has been managed in close collaboration with CSIRO and in particular utilisation of the advanced analytical techniques with Silviscan and the CSIRO Silviscan team.

Summary of Capability Funded Projects

Capability focus	Current investment and activities	2007/08 forecast	2007/08 Actual
 Creating high – impact, sustainable industries in New Zealand. 	Bioenergy. Specialty chemicals and materials. Sustainable buildings.	With others, build the National Centre for Renewable Energy Research and create energy options for New Zealand. Expand initiatives in specialty chemicals and materials through partnerships – in biopolymers and waste utilisation. Deliver with partners some new high- value, sustainable building products.	Completed via a FRST programme. Completed in full. Completed first year of two-year programme.
2. Creating knowledge-based tools and assets.	Life cycle analysis. Management information systems. Sustainable product design. Future insight / innovation planning. Risk management /materials performance.	Develop these tools to enhance their intrinsic value and grow external support.	Completed first year of two-year programme.

B: Capabilities aligned to building a vibrant and competitive forest product industry

Capability focus	Current investment and activities	2007/8 forecast	2007/08 Actual
1. Building an internationally competitive forestry industry.	Improved tree germplasm. Improved establishment, silviculture and inventory processes.	Sustain alignment to RPBC Programme. Develop transformational approaches in tree development and consolidate relationship with implementers. Sustain strong relationship to WQI Ltd. Expand FFR initiative to incorporate all elements of forestry science, from establishment to harvesting.	Completed in full.
2. Building an internationally competitive wood processing industry.	Enhance processing efficiency. Improve product diversification. Enhance integration of wood products and end-user segments. Enhance trade and reduce technical trade barriers.	Create options to enhance investor excitement in wood processing. Build a partnership in wood-based products and consumer markets. Expand building science capability. Develop an innovation plan for the NZ Forestry sector.	Completed first year of two-year programme.
3. Human productivity and safety.	Improved harvesting – systems and safety and human productivity.	Expand harvesting science. Expand focus on human productivity.	Completed in full.

C: Capabilities aligned to sustaining the foundations of a viable forestry and plant fibre sector

Capability focus	Current investment and activities	2007/08 forecast	2007/08 Actual
 Protecting New Zealand's forestry assets from natural and introduced hazards. 	Minimising pest incursion. Minimising impacts of weeds and pests. Minimising impacts of fire upon forest and rural environments.	Sustain Forest Biosecurity Research Council programme. Sustain and grow Better Border Biosecurity OBI. Sustain and grow Rural Fire Research programme.	Completed in full.
 Enhancing the infrastructure for healthy forests. 	Soil science. Forest diversity. Enhancing non-production forestry to improve environmental returns.	A nationally recognised programme in soil science with substantial public and private sector investment embedded in FFR Initiative. Expand activities in developing new species for New Zealand's forestry sector and increase sector engagement.	Completed in full.
3. Expand non- timber values from forestry.	Forestry's contribution to air and water quality and social and cultural values.	Forests as carbon sinks. Build amenity values programme in FFR initiative and secure investment.	Completed first year of two-year programme.

Corporate Social Responsibility is a long-term, strategic positioning that links a business to a social issue or worthy cause. Many major companies have a policy to act as a good corporate citizen and support local community events and activities, without necessarily benefiting from commercial gain.

Adopting corporate social responsibility philosophies include:

- caring for New Zealand by meeting social obligations
- valuing staff and being a good employer
- taking environmental responsibilities.

Ministry for the Environment, http://www.mfe.govt.nz/issues/sustainable-industry/tools-services/subjects.php?id=23

1. Caring for New Zealand by meeting social obligations:

Scion's activities aimed at meeting its social obligations are focussed on:

- lifting the recognition of science and its value to New Zealand, and
- facilitating quality engagement with its local communities.

Fostering passion for science

The educational pilot programme for Forests of Life was completed successfully this year. Scion has continued Forests of Life activity by implementing the programme at Rotorua's Owhata Primary School to help children learn about the world around them. The hands-on science programme was triggered by a request from Te Arawa elders keen for local children to learn about the importance of forests and lakes. As part of the programme, Owhata students visit Scion to find out what scientists do, and scientists in turn visit the school to talk to the children.

Scion began the Ministry of Education Science-4-Life programme in March of this year with a view to understanding how CRIs can more effectively contribute to science education in schools. Staff completed one round of workshops for teachers in 12 centres nationwide to explore various science education methods and how they can best be delivered. At the same time, Scion has started workshops with first-year university students to explore why they decided to continue in science. Data collected at these workshops will shed light on how schools can help students to become more excited about science.

Supporting continuous learning

- Scion sponsored a Wood Timber Design award at The University of Auckland for the seventh year in a row. This \$1200 cash award is granted to outstanding students in the three wood design studio programmes (\$400 each). The main purpose of the award is to reward excellent innovative design and understanding of how to design in timber, in order to encourage architectural students to explore this material in their building designs.
- Scion also provided sponsorship to the New Zealand Institute of Forestry Balneaves Travel Award. This award is to enable overseas travel for a member involved in sound and practical plantation forest research that will benefit the New Zealand forestry sector.
- Scion awarded the 2007 Scion Suffrage Centennial Scholarship to Blanche Edwards from Rotorua Girls' High School. This annual award grants \$2000 plus holiday work opportunities to female students in the Rotorua area who are interested in pursuing a science degree.

Hosting guests

Scion hosted a number of school groups over the past year, with students ranging from primary school age through to secondary. These visits are proving popular with schools because they enable children to appreciate the relevance of science in helping to overcome challenges that have a bearing on their future. In addition, Scion hosted a diverse range of national and international visitors with interests in forestry biosciences.

Taking science to the community

For the second year in a row, Scion participated at the Mystery Creek National Fieldays in Hamilton, taking the opportunity to educate interested members of the public in the work that is being done at Scion.

Down in our Christchurch community, Scion participated at the Royal New Zealand Show, with the similar objective of raising brand awareness and the profile of our research, science and technology.

Supporting local community objectives

Scion provided sponsorship for:

- The NIWA Science and Technology Fair for the Bay of Plenty region. Thirty Scion scientists helped judge this event, the fifth year Scion has been involved. Scientists in Scion's Christchurch office have provided similar support in the Canterbury and Westland science fairs for the past nine years.
- World Environment Day in Rotorua. Scion sponsored local youth efforts on the day.
- The Redwoods Family Fun Day a Rotorua event designed to encourage awareness of the local forest as a recreational and educational resource.
- Whakarewarewa School's homework book initiative. This initiative sees children supplied with homework books free of charge, courtesy of sponsors, which are branded with health and safety messages.

2. Valuing staff and being a good employer

Valuing staff...

Over the past year Scion has supported a number of staff in their academic pursuits.

Type of Student	Number employed
Internship or work experience	17
Undergraduate qualification	11
Masters qualification	14
Doctorate qualification	25
Postdoctoral	4

Supporting sporting endeavours

Recreational sport is an important aspect of Scion's organisational culture and a number of staff members attain high levels of success in their various pursuits. Scion supports many of its staff in sporting pursuits, from the dedicated professional through to the enthusiastic amateur.

- Pulp and paper specialist, Garth Weinberg, represented New Zealand in the World Single Speed Championships (mountain biking). Last year he competed in Scotland and was ranked ninth overall.
- Tissue culture scientist, Christine Devillard, won silver in her class at the National Indoor Competition for archery, and went on to achieve 12th place in the World Indoor Archery Challenge.
- Mycology scientist, Katrin Walbert, was supported in her Ironman efforts.
- Three staff teams were sponsored to take part in the Cateye Moonride mountain bike event.
- A staff team was supported in a local badminton competition.

...and being a good employer

The seven key elements of being a good employer, as set by the State Services Commission, are:

- 1. Leadership, Accountability and Culture
- 2. Recruitment, Selection and Induction
- 3. Employee Development, Promotion and Exit
- 4. Flexibility and Work Design
- 5. Remuneration, Recognition and Conditions
- 6. Harassment and Bullying Prevention, and
- 7. Safe and Healthy Environment.
- 1. Leadership, Accountability and Culture

Scion and CSIRO were fortunate to be accepted by The University of Auckland Excelerator Programme as participants in the flagship Leadership Excellence Programme – a research-based leadership development programme. This year the programme was continued for 13 Scion staff and ended in Sydney in June.

The 13 Scion staff members, representing Scion's experience, gender and ethnic diversity, worked with 18 CSIRO staff to develop their science leadership. The programme has been successful at many levels. Collaboration has been deepened and the programme has resulted in the participants developing an organisational view, plus the personal skills required to be effective leaders.

Participants have recently made a significant positive contribution to discussions on Scion reshaping and values development.

Scion has proposed a joint CRI cohort for the second cohort due to commence in July 2009.

Four significant staff consultations were completed in the last year:

- Staff consultation was key to the resizing project which took place in August 2007. Significant changes were made to the plan as a result of staff involvement.
- The refreshing of Scion values involved a bottom-up consultation process. Focus groups have been used to test and refine the values refresh proposal for the new organisational shape.
- The Partnership for Quality Group and the PSA have been consulted on changes to the Achievement and Career Enhancement (ACE) performance management system, how to address poor performance and the factors needed for a successful organisational shape.
- Focus groups were formed to give advice to management during the organisational reshaping process in April June 08. The feedback contributed to the final organisational design.

2. Recruitment, Selection and Induction

In May 2008 the template for recruitment advertising was updated and now includes reference to Scion promoting an EEO environment for all staff (the EEO logo also appears on job advertisements).

From June 2008 recruitment has been managed through an e-recruitment tool ensuring that:

- we continue to maintain a transparent and impartial process
- we increase the possibility of recruiting the best person for the job
- the process is as speedy as possible, and
- communication with applicants is timely and streamlined.

Increasingly, casual positions have been advertised internally, enabling staff with capacity to temporarily pick up hours. The benefit of this is that we recruit staff with existing organisational knowledge and create a potential job-share situation.

3. Employee Development, Promotion and Exit

The following courses were offered to 111 staff who identified needs through the performance planning process:

- Delivering Feedback
- Influencing
- Project Management
- Managing the Gap (personal organisation), and
- Confidence with Clients.

Myers Briggs Type Indicator consultancy was offered to 28 individual staff for interpersonal skills development and career counselling.

The Three Week Induction questionnaire, the Three Month Feedback survey and the Exit Feedback surveys were converted to an electronic Lotus Notes based questionnaire. We can now generate basic reports, analyse the data (including monitoring any EEO reasons for staff leaving) and design appropriate retention strategies.

4. Flexibility and Work Design

Several staff have requested, and been granted, the opportunity to work reduced hours to assist them in balancing work with out-of-work responsibilities.

5. Remuneration, Recognition and Conditions

A remuneration review conducted by Hay Consulting was completed after a consultation process. An Implementation Committee comprising representatives from management, the job evaluation committee, the Partnership for Quality and Principal Scientists, made a major contribution in linking the recommendations to the in-house performance planning and review process, and ensuring that the systems surrounding pay and conditions are streamlined, easily understood, and consistent with other processes.

The Scion life insurance scheme was drawn on for the families of three staff who died during the year.

6. Harassment and Bullying Prevention

A coach skilled in assisting staff who have difficulties working effectively together, has worked with affected staff. In two cases long-standing disputes have been addressed with effective outcomes.

One-to-one coaching has been put in place with four scientists, one support staff member and three senior managers to enhance skills in dealing with challenging situations.

7. Safe and Healthy Environment

A major Hazardous Substances and New Organisms training programme was completed. Relevant staff are now fully trained in their Hazardous Substances and New Organisms responsibilities. A plan to upgrade science work areas is part of the strategic plan for 2009-2011.

3. Taking environmental responsibility

Scion's sustainability team has focused this year on developing frameworks and processes to track Scion's energy consumption and waste outputs. These were critical areas highlighted in last year's Ecological Footprint Assessment and Cleaner Production Audit.

Ongoing initiatives include vermicomposting of cafeteria waste, recycling and an energy awareness campaign. The recycling programme has continued to collect plastic and glass bottles, aluminium cans, batteries, cardboard and paper for regular removal to a recycling depot. The collection programme has been extended this year to include polystyrene and plastic bags.

Around 90 litres of food scraps from the cafeteria and tearooms are collected per week for on-site vermicomposting, with the resulting worm juice sold as a fertiliser. The worm-farm operation has been a tremendous success, with a steady volume increase in scraps being processed, including paper towels.

An energy-saving initiative has succeeded in reducing Scion's annual heating bill by approximately \$20,000 and gas usage by 2.55 gigajoules. This was achieved by restricting distribution from the gas-fired boiler to central areas of the campus and getting individual heating for the outbuildings. Previously, the boiler pumped heated water around the campus and heat was lost where the water pipe crossed open areas to external buildings.

