



**Lincoln
University**
Te Whare Wānaka o Aoraki

Investment Plan 2008 - 2010

Please note that due to the commercial sensitivity of some of the information in the Investment Plan, some information has been withheld under the provisions of the Official Information Act.

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Executive Summary

- Lincoln University is central to provision of education and research to ensure that New Zealand optimises contributions to economic transformation through key export sectors (e.g. Agriculture, tourism and education), and makes full use of its comparative advantages in the responsible utilisation of its natural and biological resources.
- The focus of Lincoln University is on integration and application of knowledge from science, commerce, environmental and social research to achieve a contribution to the economic transformation of key export industries important to New Zealand.
- The University's record of engagement with the primary sector of New Zealand is outlined in the AERU report, *Lincoln University's Distinctive Contribution to the Economic Transformation of New Zealand*, and its current vision as a specialist research-led university sets the basis for ongoing contribution.
- The strong research performance of Lincoln University will continue to be central to the achievement of high productivity growth through innovation and an economic transformation that values environmental sustainability as a key cornerstone of future prosperity.
- Through building, strengthening and integrating its core competencies in commerce, physical, biological and social sciences, Lincoln University's future will be marked by growth and enterprise in achieving sustainable and productive systems through collaborative ventures with research and education organisations and specific industries.
- The future contribution of Lincoln University will rely heavily on areas comprising the University's Distinctive Contribution, including the disciplinary mix, the emphasis on quality outcomes, the focus on research and postgraduate education, the strong engagement with relevant industries and recognising that the future for the University and New Zealand is linked to a significant understanding and involvement with international partners and global best practice.
- The ongoing leadership position of Lincoln University will be enhanced by planned growth across most current activities but with emphasis on the distinctive disciplines and programmes, rather than acquisition of new disciplinary areas.
- Higher level strategies and planned activities for 2008 - 2010 to meet TES/STEP shifts and priorities and institutional objectives are identified for the following areas: management and stewardship; research excellence; teaching and learning excellence; excellence in community, industry and partner linkages; student experience and support; Māori and Pasifika aspirations; and, internationalisation.
- The overall priority for Lincoln University for the coming triennium is to retain, and continue to build, capacity and capabilities to continue to make significant contributions in areas of national importance. A major priority for Lincoln University is to achieve improved financial performance. Precedence will be given to: (1) increasing and managing student enrolments; (2) continuing to enhance Lincoln University's research output; and, (3) reducing delivery and other costs, whilst maintaining academic quality. Priority for Focus funds will support these organisational outcomes, which contribute directly to the sustainable future of Lincoln University.

1. PLAN CONTEXT

We face increasing demands to understand and protect New Zealand's unique environment better. We will continue to build our comparative advantage on our natural and biological resources. There are a number of key challenges to which the tertiary education system will need to contribute through teaching and learning, research, knowledge transfer and innovation. These include adding value to our primary production and managing increased demand pressure on natural resources ranging from water, land, forests and minerals.¹

Lincoln University: A Proud Tradition

Lincoln University was founded in 1878 as a School of Agriculture with its first Principal, William Ivey, appointed on 28 March that year. This makes Lincoln the third oldest institution in New Zealand's tertiary education system, after the University of Otago (1869) and the University of Canterbury (1873). The School became a full member of the University of New Zealand in 1896, when it was renamed as Canterbury Agricultural College. When the University of New Zealand devolved into separate universities, Canterbury Agricultural College became Lincoln College on 1 January 1962, issuing degrees through the University of Canterbury but governed by its own Council. This arrangement continued until 1989. In 1990, Lincoln College became Lincoln University, an autonomous university specialising in research and education in agriculture and the physical and biological sciences, complemented by the integration of international commerce, environmental management and social sciences.

Today Lincoln University has four academic divisions (Appendix 1). The Agriculture and Life Sciences Division is the largest and comprises four academic groups: agriculture; cell biology; food and wine; and soil and physical sciences. There are five research centres in the Division: the *Centre for Soil and Environmental Quality*, the *Centre for Viticulture and Oenology*, the *Centre for Advanced Computational Solutions*, the *Centre for International Development* and the recently established *Centre for Sustainable Agricultural Production*. The Bio-Protection and Ecology Division is the smallest Division, but hosts one of only seven centres of research excellence funded by the Tertiary Education Commission – the *National Centre for Advanced Bio-Protection Technologies*. The Commerce Division has academic groups covering all the main business disciplines: accounting; business management and law; economics; finance; marketing and property studies. The *Agribusiness and Economics Research Unit* in the Division is the second oldest social science research centre in New Zealand. The Environment, Society and Design Division provides expertise in environmental management, computing, resource planning, transport studies, landscape architecture, Māori and indigenous planning and development, parks and recreation management, social sciences, tourism and exercise science. Two research centres are located within the Division: the *Isaac Centre for Nature Conservation*; and the *Tourism and Recreation Research and Education Centre*.

Outside of, but closely associated with its academic divisions, Lincoln University has a number of other groups that contribute to its research and teaching mission. The Foundation Studies and English Language Centre offers bridging courses to degree programmes for students without a university entrance qualification. The Executive Development Programme (EDP) offers high-level postgraduate qualifications designed for managers in the workplace. The Professional Development Group organises and manages conferences, field days and short courses. Lincoln Hospitality Ltd. offers accommodation and catering services to students and staff and external groups.

The University founded and owns Lincoln Ventures Ltd., a science and technology company offering specialist services under four trade names: Lincoln Technology offers research and consultancy services, predominantly in sensor development, including biological sensors and electronic sensors; Lincoln Environmental is one of New Zealand's leading providers of research for management of groundwater quality and quantity; Supply Chain Systems provides practical supply chain system solutions in the perishable products sector; and AEI Software supplies computer-aided design technology to the international irrigation market.

The University operates seven demonstration or research farms: the Lincoln University Dairy Farm (operating through the South Island Dairying Development Centre); the arable and cropping farm (including the 56 hectare Kowhai Farm, Heinz Wattie's organic farm) which is currently leased to Crop & Food Research Ltd.; the Mt Grand high country run; the Field Service Centre; Argyle; and Silverwood. The University also operates a 355 hectare light land research farm, Ashley Dene, predominantly devoted to intensive pastoral systems and sheep research programmes, and hosts the Biological Husbandry Unit, which features a diverse range of established model organic agricultural and horticultural systems used for research, demonstration and education.

¹*Developing the Second Tertiary Education Strategy*. Ministry of Education, 2006, page 30.

Lincoln University's Vision and Mission

Lincoln University is central to the achievement of the education and research provision required to ensure economic transformation contributions from key export sectors including agriculture, tourism and education, and for New Zealand to make full use of its comparative advantages in the utilisation of natural and biological resources. The focus of Lincoln University is on integration and the application of knowledge from science, commerce, environmental and social research. The strong research performance of Lincoln University will continue to be central to the achievement of high productivity growth through innovation and economic transformation that values environmental sustainability as a key cornerstone of future prosperity.

The mission of Lincoln University is to provide national and international leadership in research and teaching that will contribute to ensuring a sustainable environmental, social and economic future for New Zealand (Lincoln University *Charter*, November 2003, p. 2). Consistent with this mission, the University's strategic direction is framed by accepting 'responsibilities for the creation and application of knowledge in areas that are vital to the sustainable development of New Zealand' (Lincoln University *Profile 2007-2009*, October 2006, p. 3).

Lincoln University will respond to student needs and continue to provide a student-focussed educational experience that contributes to the fostering of knowledge and skills to provide the leadership necessary for the on-going social and economic transformation of New Zealand. Lincoln University will provide a distinctive learning experience that combines academic excellence with an innovative and challenging learning environment that is focused on enabling students to achieve their potential.

Lincoln University will affirm its distinctive focus by providing the nation with leadership in research and teaching that contributes to ensuring a sustainable environmental, social and economic future for New Zealand. Through building, strengthening and integrating its core competencies in commerce, physical, biological and social sciences. Lincoln University's future will be marked by growth and enterprise in achieving sustainable and productive systems through collaborative ventures with research and education organisations and specific industries. The achievement of successful outcomes will be measured by the performance and contribution of graduates, the recognition of research of value to growth of the New Zealand economy and the generation of novel disciplinary outcomes by non-traditional combinations of resources and skills. Academic programmes will be designed to continue to meet the requirements of a wider base of prospective students and their future employers. Research will lead the academic standing of Lincoln University, support high quality educational outcomes, be a significant factor in the contribution to economic transformation, and enhance international standing.

The future shape of Lincoln University will rely heavily on areas supporting the University's Distinctive Contribution, including the disciplinary mix, the emphasis on quality outcomes, the focus on research and postgraduate education, the strong engagement with relevant industries and recognising that the future for the University and New Zealand is linked to a significant understanding and involvement with international partners and global best practice. The ongoing leadership position of Lincoln University will be enhanced by planned growth across most current activities but with emphasis on the distinctive disciplines and programmes, rather than acquisition of new disciplinary areas.

Lincoln University's Distinctive Contribution

Since its founding, Lincoln University has established a proud record of distinctive contributions to New Zealand's ongoing economic transformation, particularly through its provision of research, education and leadership that support growth and development in the land-based sectors of Canterbury, the South Island and nationally.

Many enterprises in the land-based sectors have diversified their activities to meet changing market and environmental pressures at home and abroad. Lincoln University has reflected this trend with substantial investment in its own capital and staff to provide research and education expertise in international commerce, environmental management and relevant social sciences that complement its world-class capabilities in agriculture and the land-based sciences. These investments have developed Lincoln University into a specialised research-led university with distinctive strengths in the academic disciplines necessary to meet the challenges faced by New Zealand in adding value to its primary production and managing pressures on the country's natural environment. The historical and contemporary role of Lincoln University has been in educating land and resource managers. A good deal of New Zealand's competitive advantage is in the level of education of managers in the primary and resource management sectors.

Lincoln University has a distinguished history of engagement with industry leaders and policy advisors to address vital issues of the day. This has created Lincoln University's distinctive multidisciplinary research and learning culture, which provides a unique and vital contribution to New Zealand's tertiary education system.

The research activities of University staff are focussed on producing relevant new knowledge to solve real world problems, and Lincoln University graduates are known for having practical skills and enthusiasm for making a difference in their work. These traits mean that Lincoln University's staff and graduates are often found exercising national leadership in their field.

Contributing to National Priorities and Economic Transformation

So far, the small size of New Zealand population and the relatively large land area and water resources at our disposal have allowed us to have our environmental cake and eat it too. In effect, the environment...has partially subsidised our economic development by providing a succession of quarried resources and plentiful energy resources to use, and abundant land, water and fresh air to absorb our wastes. However, those subsidies cannot be sustained indefinitely and will eventually be reduced or withdrawn if we cannot manage our activities sustainably...Given that our most important export-oriented industries (e.g. agriculture, forestry, fisheries and tourism) rely heavily on the resources of land, water, and air, our stewardship of those resources will be critical to our ongoing economic development.²

As cited above, New Zealand's comparative advantage continues to be built on its natural and biological resources. Agribusiness and forestry account for 52 percent of the country's total land area, and contribute an estimated 65 percent of merchandise exports.³ Because these and other environment-based core sectors (including tourism) are so large, gains in productivity create major economic benefits, particularly when those gains are captured by producers, processors and service providers.⁴

New Zealand's economic goal since 2002 has been to return to the top half of the OECD's ranking of per capita gross domestic product. To achieve this, the Economic Transformation Agenda focuses on five integrated themes, including growing globally competitive firms, developing innovative and productive workplaces, and ensuring environmental sustainability. The quest for sustainability has new urgency because of the scale of environmental challenges faced by the world, including the consequences of global climate change.⁵

With its balanced portfolio of relevant interdisciplinary research and teaching programmes, Lincoln University is uniquely placed within New Zealand's tertiary education system to advance these national priorities. Lincoln University's demonstrated ability to create, integrate and apply new knowledge from the land-based sciences, commerce and the social sciences places it firmly at the centre of New Zealand's development path, making direct contributions to the core sectors driving economic transformation. Its graduates bring advanced skills, commitment, and leadership qualities into business enterprises and public policy units. This is detailed in the Agribusiness and Economics Research Unit's paper on *Lincoln University's Distinctive Contribution to the Economic Transformation of New Zealand*, which is an on-going research project (See Appendix 1 for a summary of key findings).

Through engagement with government, business, iwi and community groups in its areas of its Distinctive Contribution, Lincoln University enhances New Zealand's capacity to respond effectively and creatively to change and the opportunities it brings, supporting the growth of an inclusive, innovative economy for the benefit of all New Zealanders.

As Government discussions with the sector have noted, "[New Zealand] will continue to build its comparative advantage on its natural and biological resources".⁶ Deriving lasting prosperity from those resources requires an innovative and integrated approach that recognises the social, economic, environmental and cultural implications of actions. For example, design creativity and innovation has been identified by government as critical to New Zealand's economic transformation. Lincoln University has the leading programme in environmental design through the University's delivery in Landscape Architecture.

The sustainable management of the land resource – whether it is wilderness, rural or urban - is critical to community health and wellbeing across the country. Lincoln University has been, and continues to be, a leader in natural area and park management, and the University has associated strengths in sport and recreation. The University also offers excellence in design and planning across the rural – urban continuum. These research and education programmes impact directly upon the social and physical health and wellbeing of all New Zealanders.

² Taylor, R. & Smith, I. (1997). *The State of New Zealand's Environment*, Chapter 3, p. 45.

³ *Contribution of the Land-based Primary Industries to New Zealand's Economic Growth*, Ministry of Agriculture and Forestry Report prepared for the Growth and Innovation Advisory Board, October 2003, page 2.

⁴ Webb, C. J. and C. Grant (2003) *Economic Transformation: An Implementation Framework*. Tertiary Education Commission, p. 7.

⁵ Rt. Hon. Helen Clark "Prime Minister's Speech to Opening of Parliament 2007".

⁶ "Developing the Second Tertiary Education Strategy". Ministry of Education. Page 30.

In the 20th century, much of the focus of economic policy was on achieving greater productivity in the production of New Zealand's land-based exports – increasing the quantity of output in the primary sector. Lincoln University made, and continues to make, many vital contributions to this goal. As the focus of economic policy has shifted toward concern for the environment, preserving biosecurity, developing high value-added tourism, and meeting market access requirements in export markets, Lincoln University has accepted responsibility for the applied research necessary for these areas to continue supporting New Zealand's economic transformation. The University is developing new approaches and products to reduce environmental impacts of farming, new methods for identifying potential pests and keeping them out of the country, new tools for breeding superior animals, novel biocontrol technologies to improve the biodiversity of productive lands, new toolkits for devising regional tourism strategies, new analyses to meet consumers' demand for information about the products they buy, and much more. This work is underpinning vital transformation of New Zealand's core land-based sectors as well as creating economic opportunities for niche products and the emergence of new knowledge-led industries.

Excellence in Research and Technology Transfer

There is no doubt that university technology transfer and commercialization are impacting local, state, and national economies...Excellent university technology transfer is built on excellent research. This research provides the pipeline for commercialization of research results...by leveraging R & D and entrepreneurial resources in one's university, community and state, it [creates] new opportunities for both academic excellence and economic growth.⁷

Economic transformation requires the creation and application of new knowledge. Universities, as institutions dedicated to research and learning, are key producers of new knowledge. Lincoln University is distinctive because it not only produces new knowledge, but also focuses on applying it and creating value out of it.

The University's close relationships with industry and community interests produce effective direct transmission of new knowledge from the University's world-class research teams to commercial applications and policy advice. More than a century of close partnership between Lincoln University researchers and New Zealand's land-based industries has resulted in the University providing national leadership in addressing important issues in primary sector development and environmental management. Recent investments on a national scale in biotechnology, bioprotection and biosecurity, dairy production, environmental science, landscape architecture, and viticulture and oenology, have reinforced the University's leadership in these sectors. The University is actively exploring co-funding a number of professorial chair positions based on the successful model (with MAF) to establish a new Professor of Plant Biosecurity position in 2006. Examples include quantitative genetics, water and irrigation, marketing and logistics and food science. Research within its Commerce Division is also strongly linked to the practical needs of New Zealand enterprises, focused on strong expertise in international business, applied business skills and public policy.

