



University of Otago
Te Whare Wānanga o Otāgo

A research-led university with an international reputation for excellence

**TEC Investment Plan
2017-2019**

**Approved by Council
13 September 2016**

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1.0 Introduction

This Investment Plan has been prepared by the University of Otago in accordance with the requirements of the Tertiary Education Commission (TEC). Its primary purposes are to:

- Present a summary of the University's planning context, including its contribution to the outcomes sought by Government for tertiary education, as set out in the *Tertiary Education Strategy 2014-2019* and elsewhere;
- Outline the activities the University will undertake and the services it will provide to contribute to these outcomes;
- Indicate how the University will measure its contribution to these outcomes.

This Investment Plan is structured in accordance with the requirements of the relevant Gazette Notice (No. 40 – 5 May 2016) and the TEC's Plan Guidance for 2017 and 2018. It takes account of the TEC's current Plan Guidance, the legislative and regulatory requirements and the planning and accountability framework under which New Zealand universities operate.

2.0 Strategic Intent

2.1 The University of Otago: Special Character, Mission and Role in the Sector

A tradition of innovation and excellence in research and research-led teaching across a range of traditional, professional and applied programmes defines New Zealand's first university, the University of Otago. While judging itself in an international context, Otago embraces a national role and regional responsibilities that build on the following dimensions of the University:

- A research-led culture which, in turn, underpins excellence in teaching, professional training and service;
- A broad curriculum that encompasses traditional scholarship and new knowledge;
- A concentration of special professional schools, with particular strength relative to other New Zealand universities in the sciences, health sciences and the humanities;¹
- An outstanding and nationally unique residential campus learning environment in Dunedin, with health sciences campuses in Wellington and Christchurch, and specialist facilities in Auckland and Invercargill;
- A very high proportion of students who come from outside the University's home region of Otago and Southland;
- The transformative effect that living and studying at a residential university has on Otago's students as they progress through study and emerge as well-rounded, confident and independent work-ready graduates;
- A focus on strong external linkages that enable us to provide high-quality graduates for a range of professions, and to apply research to deliver public good and economic benefit.

Otago's standing as a leading research university is confirmed by its ongoing success in competitive research funding rounds² and by independent assessments including PBRF and international rankings. We demonstrate an ongoing commitment to increasing our focus on the application of knowledge, with the value and extent of our activities in this developing area gaining increasing recognition.³

The Tertiary Education Commission's annual Educational Performance Indicators confirm the quality of Otago's teaching outcomes, consistently ranking Otago as first amongst universities for course completion and student retention.⁴ The provisional results of the latest Educational Performance Indicator round have Otago ranked first for all four key measures.

Similarly high levels of performance in respect of Māori students are a particular source of pride for Otago as we seek to contribute ever more effectively to national imperatives in this area.

¹ The TEC's annual summary profiles confirm that Otago has a greater proportion of its activity concentrated in the natural and physical sciences than any other New Zealand university, and also greater concentration in the health sciences. The latest QS subject rankings place Otago in the international top 100 for Archaeology, Anthropology, Business and Management Studies, Dentistry, Development Studies, Earth and Marine Sciences, Education, English Language and Literature, Geography, History, Law, Performing Arts, and Psychology. Dentistry and Psychology also came in within the top 50, ranking 12th and 38th respectively. Dentistry is the highest-ranked subject internationally for any New Zealand university.

² Otago has ranked first or second in the annual Health Research Council and Marsden rounds funding for each of the past ten years. Otago was also the top-performing university in the Ministry of Business, Innovation and Employment's 2012 Science Investment Round, a host or partner in all but one of the new CoREs, and a host for two and partner in seven National Science Challenges.

³ For example, Otago spin-off company Pacific Edge is the only New Zealand university spin-off to be listed on the main board of the New Zealand Stock Exchange. Otago was reported to be "well engaged with business", with external subcontracting [deploying our science expertise for commercial purposes] "well above the mean" for New Zealand universities. Ministry of Science and Innovation, University of Otago 2010/11 Summary (Wellington, May 2012).

⁴ Otago typically places first or second for qualification completion and in the top three for progression.