He Whakatauki

Ko te manu e kai ana i te miro, nona te ngahere. Engari, ko te manu e kai ana i te matauranga, nona te ao.

The bird that consumes the miro berry, owns the forest. However, the bird that consumes knowledge, owns the world.

The Maori sector demonstrated its growing hunger for research, science and technology through its proactive approach to scoping and generating technical proposals to better enable Maori to benefit from their resources. We expect this work with Maori organisations will be an increasingly important avenue through which Scion will deliver national benefit.

Research into soils on Te Arawa land trust farms, biofuel opportunities with tallow, and the use of lake weed in vermicomposting, all achieved funding pathways enabling Maori to be early-adopter investors in new science and technology developments.

Maori researchers and organisations also engaged in Scion's rebidding process with FRST to support Maori Research and Innovation concepts and proposals within two large land-based programmes. The successful proposals were Forests and Environment at \$1.95 million per annum and Diverse Forests at \$1.6 million per annum, both for five years. The programmes will enable consideration of cultural indicators within forest sustainability, and empower Maori to advance leading-edge research into the viability of indigenous species plantation forestry.

Indigenous fibre was the focus of a two-year Capability Fund project commenced in 2008. This has assisted emerging Maori scientists at Scion to advance their Western science skills within the context of native flora. It is expected that this project will enable the development of a partnership with the New Zealand Maori Arts and Crafts Institute to advance new fibre technologies at the interface with Matauranga Maori.

Scion significantly advanced the Te Aroturuki model with Environmental Risk Management Authority (ERMA) New Zealand who is supporting a national release of the model in the new year. The model was presented at ERMA's *Tikanga and Technology* hui in May 2008 and was enthusiastically received. It encouraged a better understanding of the challenges that CRIs face in engaging and partnering with Maori where controversial technologies are involved.

The strengthening of Maori engagement and involvement in Scion's core business was replicated in the partnership focus between Maori and the Crown advanced during the year.

Bioprospecting policy development for New Zealand was advanced by the Ministry for Economic Development and the Ministry of Foreign Affairs and Trade in 2007. The Government recognised the issues associated with Wai 262, the native flora and fauna Treaty claim currently before the Waitangi Tribunal. Scion initiated a partnership approach to this issue with Te Arawa facilitating a joint workshop to achieve mutual understanding between Scion and tangata whenua. This resulted in supporting submissions to the Government and, more recently, joint nominations to technical working groups established by the Crown.

The \$500 million Central North Island Iwi Collective forest land deal, signed in June 2008, is the most significant Treaty settlement directly related to Scion's research. The CNI Collective's Economic Development Strategy highlights the role that innovation will play in building capacity and capability to operate and compete on the global forestry stage and will be a strong influence on Scion's impact to New Zealand.

Scion's new strategy is strongly aligned to Maori values and aspirations, and the reconfirmation of the wharenui concept introduced in 2006 will ensure Scion continues to implement enduring partnerships with Maori. The next five years will see Maori research agendas coming to the fore and Scion's sustainability focus will align well to the quadruple bottom line emphasis that a Maori wellbeing focus provides.

Na tau rourou, na taku rourou, ka ora ai te iwi

With your food basket, and my food basket, people will be nourished
Principal Activities

New Zealand Forest Research Institute Limited (trading as Scion) is a company registered under the Companies Act 1993. Our principal activity is to conduct research in accordance with the purpose and principles specified in Sections 4 and 5 of the Crown Research Institutes Act 1992 (the Act). Scion has met all the obligations under the Act for the year ended 30 June 2008.

Scion is a commercially focused science and technology company, delivering solutions to both commercial and Crown clients. The principal research facility is located in Rotorua.

Scion, at balance date, has five wholly-owned subsidiaries, Liro Limited, Forest Research (Australasia) Pty Limited, ATLAS Technology Limited, Te Papa Tipu Properties Limited, Scion Australasia Limited and three associates – 25% ownership of Frontline Biosecurity Limited, 20% ownership of Beacon Pathway Limited, and 33.33% ownership of Biopolymer Network Limited. Scion is also a member of two consortiums – WQI Limited with a 12.82% shareholding and Radiata Pine Breeding Company Limited (RPBC) with a 17.64% shareholding.

- Forest Research (Australasia) Pty Limited was the Australian trading vehicle but has now ceased trading. The company is a New Zealand registered company.
- Te Papa Tipu Properties Limited owns the Group's land assets.
- Scion Australasia Limited is a special purpose company established for an unincorporated joint venture with Australia's national science agency, CSIRO.
- ATLAS Technology Limited is a shelf company.
- Frontline Biosecurity Limited is an incorporated joint venture, the purpose of which is to collaborate in the research and development, and commercialisation of the heat disinfestation process and other biosecurity processes.
- Biopolymer Network Limited is an incorporated joint venture whose purpose is to create technologies for advancing the utilisation of renewable biobased materials in industrial applications.
- Beacon Pathway Limited is a consortium with five shareholders and carries out research in the area of sustainability in the built environment.
- WQI Ltd is a consortium with 16 shareholders and carries out research focused on wood quality, appearance and stability that can affect the performance of the wood, and to develop effective segregation methods and technologies that allow the industry to gain maximum value from their timber resource.
- RPBC is a consortium with 17 shareholders and aims to develop and provide superior germplasm of radiata pine.

Summary of Group Financial Results to 30 June 2008

	2008 \$000	2007 \$000
Operating revenue	41,710	18,416
Surplus before taxation	1,205	(518)
Taxation expense	92	(68)
Net surplus attributable to the shareholders	1,113	(450)
Equity		
Issued and paid up capital	15,716	15,716
Retained earnings	7,860	6,856
Reserve	50	0
Total equity	23,626	22,572

Scion's Strategic Business Plan outlines the company's research capabilities as spanning three core themes:

- Sustainable Design driving the purposeful development of new knowledge, technologies and feedstocks, enabling New Zealand to become a leader in sustainability.
- New Forests and Forest Science driving innovation through diversification and supporting the transformation of the forestry sector for global success.
- Bioproduct Development transforming renewable resources into global advantages.

The business plan takes Scion further down the pathway toward achieving its Biomaterials Futures vision, and the New Zealand Government's overarching objective for Crown Research Institutes to lead the country's economic transformation.

Scion's science and commercial focus is strongly aligned with the opportunities being presented locally, nationally and globally, and when brought together, will continue to enable Scion to provide leadership on issues of local, national and global significance.

Remuneration and Compensation

Remuneration and compensation included performance awards, superannuation benefits, pay-outs of equity leave provisions and redundancy payments. Some other benefits were not quantified and are therefore excluded, including staff parking, home telephone and fax costs, and membership of relevant professional societies.

B	3	Number in Each Band	
\$360,000	-	\$369,999*	1
\$220,000	-	\$229,999	1
\$180,000	-	\$189,999	1
\$170,000	-	\$179,999	1
\$160,000	_	\$169,999	0
\$150,000	_	\$159,999	1
\$140,000	-	\$149,999	3
\$130,000	_	\$139,999	2
\$120,000	_	\$129,999	5
\$110,000	_	\$119,999	7
\$100,000	—	\$109,999	9

* Denotes Salary of Chief Executive

During the year ended 30 June 2008, \$441k was paid or became payable to 20 employees in relation to cessation of employment with Scion. Payments totalling \$233k were made to six employees in 2007.

Dividend

A dividend of \$109k was recommended and paid during the year (2007: \$59k).

Directors' Profiles

Dr Russell Ballard, CNZM, (Chairman) – is an independent, non-executive Director. Dr Ballard is Deputy Chairman of the New Zealand Correspondence School, a Director of TeamTalk Ltd, a member of the Council of Massey University and the independent Chair of the Risk and Assurance Committee of the Inland Revenue Department. Dr Ballard is also an external director on the Risk and Assurance Committee of the Ministry of Social Development. During the past year he has become a director of New Zealand Veterinary Pathology Ltd, and the independent Chair of the Risk and Assurance Committees of both the Office of the Clerk of the House, and the New Zealand Food Safety Authority. During the year he resigned from the Ensis Liaison Board. Previously Dr Ballard held several Chief Executive positions in the public service, including the Ministry of Forestry, Department of Education, Ministry of Agriculture and Fisheries, and Land Information New Zealand. Dr Ballard holds a MAgrSc and PhD (forest soils), a Diploma in Company Direction from the Institute of Directors (UK) and a Certificate in Company Direction from the Institute of Directors (NZ). He is a member of the New Zealand Institute of Forestry and the New Zealand Institute of Directors and a Fellow of the New Zealand Institute of Management.

Mr Temuera Hall (Te Arawa, Ngati Tuwharetoa) (Deputy Chairman) – is Managing Director of Lake Taupo Funds (LTF) Limited, a funds management company. LTF Limited is associated with a group of companies including a merchant banking company named Lake Taupo Capital (LTC) and direct invest company, Lake Taupo Forest Trust Investment Limited (LTFTI). Mr Hall also serves as a director of a wholly owned subsidiary of LTF Ltd, Tuwharetoa Nominees Ltd and other associated companies, Tem Corporation Aotearoa Ltd and TRM Ltd. In addition, Mr Hall is a director of Tuwharetoa 3000 Charitable Trust, and its associated companies, Tuwharetoa Ltd, T3000 Financial Services Ltd and Te Wananga o Tuwharetoa Ltd. He further serves as a trustee of Paeroa Te Akau Trust and as a director of Future Habitat Ltd. Last year, he became an executive member of the Federation of Maori Authorities and a Director of Taumau Ltd. Mr Hall holds a BSocSci majoring in geography.

Mr Peter Berg, ONZM, (Director) – is President of the New Zealand Forest Owners Association Inc., Deputy Chairman of Tane's Tree Trust, a Board member of FITEC the New Zealand forest industry training organisation, a member of the Auckland Conservation Board, Chairman of Pentarch Forest Products Limited, Chairman of New Zealand Forestry Limited, Chairman of Berg Forests Limited, on the Board of the Wood Council of New Zealand (WoodCo) Inc., New Zealand section Chair of the Commonwealth Forestry Association, and a member of the New Zealand Institute of Forestry Registration Board. Previously Mr Berg held various Chief Executive and other senior positions in the forestry sector and public service both in New Zealand and offshore. Mr Berg holds a BSc and BForSc (Aberdeen) and is a member of the New Zealand Farm Forestry Association and Fellow of the New Zealand Institute of Forestry, where he was recognised as Forester of the Year 2006.

Ms Margaret Emerre (Director) – until November 2007 Ms Emerre was the relationship manager with the Leadership Development Centre. She was formerly the Manager Research, Science and Technology of the New Zealand Forest Industries Council and CEO of the Queensland Science and Technology Council, Director of the Queensland Innovation Centre, Director of the Electronic and Electricity Industry Training Organisation, and is a Director of some small commercial companies. Ms Emerre has also managed the Master of Management Programme in the Graduate School of Business at Victoria University. This past year her partner, David King, was appointed to the Board of Windsor Engineering Group Ltd, and Ms Emerre ceased her employment with the Leadership Development Centre. Ms Emerre holds an MSc, a Post Graduate Diploma in Administration, a BSc in Biological Sciences, and a Diploma in Physical Education. She also holds a Certificate in Company Direction from the Institute of Directors.

Dr Kathy Garden (Director) – is Pro Vice Chancellor and Dean of the Faculty of Design and Creative Technologies at The Auckland University of Technology. She has held senior positions in the public and private sectors, including Director of Strategic Development at Manukau City Council, Executive Director of the New Zealand Business Council for Sustainable Development, Sustainable Development Coordinator for Fletcher Challenge, and Chief Policy Adviser at the Ministry of Research, Science and Technology. Dr Garden is on the Foundation for Research, Science and Technology's Funding Committee for the International Opportunities Fund and is a director of South Pacific Electronic Design Associates Ltd. Dr Garden holds BE, ME and PhD degrees in Electrical and Electronic Engineering, and is a Fellow of IPENZ.

Ms Bronwyn Monopoli, MBE, (Director) – is a qualified accountant with her own practice based in Nelson. She currently serves on the boards of Port Nelson Limited, the Visitor Information Network, the WearableArt Development Trust, the Nelson Millennium Centre Trust, and the New Zealand International Arts Festival Trust. Over the past year she has resigned as a director from Sentinel Assurance Company Limited, Sentinel Ltd, the Cawthorn Institute and the Ensis Liaison Board. She has previously served as a director of a wide range of companies and government bodies, including the Humanware Group Limited, Landcorp Farming Limited, the New Zealand Wool Board, Tourism New Zealand and Trade New Zealand. Ms Monopoli has a BAgrSc and a BBS. She is a fellow of the New Zealand Institute of Chartered Accountants.