In the Performance-Based Research Fund 2006 Assessment, Lincoln University ranked first on its three-year weighted measure for external research funds per full-time equivalent PBRF-eligible staff member. The Lincoln University figure was more than 10 per cent higher than the second highest, and was more than 75 per cent higher than the average figure for all eight New Zealand universities⁸. Lincoln University has maintained undeniable strengths in creating new knowledge in the land-based sciences, but this is not the limit of its open science contributions. In the areas of business and economics and social sciences and other cultural/social studies, Lincoln University is ranked a very credible third out of the eight New Zealand universities⁹.

The outcome from a carefully planned and managed approach to the latest FRST strategic investment funds also produced outstanding results for Lincoln University. In the 2006/2007 investment round, bids led by Lincoln University generated \$15,500,000 (incl. GST) in contract income. Notably, all Lincoln-led bids were successful. An additional \$4,700,000 was secured in sub-contracts to programmes led by other organisations, giving a total of \$20,200,000 in contract income. All except one \$3,000,000 sub-contract are new FRST contracts, and not replacing existing FRST contracts. In summary, this translates to a research income per annum of \$14,000,000 - \$15,400,000.

The growth in research activity is closely linked to the current and projected growth in postgraduate research enrolments across all disciplines. The University is targeting postgraduate recruitment to match current disciplinary capabilities and to ensure that capacity limits are not exceeded.

⁷ Innovative Associates Inc. (2005). *Accelerating Economic Development through University Technology Transfer*, pp. ii – v.

⁸ Smart and Weusten (2007). (ex) *Citing research: A bibliometric analysis of New Zealand University Research 1981 – 2005*. Wellington: Ministry of Education.

⁹ Derived using the Thomson Scientific database to calculate the number of citations for each university between 2001 and 2005, divided by the number of PBRF-eligible staff at each university in the 2006 Quality Assessment. The analysis was performed for broad research areas, comparable to ten of the PBRF panels (Smart, 2007)

Lincoln University has an advanced suite of Intellectual Property (IP) policies and procedures. The policy clarifies ownership of all IP created on campus, including that of students.

The externally peer-reviewed *National Centre for Advanced Bio-Protection Technologies* is hosted by Lincoln University. It is the only Centre of Research Excellence funded by the Tertiary Education Commission in the South Island. Lincoln University has eight other research centres in its main areas of expertise. These are summarised below, with further details in Appendix 2. The *Centre for Soil and Environmental Quality (CSEQ)* offers a research portfolio that addresses industry needs and government research priorities. A notable success has been the development of the commercial product, eco-n™ marketed with Ravensdown Fertiliser Co-operative Ltd.. The *Centre for Viticulture and Oenology (V&O)* acts as a focus for interdisciplinary research on wine, from soil to glass, at Lincoln University. The *Centre for Advanced Computational Solutions (C-fACS)* was established in 1999 to conduct research in computational and mathematical sciences relevant to environmental protection, biological sciences and engineering (biotechnology), and precision agriculture.

Other parts of Lincoln University offer particular resources for national policy advisors or industry groups. The *Agribusiness and Economics Research Unit (AERU)* operates from Lincoln University providing research expertise for a wide range of organisations. AERU research focuses on economics, resource, environmental, and social issues. The *Tourism, Recreation Research and Education Centre (TRREC)* is an initiative at Lincoln University to facilitate interdisciplinary tourism, recreation and leisure research and education opportunities, particularly those that focus on public resource issues including the public sector interface with the tourism and recreation industries. The *Isaac Centre for Nature Conservation* is the umbrella body for all nature conservation research at the University. Its mission statement, based on Article 1 of the 1992 *Convention on Biological Diversity*, is to promote the conservation of biological diversity and other elements of nature, its sustainable use, and the fair and equitable sharing of the benefits arising out of its utilisation through education, training and advocacy.

The *Sustainable Agricultural Production Centre (SAPC)* has been recently established to provide scientific research on sustainable agricultural production for the benefit of New Zealanders. The recently established *Centre for International Development (CID)* will focus on consultancy in developing countries. This consulting activity will utilise leading-edge approaches, processes and techniques that makes use of Lincoln University's acknowledged expertise in agriculture, tourism, natural resources and the environment.

Lincoln University also has a long-standing pedagogical and research record in the natural resource management field. In 1973, in partnership with the University of Canterbury, the Joint Centre for Environmental Sciences was established. The Joint Centre evolved to become the nationally recognised *Centre for Resource Management (CRM)* in 1982. The MSc (Resource Management) degree, a flagship qualification, was classified as a "course of national importance"¹⁰. Centre of Resource Management academic staff, research officers and postgraduate students played a pivotal role in providing policy analysis during the crucial Resource Management Law Reform process from 1988-1990. The Centre for Resource Management has now been absorbed into the larger academic structure of Lincoln University as the Environmental Management Group of the Environment Society and Design Division.

The majority of large research contracts managed by Lincoln University involve subcontract and joint research teams with Crown Research Institutes, especially Crop & Food Research Ltd., AgResearch Ltd., Landcare Research Ltd. and HortResearch Ltd.. The University has recently appointed four staff from AgResearch Ltd., Crop & Food Research Ltd. and Landcare Research Ltd. to Professorial Fellowship positions (typically 0.2FTE) in recognition of their critical contribution to cutting-edge research programmes in the agribiosciences that are linked to Lincoln University priority activities.

In 1994, Lincoln University created a wholly-owned subsidiary, Lincoln Ventures Ltd., to bring together a number of semi-autonomous operations at the University, including the New Zealand Agricultural Engineering Institute, the Kellogg Farm Management Unit and elements of the Centre for Resource Management. Lincoln Ventures Ltd. employs about 40 research scientists, technicians and support staff to carry out research on a range of real-world applications from groundwater modelling, moisture measurement, biosensors, image analysis applications, to information tools for horticulture production systems or the measurement of consumer behaviour. Its research subjects include: measurement and instrumentation; image processing; spatial IT; frost protection; groundwater quality; irrigation; spray and fertiliser application; sustainable land and water use; biotechnology; and waste treatment. Lincoln Ventures Ltd. works in partnership with private companies to commercialise products. An example is the Aquaflex system, which is a system for gauging soil moisture and temperature.

¹⁰ Centre for Resource Management. (1982) *Courses in Resource Management*. Christchurch: University of Canterbury and Lincoln College.

A further high profile cooperative venture is the South Island Dairying Development Centre (SIDDC), which is a partnership between Lincoln University, Dexcel Ltd., South Island dairy farmers (represented by the South Island Dairy Event network), Ravensdown Fertiliser Cooperative Ltd., Crop & Food Research Ltd., and Livestock Improvement Corporation Ltd.. At the heart of the partnership is the Lincoln University Dairy Farm, a 186-hectare, irrigated, state-of-the-art dairying unit. The farm is owned by Lincoln University, but is operated by SIDDC under three headings: research, extension and communication.

The Lincoln University Dairy Farm performs in the top five percent of all dairy farms in New Zealand and shares its best practice techniques with the wider farming community. Research on the Dairy Farm includes the eco-n™ research carried out by the CSEQ described above. Regular focus days for farmers and other interested people are a feature of the Dairy Farm. Established only in September 2001, the farm recorded its 10,000th visit at a focus day on irrigation in March 2007. The growth in dairying in the South Island has been a feature of the region's economic transformation in recent years. The SIDDC is an exciting partnership between a university, a Crown Research Institute, industry leaders, commercial firms and farmers to provide leadership to the sector. The wide adoption of the Lincoln University Dairy Farm production system by Dexcel Ltd. and many farmers is recognised as an excellent example of technology transfer.

Kowhai Farm is a joint venture between Heinz Wattie Ltd. and Lincoln University located on the University's arable farm. Kowhai Farm is managed according to the BIO-GRO Organic Production Standards, following its conversion by Heinz Wattie Ltd. from conventional cropping in August 2002. It is now a research and demonstration farm to improve profitability for organic farmers by investigating possible sustainable organic rotations. It was also one of two sites for a large research project on 'Strategies to Enhance Biodiversity on Mixed Cropping Farms' (1999-2003), funded by the Ministry for the Environment's Sustainable Management Fund. The economic value has not been quantified, but the list of economic and environmental benefits is extensive.

A TEC-funded Growth and Innovation Pilot Initiative (GIPI) programme, in which Lincoln University and the University of Canterbury are working together to enhance the entrepreneurial culture in their biotechnology-focussed research teams, has been very successful in attracting key staff and postgraduate students to attend seminars and workshops exploring potential IP commercialisation projects. These GIPI projects have led to a greater level of interaction with the Canterbury Innovation Incubator (Cii). A further proposal, based on the GIPI success to date, has been submitted to TEC which involves Lincoln and Canterbury Universities partnering with Otago University in developing new postgraduate qualifications (masters and postgraduate diploma) in science entrepreneurship. The proposal is for these qualifications to be jointly offered and co-branded by the three universities.

Lincoln University is a founding member of the Canterbury Innovation Incubator (Cii). It is a business incubator, established to promote and develop early stage technology based businesses in the Canterbury region. New Zealand Trade and Enterprise, which provides a substantive grant each year to support incubator operations, rates Cii as New Zealand's most successful technology company incubator. However, Cii is located in the middle of Christchurch City and to date has had a major focus on electronics and IT businesses. With the recent upsurge in interest in "agribioscience" projects across the Lincoln Resource, partly as a result of the GIPI programme, Cii have agreed to set up a satellite incubation facility (working title: *Linlinc* Innovation Centre) on the Lincoln University campus, comprising staff offices and tenant work spaces. This will provide much improved access to an important element of the local innovation infrastructure for both the University and the co-located Crown Research Institutes (CRIs). This on-site location will provide much stronger support for students and staff to build productive relationships, nurture entrepreneurial ideas and develop appropriate skills. The University is already planning for the equivalent of a student business planning competition to be run in 2008.

In addition, Lincoln University is taking a leadership role in a partnership with local Crown Research Institutes (CRIs), the Canterbury Development Corporation and local industry in a substantial multi-million dollar national budget bid being coordinated by the Ministry of Economic Development for the development of innovative food centres. The MED have agreed to a Canterbury Food Innovation Centre proposal being considered along with those of other regions. If funding can be attracted for this Innovation Centre, it will be based at Lincoln and will be the nucleus of what will, over time, develop into a Lincoln Science & Technology Park.

Excellence in Teaching and Learning

Maintaining our status as a 'clean and green' nation requires us to ensure we have the research and skills to contribute to international understanding of climate change and reduce local impacts of these changes...sustain our biodiversity...manage biosecurity risks...manage changing patterns of use of the land and sea...develop an awareness of the environment and the impacts economic and social activities have on it...¹¹

¹¹ Tertiary Education Strategy 2002/07, p. 13.

Lincoln University offers five general interdisciplinary undergraduate degrees (Bachelor's degrees in: Agricultural Science, Commerce and Management, Environmental Management, Science and Social Science) related to its core competencies in the land-based sciences, commerce and social science, plus 13 specialist three- or four-year degrees designed to provide graduates with the skill requirements of a specific industry or occupation. This portfolio is complemented with a suite of undergraduate certificates and diplomas plus postgraduate programmes in its areas of specialisation. The qualifications are weighted towards New Zealand's export sectors, which means the University is well-placed to contribute to the economic transformation needs of Canterbury regionally and of the agriculture, international business and tourism sectors nationally. The relevance of these qualifications to students and employers is reflected in the high employment rates of Lincoln University graduates (88% as reported in the NZVCC Graduate Destination Survey 2006). It is also reflected in the University's commitment to ensuring a realistic fit between the statements of graduates' attributes and teaching and student learning outcomes, which was commended in the recent Academic Audit Report.

Exports from New Zealand are heavily concentrated in land-based products, and the University's programmes in agriculture and the land-based sciences in particular, are producing graduates with the knowledge and skills to support productivity in these areas. There remains however, a shortage of graduates and high industry demand in these key areas.

Strong links between Lincoln University programmes and employer requirements reflect the University's commitment to engage with employers of its graduates. Several of its programmes are accredited by an appropriate national sector organisation, and other programmes have formal mechanisms for consultation with industry. The Commerce Division provides a good example. The accounting programme is accredited by the New Zealand Institute of Chartered Accountants and the Australian CPA and the valuation and property management programme is accredited by the Property Institute of New Zealand, the Real Estate Institute of New Zealand and the Valuers Registration Board. The Division also has a Commerce Advisory Group, comprising senior divisional staff and leaders from government and the business community, which meets twice a year to consider issues of common interest.

A major feature of curriculum design that pervades the University is the relationship between theory and practice as exemplified by the strong experiential component of applied academic programmes. The delivery methods for academic programmes are designed to fit the desired learning outcomes. Lincoln University has a tradition of developing delivery modes that are appropriate for applied programmes that require a strong experiential component. Laboratories, field trips and tours, other off-campus experiences and case studies are features of the aims and objectives of many courses, while workplace experience is an integral part of a number of programmes. The relationship between research and teaching is strongly established and Lincoln University is committed to developing research teaching nexus further.

Lincoln University's approach to curriculum development and student recruitment, combined with the interdisciplinary and applied nature of its programmes, results in graduates that are ready to accept challenges and develop solutions wherever in the world they may find themselves. The international focus of the University is also evident in the profile of its staff, many of whom bring considerable international experience to their teaching and research. This focus ensures that both New Zealand and international graduates are aware of, and prepared for, the increasingly globalised world in which they live.

Lincoln University has a wide range of scholarship support available to students. The two main undergraduate scholarships offered by Lincoln University are the Sports Scholarship and the Future Leaders Scholarship.

Lincoln University's Sports Scholarship programme was established in 1999 with support from the Canterbury Rugby Football Union, Canterbury Netball and Canterbury Cricket. Canterbury Hockey joined the programme in 2000, Canterbury Golf in 2004 and Canterbury Football (Soccer) in 2006. These codes all have well established sports development programmes and provide the opportunity for students to compete in senior and national level competition. Entry into the Sports Scholarship programme is competitive and requires students to be selected both by the sporting code for their sporting talent and by the University for their academic ability. Scholars' progress within the scholarship programme is closely monitored. To maintain their scholarship, Scholars need to perform well academically, in their strength and conditioning programme and in their sporting performance.

Since its inception, there have been 145 graduates from the programme. The programme has produced a significant number of successes, with several of the Scholars representing New Zealand at national level in their respective codes, and graduating with a range of degrees from the University.

The Future Leaders Scholarships were established in 2005 to assist students of high academic calibre and leadership potential to commence their tertiary study at Lincoln University. The Scholarship programme, which was implemented in 2006, capitalises on the University's established expertise in leadership in agribusiness (e.g., the Kellogg Rural Leadership Programme) and builds relationships with schools. Entry is competitive, and Scholars are expected to achieve academically as well as participate in a leadership programme that runs throughout both semesters.

Lincoln University has developed a new arrangement with Nelson Marlborough Institute of Technology (NMIT), a regional polytechnic, to offer a new staircasing opportunity for students from 2008. In conjunction with the Marlborough wine industry, both institutions have worked together to develop courses and structures which allow for the NMIT students to complete a Diploma in Viticulture and Wine Production and gain two years credit (with conditions) towards a Lincoln University Bachelor's degree in Viticulture and Oenology. The programme also includes a period of vintage practical experience in association with the Marlborough wine industry.

The learning environment that Lincoln University provides also contributes to its Distinctive Contribution. The University has a comprehensive framework of student surveys and teaching evaluations in place. A graduate feedback survey is conducted on an annual basis, and undergraduate and postgraduate satisfaction surveys on a triennial and biennial basis, respectively. Results from these surveys indicate that the smaller size of the Lincoln University campus and community offers distinct advantages for students. These benefits are reflected in feedback from students who value the higher levels of access to academic and support staff, the ability to develop learning relationships with academic staff and the individual interest the University takes in student progress. The competence and commitment of the teaching and learning services staff and the strong inter-relationship between the library and information and technology services received commendations in the Academic Audit Report.