Internationally, Otago is consistently rated in the top three percent of the world's universities in the major independent rankings. Within those rankings it is clearly established as one of New Zealand's two best universities overall⁵ and, consistent with this, is one of only two New Zealand universities to have secured the maximum possible Five Stars Plus QS quality rating.

Nationally and locally we place a high priority on working in partnership with other relevant groups including local authorities, other tertiary providers, research and health organisations, and iwi and iwi groups.⁶

The vision, mission and core values of the University are outlined in Attachment A, and the scope and breadth of its activities are highlighted in Attachment B.

2.2 University of Otago: Embracing our Distinctiveness

The characteristics that will continue to set Otago apart most clearly from other universities are as follows:

- Our status as a residential, destination university based in a true university town. As well as being unique in Australasia, this status is rare internationally, but it is a hallmark of many of the world's great universities;⁷
- Our standing as one of only two New Zealand universities ranking in the top echelon of the world's leading universities;⁸
- Our specific discipline expertise, encompassing a particular concentration in the sciences and health sciences, within the wider context of Otago as a fully comprehensive university⁹ with internationally recognised excellence in the humanities;
- Our demonstrated ability to achieve consistent excellence in our research alongside consistent excellence in our teaching;¹⁰
- Our focused, partnership approach to achieving improved outcomes for Māori and Pacific people;
- Our ability to produce graduates who are both work-ready and equipped more broadly as confident, articulate, thoughtful and well-connected young people who make a lasting contribution as national and international citizens;
- Our increasing capacity to apply our research in ways that deliver social, environmental, commercial and economic benefit, both nationally and internationally.

⁵ Otago consistently places as one of only two New Zealand universities inside the top 200 in the annual QS international rankings and inside the top 300 in the Times Higher Education rankings.

⁶ Including collaboration and partnership with compatible research, education, health and commercial organisations, relevant Government agencies and local bodies, and the community more generally. In particular, we maintain key relationships with Ngāi Tahu (as our cornerstone Treaty Partner), the Dunedin City Council, Otago Polytechnic, and the Southern, Canterbury and Capital and Coast District Health Boards.

⁷ All of the top ten universities in the annual Shanghai world university rankings are residential universities, and many are located in urban areas with populations of less than 250,000. These include Stanford (in Palo Alto, population 65,000), Princeton (in Princeton, population 30,000), Cambridge (Cambridge, UK, population 123,000) and Oxford (Oxford, UK, population 165,000).

⁸ As measured by international rankings, student choice, teaching performance and research performance.

⁹ This fully comprehensive nature being the norm for leading universities worldwide.

¹⁰ Otago has been the top-performing university in the national tertiary teaching awards since their inception in 2002, securing 27 awards, and winning the Prime Minister's Supreme Award seven times (no other university has won this award more than twice).

2.3 University of Otago Strategic Direction

Otago's strategic focus follows from its vision as **a research-led university with an international reputation for excellence**, and a mission which is anchored in its core institutional values.

Otago's current lead strategic document, *Strategic Direction to 2020*, has been in effect since August 2013, and will remain so over this Investment Plan period. As with its predecessor, *Strategic Direction to 2012*, it places excellence and distinctiveness to the fore.

Key points of focus include:

- Maintaining the (already high) academic calibre and performance of our student cohort;
- Developing innovative and effective transition pathways for Māori and Pacific students into tertiary study, and supporting ongoing improvements in the academic performance of these students;
- Enhancing our Dunedin campus, which has been judged amongst the most beautiful worldwide, as a key point of difference;
- Focusing our endeavours in areas where we have clear academic (including research) strength and, where necessary, reducing our involvement in or exiting from areas in which we do not have this strength;
- Maintaining our status as New Zealand's most research intensive university (as measured by independent international rankings);
- Maintaining our status as a national university;¹¹
- Applying our research and academic expertise for social and environmental well-being and for commercial and economic benefit to New Zealand and the world;¹²
- Supporting not only the academic but the social and cultural development of our students so that they become outstanding citizens as well as the scholars of the future;
- Responding to Government's goal of more international students, while maintaining an approach to internationalisation that is distinctive, and which brings benefits to all students of the University;
- Working closely with professional bodies and industry/employer groups to ensure that our provision – especially in respect of professional programmes – meets their needs;
- Addressing some of the adverse aspects of student behaviour and culture that tend to be highlighted here because of our residential campus environment;¹³
- Enhancing our emphasis on sustainability, encompassing both what we do as a university, and using our expertise to help solve national and international challenges.