Mr John Palmer (Director) – has extensive experience in the forestry and construction industries. He was the chief executive officer of start-up Silva Forest Products, an Auckland-based joint venture company formed by New Zealand's two largest foresters to export logs to Asia. Mr Palmer previously worked for construction chemicals company, Fosroc, where over a period of 18 years he held roles such as regional director for Asia Pacific and Europe, chief executive for China/Hong Kong, and chief executive for New Zealand.

Changes in Directors

Margaret Emerre and Temuera Hall's term on the Board concluded on 30 June 2008. These Directors have been replaced by Mr Sheldon Drummond, Mr Chris Insley and Mr Michael Ludbrook, who were appointed to the Board on 1 July 2008.

Directors' Interests

Any business the company has transacted with organisations in which a Director has an association has been carried out on a commercial "arms-length" basis.

Directors' Remuneration

	Scion 30 June 2008	Ensis 30 June 2008	Te Papa Tipu Properties 30 June 2008	Total 30 June 2008
Russell Ballard	57,750	16,000	0	73,750
Temuera Hall	35,750	0	8,000	43,750
Bronwyn Monopoli	30,500	16,000	0	46,500
Margaret Emerre	30,500	0	0	30,500
Kathy Garden	28,500	0	0	28,500
Peter Berg	28,500	0	0	28,500
John Palmer	28,500	0	0	28,500
External Director				
John Kahukiwa	0	0	3,000	3,000
Total	240,000	32,000	11,000	283,000

Use of Company Information

During the year no notices were received from members of the Board requesting to use Scion information received in their capacity as Directors which would not otherwise have been available to them. Additions to the Interests Register are noted in the profiles above.

The State of the Company's Affairs

A commentary on the year's performance is outlined in the Chairman's and CEO's Report and in the opinion of the Directors, the state of the company's affairs continues to be satisfactory and the outlook bright.

Auditor

In accordance with Section 21 of the Crown Research Institutes Act 1992, the Audit Office is Auditor for the Company and, pursuant to Section 29 of the Public Finance Act 1977, has appointed Ernst & Young to undertake the audit on its behalf.

Directors' Indemnity and Insurance

Scion has insured all Directors and the Directors of its subsidiaries against liabilities to other parties (except to Scion or a related party of Scion) that may arise from their position as Directors. The insurance does not cover liabilities that may arise from criminal actions.

For and on behalf of the Board **R Ballard** Chairman

28 August 2008

Statement of Responsibility

The following statement from the Board is made in accordance with Section 155 of the Crown Entities Act 2004:

- 1. The Board is responsible for the preparation of the annual financial statements and the judgements used in these.
- 2. The Board is responsible for establishing and maintaining a system of internal control designed to provide reasonable assurance as to the integrity and reliability of the financial reporting, and
- 3. In the opinion of the Board, the annual financial statements for the year ended 30 June 2008 fairly reflect the financial position and operations of the New Zealand Forest Research Institute Limited.

R Ballard Chairman

28 August 2008

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B Monopoli Director

Performance Targets

Scion's performance against the targets contained in the 2007–2010 Statement of Corporate Intent was:

	Actual	Actual	Budget
Revenue (\$000) ¹	18 416	41 710	24 340
EBIT Margin (EBIT % of Revenue)	-2.1%	2 9%	0.5%
Return on average equity	-2.0%	4.8%	0.0%
Return on average total assets ²³	1 10/	2.0%	0.0%
Equity ratio	-1.1/0	2.0 /0	72 90/
	72.0%	12.1%	1 0 2
Gearing	0.90	1.00	1.02
Interest coverage	4.5%	0.0%	11.4%
Free cash flow to average total assets	-2.92%	71.88%	1.03
	10.2%	13.6%	9.3%
Non-financial Performance Measures ⁴	Actual	Actual	Budget
Science ETE's	2007	2008	2008
Science FTE's	235	217	230
	41	43	23
	61	57	72
	337	317	325
Revenue per FTE (\$)	138,732	131,577	148,534
Research Application Metrics	050	400	000
Commissioned reports to users	350	402	380
Presentations on technical information and research results	380	295	200
Publications on technical information and research results	232	70^	160
Peer reviewed articles	152	136	140
New or improved processes, products, or services	22		10
Keynote and plenary presentations	23	4	20
Requests for information from databases and collections:			
- National Forestry Library		8,104	3,500
- National Wood Performance Archive		200	100
- National Forest Health Database	700	800	805
- National Forest Herbarium and Database		550	400
- Permanent Sample Plot Database		900	300
- Total	3,500		5,105
Patents Granted			
- In New Zealand	4	0	3
- Overseas	1	3	3
Number of licensing arrangements	1	3	3
Joint Ventures or formal associations	0	0	1
Social Responsibility/Community	Report	Report	Report
Environment Responsibility	Report	Report	Report
Maori Relationships	_	_	_
Consultation with Maori	Report	Report	Report
Learning and development	Report	Report	Report
Maori scholarships	0	0	2
R&D proposals involving Maori	_ 6	6	5
Benefit to NZ	Report	Report	Report
Good Employer		_	
Policies to meet provisions of CRI Act	Report	Report	Report
% time in training	1%	1%	3%
Number of Post Grad Students supported	33	4*	30
Work days lost in work related accidents	0	1	0
Human Capital Protection	Stats & report	Stats & report	Stats & report

* These measures reflect new assessment criteria and the dissolution of the UJV with CSIRO.

¹ Group Revenue for 2007 includes gross revenues from non-Ensis components of Scion. It excludes Scion's 50% share of Ensis gross margin contribution which is equity accounted and not classified as revenue. In 2008 Scion's share of Ensis activities was transferred back into Scion's operations.

²Note return on average total assets is calculated using a post-tax return.

³ The Board notes that Scion's return on assets is impacted by reinvestment into the science capability of the business and the existence of surplus assets.

⁴ Non-Financial Performance includes outputs from the Scion component of the UJV.

⁵ For 2007 Actual and 2008 Budget revenue per FTE assumes Scion revenue plus 50% of Ensis revenue, less the Ensis gross margin contribution to Scion. FTE numbers comprise Scion employees, including those seconded to Ensis.

Audit Report



AUDIT REPORT TO THE READERS OF NEW ZEALAND FOREST RESEARCH INSTITUTE LIMITED AND GROUP'S FINANCIAL STATEMENTS FOR THE YEAR ENDED 30 JUNE 2008

The Auditor-General is the auditor of New Zealand Forest Research Institute Limited (the company) and group. The Auditor-General has appointed me, Simon Brotherton, using the staff and resources of Ernst & Young, to carry out the audit of the financial statements of the company and group, on his behalf, for the year ended 30 June 2008.

Unqualified Opinion

In our opinion:

- The financial statements of the company and group on pages 45 to 76:
 - comply with generally accepted accounting practice in New Zealand; and
 - give a true and fair view of:
 - the company and group's financial position as at 30 June 2008; and
 - the results of operations and cash flows for the year ended on that date.
- ► Based on our examination the company and group kept proper accounting records.

The audit was completed on 28 August 2008, and is the date at which our opinion is expressed.

The basis of our opinion is explained below. In addition, we outline the responsibilities of the Board of Directors and the Auditor, and explain our independence.

Basis of Opinion

We carried out the audit in accordance with the Auditor-General's Auditing Standards, which incorporate the New Zealand Auditing Standards.

We planned and performed the audit to obtain all the information and explanations we considered necessary in order to obtain reasonable assurance that the financial statements did not have material misstatements, whether caused by fraud or error.

Material misstatements are differences or omissions of amounts and disclosures that would affect a reader's overall understanding of the financial statements. If we had found material misstatements that were not corrected, we would have referred to them in our opinion.

The audit involved performing procedures to test the information presented in the financial statements. We assessed the results of those procedures in forming our opinion.

Audit procedures generally include:

- ▶ determining whether significant financial and management controls are working and can be relied on to produce complete and accurate data;
- ▶ verifying samples of transactions and account balances;
- ► performing analyses to identify anomalies in the reported data;
- reviewing significant estimates and judgements made by the Board of Directors;
- confirming year-end balances;
- determining whether accounting policies are appropriate and consistently applied; and



determining whether all financial statement disclosures are adequate.

We did not examine every transaction, nor do we guarantee complete accuracy of the financial statements.

We evaluated the overall adequacy of the presentation of information in the financial statements. We obtained all the information and explanations we required to support our opinion above.

Responsibilities of the Board of Directors and the Auditor

The Board of Directors is responsible for preparing the financial statements in accordance with generally accepted accounting practice in New Zealand. The financial statements must give a true and fair view of the financial position of the company and group as at 30 June 2008 and the results of operations and cash flows for the year ended on that date. The Board of Directors' responsibilities arise from the Crown Research Institutes Act 1992 and the Financial Reporting Act 1993.

We are responsible for expressing an independent opinion on the financial statements and reporting that opinion to you. This responsibility arises from section 15 of the Public Audit Act 2001 and the Crown Research Institutes Act 1992.

Independence

When carrying out the audit we followed the independence requirements of the Auditor-General, which incorporate the independence requirements of the Institute of Chartered Accountants of New Zealand.

In addition to the audit we have carried out assignments in the area of IFRS advice, which is compatible with those independence requirements. Other than the audit and these assignments, we have no relationship with or interests in the company or any of its subsidiaries.

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Simon Brotherton Ernst & Young On behalf of the Auditor-General Auckland, New Zealand

FOR THE YEAR ENDED 30 JUNE 2008

		ACTUAL	GROUP BUDGET	ACTUAL	PAR ACTUAL	ENT ACTUAL
	Note	2008 \$000	(unaudited) 2008 \$000	2007 \$000	2008 \$000	2007 \$000
Revenue	2 (a)	41,710	18,735	18,416	41,658	18,409
Other income	2 (b)	157	0	127	89	25
Expenditure	3 (a)	(40,726)	(24,215)	(22,728)	(40,842)	(22,741)
Finance costs	3 (b)	(17)	(121)	(132)	(17)	(108)
Share of profit of Ensis	18	0	5,605	3,799	0	0
Share of profit of associates		81	0	0	0	0
Profit/(Loss) before tax		1,205	4	(518)	888	(4,415)
Tax expense/(credit)	9	92	1	(68)	15	(81)
Profit/(Loss) attributable to the shareholders of the parent company		1,113	3	(450)	873	(4,334)

The accompanying notes form part of these financial statements.

Statement of Recognised Income and Expense

FOR THE YEAR ENDED 30 JUNE 2008

	Note	GR0 ACTUAL 2008 \$000	DUP ACTUAL 2007 \$000	PAR ACTUAL 2008 \$000	ENT ACTUAL 2007 \$000
Fair value gain on heritage assets		75	0	75	0
Deferred tax on heritage assets		(25)	0	(25)	0
Net income recognised directly in equity	5	50	0	50	0
Profit/(Loss) for the period	5	1,113	(450)	873	(4,334)
Total recognised income and expense for the period attributable to equity holders of the parent		1,163	(450)	923	(4,334)

The accompanying notes form part of these financial statements.

Balance Sheet

AS AT 30 JUNE 2008

			GROUP		PAR	ENT
		ACTUAL	BUDGET (unaudited)	ACTUAL	ACTUAL	ACTUAL
	Note	2008 \$000	2008 \$000	2007 \$000	2008 \$000	2007 \$000
Equity						
Share capital	5	15,716	15,716	15,716	15,716	15,716
Retained earnings	5	7,860	6,971	6,856	2,008	1,244
Foreign currency translation reserve	5	0	39	0	0	0
Revaluation reserve	5	50	0	0	50	0
	•	23,626	22,726	22,572	17,774	16,960
Non Current Liabilities						
Provisions	6	101	0	123	101	123
Defined benefit plan	7(a)	1,026	1,158	1,060	1,026	1,060
		1,127	1,158	1,183	1,127	1,183
Current Liabilities						
Trade and other payables	8	7,179	3,654	5,797	14,194	9,788
Provisions	6	315	103	112	315	112
Defined benefit plan	7(a)	73	100	100	73	100
Tax payable	9	71	1	0	0	0
Bank debt	10	0	2,940	1,370	0	1,370
		7,638	6,798	7,379	14,582	11,370
Total Equity and Liabilities		32,391	30,682	31,134	33,483	29,513
Non Current Assets						
Property, plant and equipment	11	22.678	24,512	23,124	21.315	21,797
Biological assets	12	322	0	258	322	258
Intangible assets	13	136	0	218	136	218
Deferred tax benefit	9	680	908	726	685	725
Investments in subsidiaries	14	0	0	0	52	52
Investments in associates	15	116	35	35	35	35
		23,932	25,455	24,361	22,545	23,085
Current Assets						
Cash and cash equivalents	16	1,968	3	315	1,943	312
Trade and other receivables	17	6,185	2,241	3,288	8,689	5,684
Investment in Ensis	18	0	2,802	2,228	0	0
Tax receivable	9	0	0	465	0	0
Inventories	19	230	105	99	230	99
Loan	20	0	0	180	0	135
Advance to associate		76	76	76	76	76
Equipment for resale		0	0	122	0	122
		8,459	5,227	6,773	10,938	6,428
Total Assets		32,391	30,682	31,134	33,483	29,513

The accompanying notes form part of these financial statements. For and on behalf of the Board, who authorised the issue of these accounts on 28 August 2008.