Lincoln University has recently completed a major upgrade of the George Forbes Memorial Library in Ivey Hall to integrate information technology throughout the learning spaces in the Library. The University has maintained the distinctive character of this traditional building as part of the upgrade. It should be noted however that the responsibility of maintaining two other heritage buildings, the West Wing of Ivey Hall and Memorial Hall, both of which require significant capital investment, is an on-going challenge for the University. There has also been an internet cabling upgrade, which demonstrates and supports the University's commitment to supporting staff and students' needs in a 21st century, digitised age.

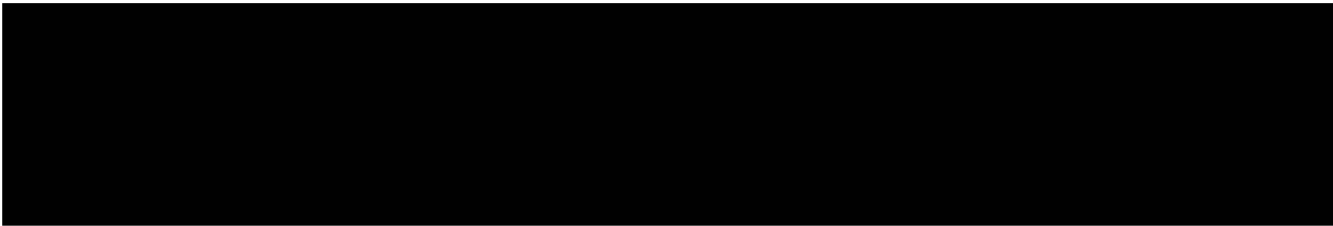
Excellence in Community, Industry and Partner Linkages

...[Universities] are called to play a central role in the 'knowledge economy' by engaging with, not preaching to, the wider society...[Universities'] interactions with stakeholders and the wider world, around teaching and research, and as good citizens, can allow universities and society to evolve together¹²

Lincoln University has strong and active links with its communities, regionally, nationally and internationally. The University is a key component of the Canterbury regional innovation system. It participates in the Canterbury Tertiary Alliance, and a group representing the geographically co-located cluster of Crown Research Institutes and other research organisations known as The Lincoln Resource. The alignment of the University's academic groups with industry and government organisations means that staff members often provide leadership in key sectors of the national economy. The University's education programmes are designed with the assistance of industry organisations, including formal professional accreditation where appropriate.

Regional linkages

Lincoln University is strongly engaged with primary sector needs through its active participation in the Agriculture and Life Sciences Partnership for Excellence (with Massey University) and the Food and Agribusiness Market Experience (FAME) Programme (in conjunction with Massey and Otago Universities). The Partnership for Excellence offers the chance for the two universities with a tradition of strong association with the primary sector to work together in new ways. For example, discussions are underway on projects to provide novel solutions to research problems, joint teaching approaches where critical mass has been an issue (e.g. horticulture) or where new courses are needed (e.g. a jointly taught Masters in Quantitative and Molecular Plant Breeding), how to raise the profile and attractiveness of agriculture and horticulture as career options and the establishment of an 'Academy of Excellence'.



A new regional Biomolecular Interaction Centre (BIC) has been established in Canterbury. It is a collaborative project spearheaded by researchers at the University of Canterbury, in partnership with researchers at Lincoln and Otago Universities, Crop & Food Research Ltd. and Environmental Science and Research Ltd. (ESR).

¹² Association of Commonwealth Universities (2001). *Engagement as a Core Value for the University*, p. 1.

Lincoln University is particularly conscious of its responsibility to provide national leadership in the primary sector. In 1969, Lincoln University launched what is now the National Bank Young Farmer Contest, and it continues to sponsor this 'icon of rural New Zealand'. The University's Kellogg Rural Leadership Programme has assisted the development of national and international leaders since its introduction in 1979. Lincoln University maintains and makes available unique facilities for the sector, including the New Zealand Biotron, the CSEQ lysimeter laboratory, the South Island Dairying Development Centre and the Kowhai Heinz Wattie Organic Farm, and a significant number of other examples.

Māori community

Lincoln University recognises the need to improve educational outcomes and support for Māori by developing a comprehensive approach to Māori education. This is being achieved through development of strategic alliances with iwi-based and non iwi-based groups and other tertiary education organisations both regionally and nationally. Lincoln University was a leader in the development of Te Tapuae o Rehua Limited, a joint venture established to increase Māori participation in tertiary education and to ensure high academic quality in Māori tertiary studies. Ngāi Tahu and Lincoln University were joined by the Christchurch College of Education and Christchurch Polytechnic Institute of Technology as founding members in 1998. The company has since grown to include the University of Otago, the University of Canterbury and the Otago Polytechnic. Te Tapuae o Rehua has assisted many Māori, both staff and students, to meet their educational aspirations by facilitating mentoring, distributing study awards and scholarships and improving access. A new initiative, a major collaborative project focusing primarily on Māori student participation, is to be developed with Ngāi Tahu, Lincoln, Otago and Canterbury Universities, CPIT and Otago Polytechnic.

Lincoln University is strengthening its relationships with Ngāi Tahu through involvement with papatipu runanga and engagement with Ngāi Tahu more generally and maintains engagement with other iwi nationally. Of particular significance is the Charter between the University and Te Taumutu Runanga. These relationships enable the University to enhance its contribution to Māori development by providing research and education in the areas in which it has specialist capability and expertise. The University is currently in negotiation with Te Taumutu Runanga about the establishment of the Te Waihora Research Centre/Te Kete ika a Rakaihautu. The Research Centre will focus on the biophysical, environmental and social issues related to Te Waihora/Lake Ellesmere.

Internal capacity to coordinate Māori development has been enhanced by the establishment of Te Puna Whakapuawai, a cross institutional wananga, representing Māori academic and support staff across the University. Lincoln University has also established Kaupapa Māori Units within each of the academic research divisions – Te Whanake (Environment Society and Design Division), Te Whairawa (Commerce Division), Te Matapuna (Bio Protection and Ecology and Agriculture and Life Sciences Divisions) to better coordinate Māori academic and research development and student support within the disciplines. Internal committees, Te Awarua and Taki Rua, are being established to better coordinate institutional Māori student support and Māori liaison respectively.

Lincoln University believes that its contribution to Māori aspirations is best advanced through improved access to disciplinary and programme areas critical to Māori advancement and which are also Lincoln University's niche disciplinary areas, including environmental management and design, tourism, bioprotection, agriculture, business and industry. This is being addressed through several initiatives including a minor subject in Māori studies available to all undergraduate degrees and promotion of interdisciplinary Māori curricula across the University. To encourage Māori student uptake of these programmes, Lincoln University also offers Future Leaders scholarships and scholarships in areas such as agribusiness and tourism. These will continue to be extended.

Lincoln University has an extensive Māori research portfolio, as evidenced in the Institutional Māori Research Stock take (2005), and will continue to encourage research that contributes to Māori knowledge and development in its specialist areas. Examples of this include the Matauranga Māori Research theme, a major component of the National Centre for Advanced Bioprotection Technologies, Māori tourism research within the Tourism and Recreation Research and Education Centre (TRREC) and research on sustainable development of Māori ancestral land in partnership with the Agribusiness and Economics Research Unit (AERU).

Pacific communities

Lincoln University has a long association with international Pacific communities, largely through its research and consulting activities and New Zealand Aid Scholarships to Pacific Island students. This provides a platform for continued development of these relationships, particularly in research and academic development. Increasingly the University is attracting domestic Pacific students, creating the need for a more co-ordinated approach to Pacific development that understands the aspirations of both local and international Pacific communities. To facilitate this, the University has strengthened its links with the Pacific community through the Canterbury Pacific Trust, other community groups and the establishment of a Pacific Reference Group to advise on Pacific development issues.

Priorities identified include: improved access for Pacific school leavers and mature 'second chance' learners; improved academic pathways to specialist areas critical to Pacific peoples development, particularly the biological and physical sciences, agriculture, environment and resource management, tourism, sport and recreation; and, specific mechanisms for monitoring and supporting Pacific students in their study.

International linkages

Lincoln University maintains a portfolio of international bi-lateral and discipline specific teaching, research and commercial relationships. Teaching relationships include student and staff exchange, study abroad and, currently, a limited amount of overseas delivery and field study. In addition to enhancing the international experience for staff and students, these relationships also make an important contribution to international comparability of academic quality standards. International research linkages are *sine qua non* for any high quality university. Lincoln University has extended these relationships to generate growing international research funding and contribute to the development of inter-governmental relationships with Europe, South America and China through researcher participation in Ministerial delegations.

In addition to extending research opportunities, this participation promotes world-leading research in many areas linked to agriculture and the environment, in particular. There is current participation in a number of international research consortia and commercial arrangements with large international companies who are supporting research or commercialising intellectual property. The University's significant international activity contributes positively to the promotion of recognition of New Zealand university qualifications and creates opportunities for extending international education, trade and development.

In managing these relationships, the University is conscious that those relationships that are multi-faceted generate the greatest benefit for students and academic staff. Two relationships that have developed into well-established alliances with internationally jointly-awarded qualifications are the relationships with Universität für Bodenkultur Wien in Vienna, Austria for the joint teaching and award of a Masters degree in Natural Resources Management and Ecological Engineering, and an agreement with Georg-August University of Göttingen, Germany for the joint teaching and award of a Master of International Nature Conservation degree. Both of these alliances require students to study at both of the partner institutions and are built on research collaboration and disciplinary leadership.

Lincoln University – Excellence into the Future

The Council and Senior Management of Lincoln University are aware of the important historical and current contributions made by the University to the economic transformation of New Zealand. They accept responsibility in partnership with the Crown for sustaining and developing the University's capabilities for excellence as a taonga to be safeguarded for future generations.

Lincoln University's leaders accept they must be prudent in their stewardship of the institution and balance the requirement to seek out new and emerging opportunities with the need to sustain and develop the institution's capability for future generations. That capability will be based on planned growth across the institution, but emphasising areas within Lincoln University's Distinctive Contribution, rather than acquisition of new disciplinary fields. The University's strong community links, its interdisciplinary approach to scholarship and its focus on the development and application of knowledge that is directly relevant to national growth objectives are at the heart of its unique character. These form a strong foundation from which Lincoln University can move into the future as a viable and sustainable independent tertiary institution.

Lincoln University requires an increase in student enrolments in all disciplinary areas, but with particular emphasis on growing both undergraduate and postgraduate numbers in areas of Lincoln University's Distinctive Contribution, and a more managed international student population. The impact of economic cycles on student recruitment, particularly in applied academic programmes such as agriculture, challenges forecasting models. Current buoyancy in the agriculture sector is reflected in high employability of prospective students and limits the progression of graduates to postgraduate study. A current and ongoing challenge is to encourage greater student uptake of programmes in agriculture and related areas, particularly potential students from urban backgrounds. The University will be required to work more closely with industry groups and employers to ensure that prospective students understand the extent of employment opportunities and the nature of future careers.

Lincoln University also acknowledges that its semi-rural location poses challenges for recruitment of students, particularly from urban backgrounds. The University is committed to investigating opportunities to overcome this challenge. The projected growth of the Lincoln township to increase the population fivefold by 2040, the similar growth of linked communities to the south of Christchurch and planned roading improvements by Transit New Zealand will continue to reduce the impacts of the semi-rural location of the University.

The high cost of delivering undergraduate programmes in agriculture and related areas that form a significant component of the University's Distinctive Contribution is not reflected in the level of financial support received from the Tertiary Education Commission or in an ability to add a major premium to tuition fees. These factors combine with student recruitment issues to limit total revenue generation in a manner that creates challenges for these critically important programme areas, and given the strong land-based focus of the University, for the institution as a whole. There is a poor correlation between current levels of investment and the requirement to support economic transformation outcomes that relate to rural sector industries and the added value contributions from the development of sophisticated food products.

Lincoln University has a proud history, right up to the present day, of producing new knowledge and excellent graduates who are essential for the ongoing transformation of economic and environmental opportunities. Lincoln University is well positioned to play a unique and important role in returning New Zealand to the top half of the OECD. The Crown can be confident that further investment in Lincoln University's capabilities will generate substantial dividends for the citizens of New Zealand.

2. THREE-YEAR OUTLOOK

This Section presents the higher level strategies and planned activities for the 2008 - 2010 period identified in the Context Section of this Plan. The strategies and activities identified in the Three-year Outlook are further supported through planned initiatives and activities detailed in the Operational Plan 2008. Operational Plan 2008 was prepared as a parallel process to the development of the Investment Plan. As such, the two Plans reflect a shared overall strategic approach and contain common objectives. Operational Plan 2008 contains the detailed statements of actions and initiatives designed to advance progress towards the University's objectives. This is further underpinned by Divisional and Sectional Operational Plans. Appendix 4 provides a summary of Lincoln University's strategic contributions to addressing Key Shifts and Priority Outcomes through its Investment Plan 2008 -2010 and Operational Plan 2008, as well as the key performance indicators that will be used to assess progress.

Management and Stewardship

1. To increase student enrolments.
2. To improve the organisational performance and financial performance of the University.
3. To deploy capital resources in such a way as to enhance the effectiveness of the University over the long-term.
4. To encourage, recognise and reward excellent performance by students and staff.
5. To act ethically and to be an environmentally and socially responsible University.

An increase in graduates, particularly with knowledge and skills in export related areas, is required to support New Zealand's on-going social and economic transformation. Lincoln University accepts responsibility in meeting this demand by continuing to grow the overall number of number of graduates, and graduates in areas of its Distinctive Contribution. Lincoln University requires an increase in student enrolments, with at least 2200 domestic EFTS by the end of the triennium and a more managed international student population that has stronger alignment to the disciplinary distinctiveness of the University, is more postgraduate in composition, with a medium-term target of 32% of the total student population.

The student recruitment and marketing activities have been combined under the leadership of an External Relations Director with a sharper focus on targets and an improved alignment of an appropriately trained staff resource. These changes are coupled with a more focussed and strategic approach to academic programme offerings, further external validation of the quality of teaching and learning and a more intensive focus on supporting student enrolment decisions with input from graduate employers. The latter will include initial scholarship support and future career management advice to strengthen pathways to employment.

The student enrolment targets projected in the Mix of Provision will be achieved through a marketing strategy that aligns marketing activity with the required contribution of each programme and a student retention strategy. Industry demand and absorptive capacity for graduates, together with student demand, are key considerations in this approach to ensure that Lincoln University continues to deliver high quality programmes, with graduates sought by industry and that contribute to economic transformation.

Lincoln University has been reviewing a number of programmes and the majority of these will be re-launched in 2009 (see Appendix 5), with a major subject in biosecurity and bioprotection signalled for introduction in 2008 (subject to CUAP approval). Substantial growth will be sought in the Bachelor of Environmental Management as it is re-developed into a flagship programme that clearly demonstrates Lincoln University's commitment to contribute to major national and global challenges in managing natural resources. Significant growth is also required in the Bachelor of Viticulture and Oenology as a programme that draws on the University's long-standing expertise in plant science and horticulture to meet the needs of a growing industry. This growth is based on sustaining the strong 2007 enrolments in this programme together with a progressive articulation agreement with the Nelson Marlborough Institute of Technology. While these programmes will provide important contributions to growth in student enrolments, the re-development and re-launch of the Bachelor of Commerce and Management will also be extremely important as will the re-development and re-launch of the iconic Bachelor of Recreation Management. Opportunities to address regional and national needs in urban design through extending and integrating Lincoln University's expertise in Landscape Architecture and Planning also exist.

Along with the programme based approach to student recruitment, the other overarching objectives of the marketing strategy are the re-vitalisation of the Lincoln University brand and a comprehensive and sensitive reporting and measurement framework. The marketing objectives will be further supported through stakeholder engagement, communications and public relations, and pathways strategies.