There is strong alignment between Otago's strategy and priorities and the tertiary education priorities of Government. Elements of Otago's strategy also complement other areas of strategic priority for Government.¹⁴ Similarly, Otago's strategic commitments around outreach are very well aligned with the Government's draft national strategic plan for science in society.

¹¹ Otago plays an important part in meeting the education needs of all of the country's major metropolitan centres; we are, for example, the third most popular study destination for school leavers from Auckland, and the second most popular for students from Wellington and Christchurch.

¹² As part of this change, the University has altered its high-level mission statement to include explicit reference to the application of its knowledge and expertise.

¹³ These aspects are common to all strongly residential universities.

¹⁴ For example, supporting priorities in relation to science in society, social development, health, and evidence-based policy development.

The following table presents the seven imperatives around which *Strategic Direction to 2020* is organised, and summarises the University's approach in responding to them.

Imperative	Response
Research Excellence	Otago will continue to take decisive steps to enhance its research culture and capacity, building on existing strengths. A particular focus will be increasing the application of that research, for economic/commercial benefit and to enhance social and environmental well-being and the health of New Zealanders. A further (and related) focus will be securing funding from international and non-governmental New Zealand sources to support research.
Excellence in Teaching	Otago will further its standing as a national leader in research-led teaching. While Otago does not wish to increase its overall roll at anything but a moderate rate, ¹⁵ it will continue to seek increased proportions of particular types of student (notably high-calibre undergraduates, postgraduates, Māori and Pacific peoples, and international students). As part of its drive to increase international enrolments, the University will maintain a balanced approach to internationalisation.
Outstanding Campus Environments	Investment decisions will continue to ensure that facilities at all campus sites are world-class, appropriate to a changing student mix and research needs. A rolling Priority Development Plan (PDP) guides these investments within the long-term vision and framework of the <i>University of Otago Campus Master Plan</i> . Provision has been made in the PDP for seismic upgrades, and careful attention will be paid to maintaining the quality and character of heritage buildings and enhancing the overall aesthetic of each campus site.
Outstanding Student Experiences	Life and study at New Zealand's only true residential university supports personal growth and development to an unrivalled extent; indeed, employers consistently observe that a defining characteristic of Otago graduates is their high level of personal maturity and independence. Otago will enhance that experience through bold initiatives to, amongst other things, promote healthy lifestyles and harness student altruism in such a way that they will graduate ready and willing to make their mark as community-minded citizens as well as work-ready graduates.
Commitment as a Local, National and Global Citizen	Otago's drive to inculcate a greater spirit of citizenship in its students stems from its own commitment to contributing to the local, national and international good. Key points of focus for this will be: extending its flourishing partnerships with Māori to make a meaningful difference for Māori; further developing its expanding links with Pacific communities here and overseas for like purpose; leading the way in its own activities and deploying its expertise to undertake and support socially and environmentally responsible activity. Collaborative arrangements with local, national and international partners will play a vital role in this, especially when these are deployed to encourage research connections that support national and international development.
Strong External Engagement	Otago continues to place an emphasis on engaging effectively with national bodies, on building relationships with employers and industry, and on having vibrant partnerships with compatible research and teaching organisations around the world. Increasingly meaningful engagements with the communities in which Otago operates will also be sought, as well as mutually beneficial long-term relationships with alumni, all of whom have the status of lifelong members of the University.
Sustaining Capability	The need for Otago to effectively deploy its financial, physical, technological and staff resources is particularly important in the current fiscally constrained environment. Along with careful scrutiny of internal processes and structures, attention must be directed to the cost of external obligations. Similarly, while the further development of entrepreneurial and enterprise-based activities will assist the University in diversifying its funding base, adequate levels of Government funding and fee revenue remain a requirement. ¹⁶

¹⁵ The University's latest long-term planning forecasts are predicated on an average annual roll growth rate of 0.75%.