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Chairman

Director

Cash Flow Statement

FOR THE YEAR ENDED 30 JUNE 2008

			GROUP		PAR	ENT
		ACTUAL	BUDGET (unaudited)	ACTUAL	ACTUAL	ACTUAL
	Note	2008 \$000	2008 \$000	2007 \$000	2008 \$000	2007 \$000
Cash Flows from Operating Activities						
Cash was provided from:						
Receipts from customers		38,745	19,271	17,656	38,756	17,645
Distributions from Ensis		2,228	5,500	4,120	0	0
Interest received		229	0	17	158	13
Dividend received		0	0	0	0	16
Income tax retund		405	25,094	21,793	38,914	17,674
Cash was applied to:						
Payments to employees		22.072	9.710	10.950	22.070	10.949
Payments to suppliers		15.257	12.377	7.478	15.357	7.692
Interest paid		20	138	143	20	119
Income tax paid		0	0	5	0	0
		37,349	22,225	18,576	37,447	18,760
Net cash flows from operating activities	22	4,318	2,869	3,217	1,467	(1,086)
Cash Flows from Investing Activities Cash was provided from:						
Proceeds from sale of property, plant and equipment		13	0		13	
Proceeds from loan repayments		180	180	114	135	82
Cash was applied to:		193	180	114	148	82
Purchase of property, plant and equipment		1,348	2,345	832	1,247	644
Purchase of intangibles		31	0	69	31	69
		1,379	2,345	901	1,278	713
Net cash flows used in investing activities		(1,186)	(2,165)	(787)	(1,130)	(631)
Cash Flows from Financing Activities Cash was provided from:						
Net advances from subsidiaries		0	0	0	2,773	4,297
		0	0	0	2,773	4,297
Cash was applied to:						
Decrease in term debt		1,370	(595)	2,185	1,370	2,185
Payment of dividend		109	(109)	59	109	59
		1,479	(704)	2,244	1,479	2,244
Net cash flows from financing activities		(1,479)	(704)	(2,244)	1,294	2,053
Net Increase (Decrease) in Cash Held		1.653	0	186	1,631	336
Add opening cash brought forward		315	3	129	312	(24)
Add effect of exchange rate change on foreign currency balance		0	0	0	0	0
Ending Cash Carried Forward	16	1,968	3	315	1,943	312

The accompanying notes form part of these financial statements.

FOR THE YEAR ENDED 30 JUNE 2008

1. Statement of Accounting Policies

REPORTING ENTITY

New Zealand Forest Research Institute Limited is a Crown Research Institute registered under the Companies Act 1993. The registered office is Te Papa Tipu Innovation Park, 49 Sala Street, Rotorua. The group consists of New Zealand Forest Research Institute Limited and its subsidiaries.

New Zealand Forest Research Institute Limited is a reporting entity for the purposes of the Financial Reporting Act 1993. It is domiciled and incorporated in New Zealand and is wholly owned by the Crown.

The Financial statements of New Zealand Forest Research Institute Limited for the year were authorised for issue in accordance with a resolution of the directors on the date as set out on the balance sheet.

The activities of New Zealand Forest Research Institute Limited include a range of research and development programmes aimed at using plant-based renewable resources and waste streams to create new materials, energy sources and environmentally sustainable products and processes.

New Zealand Forest Research Institute Limited trades as Scion and these names have identical meaning in this report.

1.1 Material Variances from Budget

For the year ending 30 June 2008, significant variances can be seen between actual and budget in revenue and expenses, trade and other payables, and trade and other receivables. These large variances are materially driven by the termination of the unincorporated jointly controlled entity, Ensis. The Scion group budget was prepared under the assumption that Ensis would operate for the entire 2008 financial year. In reality, Ensis was terminated effective from 1 July 2007. Further explanation can be found in Note 1.2(a), 18 and 26.

1.2 Summary of Significant Accounting Policies

a) Basis of Preparation

The financial statements have been prepared in accordance with generally accepted accounting practice in New Zealand and the requirements of the Companies Act 1993 and the Financial Reporting Act 1993. The financial statements have also been prepared on an historical cost basis, except for forestry assets and certain heritage assets that have been measured at fair value.

The group had a 50% interest in an unincorporated jointly controlled entity, Ensis, up until 30 June 2007. The group's 50% profit share was equity accounted. Ensis was legally terminated on 31 December 2007, but with economic effect from 1 July 2007 with each party to Ensis reverting to its own separate accounts. The New Zealand part of the operations was transferred back into New Zealand Forest Research Institute Limited.

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

b) Statement of Compliance

The financial statements have been prepared in accordance with NZ GAAP. They comply with New Zealand equivalents to International Reporting Standards, and other applicable Financial Reporting Standards, as appropriate for profit-oriented entities. The financial statements comply with International Financial Reporting Standards (IFRS).

These are the first set of financial statements prepared based on NZ IFRS and comparatives for the year ended 30 June 2007 have been restated accordingly. Reconciliations of equity at 1 July 2006 and 30 June 2007 and profit for the year ended 30 June 2007 under NZ IFRS to the balances reported in the 30 June 2007 financial statements are detailed in Note 28.

c) Basis of Consolidation

The consolidated financial statements include the parent company and its subsidiaries. All intercompany transactions and unrealised profits and losses between the group of companies are eliminated from the financial statements on consolidation. In the parent company financial statements, investments in subsidiaries are stated at cost.

FOR THE YEAR ENDED 30 JUNE 2008

d) Associate Companies

These are companies in which the group holds substantial shareholdings and in whose commercial and financial policy decisions it participates.

Associate companies have been reflected in the consolidated financial statements on an equity accounting basis which shows the group's share of surpluses in the Consolidated Statement of Financial Performance and its share of post acquisition increases or decreases in net assets, in the Consolidated Statement of Financial Position.

e) Joint Ventures

The interest in the jointly controlled entity is equity accounted.

f) Intangible Assets

Intangible assets acquired separately are capitalised at cost and from a business combination are capitalised at fair value as at the date of acquisition. Following initial recognition, the cost model is applied to the class of intangible assets.

The useful lives of these intangible assets are assessed to be either finite or indefinite.

Where amortisation is charged on assets with finite lives, this expense is taken to the income statement.

Intangible assets created within the business are not capitalised and expenditure is charged to the income statement in the year in which the expenditure is incurred.

Intangible assets are tested for impairment where an indicator of impairment exists, and in the case of indefinite life intangibles, annually, either individually or at the cash generating unit level. Useful lives are also examined on an annual basis and adjustments, where applicable, are made on a prospective basis.

A summary of the policies applied to the group's intangible assets is as follows:

	Patents and Licenses	Software
Useful lives	Indefinite	Finite
Method used	Not depreciated or revalued	Three years – Straight line
Internally generated/Acquired	Acquired	Acquired
Impairment test/Recoverable amount testing	Annually and where an indicator of impairment exists	Amortisation method reviewed at each financial year-end; Reviewed annually for indicator of impairment

Gains or losses arising from derecognition of an intangible asset are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognised in the income statement when derecognised.

g) Biological Assets

Biological assets consist entirely of tree plantations which are measured at fair value less any point of sale costs. Gains and losses arising on initial recognition or change in fair value, less estimated point of sale costs, are included in profit and loss in the period in which they arise.

The fair value of tree plantations is determined by an independent valuer.

The valuation method for immature trees is the net present value of future net harvest revenue less estimated costs of owning, protecting, tending and managing trees. For mature trees fair value is deemed to be the net harvest revenue value.

h) Property, Plant and Equipment

All items of property, plant and equipment are valued at the cost of purchase from the Crown as at 1 July 1992 adjusted for subsequent additions at cost, disposals and depreciation. Plant and equipment are recorded at cost less accumulated depreciation. Land and capital work in progress are recorded at cost.

Expenditure incurred on property, plant and equipment is capitalised where such expenditure will increase or enhance the future benefits provided by the asset. Expenditure incurred to maintain future benefits is classified as repairs and maintenance.

FOR THE YEAR ENDED 30 JUNE 2008

h) Property, Plant and Equipment (cont)

When an item of property, plant and equipment is disposed of, the difference between the net disposal proceeds and the carrying amount is recognised as a gain, or loss, in the Statement of Financial Performance.

Depreciation is provided for using the straight-line method to allocate the historical cost, less an estimated residual value, over the estimated useful life of the asset.

The useful lives of the major classes of assets have been calculated as follows:

Buildings and Land Improvements	40-60 years
Plant and Equipment	4–15 years
Furniture and Fittings	10 years
Motor Vehicles	3–7 years
Library Books	20 years

Some library books have been identified as heritage assets which are recorded at fair value as determined by an independent valuer.

i) Recoverable Amount of Non-current Assets

At each reporting date, the group assesses whether there is any indication that an asset may be impaired. Where an indicator of impairment exists, the group makes a formal estimate of recoverable amount. Where the carrying amount of an asset exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

Recoverable amount is the greater of fair value less costs to sell and value in use. It is determined for an individual asset, unless the asset's value in use cannot be estimated to be close to its fair value less costs to sell, and it does not generate cash inflows that are largely independent of those from other assets or groups of assets, however, if the recoverable amount is determined for the cash-generating unit to which the asset belongs.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pretax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

j) Trade Receivables

Trade receivables are initially recognised at fair value and subsequently valued at amortised cost less impairment allowance.

Collectability of trade receivables is reviewed on an ongoing basis. Debts that are known to be uncollectible are written off when identified. An allowance for doubtful debts is raised when there is objective evidence that it is probable the group will not be able to collect the debt.

k) Inventories

Consumable stores are valued at the lower of cost, on a weighted average price of stock on hand, and net realisable value.

Nursery stocks are valued at net realisable value. Changes in net realisable value are recognised in the profit and loss account in the period in which they occur.

I) Research Costs

Research costs are expensed in the period incurred.

m) Provisions and Employee Benefits

Provisions are recognised when the group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the balance sheet, using a discounted cash flow methodology.

(i) Wages, Salaries and Annual Leave

The liability for wages, salaries and annual leave recognised in the balance sheet is the amount expected to be paid at balance date. Provision has been made for benefits accruing to employees for annual leave in accordance with the provisions of employment contracts in place at balance date.

FOR THE YEAR ENDED 30 JUNE 2008

m) Provisions and Employee Benefits (cont)

(ii) Long Service Leave

The liability for long service leave is recognised and measured as the present value of expected future payments to be made in respect of services provided by employees up to the reporting date using the projected unit credit method. Consideration is given to expected future wage and salary levels, experience of employee departures, and periods of service. Expected future payments are discounted using market yields at the reporting date on national government bonds with terms to maturity and currencies that match, as closely as possible, the estimated future cash outflows.

(iii) Defined Benefit Plan

The defined benefit plan is unfunded. The cost of providing benefits under the defined benefit plan is determined using the projected unit credit actuarial valuation method. Actuarial gains and losses are recognised in the profit and loss in the period in which they arise.

The defined benefit liability recognised in the balance sheet represents the present value of the defined benefit obligations.

Long service leave and retirement leave provisions are based on an actuarial valuation.

n) Leases

Group as a Lessee

Operating lease payments, where the lessors effectively retain substantially all the risks and benefits associated with ownership of the leased items, are included as an expense in the Statement of Financial Performance in equal instalments over the lease term.

Group as a Lessor

Leases in which the group retains substantially all the risks and benefits of ownership of the leased asset are classified as operating leases. Initial direct costs incurred in negotiating an operating lease are expensed as incurred.

o) Cash and Cash Equivalents

Cash and short-term deposits in the balance sheet comprise cash at bank and in hand and short-term deposits with an original maturity of three months or less.

For the purposes of the Cash Flow Statement, cash and cash equivalents consist of cash and cash equivalents as defined above, net of outstanding bank overdrafts.

p) Goods and Services Tax (GST)

The financial statements are prepared on a GST exclusive basis.

q) Foreign Currencies

Functional and presentation currency

Both the functional and presentation currency of New Zealand Forest Research Institute Limited and its New Zealand subsidiaries is New Zealand dollars.