The management of costs is being addressed in 2007 and commenced through the implementation of a Business Improvement Audit (commissioned in late 2006). The immediate focus is on increasing effectiveness and productivity by internal organisational change.

A significant number of retirements, and a more limited number of resignations, has allowed for natural attrition. While the University will continue to address the issue of adjusting staffing levels, it will support planned growth in areas of Lincoln University's strategic direction and staff in these key areas will continue to be actively recruited.

The University is committed to maintaining a profile of staff that can provide leadership and deliver on the proposed future direction. This will require selective decisions on new staff appointments into key disciplinary and support areas during a period of overall staff reduction. Strategic investments in staff in water resources management, support of growth in plant biosecurity, in genetics and breeding, food quality and in a number of other areas will be considered in 2008, typically as part of broader partnership discussions that may involve external support.

The University will continue to roll out its capital investment programme over the next three years to provide the quality of space and resources required for high quality education and research. Immediate examples include new facilities for Landscape Architecture, further growth of IT infrastructure and improvements in undergraduate laboratory facilities.

Research Excellence

6. To achieve a postgraduate profile consistent with the mix of provision and enhance support for postgraduate students.
7. To encourage, recognise and support excellence in research.
8. To strengthen and promote existing areas of research performance and nurture areas of emerging talent.
9. To stimulate and support knowledge transfer, innovation, commercialisation and consulting by staff and students, with increased emphasis on relationships with industry.

Lincoln University's Research Strategy includes five components:

- i. The development of policies and procedures that provide the formal infrastructure necessary to encourage and support research and innovation, particularly the creation and application of intellectual property (IP).
- ii. The procurement of substantial increases in research investment from the public and private sector to promote research and innovation at the University.
- iii. Further developing the PBRF revenue stream and the PBRF-measured performance of the University.
- iv. Instigating a cost-effective innovation system at Lincoln University that provides high quality infrastructural and operational support to ensure that commercial, environmental and social outcomes are realised.
- v. Aligning and, as far as is appropriate, integrating the Lincoln University innovation system with those being created at the neighbouring CRIs and selected members of the wider Canterbury research and innovation community.

The University has made good progress with the first two of the above but further initiatives are needed to grow the University's research capability, increase its innovative outputs and provide opportunities for knowledge and technology transfer for the benefit of New Zealand and New Zealanders. These endeavours will contribute substantially to Lincoln University's ability to deliver on Government's expectations as defined in its *Tertiary Education Strategy 2007 – 2012* and provide the key shifts necessary to advance the roles thus defined.

Lincoln University will continue to develop research groups and programmes which have sufficient critical mass to compete internationally. The University recognises that, while it has performed well in recent FRST funding rounds, it does not have a distinguished record in attracting Marsden Fund grants and more needs to be done to position staff to be successful with Marsden proposals.

In particular, special programmes to mentor and assist emerging staff with 'Fast Start' applications will be established. The University is aligning its internal research initiatives to reflect the PBRF environment.

A deliberate, ambitious strategy to achieve a substantial enhancement of the University's overall PBRF staff profile by 2012 has been developed. The aim is to achieve a PBRF A:B:C:R ratio of 12:37:37:14. This will be actioned by a combination of targeted initiatives to improve the research performance of existing staff, making new appointments of established research leaders in areas of emerging research excellence, and replacing retiring staff with high performing, research active appointments. The result will be a high quality research environment across the University. Particular additional initiatives are being put in place to strengthen selected research areas where PBRF Quality Scores need significant attention.

Developing new and maintaining existing collaborative partnerships is an integral part of Lincoln University's approach to building external research income. In particular, leveraging the benefits of co-location through strong research and innovation relationships across the wider Lincoln Science Precinct has been a priority and excellent collaborations benefiting staff and students exist with Crop & Food Research Ltd., Landcare Research Ltd., and AgResearch Ltd.. Initiatives include a new responsibility for the Deputy Vice-Chancellor to work more closely with primary sector and agribusiness leaders to identify key emerging areas for research to mitigate the threats to New Zealand's bioeconomy from climate change concerns.

The University aims to pursue its research mission of being world class in selected areas of excellence by, among other initiatives, continuing to develop strong research links to high quality research institutions in Australia, North America, Europe and Asia that have complementary research expertise. The University will concentrate on a selected number of top tier research institutes that are strategically important to achieving this mission. The outcomes will include new opportunities for collaborative research, staff and student exchanges, an increased number of distinguished international visitors and, possibly, the development of joint or dual PhD programmes (which allow PhD students to spend part of their research time at the partner university).

The University is applying for a pre-seed accelerator fund that will enable near-commercial projects to be better supported. While licensing technologies is likely to remain the preferred route for commercialising intellectual property, the University will continue to assess the option of forming offshoot companies. The implementation of a 'Venture Challenge Competition' along with the establishment of a pre-incubation unit (in 2008) in dedicated space alongside the Research and Commercialisation Office will provide strong on-site support for and stimulus to the successful commercialisation of intellectual property. The Canterbury Innovation Incubator (Cii) has committed to staffing the pre-incubation unit and this whole initiative is seen as a vital initial step to developing a Lincoln Innovation Centre (incorporating the needs of the local CRIs as well) and the eventual establishment (10 years) of a full Science and Technology Park at Lincoln.

Teaching and Learning Excellence

10. To encourage, recognise and support excellence and innovation in teaching.
11. To develop the University's academic programmes and delivery to ensure they are aligned to research, employment and student educational needs.
12. To promote academic excellence, inspire life-long learning and stimulate personal development.
13. To enhance differentiation and specialisation, with emphasis on interdisciplinary learning in context.
14. To develop collaborative arrangements, where appropriate.

Lincoln University has always recognised the importance of high quality teaching. This translates into recognition by the annual salary review process and annual awards for excellence in teaching. The University was the last university to complete Cycle 3 of the academic audits conducted by the New Zealand Universities Academic Audit Unit and received positive affirmation of its commitment to teaching quality and support for the learning environment of students. The University will work towards the implementation of recommendations in the Academic Audit Report over the period of this Plan. This will include consolidating a medium term strategic vision for teaching and learning at Lincoln University, emphasising the inter-disciplinary and in-context learning that distinguishes the University.

The changing learning needs of an increasingly diverse student body and the potential for non-traditional delivery modes to support learning outcomes will also be addressed. This could include further development of off-campus, as well as technology-mediated and technology supported modes of delivery, to meet learner needs. Appropriate national and international benchmarks for teaching and learning need to be established. It should be noted however, that Lincoln University already engages in a range of international benchmarking activities including bi-directional student exchanges that encompass relationships with four of the top six agricultural institutions in Europe, international examination of Lincoln University PhD theses and international peer reviewed research.

The University will continue its commitment to professional development of staff to support excellence in teaching that is informed by relevant research. There will be investment in new staff in developing disciplines, that include collaborative arrangements, and which are aimed at further growth of the distinctive disciplinary mix of the University and the specialist areas of undergraduate teaching.

A key initiative that commenced in 2006 is the Review of Academic Delivery. This review process was designed to rationalise the number of undergraduate degree programmes and implement academic programme design minima that reduce the number of academic courses. This process has been supplemented by academic programme reviews. The first phase of the academic programme review is the undertaking of a self-review. This self-review is then reviewed by an External Panel. The major focus of the academic programme review is on improving the design of undergraduate degrees to meet future requirements of professions and employers and to eliminate costs that add little value to the qualifications obtained by graduates. In 2007 the University reviewed undergraduate degrees in Science, Recreation Management, Environmental Management, Social Science and Tourism. The equivalent review of undergraduate Commerce degrees will be completed at the end of 2007. Implementation of revised programme structures and courses will continue through 2008 and 2009. The outcome of these reviews will provide a reduction in the number of undergraduate courses delivered, an enhancement of the structure of degrees that is consistent with the requirements of employers and an overall reduction in the cost of delivery of the undergraduate degrees.

One additional ambition is to encourage a larger number of students to pursue research-based postgraduate qualifications, particularly in Lincoln University's areas of Distinctive Contribution. At present the high level of employability of Lincoln University graduates, the high level of national employment and the relevance of the University's academic programmes to national economic transformation objectives have all conspired to limit the flow of domestic graduates to Masters and PhD degrees. The University is seeking further support from key industries to ensure that the number of suitably qualified postgraduates meets national requirements in the industries served by the University.

The Agriculture and Life Sciences Partnership for Excellence with Massey University will provide further opportunities to enhance provision in disciplines linked to agriculture and in the use of natural and biological resources. The Partnership for Excellence has strong support from all sub-sectors of the agricultural industry and will provide the forum for targeting future educational investment into areas that are currently under-represented by graduates but where future economic growth is forecast. The Partnership will be used to trigger re-investment in animal and plant genetics and breeding, in sectors of horticulture, and other areas.

The Partnership for Excellence is one component of the collaboration that the University will pursue in the tertiary sector. Relationships with other tertiary providers, such as the arrangement with NMIT discussed above, will be developed to provide pathways for students wishing to study qualifications that contribute to Lincoln University's Distinctive Contribution.

The University will enhance student retention and student completion rates through a series of initiatives including management of the transition to tertiary study, the first year student experience and early and proactive intervention with students who are struggling to adjust to tertiary study.

Excellence in Community, Industry and Partner Linkages

15. To enhance student engagement to meet their education aspirations.
16. To strengthen and promote linkages with communities of special interest.
17. To provide extension and continuing education opportunities for people outside the formal University community.
18. To foster University consultancy activity as a means of engagement and knowledge transfer.

The focus on meeting the needs of students will be enhanced, particularly around the design and delivery of academic programmes and in meeting the requirements for future employment. The existing industry liaison activity will be enhanced to provide further improvements in aligning graduate attributes with the requirements of employers. This is designed to improve the already high level of placement of graduates and to increase the enrolment of prospective students into academic programmes that are required by the industries supported by the University.

The University has an established Community and Industry Engagement Strategy that will be expanded and given additional impetus by the appointment of an External Relations Director and realignment of the Alumni Relations and Employment and Industry Liaison Groups. The outcomes sought from the restructure include improved coherence of engagement with all external stakeholder groups, in particular prospective students and industries employing Lincoln University graduates.

In addition the current expansion of Lincoln University Alumni Association activities will be the basis for a major fundraising initiative that is designed around improved support for students through direct financial support and provision of improved facilities.

The most recent initiatives embraced by the Review of Academic Delivery, leading to improved academic programme design, and the continued growth in external research revenue have both involved regular and significant discussions with those industries that support Lincoln University graduates. These levels of stakeholder engagement are important and ongoing and will yield future benefits by aligning graduates, at all levels, and research outcomes with industry growth and opportunity. The emphasis is on collaborative partnerships that are mutually beneficial.

The University is introducing a revised policy around staff engagement in consultancy activity that may take place in New Zealand or overseas. The focus is on enhancing consultancy as a legitimate part of the University's business and one that meets the aspirations of staff and the requirements of external clients. The management of consultancy will parallel the processes used for securing external research revenue.

Student Experience and Support

19. To enhance student academic and learning support services.
20. To provide a responsive and supportive learning environment that reflects and celebrates the diversity of student aspirations and experience.

Lincoln University has a demonstrated record of providing a distinctive experience through its smaller campus community and experiential approach to learning. In recognition of this, the level and competence of student support staff was commended in the 2007 Academic Audit Report.

Student experience and support strategies over this period will maintain the experiential learning aspect of Lincoln University qualifications and will review the use and management practices around teaching that includes significant field trip and tour components.

Lincoln University's forecasts of its Mix of Provision rely not only on a revised approach to student recruitment but also on achieving high retention rates that are consistent with maintaining high standards of academic quality. While course completion and qualification completion rates compare favourably with others in the sub-sector, the University will develop specific strategies to improve the transition of students to tertiary study and to identify and assist academically at risk students early in their university careers.

The University will continue to invest in world-class teaching and learning environments, in terms of both physical and technological infrastructure. With the completion of the library upgrade, the next major initiative is the construction of a new, purpose-built, facility for Landscape Architecture and increasing the number of computer suites and wireless computer access zones on campus.

The University will seek to support learners' opportunity for study through increasing access to scholarship support, particularly in those areas where there is high national demand but lower levels of school-leaver uptake.

Further development of the student support infrastructure will reflect the increasing diversity of students, including new immigrants and those who select New Zealand as an education destination.

Māori and Pasifika Aspirations

21. To increase the number of Māori students, and the proportion of domestic students who are Māori.
22. To contribute to the development of Māori communities through engagement, academic programmes and extension activities.
23. To enhance Māori leadership within the University and improve the understanding of tikanga Māori among staff and students.
24. To increase the number of Pacific Island students, and the proportion of domestic students who are Pacific people.
25. To work with other agencies to improve the long-term well-being and sustainable development of Pacific peoples.

Lincoln University's distinctive contribution to Māori development has generally been in the area of agriculture, primary sector industry, environment and resource management, and increasingly commerce. The applied, interdisciplinary nature of Lincoln University's programmes (including the application of Māori studies across different disciplinary contexts) appeals to Māori communities and we will continue building on this tradition and experience to deliver excellence in teaching and research to, and for, Māori.

Interestingly, Māori students, Māori academic staff and Māori research activities are spread roughly equally across the academic divisions. This reflects the broad spectrum of Māori development priorities that are currently being articulated. It also provides a strong focus for future University contributions to Māori development. A pan-institutional wananga, Te Puna Whakapuawai has been established to coordinate strategic Māori development across the University. Kaupapa Māori Units have also been established in each of the academic divisions to facilitate Māori capacity building in; interdisciplinary curriculum development, research, student support, improved progression to postgraduate study and staff development. The rationale is these initiatives are best developed and coordinated within the disciplines.

Lincoln University values its connections with manawhenua Ngāi Tahu through various iwi initiatives, participation in Te Tapuae o Rehua and implementation of a Charter of Understanding with Te Taumutu Runanga. The University is also committed to extending its education and research network and distinctive contribution to other iwi and Māori organisations throughout the country, including the many North Island based iwi, with whom the University has historical connections.

Lincoln University is committed to enhancing opportunities for Pacific Island students. The University's current and ongoing areas of focus include: more structured engagement with the Pacific community through a Pacific Reference Group and links to key Pacific agencies, as well as provision of appropriate and improved cultural, social and academic support to encourage Pacific student achievement. Initiatives have already been established and will continue to be refined. These include: student monitoring and mentoring programmes (linked with Māori students), academic excellence scholarships (initiated in 2006), and an appropriate space on campus for Pacific students to foster collegiality and cultural enhancement.

Senior Management responsibility for Māori and Pasifika development resides with the Assistant Vice-Chancellor (Māori) and initiatives to progress these developments will occur through Lincoln University's Māori Development and Pacific Development Strategies. Lincoln University is working toward enhancing Māori and Pacific student retention, progression and achievement. Emphasis is on initiatives and activities to attract and retain Māori and Pacific Island students in areas of Lincoln University's Distinctive Contribution.

Internationalisation

26. To achieve an international student profile that has an appropriate diversity of study disciplines, country of origin and level of study.
27. To progress opportunities for international research collaborations.
28. To increase opportunities for New Zealand students to incorporate an international experience into their programme.

Lincoln University is a highly internationalised university with a record of meeting the needs of international students and producing graduates who support New Zealand businesses in their international activities. The University has also established two leading postgraduate programmes that are jointly taught and awarded with two European partner universities, as well as a record of long-standing exchange agreements with leading international institutions.

Strategies for the period of the Investment Plan are to consolidate and stabilise international student recruitment to achieve a position of sustainable diversity in the international student body. Achieving a position of sustainable diversity will mean increasing the number of countries from which significant numbers of students are recruited and increasing the spread of international student enrolments across Lincoln University qualifications, particularly those that are critical to the University's distinctiveness.