¹⁶ As well as Government funding, Otago has concerns about its lack of freedom to charge appropriate domestic student fees: at present, the University has fees in some subject areas that are well below those charged elsewhere; and rather than allowing the University to close this differential, the current annual maximum fee movement limit actually operates in a way that increases the gap in dollar terms.

Strategic Direction to 2020 provides a focus and structure for other key strategic documents, including key whole-of-University documents such as the *Māori Strategic Framework* (a revised version of which was recently approved) and the *Pacific Strategic Framework*, *Teaching and Learning Plan*, and *Research Action Plan* (current versions of which are in place).

As well as providing a foundation for decisive central decision making, our strategic imperatives are an effective framework for planning and decision making within our constituent departments, schools and divisions. This approach, focusing on strategic leadership rather than highly detailed and prescriptive planning, gives different areas of the organisation considerable freedom in determining how to respond to the challenges posed by the imperatives. This, in turn, supports dynamic change while respecting the University's core values of intellectual and academic freedom.

At the same time, the implementation of *Strategic Direction to 2020* requires a number of specific pan-University initiatives to be vigorously pursued. These are contained in a central Action Plan that is subject to regular review and updating.

2.4 General Alignment to Government Priorities

There is a long-standing synergy between Government priorities for universities and the institution-specific priorities of Otago. This has been apparent throughout the current regime of Investment Plans which, coincidentally, commenced at the same time Otago was formulating its *Strategic Direction to 2012* plan. It has continued with *Strategic Direction to 2020*.

This synergy has enabled Otago to respond to the Tertiary Education Commission's goals, objectives and priorities for the sector in a manner which anchors that response in the University's own strategy. This, in turn, ensures a response that is both distinctive and strong in terms of the results it delivers and the foundation it establishes going forward.

Evidence that this approach delivers excellent results can be seen in the University's achievements against the specific performance commitments it made in the previous Investment Plan.

This performance against plan commitments is consistent with Otago's strong performance as measured by the TEC's Educational Performance Indicators. These have seen Otago as the top-ranked New Zealand university for course completion and student retention from 2011-2013, the top-ranked university for qualification completion and student progression in 2015 and – provisionally – the top-ranked university across all four measures in 2015.

The TEC should also gain confidence from the solid financial performance that has been a notable feature of the University over many years. This performance has seen the University consistently rated as low risk against the TEC's Financial Monitoring Framework, and provides a core underpinning for the ambitious capital development programme (refer to section 2.6.1) that the University has now commenced, and which will be a feature of its activity for the next decade.

These observations are relevant to the future, both because a past record of responsiveness and responsible operation is an important indicator of what to expect from Otago in the future, and because the priorities outlined for this plan period represent an evolution of those from previous plan periods.

As can be seen in general terms above, and in more detailed form in section 2.5 below, the way in which the University's strategic direction is evolving for 2017 and beyond will clearly

strengthen the alignment between institutional purpose and the Government's priorities.

2.5 Contribution to Government Tertiary Priorities

The *Tertiary Education Strategy 2014-2019* identifies six priorities for the tertiary sector. These are re-framed slightly in the Gazette Notice as matters to be addressed in this Investment Plan. Additionally, we are aware of specific priorities for this plan period relating to South Auckland, Northland, and sub-degree primary industry-related qualifications.

Otago's intentions in respect of these priorities are outlined in this section of the Plan.

2.5.1 Delivering Skills for Industry

Government's Position

Tertiary institutions are expected to be engaged with industry and employers to ensure their needs are being met, and to provide prospective and current students with information (especially employment-related) that allows them to make informed study choices. Evidence is sought that we have a strong focus on ensuring that graduates gain both transferable skills and specific qualifications that are matched to labour market demand, and that we are paying close attention to the employment outcomes of our graduates.

Otago's Current Position

Otago prides itself on a deep and ongoing engagement with industry, employers and students, and on producing graduates who are fully equipped for a post-study life in which transferable skills will be at least as important as discipline-specific knowledge; indeed, the feedback we often get from employers is that a transferable skillset is one of the distinguishing characteristics of Otago graduates.