Transactions and balances

Transactions in foreign currencies are initially recorded in the functional currency by applying the exchange rates ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the rate of exchange ruling at the balance sheet date.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate as at the date of the initial transaction. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

r) Revenue Recognition

Research Revenue

Research revenue from both Government and commercial sources is recorded when earned based on the percentage of work completed. Percentage of work completed is based on management judgement, after considering such things as costs incurred and other contracted commitments. Work completed but not invoiced is recorded as accrued revenue while work invoiced but not completed is recorded as revenue in advance.

FOR THE YEAR ENDED 30 JUNE 2008

r) Revenue Recognition (cont)

Sale of Goods

Revenue is recognised when the significant risks and rewards of ownership of the goods have passed to the buyer. Risk and reward are considered passed to the buyer at the time of delivery.

Interest Revenue

Interest revenue is recognised when earned based on applicable interest rates applied to the group's cash deposit balances.

s) Taxation

The income tax expense charged to the Income Statement includes both the current year's provision and the income tax effects of temporary differences calculated using the liability method.

Tax effect accounting is applied on a comprehensive basis to all temporary differences. A debit balance in the deferred tax account, arising from temporary differences or income tax benefits from income tax losses, is only recognised if it is probable there will be taxable profits available in the future against which the deferred tax asset can be utilised.

Subsequent realisation of the tax benefit is subject to the requirements of income tax legislation being met.

t) Borrowing Costs

Borrowing costs are recognised as an expense when incurred.

u) Interest-bearing Loans and Borrowings

All loans and borrowings are initially recognised at the fair value of the consideration received net of issue costs associated with the borrowing.

After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortised cost using the effective interest method. Amortised cost is calculated by taking into account any issue costs, and any discount or premium on settlement.

For the purpose of valuing bank borrowings, the bank interest rate is taken as the discount rate. As such the bank borrowings are carried at the value of the debt with the bank.

v) Trade and Other Payables

Trade and other payables are carried at amortised cost and due to their short-term nature they are not discounted. They represent liabilities for goods and services provided to the group prior to the end of the financial year that are unpaid and arise when the group becomes obliged to make future payments in respect of the purchase of these goods and services. The amounts are unsecured and are usually paid within 60 days of recognition.

1.3 Significant Accounting Judgements, Estimates and Assumptions

a) Revenue Recognition

Revenue is recognised based on the percentage of work completed on a project basis. Percentage of work completed is based on management judgement after considering such things as hours completed, costs incurred and actual results to date.

b) Heritage Assets

The group holds several heritage assets which have significant value due to both being rare, and having importance to the nation. Where a heritage cost can be measured reliably they are revalued at least every five years.

Due to the nature of some heritage assets, management does not believe they can be valued reliably. These assets have been identified as disclosed. Details of heritage assets can be found in Note 24.

c) Biological Assets

The group's biological assets consist of tree plantations. These are valued at the net present value of future net harvest less estimated costs of owning, protecting, tending and managing trees. The valuation process includes several judgements and estimations around discount rates, future costs, and future prices. Management used the experience of a registered forestry valuer to reduce the risk of misstatement resulting from these judgements and estimates.

FOR THE YEAR ENDED 30 JUNE 2008

1.4 Accounting Standards issued but not yet Effective

The following standards have had changes that have been issued but not yet made effective:

- NZ IAS 1 Presentation of Financial Statements
- NZ IAS 16 Property, Plant and Equipment
- NZ IAS 19 Employee Benefits
- NZ IAS 23 Borrowing Costs
- NZ IAS 27 Consolidated and Separate Financial Statements
- NZ IAS 28 Investments in Associates
- NZ IAS 41 Agriculture
- NZ IFRS 3 Business Combinations
- NZ IFRS 8 Operating Segments

The group has chosen not to apply the changes in the above standards prior to their effective date. While these standards are applicable to the group, they are not expected to have a material impact on our accounts. These are all applicable for the group from the period beginning 1 July 2009, except NZ IFRS 8 which is applicable from 1 July 2008.

		GROUP		PARENT	
		ACTUAL	ACTUAL	ACTUAL	ACTUAL
		2008	2007	2008	2007
_		\$000	\$000	\$000	\$000
2.	Revenue and Other Income				
	(a) Revenue				
	Government research revenue	21,878	7,796	21,878	7,796
	Commercial research revenue	19,384	10,596	19,403	10,577
	Sale of Intellectual Property	200	0	200	0
	Dividend	0	0	0	16
	Royalty	10	7	10	7
	Interest revenue	238	17	167	13
		41,710	18,416	41,658	18,409
	(b) Other Income				
	Change in fair value of plantation trees	64	24	64	24
	Net realised exchange fluctuations	93	103	25	1
	C C	157	127	89	25
3.	Expenditure and Finance Costs (a) Expenditure				
	Personnel remuneration and expenses	22,122	11,092	22,120	11,091
	Other personnel related costs	559	338	558	338
	Contractors and subcontractors	7,012	3,169	6,979	3,068
	Consumables	952	750	952	750
	External services	2,922	1,976	2,856	1,975
	Travel and accommodation	1,646	853	1,644	853
	Lease and rental costs	680	398	1,035	706
	Depreciation	2,053	2,100	2,033	2,096
	Amortisation	113	133	113	133
	Loss on disposal of fixed assets	146	4	146	4
	Impairment of assets	11	48	11	48
	Reversal of impairment	(48)	(7)	(48)	(7)
	Premises	1,289	1,091	1,118	924
	Director's fees	283	225	272	213
	Restructuring costs	417	59	417	59
	Bad debts written off	26	0	26	0
	Doubtful debt provision	1	65	1	65
	Unrealised exchange fluctuations	89	0	89	0
	Other	453	434	520	425
		40,726	22,728	40,842	22,741

FOR THE YEAR ENDED 30 JUNE 2008

		GR ACTUAL 2008 \$000	OUP ACTUAL 2007 \$000	PAR ACTUAL 2008 \$000	ENT ACTUAL 2007 \$000
3.	Expenditure and Finance Costs (cont)				
	(b) Finance Costs				
	Bank loans and overdraft	17	96	17	95
	Inland Revenue use of money interest	0	36	0	13
		17	132	17	108
4.	Auditor's Remuneration Amounts paid or due and payable to the auditors for:				
	Auditing financial statements				
	Parent entity auditor	129	93	129	93
	IFRS consultation costs	0	30	0	30

Audit fees costs are included in contractors and subcontractors expenses in Note 3(a) Expenditure.

5. Statement of Movements in Equity

	Ordinary Shares	Asset Re- valuation Reserve	Retained Earnings	Total	Ordinary Shares	Asset Re- valuation Reserve	Retained Earnings	Total
	2008 \$000	2008 \$000	2008 \$000	2008 \$000	2007 \$000	2007 \$000	2007 \$000	2007 \$000
GROUP					-			
Balance as at 1 July	15,716	0	6,856	22,572	15,716	0	7,365	23,081
Income and expense for the period recognised directly in equity	0	50	0	50	0	0	0	0
Profit	0	0	1,113	1,113	0	0	(450)	(450)
Equity transactions:								
Dividend paid	0	0	(109)	(109)	0	0	(59)	(59)
Balance 30 June	15,716	50	7,860	23,626	15,716	0	6,856	22,572
PARENT								
Balance as at 1 July	15,716	0	1,244	16,960	15,716	0	5,637	21,353
Income and expense for the period recognised directly in equity	0	50	0	50	0	0	0	0
Profit	0	0	873	873	0	0	(4,334)	(4,334)
Equity transactions:								
Dividend paid	0	0	(109)	(109)	0	0	(59)	(59)
Balance 30 June	15,716	50	2,008	17,774	15,716	0	1,244	16,960

New Zealand Forest Research Institute Limited has authorised, issued and paid up capital of 15,716,000 ordinary shares. Shares do not have a par value.

All shares have equal rights with respect to voting, dividends and distribution on winding up. There are no restrictions on the distribution of dividends or repayment of capital.

The asset valuation reserve is used to record increments and decrements in the fair value of heritage book assets.

The foreign currency translation reserve is used to record exchange differences arising from the translation of the financial statements of foreign operations.

FOR THE YEAR ENDED 30 JUNE 2008

5. Statement of Movements in Equity (cont)

Capital Management

Scion is 100% Crown owned. Scion completes a three year plan on an annual basis and as part of that three year plan, capital requirements for the future. When managing capital, management's objective is to ensure the entity continues as a going concern, while balancing its financial goals of delivering returns in line with market cost of capital, with its public good goals of reinvesting in science that will benefit New Zealand. Management uses total equity as capital.

6. Provisions

The group has provisions for long service leave and restructuring. The long service leave provision totals \$235k in June 2008 (2007: \$236k) and was valued by an actuary.

The restructuring provision totalling \$181k in June 2008 allows for costs associated with the termination of Ensis joint venture, a jointly controlled entity, and the reshaping of Scion, both of which occurred in the financial year ended 30 June 2008. Costs provided are for potential payments to personnel. Final value of payment is dependent on the number and level of staff affected.

GROUP

The provisions are made up as follows:

	0	
	ACTUAL	ACTUAL
	\$000	\$000
Current Provision	315	112
Non-Current Provision	101	123

Movement in each class of provision during the year is as follows:

	Long Service Leave	Restructuring	TOTAL
	\$000	\$000	\$000
Balance 1 July 2007	235	0	235
Amounts used during the period	(88)	0	(88)
Provisions made during the period	90	181	271
Discount rate adjustment	(2)	0	(2)
Balance 30 June 2008	235	181	416

7. Pension Plans

a) Defined Benefit Plan

Scion operates an unfunded defined benefit plan. The plan is closed to new members and will cease when all current members have either retired or left the group. There are no assets backing the unfunded liability.

The cost of providing benefits under the defined benefit plan is determined using the projected unit credit actuarial valuation method. Actuarial gains and losses are recognised in the Profit and Loss account. Past service cost is recognised immediately.

The defined benefit liability recognised in the balance sheet represents the present value of the defined benefit obligation.

	GROUP		
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	
Net plan expense			
Current service cost	2	2	
Interest cost on benefit obligation	73	69	
Net actuarial (gains)/losses recognised in the year	(102)	(43)	
Net plan expense	(27)	28	

The net plan expense is included in the personnel remuneration and expense line in Note 3(a) Expenditure.

FOR THE YEAR ENDED 30 JUNE 2008

7. Pension Plans (cont)a) Defined Benefit Plan (cont)

		Defi	ned Benefit	Plan	
	2008	2007	2006	2005	2004
	\$000	\$000	\$000	\$000	\$000
Benefit liability included in the balance sheet					
Present value of defined benefit obligation	1,099	1,160	1,188	1,276	1,100
				GRC	OUP
				ACTUAL 2008 \$000	ACTUAL 2007 \$000
Changes in the present value of the defined benefit obligation are as follows:	t				·
Opening balance				1.160	1.188
Current service cost				2	2
Interest cost				73	68
Actuarial (gains)/losses recognised in the year				(102)	(43)
Benefits paid				(34)	(55)
Closing balance				1,099	1,160

The history of experience adjustments is as follows:

	2008	2007	2006	2005	2004
	\$000	\$000	\$000	\$000	\$000
Experience adjustments on plan liabilities	(90)	0	68	44	(22)

The principal actuarial assumptions used in determining the defined benefit plan obligations are shown below:

	2008 \$000	2007 \$000
Discount rate	6.42%	6.27%
Future salary increases	4.50%	4.50%

b) Defined Contribution Plan

During the period defined contributions totalling \$111k (2007: \$124k) were made to the Government Superannuation Fund.

		GR ACTUAL 2008 \$000	OUP ACTUAL 2007 \$000	PAF ACTUAL 2008 \$000	RENT ACTUAL 2007 \$000
8.	Trade and Other Payables				
	Trade payables	3,325	1,883	3,282	1,694
	Other payables	61	38	61	38
	Dividend payable	0	0	0	0
	Employee payables and accruals	2,440	2,141	2,440	2,141
	Intercompany payables (refer note 27)	0	0	7,065	4,187
	Payable to associates	20	19	20	19
	Ensis payable (refer note 27)	0	860	0	860
	Payable to directors	11	50	10	44
	Revenue in advance	1,322	806	1,316	805
		7,179	5,797	14,194	9,788

The carrying amount disclosed above is a reasonable approximation of fair value. Trade creditors are non-interest bearing and are normally settled within 60 days.