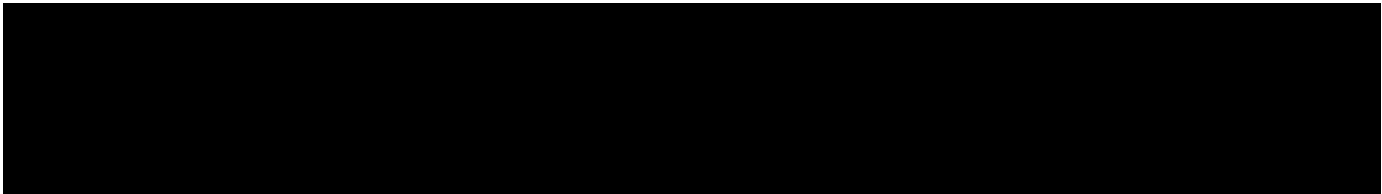
In 2007 Lincoln University has reviewed its portfolio of agent relationships and Memoranda of Understanding with international partners. This has resulted in a tiered approach to agent management that develops stronger relationships with a smaller number of agents and active exchange relationships approved by the New Zealand Immigration Service.

Lincoln University will work with key agents and partner institutions (including establishing articulation pathways for students, where appropriate) to achieve a diverse and sustainable international student body. This approach supports not only the needs of students, but also aligns with New Zealand immigration policy in attracting skilled immigrants in areas of national need and the needs of New Zealand businesses for international graduates that can support their offshore activities.

Through working with international partner institutions, Lincoln University will increase the number of New Zealand students that include an international experience in their study. Exchange and other partner relationships will play an important role in this, as will increasing domestic enrolments in the two jointly awarded masters degrees and in the Centre for International Development. Further work is required to provide additional support for students including access to loans and allowances while participating in the overseas requirements of the jointly awarded programmes and increasing the level and availability of scholarship support.

Priorities for Three-year Outlook

The overall priority for Lincoln University for the coming triennium is to retain, and continue to build, capacity and capabilities to continue to make significant contributions in areas of national importance. A major priority for Lincoln University is to improve its financial performance. Precedence will be given to: (1) increasing and managing student enrolments; (2) continuing to enhance Lincoln University's research output; and, (3) reducing delivery and other costs, whilst maintaining academic quality. Priority for Focus funds will support these organisational outcomes, which contribute directly to the sustainable future of Lincoln University.



3. SUMMARY OF ACTIVITY

Section withheld under the provisions of the Official Information Act

4. KEY PERFORMANCE INDICATORS

Enhanced differentiation and complementarity among universities and with other sub-sectors to ensure an effective, high quality network of university provision. □

Increasing collaboration and building critical mass in teaching and research, particularly

KPIs as defined in Methodology paper (see glossary)

For historic results refer to caveats in BMR (for example, issues relating to data quality or completeness)

Investment Guidance KPI	BMR Ref.	Plan KPI	Historic		Outcome Commitment			Notes	Reporting Lag (Years)	Cohort Year Type (see Glossary)
			Base Year	Result	2008	2009	2010			
Increase links with other sub-sectors by reducing the proportion of sub-degree provision (measured according to EETS)	4.1.1	Proportion of sub-degree EFTS provision	2006	11%	10%	10%	9%	Mix of Provision figure differs from BMR for 06. Mix of provision is 8.8%, BMR is 11%	1	Participation Cohort

TEO Defined Quantitative or Qualitative KPIs

Investment Guidance KPI	Plan Ref.	Plan KPI	Historic		Outcome Commitment			Rationale / Notes	Reporting Lag (Years)	Calculation (see Glossary)
			Base Year	Result	2008	2009	2010			
Collaboration and consolidation of provision with other universities	Obj 14; p. 16	Collaborative delivery	2006	0	2	5	8	Includes agreements such as Partnerships for Excellence	1	Number of courses that form part of qualifications offered by other Universities as part of agreements to collaborate on consolidation of provision
Effective stakeholder engagement processes and outcomes	Obj 11; p. 16	Industry advisory boards for programmes	2007	16%	30%	50%	60%	Enhances industry and employer input into academic programmes and maintains alignment	1	Proportion of undergraduate qualifications that have direct linkages with an industry advisory board (or equivalent)
	Obj 11; p. 16	Professional accreditations of qualifications	2007	8	9	10	10		1	Number of professional accreditations
	Obj 11; p. 16	Number of industry and alumni funded scholarships available to Lincoln University students	2007	68	75	100	120	Development of joint approach with industry to recruit students into areas of high industry demand but lower uptake by school leavers	1	
	Obj 11; p. 16	Stakeholder satisfaction in excess of 90%	2007	> 90%	>90%	>90%	>90%	Stakeholder satisfaction surveys are currently conducted for students, and graduates; and planned for industry and employer groups.		Responses greater than and including 3 on a 5pt satisfaction rating scale
Increase links with other sub-sectors by increasing student progression into degrees (from other TEOs). Research partnerships and connections	Obj 1, 14 & 15; p. 15, 16 & 19	Number of students with previous non-university tertiary study progressing to university study	2007	7	8	9	10	Part of pathways strategy to build relationships with non-university providers in areas of distinctive contribution		
	Obj 9; p. 14 & 15	Joint appointments with CRI or industry and continuing research positions with external funding support	2007	73	80	85	90			Number of appointments. Must be employed by or sub-contracted to partner organisation
	Obj 9; p. 14 & 15	Number of collaborative research projects with CRI or industry	2007	73	80	85	90			

Increasing educational success for young New Zealanders

KPIs as defined in Methodology paper (see glossary)

For historic results refer to caveats in BMR (for example, issues relating to data quality or completeness)

Investment Guidance KPI	BMR Ref.	Plan KPI	Historic		2008	2009		2010	Notes	Reporting Lag (Years)	Cohort Year Type (see Glossary)
			Base Year	Result		Outcome Commitment	2010				
Increase the proportion of EFTS for students aged under 25 enrolled in qualifications at degree level and above	4.1.2	Proportion of EFTS for degree, grad diploma and post-graduate qualifications for students aged under 25	2006	87%	85%	85%	85%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	1	Participation Cohort	
	4.2.4	Successful course completion rates for degree and grad diploma qualifications for students aged under 25	2006	87%	85%	85%	85%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	1	Successful Course Completion Cohort	
Increase completion rates of students aged under 25 enrolled in qualifications at degree level and above.	4.2.8	First year qualification-level attrition for degree, grad diploma and post-graduate qualifications for students aged under 25	2006	17%	17%	16%	15%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	3	First Year Qualification Level Attrition Cohort	
	4.2.15	Qualification-level completion rates in one EFTS and under degree, grad diploma and post-graduate qualifications for students aged under 25 (over a 2 year period)	2005	79%	79%	80%	80%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	2	Qualification Level Completion Cohort	
	4.2.16	Qualification-level completion rates for all degree, grad diploma and post-graduate qualifications for students aged under 25 (over a 5 year period)	2002	60%	60%	63%	65%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	5	Qualification Level Completion Cohort	

TEO Defined Quantitative or Qualitative KPIs

Investment Guidance KPI	Plan KPI	Historic		2008	2009		2010	Rationale / Notes (source of data)	Reporting Lag (Years)	Calculation (see Glossary)
		Base Year	Result		Outcome Commitment	2010				
Student satisfaction with learning support services	% Satisfied on item Quality & range of Student Learning services	2007	72%	Triennial survey	Triennial survey	75%	Undergraduate Student Satisfaction survey (triennial survey)	1	Responses greater than and including 3 on a 5pt satisfaction rating scale	
Improved academic performance of first year students	Semester 1 success rate of first year students	2007	82%	>80%	>80%	>80%		0	Percentage of credits passed over credits taken in this measure used for reporting to NZVCC	
Meeting student needs	Student satisfaction	2007	91%	Triennial survey	Triennial survey	>90%	Undergraduate Student Satisfaction survey (triennial survey)	1	Responses greater than and including 3 on a 5pt satisfaction rating scale	
	High quality lecturers	2006	81%	> 85%	> 85%	> 85%	Lecturer evaluations	1	Proportion of students evaluating lecturers as 'Excellent' or 'Good'	
	High quality teaching	2006	95%	> 85%	> 85%	> 85%	Graduate Feedback Survey (Course Experience Questionnaire)	1	Responses greater than and including 3 on a 5pt Good Teaching scale	
	Postgraduate overall satisfaction	2007	94%	Biennial	>95%	Biennial	Postgraduate Student Satisfaction Survey	1	Responses greater than and including 3 on a 5pt satisfaction rating scale	

Increasing the achievement at degree and postgraduate levels of under-represented groups, especially Maori and Pacific students, through strengthening pathways from schools and other TEOs, and enhancing support structures within universities.

KPIs as defined in Methodology paper (see glossary)

For historic results refer to caveats in BMR (for example, issues relating to data quality or completeness)

Investment Guidance KPI	BMR Ref.	Plan KPI	Historic		2008	Outcome Commitment		Notes	Reporting Lag (Years)	Cohort Year Type (see Glossary)
			Base Year	Result		2009	2010			
Increase the proportion of EFTS for Māori and Pacific students.	4.1.3	Proportion of domestic EFTS for Māori students	2006	5.5%	4.8%	5.2%	5.5%	Lincoln University data	1	Participation Cohort
	4.1.4	Proportion of EFTS for Pacific students	2006	1.8%	2.1%	2.3%	2.5%	Lincoln University data	1	Participation Cohort
Increase the completion rates for degree and postgraduate qualifications amongst Māori and Pacific students	4.2.2	Successful course completion rates for degree and grad diploma qualifications for Māori students	2006	72%	80%	80%	80%	Lincoln University data	1	Successful Course Completion Cohort
	4.2.3	Successful course completion rates for degree and grad diploma qualifications for Pacific students	2006	73%	75%	80%	80%	Lincoln University data	1	Successful Course Completion Cohort
	4.2.6	First year qualification-level attrition for degree, grad diploma and post-graduate qualifications for Māori students	2004	32%	30%	27%	25%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009. Outcome commitments benchmarked to sub-sector averages	3	First Year Qualification Level Attrition Cohort
	4.2.7	First year qualification-level attrition for degree, grad diploma and post-graduate qualifications for Pacific students	2004	%	30%	27%	25%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009. Outcome commitments benchmarked to sub-sector averages	3	First Year Qualification Level Attrition Cohort
	4.2.11	Qualification-level completion rates in one EFTS and under degree, grad diploma and post-graduate qualifications for Māori students (over a 2 year period)	2004	%	35%	37%	40%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009. Outcome commitments benchmarked to sub-sector averages	2	Qualification Level Completion Cohort
	4.2.12	Qualification-level completion rates for all degree, grad diploma and post-graduate qualifications for Māori students (over a 5 year period)	2002	%	35%	37%	40%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009. Outcome commitments benchmarked to sub-sector averages	5	Qualification Level Completion Cohort
	4.2.13	Qualification-level completion rates in one EFTS and under degree, grad diploma and post-graduate qualifications for Pacific students (over a 2 year period)	2005	%	35%	37%	40%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009. Outcome commitments benchmarked to sub-sector averages	2	Qualification Level Completion Cohort
	4.2.14	Qualification-level completion rates for all degree, grad diploma and post-graduate qualifications for Pacific students (over a 5 year period)	2002	%	35%	37%	40%	This commitment uses BMR data, Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009. Outcome commitments benchmarked to sub-sector averages	5	Qualification Level Completion Cohort

TEO Defined Quantitative or Qualitative KPIs

Investment Guidance KPI	Plan KPI	Historic		2008	2009	2010	Rationale / Notes	Reporting Lag (Years)	Calculation (see Glossary)
		Base Year	Result						
Progression to University through articulation pathways & 19	Number of Maori and Pacific Islands students			Develop measure	5	8	Supported through Te Tapuae initiative	1	
Progression to postgraduate study	Maori and Pacific Islands students progressing to postgraduate qualifications			Develop measure	12	15		1	Number of Maori and Pacific Islands students enrolled in postgraduate qualifications who have studied at Lincoln University in the preceding 5 year period
Maori and Pacific islands Enrolments in Certificate of University Preparation		2007	N/A	0	6	8	Supported through Te Tapuae initiative, first impact likely to be 09 as students will come through as a cohort		

Continuing the contribution that university teaching and research make to economic growth, and exploration of what more can be done to further understand and enhance that contribution.

TEO Defined Quantitative or Qualitative KPIs

Investment Guidance KPI	Plan KPI	Historic		2008	2009	2010	Rationale / Notes (data source)	Reporting Lag (Years)	Calculation (see Glossary)
		Base Year	Result						
Each university to identify KPIs related to their contribution to economic growth (eg. Increased economic outcomes for their graduates, creation of business spin-offs, or effective research collaboration with business).	Obj. 11, 15 & 16; p. 16 & 17	2006	88%	>85%	>85%	>85%	(Graduate destination survey). Note link to increased postgraduate enrolments	1	
	Obj. 9; p. 14 & 15			Establish baseline		Increase by 10%			
	Obj. 9 & 18; p. 15 & 17	2006	\$191,000	\$190,000	\$200,000	>\$200,000		1	Revenue from consulting activities as defined by LU consulting policy
	Obj. 9; p. 14 & 15	2007	0	1	1	2			
	Obj. 16 & 17; p. 19	2007			Measure to be confirmed	Progress against targets	Progress against targets	Higher levels anticipated in 2009 with South Island Agricultural Field Days	1
Engagement with stakeholders	Obj. 17; p. 17	2006	27	30	30	30		1	Enrolments in non-award short courses (EFTS)
	Obj. 14; p. 16	2007	5	10	12	15		1	Number of PIX Trust-funded projects
	Obj. 17 & 18; p. 17	2006	296	>310	>320	>330		1	Number of publications

Improving research connections and linkages to create economic opportunities

TEO Defined Quantitative or Qualitative KPIs

Investment Guidance KPI	Plan KPI	Historic		2008	2009	2010	Rationale / Notes	Reporting Lag (Years)	Calculation (see Glossary)
		Base Year	Result						
Each university to identify KPIs for their specific initiatives.									
Identify dimensions of contribution, assess contribution of Lincoln University qualitatively and quantitatively	Further research on Lincoln University's Distinctive Contribution to the economic transformation of New Zealand	2007	framework completed	--	Quantification of contribution	--	Includes employer and alumni surveys	1	
Develop closer linkages between LU and key industries	Increase in TBG projects, TIF projects and students engaged in L.V.L projects	2007	3	≥ 5	≥ 7	≥ 10		1	Number of projects
Community and industry engagement	Establish and progress strategy			Strategy established and targets established		Identified targets achieved	Supported by employer and industry survey		
TEO defined KPI									
TEO defined KPI									
TEO defined KPI									

Focusing capability building efforts to achieve increased quality and performance against international benchmarks

KPIs as defined in Methodology paper (see glossary)

For historic results refer to caveats in BMR (for example, issues relating to data quality or completeness)

Investment Guidance KPI	BMR Ref.	Plan KPI	Historic		Outcome Commitment			Notes	Reporting Lag (Years)	Cohort Year Type (see Glossary)
			Base Year	Result	2008	2009	2010			
Increase completion rates for degree and postgraduate qualifications.	4.2.1	Successful course completion rates for degree and grad diploma qualifications	2006	87%	85%	85%	85%	This commitment uses BMR data. Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	1	Successful Course Completion Cohort
	4.2.5	First year qualification-level attrition for degree, grad diploma and post-graduate qualifications	2004	18%	17%	16%	15%	This commitment uses BMR data. Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	3	First Year Qualification Level Attrition Cohort
	4.2.9	Qualification-level completion rates in one EFTS and under degree, grad diploma and post-graduate qualifications (over a 2 year period)	2005	73%	73%	75%	75%	This commitment uses BMR data. Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	2	Qualification Level Completion Cohort
	4.2.10	Qualification-level completion rates for all degree, grad diploma and post-graduate qualifications (over a 5 year period)	2002	58%	60%	60%	62%	This commitment uses BMR data. Lincoln University will continue to work towards replicating this measure with measure to be in place for 2009	5	Qualification Level Completion Cohort

TEO Defined Quantitative or Qualitative KPIs

Investment Guidance KPI	Plan Ref.	Plan KPI	Historic		Outcome Commitment			Rationale / Notes	Reporting Lag (Years)	Calculation (see Glossary)
			Base Year	Result	2008	2009	2010			
Each university to identify KPIs for improved quality and effectiveness as part of any proposals for capability building.										
Maintain national disciplinary and infra-structural capability in teaching and research in agriculture	Obj. 2; p. 13 & 14	Negotiated increased funding to support agricultural teaching delivery			Parameters for calculation established		Break-even position on agricultural teaching delivery	1		
Capability and capacity building in areas of national importance	Obj. 1, 7, 8, 9 & 11; p. 13, 14 & 16	Review programmes and provision in food and beverage, plant and animal breeding, horticulture, transport, biochar, urban design and planning, science entrepreneurship and water capabilities	2007		Strategic review of opportunity and requirements completed	Priorities for capability investment identified and plans established	Progress against milestones	1		
	Obj. 1, 3 & 9; p. 13, 14 & 15	Establishment of new, partially funded chairs in areas of national importance	2007	1	1	1	1	1		
Development of e-Research capability	Obj. 7 & 8; p. 14 & 15	Number of research projects that utilise KAREN advanced networking and data analysis capabilities	2007	0	1	2	4		1	

Each university to offer KPIs to demonstrate how research quality is being managed "in between" Performance-Based Research Fund (PBRF) rounds. (1)	Obj. 7, 19 & 27; p. 14, 15 & 19	High quality of research output	2006	376	>400	>425	>450		1	Number of Refereed research publications
	Obj. 1 & 6; p. 13, 14 & 15	Research degrees	2006	85	>90	>100	>110		1	Research degree completions
	Obj. 2 & 9; p. 13, 14 & 15	External Research Revenue	2006	13.1	14.5	15	15.4		1	External Research Revenue (\$ million)
	Obj. 9; p. 15	New Venture Challenge	2007	0	1	1	1	Running of new venture challenge competition	1	
	Obj. 9; p. 15	Pre-incubation unit	2007	0	2	3	5	Connected to the Canterbury Innovation Incubator (Cii)	1	Events held in pre-incubation unit
	Obj. 3, 7 & 19; p. 14 & 18	Council approved capital investment in teaching and research infra-structure			Progress against milestones	Progress against milestones	Progress against milestones	Upgrade of Landscape Architecture facilities; full implementation of Peoplesoft; IT network upgrade	1	

KPIs for Organisational Outcome Commitments (Quantitative or Qualitative)

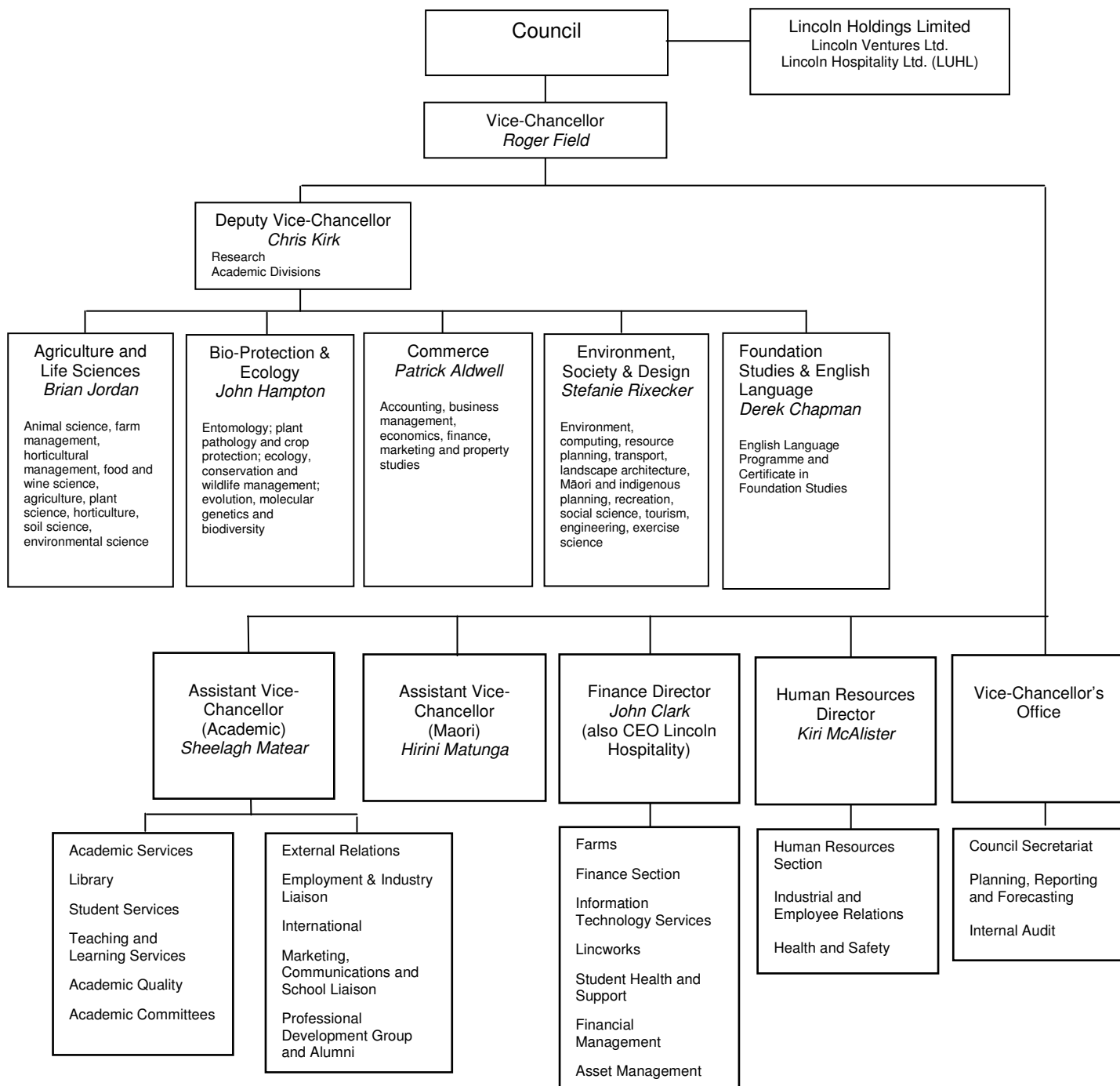
Initiative/Change from Three-year outlook*	Plan Ref	Plan KPI	Historic (if applicable)		2008	2009		2010	Rationale / Notes	Reporting Lag (Years)	Calculation (see Glossary)
			Base Year	Result		Outcome Commitment					
PBRF profile	Obj. 7 & 8; p. 14 & 15	Target A:B:C:R % profile by 2012	2006	5:25:47:23			8:30:42:20			1	

* Each initiative/change listed here should map to an initiative/change in the Three-year outlook.

NOTE - KPIs for strategies in the 3 year outlook are included in the previous tabs.

Appendices

Lincoln University Organisational Structure



Lincoln University's Distinctive Contribution to the Economic Transformation of New Zealand

**Paul Dalziel
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William Kaye-Blake
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Louise Ferguson**

October 2007



Lincoln University

Abstract

Lincoln University was founded in 1878 as a School of Agriculture, making Lincoln the third oldest institution in New Zealand's tertiary education system. In 1990, Lincoln College became Lincoln University, an autonomous university specialising in agriculture, the physical and biological sciences, commerce, the environment and social science. Its vision is to provide the national and international leadership in research and teaching that will contribute to ensuring a sustainable environmental, social and economic future for New Zealand.

Lincoln University has a long and proud history of research providing new knowledge and making it available to end-users in New Zealand. There is solid evidence of world-class research at Lincoln University in land-based sciences. Chapter 3 describes some notable case studies of research innovations. The Centre for Soil and Environmental Quality, for example, has recently developed a commercial product whose net return to the dairy industry was estimated to have been \$3.8 million in 2004, and could have been above \$25 million in 2007. The 2006 PBRF exercise revealed that Lincoln University is New Zealand's top university, adjusted for size, for performing externally funded research. Lincoln University has seven first-class research centres in its main areas of expertise. These include the National Centre for Advanced Bio-Protection Technologies hosted by Lincoln University, which is pursuing multidisciplinary research and development to meet the biosecurity and pest management needs of New Zealand's plant based primary industries and natural ecosystems.

Lincoln University has a well-balanced portfolio of teaching programmes that are producing graduates with important skills needed for New Zealand's ongoing economic transformation. The University offers undergraduate degrees in each of its five core specialisations and 13 specialist degrees to meet the skill requirements of specific industries or occupations. At the postgraduate level, Lincoln University offers 11 Bachelor degrees with honours, 18 Masters degrees and the Doctor of Philosophy degree. These degrees are supplemented with shorter programmes leading to certificates or diplomas. Lincoln University has a distinctive approach to learning, based on applied programmes that combine theory and practice within an inter-disciplinary and multi-disciplinary context. This reflects the University's commitment to engage with employers of its graduates. Lincoln graduates are regarded as good at transferring their skills over a wide range of tasks. Surveys show that three-quarters of Lincoln University graduates have their employment expectations met within 12 months of graduation.

Lincoln University is a creative and animating resource for its regional and sectoral partners. It employs more than 300 highly skilled academic and research staff, many of whom are from overseas and could not otherwise have offered their talents to New Zealand. The University hosts national specialist facilities, including the New Zealand Biotron, the CSEQ lysimeter laboratory, the NRE flume facility and the Lincoln Trade and Environment Model. It is a founding member of the Lincoln Resource, which is a group of companies and organisations involved in land-based research and its application in business. Lincoln University is particularly conscious of its responsibility to provide national leadership in agriculture, including the New Zealand Kellogg Rural Leadership Programme. It is also involved in numerous initiatives that contribute to community development in the region such as the University's formal relationship with Te Taumutu Rūnanga, the Lincoln Envirotown Trust, the WaterWatch programme, the Youth EnviroSchool (YES), and the New Zealand Cricket High Performance Centre.

Executive Summary

Introduction

1. This report presents the results of a research project undertaken by a team of researchers in Lincoln University's AERU research unit, commissioned by the Chancellor and the Senior Management Group of Lincoln University against the background of the New Zealand government's *Tertiary Education Strategy 2007-2012* released on 14 December 2006. It is part of the University's critical reflection on its current performance in meeting stakeholder needs and priorities. The aim is to provide evidence on the distinctive contribution Lincoln University is making to New Zealand's economic transformation.
2. Lincoln University was founded in 1878 as a School of Agriculture, making Lincoln the third oldest institution in New Zealand's tertiary education system. The School became a full member of the University of New Zealand in 1896. When the University of New Zealand devolved into separate universities, Canterbury Agricultural College became Lincoln College on 1 January 1962, issuing degrees through the University of Canterbury but governed by its own Council. In 1990, Lincoln College became Lincoln University, an autonomous university specialising in agriculture, the physical and biological sciences, commerce, the environment and social science.
3. The vision of Lincoln University is to provide the national and international leadership in research and teaching that will contribute to ensuring a sustainable environmental, social and economic future for New Zealand (Lincoln University *Charter*, November 2003, p. 2). Consistent with this vision, the University's strategic direction is framed by accepting 'responsibilities for the creation and application of knowledge in areas that are vital to the sustainable development of New Zealand' (Lincoln University *Profile 2007-2009*, October 2006, p. 3).

The Economic Transformation of New Zealand

4. New Zealand experienced a period of significant economic reforms between 1984 and 1994. The remainder of the decade was a transition phase to the new market economy as the economic reforms were consolidated but not extended. After the 1999 general election, the government adopted a new form of economic management based on 'economic transformation'. Chapter 2 of the report draws on government documents published between February 2002 and November 2006 to describe what is meant by the economic transformation of New Zealand.
5. These documents emphasise strengthening innovation systems within New Zealand (regional, national and sectoral) and better international linkages. They acknowledge the important role of New Zealand's existing land-based industries (including tourism) as well as the importance of new knowledge-driven enterprises. Indeed, Webb and Grant (2003, p. 13) observe that the land-based industries 'are the predominant drivers of the economy and provide the cash flow (and tax base) essential for funding the transformation' of New Zealand.
6. The Economic Transformation Agenda identifies five key areas or integrated themes to be the focus of the government's strategic direction: (1) globally competitive firms; (2) world class infrastructure; (3) innovative and productive workplaces – underpinned by high standards in education, skills and research; (4) environmental sustainability; and (5) Auckland – an internationally competitive city. Lincoln University is well placed to contribute to these themes.

7. The government's economic objective is to return New Zealand to the top half of the OECD in terms of real gross domestic product (GDP) per capita, and then maintain that standing. Chapter 2 shows that to achieve this target by 2015, assuming the median country in the OECD ranking continues to grow at its recent historical rate, New Zealand's per capita GDP growth rate will need to be 4.6 per cent per annum, which is two and a half times greater than its actual growth rate between 1990 and 2004.
8. Chapter 2 also reports a simulation of the growth in employees with university-level qualifications that is consistent with returning to the top half of the OECD by 2015. Under a balanced growth scenario, the number of annual domestic graduations needs to increase by just under 10 per cent. The shortfall is greater if attention is restricted to university graduates on the basis that research activity in Institutes of Technology, Polytechnics, Colleges of Education, Wānanga and Private Training Enterprises is very weak. In an export-led scenario, New Zealand is producing enough graduates in total, but it is not clear whether the Tertiary Education System is producing the right mix of graduates with the right skills for New Zealand's export firms in agriculture, manufacturing and tourism.

Lincoln University as Producer of New Knowledge

9. Karlsson and Zhang (2001, p. 180) suggest that 'research-oriented universities are to the knowledge economy what coal and iron mines were to the industrial economy'. Table 6 of this report classifies university activities in producing new knowledge across two dimensions. The first dimension creates five types of research, depending on whether it is inspired by the researcher, the government, an industry, an enterprise or the requirement for postgraduate students to include research as part of their degree. All of these categories include basic and applied research.
10. Lincoln University has a long and proud history of open science research providing new knowledge, especially for the primary sector of New Zealand. A recent report by Smart and Weusten (2007) has provided evidence of the world-class standard of research achieved at Lincoln University in land-based sciences.
11. It is not possible to quantify the total value of open science contributions made by land-based scientists at Lincoln University over its 130-year history, but Chapter 3 of the report describes some notable case studies: the introduction of subterranean clover and the use of lime fertiliser; the demonstration that lucerne can be grown on lighter soils dry lands; the development of the Coopworth sheep breed; the foundation of Canterbury's wine industry; and the use of ecological engineering to improve the efficacy of beneficial insects.
12. As the previous examples illustrate, Lincoln University has maintained undeniable strengths in creating new knowledge in the land-based sciences but this is not the limit of its open science contributions. Smart (2007), for example, present data on the impact of New Zealand university researchers under the broad categories of business and economics, and social sciences and other cultural/social studies. In both cases, Lincoln University is ranked a credible third out of the eight New Zealand universities.
13. Again there have been some notable case studies of contributions by Lincoln University in commerce, environmental management and social science: the Philpott-Ross model provided the analytical foundations for the National Development Conference in 1968/69; the Centre for Resource Management played a pivotal role in providing policy advice leading up the New Zealand's world-renowned Resource Management Act 1991; the Tourism and Recreation Research and Education Centre has produced a tourism planning toolkit widely disseminated for regional tourism strategies; and the 'food miles' research in the Agribusiness and Economics Research Unit has been recognised for excellence in economics of benefit to New Zealand.