FOR THE YEAR ENDED 30 JUNE 2008

		GR	OUP	PARENT		
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000	
9.	Income Tax					
-	(a) Income Tax Expense					
	The major components of income tax expense in the					
	Income Statement are:					
	Current income tax					
	Current income tax charge	564	49	470	(1,324)	
	Tax effect of loss offset	0	0	23	1,376	
	Tax losses recognised from previous years	(493)	(50)	(493)	(50)	
		71	(1)	0	2	
	Deferred income tax					
	Deferred tax expense/(income) related to prior year	10	0	0	0	
	Relating to origination and reversal of temporary	(101)	(54)	(07)	(70)	
	differences	(101)	(54)	(97)	(70)	
	Amount of deferred tax expense/(income) related to	112	(12)	112	(12)	
	changes in tax rates	112	(13)	112	(13)	
		21	(67)	15	(83)	
	Income tax expense/(income) reports in the income	02	(69)	15	(91)	
	statement	52	(66)	15	(81)	
	 (b) Amounts charged or credited directly to equity Deferred income tax related to items charged (credited) directly to equity Net gain on revaluation of heritage assets 	25	0	25	0	
	(c) Reconciliation between the aggregate tax expense/(income) recognised in the Income Statement to tax expense/ (income) calculated at the statutory income tax rate	1 205	(518)	888	(4 415)	
	Toy at the statutory income toy rate of 220/	1,205	(010)	000	(+,+10)	
		398	(171)	293	(1,457)	
	(2007. 33%) Adjusted by:					
	Prior year income tax	(64)	8	(58)	7	
	I tilisation of unrecognised prior year tay losses	(493)	(50)	(493)	(50)	
	Deferred tax adjustment for tax rate change	(433)	(30)	(433)	(30)	
	Tax recognised on pre-incorporation retirement leave	(4)	(42)	(4)	(43)	
	Entertainment	(+)	5	(+)	2	
	Non-deductible legal fees	15	20	14	7	
	Other	116	162	117	77	
	Tax effect of loss offsets	0	0	23	1.376	
	Income tax expense	92	(68)	15	(81)	
		~-			(01)	

Tax losses of loss making entities within the group are fully offset against profit entities. The tax effect of parent losses offset in 2007 was \$1,376k of which \$1,321k related to Scion Australasia Limited, the Ensis joint venture partner which pays tax on the joint venture profits. The Scion share of the Ensis operations were carried out by the parent in 2008 hence an offset does not arise.

FOR THE YEAR ENDED 30 JUNE 2008

9. Income Tax (cont)

(d) Recognised deferred tax assets and liabilities

	CONSOLIDATED				PARENT			
	2008 \$000 Current Income Tax	2008 \$000 Deferred Income Tax	2007 \$000 Current Income Tax	2007 \$000 Deferred Income Tax	2008 \$000 Current Income Tax	2008 \$000 Deferred Income Tax	2007 \$000 Current Income Tax	2007 \$000 Deferred Income Tax
Opening balance	465	726	500	659	0	725	463	642
Charge to income	(71)	(21)	0	67	0	(15)	2	83
Charge to equity	0	(25)	0	0	0	(25)	0	0
Other payments	(465)	0	(35)	0	0	0	(465)	0
Closing balance	(71)	680	465	726	0	685	0	725

The reduction in the corporate tax rate from 33% to 30% from the 2009 tax year has been taken into account in calculating the value of deferred tax as at 30 June 2008.

.....

	GROUP		PAR	ENT
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
(e) Deferred income tax relates to the				
following:				
Deferred tax liabilities				
Property, plant and equipment	(355)	(375)	(350)	(375)
Nursery inventory	(41)	0	(41)	0
Standing timber	(97)	(77)	(97)	(77)
	(493)	(452)	(488)	(452)
Deferred tax assets				
Patents and trademarks	116	91	116	91
Payroll provisions	900	905	900	905
Provision for doubtful debts	2	20	2	20
Income in advance	51	69	51	69
Other accruals	1	93	1	92
Other	103	0	103	0
	1,173	1,178	1,173	1,177
Net Deferred Tax Asset per Balance Sheet	680	726	685	725

The group has unused tax losses of \$0 (2007: \$1,494k) for which no deferred tax asset has been recognised in the balance sheet.

FOR THE YEAR ENDED 30 JUNE 2008

9. Income Tax (cont)

f) Imputation credits

Under section ME 1(2)g of the Income Tax Act 1994, New Zealand Forest Research Institute Limited is not required to maintain an imputation credit account due to it being a Crown Research Institute.

Scion Australasia Limited, a wholly owned subsidiary of New Zealand Forest Research Institute Limited, has an imputation credit account with a balance of \$591,326 at 30 June 2008 (2007: \$1,064,295).

Liro Limited, a wholly owned subsidiary of New Zealand Forest Research Institute Limited, has an imputation credit account with a balance of \$938 at 30 June 2008 (2007: \$938).

10. Bank Debt

The group had no borrowing as at 30 June 2008. At 30 June 2007 the interest rate was 8.60%. The bank debt is unsecured, but subject to financial covenants being maintained. The total facility available to the group is \$7,000,000 (2007: \$7,000,000). The bank facility maturity date is 31 October 2008.

At 30 June 2007 the carrying amount approximated the fair value.

FOR THE YEAR ENDED 30 JUNE 2008

11. Property, Plant and Equipment

GROUP	Land &	Buildings	Plant & Equipment	Furniture &	Motor Vehicles	Books & Periodicals	Capital Work in Progress	Total
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
At 1 July 2007								
Carrying amount net of								
accumulated depreciation and	1,383	15,387	5,540	144	96	169	404	23,123
impairment at 1 July 2007								
Additions	57	10	836	83	21	0	643	1,650
Transfers from CWIP	300	53	51	0	0	0	(404)	0
Disposals	0	(98)	(6)	0	(2)	0	0	(106)
Impairment provision made	0	0	(11)	0	0	0	0	(11)
Revaluations	0	0	0	0	0	75	0	75
Depreciation expensed	(36)	(399)	(1,572)	(36)	(10)	0	0	(2,053)
Carrying amount net of								
accumulated depreciation and	1,704	14,953	4,838	191	105	244	643	22,678
impairment at 30 June 2008								
At 30 June 2008								
Cost or fair value	1,833	19,007	29,650	1,577	208	244	643	53,162
Accumulated depreciation and	(129)	(4,054)	(24,812)	(1,386)	(103)	0	0	(30,484)
Net carrying amount	1,704	14,953	4,838	191	105	244	643	22,678

An impairment allowance was raised in respect of certain equipment which was deemed to no longer have value to the business because of its condition or purpose and further, did not have resale value due to its specialist nature or age. Refer also to Note 24 for information on heritage assets.

FOR THE YEAR ENDED 30 JUNE 2008

11. Property, Plant and Equipment (cont)

GROUP	Land &	Buildings	Plant &	Furniture &	Motor Vehicles	Books &	Capital Work in	Total
	\$000	\$000	Equipment \$000	\$000	\$000	\$000	\$000	\$000
At 1 July 2006								
Carrying amount net of								
accumulated depreciation and	1,499	15,202	5,791	155	96	169	200	23,112
impairment at 1 July 2006								
Additions	5	640	1,367	31	14	0	204	2,261
Disposals	(100)	0	0	0	0	0	0	(100)
Impairment provision made	0	(48)	(2)	0	0	0	0	(50)
Depreciation expensed	(21)	(407)	(1,616)	(42)	(14)	0	0	(2,100)
Carrying amount net of								
accumulated depreciation and	1,383	15,387	5,540	144	96	169	404	23,123
impairment at 30 June 2007								
At 1 July 2006								
Cost or fair value	1 571	19.040	28 315	1 / 86	225	169	200	51 006
Accumulated depreciation and	(72)	(3,838)	(22,524)	(1 331)	(120)	0	200	(27 894)
impairment	(12)	(3,030)	(22,324)	(1,551)	(123)	0	0	(27,004)
Net carrying amount	1,499	15,202	5,791	155	96	169	200	23,112
At 30 June 2007								
Cost or fair value	1,476	19,139	28,931	1,518	239	169	404	51,876
Accumulated depreciation and impairment	(93)	(3,752)	(23,391)	(1,374)	(143)	0	0	(28,753)
Net carrying amount	1,383	15,387	5,540	144	96	169	404	23,123

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11. Property, Plant and Equipment (cont)

PARENT	Land & Improvements	Buildings	Plant & Equipment	Furniture & Fittings	Motor Vehicles	Books & Periodicals	Capital Work in Progress	Total
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
At 1 July 2007								
Carrying amount net of								
accumulated depreciation and	357	15,387	5,540	144	96	169	104	21,797
impairment at 1 July 2007								
Additions	0	10	836	83	21	0	643	1,593
Transfers from CWIP	0	53	51	0	0	0	(104)	0
Disposals	0	(98)	(6)	0	(2)	0	0	(106)
Impairment provision made	0	0	(11)	0	0	0	0	(11)
Revaluations	0	0	0	0	0	75	0	75
Depreciation expensed	(16)	(399)	(1,572)	(36)	(10)	0	0	(2,033)
Carrying amount net of								
accumulated depreciation and	341	14,953	4,838	191	105	244	643	21,315
impairment at 30 June 2008								
At 30 June 2008								
Cost or fair value	441	19,007	29,650	1,577	208	244	643	51,770
Accumulated depreciation and impairment	(100)	(4,054)	(24,812)	(1,386)	(103)	0	0	(30,455)
Net carrying amount	341	14,953	4,838	191	105	244	643	21,315

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11. Property, Plant and Equipment (cont)

PARENT	Land & Improvements	Buildings	Plant & Equipment	Furniture & Fittings	Motor Vehicles	Books & Periodicals	Capital Work in Progress	Total
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
At 1 July 2006								
Carrying amount net of								
accumulated depreciation and	369	15,202	5,792	155	96	169	168	21,951
impairment at 1 July 2006								
Additions	4	640	1,303	31	14	0	0	1,992
Transfers from CWIP	0	0	64	0	0	0	(64)	0
Disposals	0	0	0	0	0	0	0	0
Impairment provision made	0	(48)	(2)	0	0	0	0	(50)
Depreciation expensed	(16)	(407)	(1,617)	(42)	(14)	0	0	(2,096)
Carrying amount net of								
accumulated depreciation and	357	15,387	5,540	144	96	169	104	21,797
impairment at 30 June 2007								
At 1 July 2006								
Cost or fair value	436	19,040	28,315	1,485	225	169	168	49,838
Accumulated depreciation and impairment	(67)	(3,838)	(22,523)	(1,330)	(129)	0	0	(27,887)
Net carrying amount	369	15,202	5,792	155	96	169	168	21,951
At 30 June 2007								
Cost or fair value	440	19,139	28,931	1,517	239	169	104	50,539
Accumulated depreciation and impairment	(83)	(3,752)	(23,391)	(1,373)	(143)	0	0	(28,742)
Net carrying amount	357	15,387	5,540	144	96	169	104	21,797

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12. Biological Assets

Biological assets consist of tree plantations. The group has 98 hectares of trees planted for experimental purposes. Trees will be harvested for sale when experimental work is completed and they have reached maturity.

	GROUP		PAR	RENT
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
Carrying amount 1 July	258	234	258	234
Gain/(loss) from changes in fair value less estimated point-of-sale costs	64	24	64	24
Carrying amount 30 June	322	258	322	258

The group has tree plantations at three locations:

- (a) 35 hectares of immature Radiata Pine is located at Puruki. The trees were planted for experimental purposes. The group has a forestry right which expires in 2067.
- (b) 20.8 hectares of immature Radiata Pine and 5.5 hectares of Mexican Cypress are located at Tikokino. The trees were planted for experimental purposes. The Mexican Cypress has zero value at 30 June 2008.
- (c) 34.5 hectares of immature Radiata Pine is located at Mamaku plus 2.2 hectares of mature Sitka Spruce. The trees were planted for experimental purposes. The group has a forestry right which terminates when the trees are harvested or in 2024, whichever is the earlier.

No agricultural assets have been harvested during the year.

		GR	GROUP		PARENT	
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000	
13.	Intangible Assets					
	Software					
	Opening balance					
	At cost	2,748	2,679	2,748	2,679	
	Less accumulated amortisation	(2,530)	(2,397)	(2,530)	(2,397)	
	Opening net carrying amount 1 July	218	282	218	282	
	Opening carrying amount 1 July	218	282	218	282	
	External additions	31	69	31	69	
	Current year amortisation	(113)	(133)	(113)	(133)	
	Closing carrying amount 30 June	136	218	136	218	
	Closing balance 30 June					
	At cost	2,785	2,748	2,785	2,748	
	Less accumulated amortisation	(2,649)	(2,530)	(2,649)	(2,530)	
	Closing net carrying amount 30 June	136	218	136	218	

FOR THE YEAR ENDED 30 JUNE 2008

		Р	ARENT
		30 June 2008	30 June 2007
		\$000	\$000
Investments in Subsidiaries			
Opening shares in subsidiaries		52	52
Acquired in current year		0	0
Disposed of in current year		0	0
Closing shares in subsidiaries		52	52
	Shares	Percentage Held	Balance Date
Subsidiaries			
Liro Limited	1,000	100%	30 June
Forest Research (Australasia) Pty Limited	100	100%	30 June
Atlas Technology Limited	100	100%	30 June
Te Papa Tipu Properties Limited	100	100%	30 June
Scion Australasia Limited	100	100%	30 June
	Investments in Subsidiaries Opening shares in subsidiaries Acquired in current year Disposed of in current year Closing shares in subsidiaries Subsidiaries Liro Limited Forest Research (Australasia) Pty Limited Atlas Technology Limited Te Papa Tipu Properties Limited Scion Australasia Limited	Investments in SubsidiariesOpening shares in subsidiariesAcquired in current yearDisposed of in current yearClosing shares in subsidiariesSubsidiariesLiro LimitedForest Research (Australasia) Pty Limited100Atlas Technology Limited100Scion Australasia Limited100Scion Australasia Limited	P30 June 2008 \$000Investments in SubsidiariesOpening shares in subsidiariesAcquired in current yearDisposed of in current yearClosing shares in subsidiariesClosing shares in subsidiariesSubsidiariesSharesPercentage HeldSubsidiariesLiro Limited1,000100%Forest Research (Australasia) Pty Limited100100%Te Papa Tipu Properties Limited100100%Scion Australasia Limited100100%Scion Australasia Limited

Liro Limited does not trade. It earns interest from a loan arising from the sale of an investment.

Forest Research (Australasia) Pty Ltd previously operated a branch in Australia providing software support services. The company has now ceased trading.

Te Papa Tipu Properties Limited was incorporated on 25 March 2004. The company owns the group's land assets.

Atlas Technology Limited does not trade.

Scion Australasia Limited, a special purpose company for the Ensis 50/50 unincorporated jointly controlled entity with CSIRO Australia, was incorporated on 14 June 2004.

During the year two non-trading subsidiaries – Scion Group Limited and SignaGen Limited were removed from the Companies Office Register.

New Zealand Forest Research Institute Limited is the registered holder of 100% of the shares of Future Forests Research Limited, however these shares are held in trust for the members and therefore it has not been treated as a subsidiary for consolidation purposes.

All subsidiaries are incorporated in New Zealand.

		GRO	PARENT		
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
15.	Investments in Associates				
	(a) Investment Details				
	Frontline Biosecurity Limited	0	0	0	0
	Beacon Pathway Limited	38	20	20	20
	Biopolymer Network Limited	78	15	15	15
		116	35	35	35

New Zealand Forest Research Institute Limited has a 25% (2007: 25%) shareholding in Frontline Biosecurity Limited. The company carries out research, development and commercialisation of biosecurity processes. The company has a balance date of 31 March.

New Zealand Forest Research Institute Limited has a 20% (2007: 20%) shareholding in Beacon Pathway Limited. The company carries out research in the area of sustainability in the built environment.

New Zealand Forest Research Institute Limited has a 33.33% (2007: 33.33%) shareholding in Biopolymer Network Limited, a company carrying on research, development and commercialisation of biopolymers.

The group's proportion of voting power held in each associate is the same as its ownership interest.

FOR THE YEAR ENDED 30 JUNE 2008

15. Investments in Associates (cont)

(a) Investment Details (cont)

All of the companies are incorporated in New Zealand.

The parent entity undertakes research projects with the Forest and Forest Products Research Organisation (FAFPRO) through five cooperatives. Expenditure incurred on research and recoveries from the cooperatives has been included in the financial statements.

	GRC	UP	PAR	ENT
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
(b) Movements in the carrying amount of the group's investments in associates				
Opening share of decrease in net assets	(10)	(10)	(10)	(10)
Current year share of increase/(decrease) in net assets of associates	81	0	0	0
Closing share of increase/(decrease) in net assets	71	(10)	(10)	(10)
Cost of investments	45	45	45	45
Carrying amount of investments to 30 June	116	35	35	35
			GRO	

2008

\$000

2007

\$000

(c) Summarised financial information

The following table illustrates summarised financial information relating to the group's associates:

Extract from the associates' balance sheets:

Current assets	2,135	2,967
Non-current assets	45	273
	2,180	3,240
Current liabilities	1,528	2,663
Non-current liabilities	205	205
	1,733	2,868
Net assets	447	372
Share of associates' net assets	116	98
Extract from the associates' income statements:		
Revenue	6.352	5.596
Net Profit	74	102

There are no known contingent liabilities relating to associates.

		GR	PAF	RENT	
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
16.	Cash and Cash Equivalents				
	Cash on hand	6	1	6	1
	Bank	332	308	307	305
	Call deposits	1,630	6	1,630	6
		1,968	315	1,943	312

Cash at bank earns interest at 6.26% (2007: 0%) on balances over \$100,000. Call deposits earn interest at the rate applicable on the day. For the purposes of the Cash Flow Statement, Cash and Cash equivalents are equivalent to cash and cash equivalents presented in the Balance Sheet.

FOR THE YEAR ENDED 30 JUNE 2008

		GROUP		PAF	RENT
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
17.	Trade and Other Receivables				
	Trade receivables	3,896	2,323	3,891	2,323
	Allowance for impairment loss	(7)	(60)	(7)	(60)
	Other debtors	54	4	54	4
	Prepayments	458	414	458	414
	Accrued revenue	1,128	391	1,128	383
	Related party receivables:				
	Associates	656	216	656	216
	Subsidiaries	0	0	2,509	2,404
	Carrying amount 30 June	6,185	3,288	8,689	5,684

(a) The carrying amount disclosed above is a reasonable approximation of fair value due to the short-term nature of the receivables.

(b) Allowance for Impairment Loss

Trade receivables are non-interest bearing and are generally on 30–60 day terms. A provision for impairment loss is recognised when there is objective evidence that a trade receivable is impaired. An allowance for impairment loss of \$1k (2007: \$65k) has been recognised for the group and \$1k (2007: \$65k) by the parent for specific debtors. The allowance is included in a separate line item in Note 3(a) Expenditure.

Movements in the allowance for impairment loss were as follows:

	GR	GROUP		ENT
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
Opening balance 1 July	60	137	60	137
Charge for the year	1	65	1	65
Amounts written off	(54)	(142)	(54)	(142)
Closing balance 30 June	7	60	7	60

At 30 June, the ageing analysis of trade receivables is as follows:

		Total \$000s	0-30 Days CNI* \$000s	0-30 Days CI* \$000s	31-60 Days CNI* \$000s	31-60 Days CI* \$000s	61-90 Days PDNI* \$000s	61-90 Days CI* \$000s	+91 Days PDNI* \$000s	+91 Days CI* \$000s
2008	Consolidated	3,896	3,571	0	206	0	92	0	20	7
	Parent	3,891	3,566	0	206	0	92	0	20	7
2007	Consolidated	2,323	2,045	8	211	2	6	2	1	48
	Parent	2,323	2,045	8	211	2	6	2	1	48

* Current not impaired (CNI)

* Past due not impaired (PDNI)

* Considered impaired (CI)

(c) For related party terms and conditions refer to Note 27.

FOR THE YEAR ENDED 30 JUNE 2008

18. Investment in Ensis

Ensis was a 50:50 jointly controlled entity with CSIRO in Australia. Scion's share was held through Scion Australasia Limited. The jointly controlled entity was terminated on 31 December 2007, however this termination was effective 30 June 2007. All assets and liabilities of the jointly controlled entity were purchased at book value by the jointly controlled entity partners. The assets and liabilities were split based on where the assets resided and who delivered the related projects. Assets included debtors, creditors, intercompany balances and cash balances.

The group's 50% share of Ensis operating profit before interest in prior periods was \$3,737k at 30 June 2007. Net surplus is comprised as follows:

	GROUP		
	30 June 2008 \$000	30 June 2007 \$000	
Operating revenue	0	57,196	
Direct costs	0	49,722	
Profit	0	7,474	
Scion Australasia's 50% share	0	3,737	
Scion Australasia's 50% share of interest revenue	0	62	
	0	3,799	
Current assets (50% share)	0	4,002	
Current liabilities (50% share)	0	1,774	

The investment in Ensis was recorded as a current asset as the joint venture agreement required all profits to be distributed in the year following that in which they are earned.

	GRO	GROUP		
	30 June 2008 \$000	30 June 2007 \$000		
Opening share of profit	2,228	2,549		
Current year share of profit	0	3,799		
Distributions received	(2,228)	(4,120)		
Closing share of profit	0	2,228		

		GRO	GROUP		ENT
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
19.	Inventories				
	Consumable stores (at cost)	94	99	94	99
	Nursery stock	136	0	136	0
	Closing carrying amount	230	99	230	99

Consumable stores recognised as an expense for the year are \$108k (2007: \$95k) for the group and \$108k (2007: \$95k) for the parent company. The expense has been included in the "other" line item in Note 3(a). There were no consumable inventory write-downs in the period. During the year the parent acquired nursery stock valued at \$98k from the Ensis jointly controlled entity on its termination. \$98k was expensed in 2008 and is included in the consumables line in Note 3(a).
FOR THE YEAR ENDED 30 JUNE 2008

		GROUP		PARENT	
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
20.	Loan to Pocket Solutions Limited				
	Opening balance	180	295	135	241
	Repayments	(180)	(115)	(135)	(106)
	Closing balance	0	180	0	135
	Term portion of loan	0	0	0	0
	Current portion of loan	0	180	0	135
	Total	0	180	0	135

The loan was secured by a Deed of Mortgage over the shares of IFR Technologies Limited (68.8%) and all the shares of the purchasing company.

21. Financial Instruments

Financial Instruments include: Loans and Receivables Trade Debtors Other Debtors Loan to Pocket Solutions Intercompany Receivables

Other Financial Liabilities Trade and Other Payables Term Loan

All the above financial instruments are measured at amortised cost.

Liquidity Risk

The group's objective is to maintain a balance between continuity of funding and flexibility through the use of a bank debt facility and a bank overdraft. Management monitor, on a monthly basis, our free capacity within the debt facility and our forecasted ability to pay for that debt.

The group's debt facility is with the National Bank of New Zealand Limited. As at 30 June 2008 no borrowings were drawn down (2007: \$1,370,000 at 8.60%).

Trade payables are non-interest bearing and are normally settled within 60 days. The company and group liabilities all have contractual maturities of less than 120 days.

FOR THE YEAR ENDED 30 JUNE 2008

21. Financial Instruments (cont)

Credit Risk

Financial instruments that potentially subject the group to credit risk consist of bank balances and accounts receivable. The group generally does not require any security.

Significant new non-Government customers are credit checked. Trade receivable ageing is reviewed monthly and all aged trade receivables are followed up. Credit stops are used for non-paying customers.

Maximum exposures to credit risk as at balance date are:

	GROUP		PARENT	
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
Current account	332	308	307	305
Call deposits	1,630	6	1,630	6
Receivables	5,072	2,658	5,067	2,650
Intercompany receivable	0	0	2,509	2,404
Associated trade receivables and advances	732	292	732	292
Loans	0	180	0	135

The above maximum exposures are net of any provision for losses on these financial instruments.

Market Risk

Market risk on financial instruments comprise the following three types of risk:

Interest Rate Risk

The group's exposure to market interest rates relates primarily to the group's long-term debt and cash deposits. Debt has been managed to low levels over the reported period with resulting interest rate risk being minimal.

Currency Risk

With the winding up of the unincorporated jointly controlled entity, Ensis, in the year ended 30 June 2008, only small balances are now held in currencies other than New Zealand dollars, with these materially all in debtors. Collection on all these debtors is expected within 60 days resulting in minimal foreign exchange risk.

As at 30 June 2007 Scion group had a 50% interest in the unincorporated jointly controlled entity, Ensis. Ensis was denominated in Australian dollars and included approximately 60% of the Scion group's business. As a result Scion group had the potential to be significantly affected by movements in the AU\$/NZ\$ exchange rate.

No active programme of hedging this exposure was undertaken. Management aimed to minimise the foreign exchange risk from Ensis by actively managing the Australian dollar balance sheet to keep it as small as possible. As at 30 June 2007 the net exposure in Australian dollars was NZ\$2,228k. Hence a 10% strengthening/weakening in the AU\$/NZ\$ exchange rate would have had a NZ\$223k negative/positive impact on group profits and equity.

Other Price Risk

Other price risk primarily relates to the market price of financial instruments. As Scion does not trade in financial instruments there is no perceived risk in this category.