14. Lincoln University is New Zealand's top university, adjusted for size, for performing externally funded research. Evidence for this claim is provided in the PBRF exercise in 2006, which recorded that Lincoln University's external research funding was \$75,807 per full time equivalent staff. This was the highest of the New Zealand universities (including the two universities with medical schools) and more than three-quarters higher (76.9 per cent) than the figure for all eight universities of \$42,848.
15. Further evidence of Lincoln University's commitment to produce economically valuable research is provided by the new projects awarded to Lincoln University in 2007 by the Foundation for Research, Science and Technology (FRST). There were six projects in total, amounting to \$15.6 million for work that will each take between 28 months and six years. The grants were made to researchers in the University's specialist research centres, spread across all four of the University's academic divisions.
16. Lincoln University has seven first-class research centres in its main areas of expertise, with a further two centres being founded in late 2007. The National Centre for Advanced Bio-Protection Technologies hosted by Lincoln University is the only Centre of Research Excellence funded by the Tertiary Education Commission in the South Island. It is pursuing multidisciplinary research and development to meet the biosecurity and pest management needs of New Zealand's plant based primary industries and natural ecosystems. A recent economic evaluation of the Centre reported that the biosecurity research alone is likely to be worth tens of millions of dollars per year in risk reduction and avoided damages.
17. The Centre for Soil and Environmental Quality has developed a commercial product, eco-n™, whose net return to the dairy industry was estimated to have been \$3.8 million in 2004, and could have been above \$25 million in 2007. The CEO of Ravensdown told the authors of this report that Lincoln University has developed a robust model for partnering with private firms to commercialise research, making it a better partner than other research providers.
18. Research creating intellectual property is not limited to the University's research centres. An example is the development of gene marker technologies for sheep breeding. The Footrot Gene-Marker Test (FGMT) operation is run as a business within Lincoln University. Under plausible scenarios the annual benefits of the Footrot Gene-Marker Test (FGMT) programme lie between \$3 million and \$6 million, producing a total net present value between \$14 million and \$24 million.
19. In 1994 Lincoln University created a wholly-owned subsidiary, Lincoln Ventures Ltd., to bring together a number of semi-autonomous operations at the University. Lincoln Ventures employs about 40 research scientists, technicians and support staff, working in partnership with private companies to commercialise products. Lincoln University is involved in another technology venture as a founding partner of the Canterbury Innovation Incubator (Cii). In 2007, Cii agreed to set up a satellite incubation facility on the Lincoln University campus, reflecting strong interest in agribioscience projects across the Lincoln Science Precinct.
20. Another high profile cooperative venture is the South Island Dairying Development Centre (SIDDC). At the heart of the partnership is the Lincoln University dairy farm, a 186-hectare, irrigated, state-of-the-art dairying unit. Established only in September 2001, the farm recorded its 10,000th visit in March 2007. A short distance down the road is Kowhai Farm, a joint venture between Heinz Wattie's and Lincoln University on the University's crop farm. Kowhai Farm is managed according to the BIO-GRO Organic Production Standards, following its conversion by Heinz Wattie's from conventional cropping in August 2002. It is now a research and demonstration farm to improve profitability for organic farmers by investigating possible sustainable organic rotations.

Lincoln University as Educator of Advanced Knowledge

21. A substantial international literature has been produced over the last 40 years to demonstrate that university graduates on average experience a significant earnings premium in the labour market. It is also generally accepted that these premiums reflect a higher labour productivity of graduates compared to non-graduates, and there is further evidence that skilled people are often more productive when working with other skilled people. Taken together, these observations imply that university education gives graduates valuable skills, resulting in a more productive workforce and therefore contributing to economic transformation.
22. Lincoln University has a well-balanced portfolio of programmes producing graduates with important skills needed for the ongoing transformation of the New Zealand economy. The University offers generic three-year undergraduate degrees in each of its core specialisations: the Bachelor of Agriculture, the Bachelor of Commerce and Management, the Bachelor of Environmental Management, the Bachelor of Science, and the Bachelor of Social Science. It also offers 13 specialist degrees designed to meet the skill requirements of a specific industry or occupation. At the postgraduate level, Lincoln University offers 11 Bachelor degrees with honours, 18 Masters degrees and the Doctor of Philosophy degree. These degrees are supplemented with a range of shorter programmes leading to certificates or diplomas.
23. The international literature suggests that university education in commerce-related fields can enhance economic development. A feature of commerce at Lincoln University is its focus on *international* commerce, consistent with its origins in the need to offer education in international trade and marketing to students in the agriculture programme. This is an important contribution to the New Zealand economy, providing graduates with skills necessary for developing the country's international trade. At a more advanced level, the University's Executive Development Programme offers two postgraduate qualifications (Masters of Professional Studies and Masters of Property Studies) designed for the professional development of managers in the workplace.
24. Lincoln University has an active programme of stakeholder communication, beginning with the publications on its website and the work of its marketing and communications unit in the Business Development Office. The University's Professional Development Group is devoted to organising and managing conferences, field days and short courses. This includes the flagship New Zealand Kellogg Rural Leadership Programme, which develops emerging agribusiness leaders to help shape the future of New Zealand agribusiness and rural affairs. Academic staff are involved in providing resources to university stakeholders, including as a result of their participation in conferences.
25. Lincoln University recognises that it is a national institution, making significant contributions to the transformation of the New Zealand economy in its specialist areas. The University also recognises the importance of being well-connected to its local region. It is a founding member of the Canterbury Tertiary Alliance with the University of Canterbury and the Christchurch Polytechnic Institute of Technology. It is also a member of the Te Tapuae o Rehua partnership between Ngāi Tahu and six South Island tertiary institutions working together to support Māori development and aspirations.
26. Lincoln University is providing skilled graduates in each of the three sectors emphasised in the *Canterbury Regional Economic Development Strategy 2005-2015*. The University has world-class research records and teaching programmes relevant to the agricultural industries. The University's Tourism and Recreation Research and Education Centre facilitates interdisciplinary tourism, recreation and leisure research and education opportunities. The Applied Computing Group at Lincoln University focuses on equipping students with transferable computing knowledge and skills that can be applied to real world problems, and is well connected to the local computing industry.

27. Lincoln University is also well placed to contribute to meeting important labour market needs identified in the *Regional Statement of Tertiary Education Needs, Gaps and Priorities in Canterbury*. Its most popular programme is the Bachelor of Commerce and Management, which is strongly focused on high quality management education that is relevant to the needs of business. The BCM degree includes 'international business' as a Major area of study, which provides skills to increase an employing firm's ability to export successfully. The University's Bachelor of Tourism Management is a response to the growth of tourism in Canterbury and nationally, which incorporates a strong component of high quality management education. Exports from New Zealand are still heavily concentrated in land-based commodities, and the University's programmes in agriculture and the land-based sciences are producing graduates who know how to be productive. The University supports responsive delivery of its programmes, including the provision of some courses in regional education mode and the work of the Professional Development Group and the Executive Development Programme in providing flexible education for people while they are in work.
28. These strong links between Lincoln University programmes and employer requirements are not accidental, but reflect the University's commitment to engage with employers of its graduates. Several of its programmes are accredited by an appropriate national sector organisation, and other programmes have formal mechanisms for consultation with industry.
29. At the national level, Lincoln University's portfolio of undergraduate and postgraduate degree offerings is well-suited to meet New Zealand's projected needs for graduates if it is to return to the top half of the OECD by 2015. Lincoln University has the capacity to accept higher enrolments to produce a 10 per cent increase in domestic graduations per annum (under the balanced growth scenario) or to produce an increased proportion of graduates with the right mix of skills for employment in the export industries, particularly through its programmes in agriculture, the land-based sciences, international business and tourism (under the export-led scenario).
30. Lincoln University has a distinctive approach to learning, based on applied programmes that combine theory and practice within an inter-disciplinary and multi-disciplinary context. Lincoln graduates are regarded as good at transferring their skills over a wide range of tasks. Surveys show that three-quarters of Lincoln University graduates have their employment expectations met within 12 months of graduation. Lincoln graduates have been in the past, and continue to be, extremely influential in policy, with involvement in a number of governmental and business agencies.

Lincoln University as Animator of Regions and Sectors

31. Gunasekara (2006, p. 102) has noted the following international trend: 'Theorisation of the role of universities in regional innovation system has evolved in the last 20 years, from the innovation systems approach, which highlighted the importance of knowledge spillovers from the educational and research activities performed by universities in regional knowledge spaces, towards the development of a third role performed by universities in animating regional economic and social development.' The literature identifies five ways that a university can contribute to economic transformation as an animator of regions and sectors: through its contributions to regional revenue flows; through its specialist skills and facilities; through its position as a creative hub in the broader creative ecosystem of a region or industry; through its role as a magnet for talented people and high-tech firms; and through its contribution to community development projects.
32. Lincoln University is a very significant enterprise in the Selwyn district. The growth of the University has undoubtedly contributed to Selwyn being the second-fastest growing territorial authority in New Zealand between the 2001 and the 2006 Census. Adopting multipliers used in a University of Auckland economic impact study, Chapter 5 of the report suggests that Lincoln University's contribution to the Canterbury economy in 2006 was in the order of \$500 million.

33. Lincoln University employs more than 300 academic and research staff covering a wide range of specialist skills. It hosts specialist facilities, concentrated in its land-based sciences, including the New Zealand Biotron, the CSEQ lysimeter laboratory and the NRE flume facility. Other parts of the University offer particular resources for national policy advisors or industry groups, such as the Lincoln Trade and Environment Model. The Lincoln University Library provides information resources and services that are heavily used by university staff and students for research and study.
34. Lincoln University is a founding member of the Lincoln Resource, which is a group of companies and organisations involved in land-based research and its application in business, based in and around the Lincoln township. Membership of the Lincoln Resource strengthens the University's research capabilities. Many of the large research contracts it manages, for example, involve subcontracted or joint research teams with other members of the Lincoln Resource. At the national level, Lincoln University staff are engaged in a wide range of public service.
35. Lincoln University is particularly conscious of its responsibility to provide national leadership in agriculture. In 1969, for example, Lincoln University launched what is now the National Bank Young Farmer Contest that has evolved over the years to become 'an icon of rural New Zealand.', including a televised grand final. Lincoln University remains a major sponsor of this high profile multi-disciplined farming challenge. The commitment to agricultural leadership is also reflected in the Kellogg Rural Leadership Programme, offered by Lincoln University since 1979. There are now over 500 "Kelloggers", many of whom have gone on to become well-known names in the rural sector, contributing to the ongoing transformation of this key sector in the New Zealand economy.
36. Since the appointment in 1878 of William Ivey as its first Principal, Lincoln University has attracted, and continues to attract, outstanding staff members. Many appointments are from overseas, bringing talented researchers to New Zealand who otherwise could not have offered their skills to this country. The talent at Lincoln University is not limited to its staff. The University attracts some excellent students, particularly at the postgraduate level, several of whom are recognised with scholarships, awards and prizes each year. These examples reflect a long tradition of outstanding postdoctoral research at Lincoln University that is now celebrated at an annual postgraduate students' conference on campus.
37. Lincoln University is involved in numerous initiatives that contribute to community development in the region. This report focuses on five examples: the University's formal relationship with Te Taumutu Rūnanga; the Lincoln Envirotown Trust; the WaterWatch programme; the Youth EnviroSchool (YES); and the New Zealand Cricket High Performance Centre.

Conclusion

38. This report has sought to provide evidence for Lincoln University's distinctive contribution to the economic transformation of New Zealand. Since its foundation as a School of Agriculture in 1878 and continuing to the present day, Lincoln has provided leadership in the primary sector of New Zealand and in the land-based sciences. As the challenges facing New Zealand agriculture have expanded to include issues in world trade and the environment, so Lincoln University has invested in developing strong competencies in commerce, environmental management and the social sciences. The result is a specialist research-led university that is particularly well-placed to meet the objectives of the government's *Tertiary Education Strategy 2007-2012*.
39. A feature of Lincoln University is the holistic approach it takes in its specialist areas of expertise to the various ways in which a university can contribute to the economic transformation of its regional or national communities. Its long history of engagement with the primary sector of New Zealand, and its current vision as a specialist research-led university with core competencies in agriculture, the land-based sciences, commerce, environmental management and social science, mean that Lincoln University can adopt a fully integrated approach in its contributions to transforming New Zealand's core industries.

40. A gap noted by the research team for this project is the difficulty of obtaining information about the career paths followed by the University's graduates. It may be possible for the University to undertake a full survey of alumni and employers, perhaps in association with the Kea network of New Zealand's global talent community. As the University reviews its degree programmes, the reviews might include specific consideration of how the University's degree offerings can better contribute to New Zealand's ongoing economic transformation.
41. The analysis in Chapter 4 notes that the workforce in New Zealand's export sectors contains a lower proportion of university-level graduates than other parts of the economy. There may be opportunities for Lincoln University to exercise leadership in exploring this issue, particularly in agriculture and tourism. Suitable partnerships with industry groups in these sectors might be financed by the Tertiary Education Commission to encourage tertiary study by school-leavers intending to enter these sectors as well as life-long learning by employees.
42. One of the distinctive contributions of Lincoln University has been its strong engagement with businesses and industry groups in its areas of specialisation. The costs of initiating and maintaining engagement with industry partners are not well recognised in funding systems that have focused on research and learning. There are opportunities for Lincoln University to increase its involvement with industry groups to understand and meet the needs of businesses if funds are made available to facilitate this.
43. Lincoln University is currently undertaking a review of the undergraduate programmes in commerce. There may be an opportunity for the review to strengthen the commerce programme's distinctive concentration on providing its students with the capability to assist businesses to be internationally competitive.
44. A distinctive feature of the Māori research and learning activities at Lincoln University is that both are integrated into wider university programmes in the land-based sciences, in commerce and in the social sciences. This is a distinctive contribution of Lincoln University to the development of Mātauranga Māori research in New Zealand. The results of this Māori research need to be communicated with appropriate communities to ensure authenticity and validity. This is a resource intensive process. The University may want to discuss with the Tertiary Education Commission whether Māori research should continue to be funded at the social science rate (in the PBRF exercise, for example), or whether it should be increased to the higher physical science rate.
45. There already exists a premium in government funding models for science research to reflect its higher cost (compared to social science or commerce research, for example), but there remains a widespread view that applied or interdisciplinary research producing valuable new knowledge for New Zealand's ongoing economic transformation is under-funded. Significant intellectual property has been developed at Lincoln University. The University has enormous potential to continue creating commercial opportunities for New Zealand firms.
46. Lincoln University prides itself on being 'a truly international university'. It has extensive links to international communities through staff members' research and extension activities. In some cases these links are formalised at the university level; others involve staff members in formal roles of collaboration and exchange. There are students from about 60 different countries at Lincoln University. The University hosts international academics on a regular basis, and members of its own staff regularly present their research at international conferences and work in collaboration with overseas colleagues. The value of these international exchanges can be enormous.
47. Environmental sustainability is a core strength at Lincoln University. The Isaac Centre for Nature Conservation is the umbrella body for the University's nature conservation research.

The Isaac Centre is involved in a number of exciting environment-related projects in pursuit of its mission statement to promote the conservation of biological diversity and other elements of nature, its sustainable use, and the fair and equitable sharing of the benefits arising out of its utilisation through education, training and advocacy. Lincoln University's unique blend of expertise in the land-based sciences, in business and economics, and in the relevant social sciences, means it is particularly well-placed to respond to opportunities for the provision of research and learning in environmental sustainability. These opportunities are likely to become more pronounced as the world responds to the challenges posed by global climate change, changing patterns of international trade and environmental kaitiakitanga or stewardship.

48. Historically, New Zealand's research focus has been on increasing physical productivity in terms of increasing outputs per unit of labour or other inputs. The focus has not been so strong on improving prices by successfully meeting consumer demand in premium markets. Increasingly, to achieve higher value and to maintain access to high value markets, attention has to be given to market access requirements. These have always included factors such as food safety and quality (something at which New Zealand is good) but now producers are increasingly being required to meet standards for the conditions under which their products are produced and distributed (as witnessed by the recent 'food miles' debates in Europe).
49. The need to address this is urgent, since there is a short window of opportunity for New Zealand's primary sector exporters while export subsidies in other countries are being reduced and as the conversion of agricultural area to biofuel production continues. To take advantage of this opportunity, however, and to protect medium term access to premium markets, New Zealand will have to ensure its production can be certified as meeting emerging regulatory and consumer requirements for sustainability and environmental management.
50. Lincoln University, based on its holistic approach to applied research, relevant education and strong engagement, together with its particular suite of core capabilities in agriculture, the land-based sciences, commerce, environmental management and social science, is able to assist New Zealand firms take advantage of these global opportunities, while enhancing the social, economic, environmental and cultural well-being of New Zealand's communities in the present and for the future.