FOR THE YEAR ENDED 30 JUNE 2008

		GROUP		PAR	PARENT	
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000	
22.	Reconciliation of operating surplus after taxation with cash flows from operating activities					
	Reported surplus after taxation	1.113	(450)	873	(4.334)	
	Add (less) non cash items:		/			
	Depreciation	2,053	2,100	2,033	2,096	
	Amortisation	113	133	113	132	
	Impairment provision	(37)	42	(37)	42	
	Doubtful debts	27	70	27	70	
	Movement in deferred tax benefit	21	(68)	15	(82)	
	Revaluation of biological assets	(64)	(24)	(64)	(24)	
	Unrealised loss on foreign currency account	0	0	0	0	
		2,113	2,253	2,087	2,234	
	Add (less) items classified as investing activity:					
	(Gain) loss on disposal of property, plant and equipment	146	4	146	4	
	Share in associate company profit	(81)	0	0	0	
	Capital related items in creditors	(305)	(128)	(350)	(71)	
		(240)	(124)	(204)	(67)	
	Movements in working capital items:					
	(Increase)/Decrease in debtors and prepayments	(2,804)	(514)	(2,911)	565	
	(Increase)/Decrease in inventories	(130)	1	(130)	1	
	(Increase)/Decrease in Ensis profit receivable	2,228	321	0	0	
	Increase/(Decrease) in creditors and accruals	1,502	1,734	4,525	4,432	
	Increase/(Decrease) in taxation payable	536	(4)	0	455	
	Increase/(Decrease) in intercompany debtors	0	0	105	(1,071)	
	(Increase)/Decrease in intercompany creditors	0	0	(2,878)	(3,301)	
		1,332	1,538	(1,289)	1,081	
	Net cash flows from operating activities	4,318	3,217	1,467	(1,086)	

23. Contingencies

Treaty of Waitangi Issues

Two verified land claims affecting the group currently exist:

(i) Ngati Whakaue - covering the whole Rotorua Campus

(ii) Ngati Wahiao - covering the southern end of the Rotorua Campus

No reliable estimates can be made of the impact of these contingencies.

24. Heritage Assets

The company has identified its herbarium and germplasm collections as heritage assets. In accordance with NZ IAS 16, Property, Plant and Equipment, these assets are held under the cost model. The Directors believe that there is no practical basis upon which to reliably value these collections.

FOR THE YEAR ENDED 30 JUNE 2008

25. Commitments

Operating Lease Commitments – Group as Lessee:

The group has entered into commercial leases on certain motor vehicles and items of office equipment. The leases have lives of three or four years with renewal options included in the motor vehicle leases only. There are no restrictions placed on the lessee by entering into these leases.

Future minimum rentals payable under non-cancellable operating leases as at 30 June are as follows:

	GROUP		PARENT	
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
Lease commitments under non-cancellable operating leases:				
Within one year	390	410	390	410
One to five years	324	228	324	228
Greater than five years	0	0	0	0
	714	638	714	638

Operating Lease Commitments – Group as Lessor:

The group has entered into commercial property leases on its surplus corporate buildings and land. These noncancellable leases have remaining terms of up to four years on buildings and 30 years on land leases. All leases include a clause to enable upward revision of the rental charge on an annual basis according to prevailing market conditions.

Future minimum rentals receivable under non-cancellable operating leases as at 30 June are as follows:

	GROUP		PARENT	
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
Lease commitments under non-cancellable operating leases:				
Within one year	309	320	245	286
One to five years	579	664	325	529
Greater than five years	936	567	20	61
	1,824	1,551	590	876

	GROUP		PARENT	
	ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
Capital Commitments: Capital expenditure contracted for at balance date but not provided for	504	222	504	186

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26. Transactions with Related Parties

During the year New Zealand Forest Research Institute Limited entered into the following transactions:

	PAI	RENT
	30 June 2008 \$000	30 June 2007 \$000
Subsidiary Companies		
Receipt of loan payment on behalf of Liro	(46)	(11)
 Intercompany account 	(1,398)	(1,352)
Forest Research (Australasia) Pty Ltd Liabilities paid on behalf	0	7
Amount (payable)/receivable at balance date	Ū	
 Intercompany account 	1,353	1,353
Scion Australasia Ltd		
I ax payment/(receipts) made on behalf	(536)	451 160
Other liabilities paid on behalf	0	8
Ensis distributions received on behalf	(2,296)	(4,222)
Amount (payable)/receivable at balance date	(5.000)	(0,000)
 Intercompany account 	(5,668)	(3,603)
Te Papa Tipu Properties Ltd		
Charge for services	80	0
Receipt of rent Beid on bobolf	(354)	(309)
Transfer of improvements		(100)
Amount (payable)/receivable at balance date	-	()
 Intercompany account 	1,145	1,051
Associates		
Beacon Pathway Ltd	(200)	(200)
Supplied goods and services	(200) 75	(200)
Receivable/(Payable) at balance date	8	27
Outstanding unsecured shareholders advance from New Zealand Forest	76	76
Research Institute Limited to Beacon Pathway Ltd		
Biopolymer Network Ltd	4 544	4 200
Supplied goods and services	1,511	1,390
Receivable/(Payable) at balance date	165	169
Frontline Biosecurity Ltd		
Subcontract Government funded contracts	0	0
Supplied goods and services	0	0
Receivable/(Payable) at balance date	U	0

FOR THE YEAR ENDED 30 JUNE 2008

26. Transactions with Related Parties (cont)

	PAR	ENT
	30 June 2008 \$000	30 June 2007 \$000
Other Related Parties		
Radiata Pine Breeding Co Ltd		
Contribution to research outputs	(118)	0
Supplied goods and services	433	9
Goods and services received	2	0
Receivable/(Payable) at balance date	160	0
WQI Ltd		
Supplied goods and services	469	2
Receivable/(Payable) at balance date	66	0
Government Entities and Agencies		
Supplied services	28,250	11,444
Services received	2,733	864
Receivable/(Payable) at balance date	1,770	1,189

Ensis

On 1 July 2004, New Zealand Forest Research Institute Limited transferred four business units, which approximated one third of its operations, into Ensis, a 50/50 unincorporated jointly controlled entity with CSIRO, Australia's national science agency. On 1 July 2005 a further one third of its operations were transferred into the jointly controlled entity. The New Zealand part of the jointly controlled entity operations was transferred back into New Zealand Forest Research Institute effective 1 July 2007 after formal termination of the jointly controlled entity occurred on 31 December 2007.

Ensis was funded \$0 (2007: \$15,223k) by New Zealand Forest Research Institute Limited to perform an equivalent amount of New Zealand Forest Research Institute Limited's Government contracts. Certain staff were seconded by New Zealand Forest Research Institute Limited into the jointly controlled entity. New Zealand Forest Research Institute Limited charged \$0 (2007: \$11,167k) for those personnel. During the year New Zealand Forest Research Institute Limited provided other goods and services to Ensis totalling \$0 (2007: \$314k). During the year New Zealand Forest Research Institute Limited Forest Research Institute Limited provided other goods and services to Ensis totalling \$0 (2007: \$314k). During the year New Zealand Forest Research Institute Limited provided Forest Research Institute Limited provided other goods and services from Ensis totalling \$0 (2007: \$409k). At 30 June 2008 New Zealand Forest Research Institute Limited owed Ensis \$0 (2007: \$860k).

Other

During the year the group provided services to FITEC totalling \$61k (2007: \$48k), New Zealand Forestry Limited \$8k (2007: \$4k), the New Zealand Forest Owners Association Inc \$539k (2007: \$0), Pentarch Forest Products Limited \$2k (2007: \$0) and Tane Tree Trust \$4k (2007: \$0).

The group also received services totalling \$336k (2007: \$11k) from the New Zealand Forest Owners Association Incorporated.

Mr Peter Berg, a director of New Zealand Forest Research Institute Limited, is a director of the aforementioned entities. The services were provided and/or received on normal trading terms.

Terms and conditions of transactions with related parties

Sales to and purchases from related parties are made in arm's length transactions both at normal market prices and on normal commercial terms. Outstanding balances at year-end are unsecured and interest free. No guarantees are provided or received for any related party receivables or payables.

No related party debts were written off during the year (2007: Nil) and no impairment allowance has been raised for any of these debts.

FOR THE YEAR ENDED 30 JUNE 2008

		GRO	GROUP		ENT
		ACTUAL 2008 \$000	ACTUAL 2007 \$000	ACTUAL 2008 \$000	ACTUAL 2007 \$000
27.	Key Management Personnel				
	Short-term employee benefits	1,490	536	1,482	523
	Long-term employee benefits	0	0	0	0
	Termination employee benefits	13	0	13	0
		1,503	536	1,495	523

28. Impact of Adoption of NZ IFRS

The impacts of adopting NZ IFRS on the total equity and profit after tax as reported under previous New Zealand Generally Accepted Accounting Practice (NZ GAAP) are illustrated below.

(i) Reconciliation of Total Equity as Presented under Previous NZ GAAP to that under NZ IFRS

	CONSOLI 30 June 2007 \$000	DATED 1 July 2006 \$000	PARE 30 June 2007 \$000	NT 1 July 2006 \$000
Total equity under previous NZ GAAP	22,560	23,108	16,948	21,376
Adjustments to retained earnings (net of tax)				
Changes in valuation of forests assets (a)	94	70	94	70
Write off of intangible assets (b)	(11)	(11)	(11)	(11)
Depreciation adjustment on intangible asset written off	6	0	6	0
additional temporary deferred tax timing differences under IFRS (c)	(77)	(80)	(77)	(82)
Total Equity under NZ IFRS	22,572	23,087	16,960	21,353

(a) Forestry assets are required to be revalued annually under NZ IAS 41 (Agriculture). Annual valuations were not done under NZ GAAP. This has resulted in an increase in total equity.

(b) An intangible asset was written off as it did not meet the recognition criteria under NZ IAS 38 (Intangible Assets). This resulted in a decrease in total equity.

(c) Changes in deferred tax under NZ IAS 12 (Income Tax) have decreased deferred tax asset and decreased retained earnings.

(ii) Reconciliation of Profit After Tax as Presented under Previous NZ GAAP to that under NZ IFRS

	CONSOLIDATED 30 June 2007 \$000	PARENT 30 June 2007 \$000
Prior year profit after tax as previously reported	(485)	(4,369)
NZ GAAP to NZ IFRS transition adjustments:		
Revaluation of forests assets (a)	24	24
Taxation expense		
Deferred taxation expense	5	5
Depreciation reversal	6	6
Prior year profit after tax under NZ IFRS	(450)	(4,334)

(a) Forestry assets are required to be revalued annually under NZ IAS 41 (Agriculture). Annual valuations were not done under NZ GAAP.

There was no impact on cash flows on the transition to IFRS.

29. Segment Information

The group operates principally in New Zealand providing scientific research and technology to Government and commercial clients.

Board of Directors

Dr Russ Ballard - Chairman	
Temuera Hall - Deputy Chairman	(resigned 30 June 2008)
Peter Berg	
Margaret Emerre	(resigned 30 June 2008)
Kathy Garden	
Bronwyn Monopoli	
John Palmer	
Barbara Forbes (Company Secretary)	
EXECUTIVE MANAGEMENT	
Dr Tom Richardson – Chief Executive Officer	
Dr Russell Burton – Group Manager: Incubators and Investments	
John Gifford – Group Manager: Sustainable Consumer Products	(resigned 11 January 2008)
Alyson Howell – Acting Group Manager: Human Resources	
Jacky James – Group Manager: Marketing and Communications	(resigned 07 May 2008)
Lionel Jeyaraj – Chief Financial Officer and Group Manager Corporate	Services
Dr Elspeth MacRae – Group Manager: Biomaterials Research	
Tupara Morrison – Group Manager: Maori Strategy	

AUDITORS

Simon Brotherton Ernst & Young, Auckland, on behalf of the Auditor-General

BANKERS

National Bank of New Zealand

SOLICITORS

Bell Gully, Auckland

Registered Office

Te Papa Tipu Innovation Park 49 Sala Street, Private Bag 3020 Rotorua 3010, New Zealand

Contact Details

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Scion - Christchurch

Telephone:	+64 3 364 2949
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Scion – Wellington

Commercial Businesses

ATLAS Technology

Telephone:	+64 7 343 5624
New Zealand Freephone:	0800 786 285
Facsimile:	+64 7 343 5679
Website:	www.atlastech.co.nz

COHFE (Centre for Human Factors and Ergonomics)

Telephone:	+64 7 343 5899
Facsimile:	+64 7 348 0952
Website:	www.cohfe.co.nz

Veritec

Telephone:	+64 7 343 5899
Facsimile:	+64 7 348 0952
Website:	www.veritec.co.nz