Lincoln University Research Centres

The *National Centre for Advanced Bio-Protection Technologies* is hosted by Lincoln University. It is the only Centre of Research Excellence funded by the Tertiary Education Commission in the South Island. Its aim is to pursue multidisciplinary research and development to meet the biosecurity and pest management needs of New Zealand's plant based primary industries and natural ecosystems. The Centre commissioned an economic analysis of its activities, which estimated the likely magnitudes of the economic impact of the four research themes (Kaye-Blake et al, 2007). The biosecurity research alone is likely to be worth tens of millions of dollar per year in risk reduction and avoided damages. The impact could be higher, depending on the specific threats that are avoided. Biocontrol research may contribute millions of dollars through marketable biocontrol agents (BCAs), and may lead to even greater productivity across the agricultural sector in the case of research on classical biocontrol. The research on the biotechnology theme has economic potential similar to that of BCA research, although it appears to face different risks in terms of realising value through commercialisation. Finally, the Mātauranga Māori research theme is potentially generating tens of thousands of dollars in increased returns for participating growers. Some specific economic impacts were identified in the report:

- Estimated revenues from a biocontrol agent for *Botrytis* in grapes are up to \$10 million per year in New Zealand alone.
- Ecological engineering in vineyards can create \$21 million of benefits from reduced fungicides and insecticides.
- The Centre has successfully commercialised a fungal biocontrol agent in New Zealand. Approval for export of the product to Australia is pending.
- If the probability of a \$1 billion per year biosecurity problem can be reduced by just one per cent, the financial benefit over ten years is \$66.9 million. For comparison's sake, estimated losses from didymo are \$1.93 to \$3.85 billion per year.
- Centre research is generating tens of thousands of dollars in value for Māori horticulturalists.
- Additional Centre research is focused on major pest problems whose impacts have been assessed as follows:
 - The Argentine stem weevil causes damages of up to \$1 billion annually.
 - Clubroot disease is estimated to cause annual damages of \$8.7 million.
 - Annual losses from California thistle are estimated at \$450 million annually.
 - Control of needle blight in one 145,000-hectare forest cost \$18.4 million over 22 years.

The *Centre for Soil and Environmental Quality (CSEQ)* offers a research portfolio that addresses industry needs and government research priorities. A notable success has been the patenting and development of the commercial nitrification inhibitor product, eco-n™ marketed to dairy farmers with Ravensdown Fertiliser Co-operative Ltd.. The economic impact of eco-n™ was evaluated as part of a wider study of biotechnology by Kaye-Blake et al. (2006, p. 49), and assuming a very conservative 10 per cent increase in pasture production, the net return is \$223 per hectare per year. In the autumn of 2007, eco-n was applied to approximately 52,000 hectares, producing an estimated total net return to the industry of more than \$3.791 million. There has been a more than threefold increase in land area under treatment in 2007. The CSEQ research has also produced environmental benefits. Eco-n™ is a key technology for reducing New Zealand's production of greenhouse gases and the amount of nitrate leaking into the waterways.

The *Centre for Viticulture and Oenology (V&O)* acts as a focus for interdisciplinary research on wine, from soil to glass, at Lincoln University. It was established in 1998 in recognition of the wide range of specialist topics that contributed to the teaching and research programmes. Lincoln University has been actively involved in wine research since 1990, although varietal and clonal evaluation trials preceded this, beginning in the 1970s. This period coincided with renewed interest in growing classical wine grape varieties in New Zealand. Throughout, the emphasis of the work at Lincoln University has been the development of cool-climate wine styles suited to the New Zealand environment. More recently, that interest has grown to incorporate social and commercial sciences.

The *Centre for Advanced Computational Solutions (C-fACS)* was established in 1999 to conduct research in computational and mathematical sciences relevant to environmental protection, biological sciences and engineering (biotechnology), and precision agriculture. C-fACS is a distributed research centre having members at different sites but the co-ordination is through the Agriculture and Life Sciences Division at Lincoln University. C-fACS aims to embody the best aspects of both academic and industrial cultures, allowing Lincoln University to uphold scientific ideals while at the same time demonstrating an awareness of real world constraints. The Centre has been launching a number of Integrative Systems Biology Initiatives to develop computational platforms to model the biochemical, metabolic, and gene regulatory pathways related to water-, UV-, and temperature- stress responses of plants. The other systems biology projects involve genetic level circadian rhythms, signalling pathways related to Bovine mastitis, and gene expression related to breast cancer.

Other parts of Lincoln University offer particular resources for national policy advisors or industry groups. The *Agribusiness and Economics Research Unit (AERU)* has had a proud history of achievement for over 40 years and provides research expertise for a wide range of organisations. The Unit employs full-time researchers and it also functions as a research coordinating body for staff of the University involved in economic, social, and environmental research. It can call upon the expertise of staff in all Divisions of the University and it has particularly close links with the Commerce, and Environment Society and Design Divisions. The AERU has developed and maintains the Lincoln Trade and Environment Model (LTEM). This is an agricultural multi-country, multi-commodity model which uses a partial equilibrium framework to analyse the impact of agricultural domestic and trade policies. The LTEM also quantifies the linkages between the agricultural sector and the environment in various contexts through an extension of the main model structure to include environmental sub-modules or environmental damage functions. Hence the LTEM is able to evaluate the link between trade and the environment and so enable New Zealand producers, environmentalists, traders, and policy analysts to assess implications of changes in production, policy or trade conditions on the environment and on producer returns. The risks and benefits to New Zealand of both internal and external changes in market and policy preferences can be assessed. Recent research evaluating the 'food miles' debate in Europe showed that New Zealand products compare favourably with lower energy and emissions per tonne of product delivered to the United Kingdom compared to other UK sources. In the case of dairy, New Zealand is at least twice as efficient; and for sheep meat four times. This research has withstood close scrutiny from a wide range of overseas academic and government bodies concerned with trade and the environment. The outstanding value of this contribution was recognised on 30 August 2007, when Professor Saunders was awarded the prestigious NZIER Economics Award for excellence in economics of benefit to New Zealand.

The *Tourism, Recreation Research and Education Centre (TRREC)* is an initiative at Lincoln University to facilitate interdisciplinary tourism, recreation and leisure research and education opportunities, particularly those that focus on public resource issues including the public sector interface with the tourism and recreation industries. TRREC's mission is to achieve excellence in interdisciplinary tourism and recreation research, consultancy and education, and to deliver outputs to the industry that are timely, relevant and easy to apply. TRREC research projects involve a number of collaborators including the Tourism Industry Association, the Ministry of Tourism, Landcare Research Ltd., Beca Carter Hollings and Ferner Ltd., and the Tourism and Leisure Group.

These projects include FoRST-funded research. Staff members of TRREC have also undertaken a number of consultancies for agencies including World Tourism Organisation (WTO), United Nations Development Programme (UNDP), and New Zealand Ministry of Foreign Affairs and Trade (NZ MFT).

The *Isaac Centre for Nature Conservation* is less directly concerned with economic transformation, but is the umbrella body for all nature conservation research at the University. Its mission statement, based on Article 1 of the 1992 Convention on Biological Diversity, is to promote the conservation of biological diversity and other elements of nature, its sustainable use, and the fair and equitable sharing of the benefits arising out of its utilisation through education, training and advocacy. The Centre was established in 1999 to build on and focus the extensive skills and scholarship of Lincoln University staff for research, teaching and vocational training in nature conservation. This includes disciplines such as conservation biology, community and landscape ecology, sustainable management of natural resources, recreation and tourism in natural environments, development and use of environmental indicators, landscape design, habitat restoration and species recovery programmes, ethnobiology and wildlife management, ex situ (botanic garden, zoo and germ plasm bank) conservation, bio-economics and the ethics of nature.

The *Sustainable Agricultural Production Centre* (SAPC) has been recently established to provide scientific research on sustainable agricultural production for the benefit of New Zealanders. The Centre will coordinate and bring together research activities and programmes on sustainable agricultural production.

The recently established *Centre for International Development* (CID) will focus on consultancy in developing countries. This consulting activity will utilise leading-edge approaches, processes and techniques that makes use of Lincoln University's acknowledged expertise in agriculture, tourism, natural resources and the environment. This Centre provides the opportunity to enhance Lincoln University's reputation and profile through its consulting activity, publications and presence, and will contribute towards the University's social responsibility goals.

Mapping Lincoln University KPIs to TES/STEP and Three-year Outlook

Withheld under the provisions of the Official Information Act.

Operational Plan 2008 – Initiatives and Activities

Strategic Objective 1:

Management and Stewardship

- 1.1 Conclude negotiations with the Tertiary Education Commission for appropriate funding for the 2008-2010 triennium.
- 1.2 Progress and extend revised objectives in Business Improvement Audit and subsequent approach to optimising service levels and support.
- 1.3 Complete changes linked to Review of Academic Delivery and implementation of projections in the Investment Plan.
- 1.4 Implement revised Annual Salary Review (ASR) process.
- 1.5 Implement changes associated with the Public Records Act.
- 1.6 Implement the PeopleSoft upgrade.
- 1.7 Review Job Evaluation Tool and associated processes.
- 1.8 Implement revised approach to marketing and recruitment.
- 1.9 Develop a Postgraduate recruitment strategy which recognises the different drivers (academic career, research, unemployment, international experience) and market opportunities.
- 1.10 Review of Institutional Structure.
- 1.11 Investigate improvements in meeting the transport requirements of students living in Christchurch and contribute to the reduction of carbon emissions by providing free or subsidised bus fares for students at Lincoln University.

Strategic Objective 2:

Research Excellence

- 2.1 Enhance research management support services.
- 2.2 Implement a commercialisation approach to improve knowledge transfer and generate financial returns on research investment.
- 2.3 Implement the Lincoln University Research Strategy.
- 2.4 Develop closer links between Lincoln University and key industries.
- 2.5 Plan for enhancing PBRF performance.

Strategic Objective 3:

Teaching and Learning Excellence

- 3.1 Implement Timetabling Software.
- 3.2 Continue implementation of programme reviews to ensure programmes meet employer and student needs and costs of delivery are reasonable.
- 3.3 Develop pathways strategy.
- 3.4 Scope opportunities to consolidate provision and develop collaborative programmes and delivery with other Universities and teaching institutions.
- 3.5 Establish Teaching and Learning Strategic Direction.

- 3.6 Develop and implement student retention strategy.
- 3.7 Teaching innovation.
- 3.8 Introduce Annual Teaching Facilities funding round.
- 3.9 Course Information System (Continuing Project - in 2007 plan).
- 3.10 Establish eLecture platform and support framework (Continuing Project - in 2007 plan).
- 3.11 Conduct a review of assessment and student workload (carried forward from 2007).

Strategic Objective 4:

Community, Industry and Partner Linkages

- 4.1 Establish Industry Relations Strategy.
- 4.2 Extend Schools Outreach Programmes.
- 4.3 Develop Industry/Employer Liaison Groups directly linked to Academic Programmes.
- 4.4 Improve internal communication and engagement processes.
- 4.5 Re-introduce Inaugural Professorial Lectures.
- 4.6 Implement the Partnership for Excellence programme.

Strategic Objective 5:

Student Experience and Support

- 5.1 Increase the level of scholarship support available to students.
- 5.2 Orientation and first year transition.
- 5.3 Review student field trips and tours in relation to tuition fees, value for money to students and academic outcomes.
- 5.4 Landscape Architecture Building and Student Computer Suites.
- 5.5 Explore flexible postgraduate workspaces.
- 5.6 Student computer suites.
- 5.7 Review of the Discipline Regulations, Policy and Procedure.

Strategic Objective 6:

Māori and Pasifika Aspirations

- 6.1 Consolidate Kaupapa Māori Units across all divisions and consolidate Te Puna Whakapuawai as the institutional forum for coordinating Māori development.
- 6.2 Promote minor in Māori Studies across all undergraduate degree programmes.
- 6.3 Develop a marketing strategy to better target the Māori community regionally and nationally and equivalent Pasifika communities.
- 6.4 Provide opportunities for Māori academic, research and support staff to build scholarship, research productivity and cultural awareness and enhance Māori student success.
- 6.5 Review foundation studies programmes for Māori and Pacific students.

- 6.6 Establish and improve existing links appropriate local, national and international Pacific agencies to better align Lincoln University's Distinctive Contributions with Pacific development needs.
- 6.7 Investigate and review opportunities for Pacific students in Lincoln sports programmes and scholarship initiatives and other specialist areas critical to Pacific peoples development.
- 6.8 Revise the Pacific Student Support strategy to enhance Pacific student success and achievement.
- 6.9 Complete an institutional stock take of past and current Pacific related research.

**Strategic Objective 7:
Internationalisation**

- 7.1 Establish an international research linkages programme that includes postgraduate students.
- 7.2 Enhance international recognition of Lincoln University qualifications.
- 7.3 Revise international activities plan to reflect desired mix and spread of international students.
- 7.4 Increase number and diversity of study abroad students at Lincoln University.
- 7.5 Increase support for Lincoln University students to include international experience in study.
- 7.6 Establish articulation agreements as part of sustainable flows of international students.

Programme Changes 2008 - 2010

Programme	Change	Timeframe for Implementation
Bachelor of Science	introduction of Bioprotection and biosecurity major	2008 (subject to CUAP approval)
Bachelor of Science	response to external review panel report	2008-9 (subject to CUAP approval, if necessary)
Bachelor of Recreation Management	programme revision and reduction in number of programme options	2009 (subject to CUAP approval)
Bachelor of Environmental Management	programme revision	2009 (subject to CUAP approval, if necessary)
Bachelor of Tourism Management	programme revision	2009 (subject to CUAP approval, if necessary)
Bachelor of Social Science	programme revision and reduction in number of programme options	2009 (subject to CUAP approval, if necessary)
Bachelor of Commerce and Management	introduction of new major subject – hotel management	2008 (subject to CUAP approval)
Bachelor of Commerce and Management	renaming to Bachelor of Commerce and revision of number of major subject available	2009, subject to report from external review panel and CUAP approval, if necessary
Bachelor of Commerce (Hotel and Institutional Management)	cease entry	subject to introduction of hotel management major in BCM
Bachelor of Commerce (Forestry)	no further entry	
Bachelor of Commerce (Accounting)	new qualification	2009, subject to report from external review panel and CUAP approval, if necessary
Bachelor of Commerce (Transport and Logistics)	programme revision	2009, subject to report from external review panel and CUAP approval, if necessary
Bachelor of Commerce (Food Industry)	programme revision	2009, subject to report from external review panel and CUAP approval, if necessary
Diploma in Commerce	programme revision	2009, subject to report from external review panel and CUAP approval, if necessary

Supporting Documents (available upon request)

- 2007 Lincoln University Calendar
- Academic Audit Portfolio 2006
- Academic Audit Report
- Annual Report 2006
- Graduate Attributes Database
- Graduate Destination Survey Reports
- Graduate Feedback Survey Reports
- Lincoln University's Distinctive Contribution to the Economic Transformation of New Zealand (report prepared by AERU)
- Lincoln University Marketing Plan
- Lincoln University Prospectus (Domestic, International and Postgraduate)
- Lincoln University Teaching and Learning Statement
- Operational Plan 2008
- Performance Based Research Funding Report 2006
- Profile 2007 – 2009
- Research Profile 2007/08
- Review of Academic Delivery 2006
- Statement of Strategic Direction 2005 – 2015
- Student Charter
- Student Satisfaction Survey Reports
- University Charter 2004 - 2009