Industry, employer and student engagement at Otago takes place in the context of a well-established understanding of the place of these groups within our wider network of key stakeholders and, related to this, our knowledge of the expectations they have of us. These are summarised in Attachment C.

Regular interaction with employers and industry ensures that we maintain an up-to-date understanding of what is required in their workplaces, and that employers and industry understand what is changing within the University. This engagement comprises both high-level, strategically-focused engagement, and more specific engagement focused on particular qualifications, disciplines or operational areas.

The means by which we engage with employers and industry include:

- Input at the highest level of institutional governance;¹⁷
- Permanent advisory boards that support particular (usually vocationally-focused) schools, departments and programmes;¹⁸
- External accreditation reviews for these same schools, departments and programmes;¹⁹
- Employer or industry representation on panels for our own internal reviews;

¹⁷ For example, the University of Otago Council includes a majority of members who are prominent in business or industry.

¹⁸ For example, at Otago, the advisory boards for our School of Business, and for our Applied Science programmes.

¹⁹ We currently maintain 68 specific accreditations with professional bodies for various academic programmes (all of which require periodic accreditation reviews).

- Visits by employers for recruitment purposes;²⁰
- Involvement in student internships;²¹
- Our academic staff sharing their expertise with industry;
- Periodic surveys of employers.²²

Otago is also unique amongst New Zealand universities in being a formal partner in the economic development strategy for the main city in which it is based. This partnership – which includes the Otago Chamber of Commerce, the Otago/Southland Employers Association, the Dunedin City Council, Otago Polytechnic and local *rūnanga* – allows us to engage around employment and economic outcomes at both a strategic and project level.²³

The extent and importance of informal interactions should not be discounted either. There are tens of thousands of Otago graduates in the workforce (including some who are major employers and/or business owners), and a reasonable number maintain contact with their *alma mater*. Similarly, the parents of our students include many who are successful in business, industry or their chosen professions. Utilising these networks is a way of overcoming two obvious barriers to effective employer/business engagement: firstly, the large number of small-medium enterprises in this country; secondly, the absence of an obvious single industry to engage with in respect of our general degree graduates.

A final point easily overlooked is that Otago is itself a significant enterprise, employing dozens of graduates in general and specialist non-academic roles.²⁴ We therefore have first-hand experience of changing employer needs, and of responding to many of the key forces of change in the same way as businesses and other employers.

In respect of graduate attributes, Otago takes a deliberate approach to identifying the skills and attributes it seeks to develop in its students. While some of the skills and attributes will vary, or receive a greater or lesser emphasis in particular qualifications,²⁵ there is an overarching set of attributes we seek to inculcate in all of our students.

These attributes, which are presented in Attachment D, link directly to what employers tell us they are seeking from graduates, and to the key attributes that are widely regarded as important for graduates to possess in the future.

Otago takes a somewhat unusual approach to assessing the development and application of attributes by asking our graduates – 18 months after graduation – to reflect on the extent to which they feel they developed these attributes while at Otago, and the extent to which they have since applied them.

²⁰ Otago will typically have 150 or more businesses – local, national and international – present on campus in any given year.

²¹ While often thought of purely in respect of business student internships, Otago also operates internships for its applied science students. Internships and/or practicums are also well-established in our health sciences professional programmes and, of course, are integral to teacher education.

²² Undertaken in 2015, our most recent employer survey elicited feedback from 149 major New Zealand employers on a range of matters, including the attributes, qualities and competencies employers looked for in graduates, and about graduates' preparation and expectations more generally.

²³ Specific projects undertaken under this partnership include: the operation of a StartUp Space for early stage entrepreneurs (operated by the University's School of Business, in conjunction with the Polytechnic and Dunedin City Council); and a well-established summer business internship programme (placing 48 students in 32 different local businesses in 2015/2016). Our relationship with Otago Polytechnic also encompasses the provision of shared services (including the UNIPOL student recreation centre and the Robertson Library, both of which are operated by the University but are used by both institutions), and collaborative academic endeavours in fields such as sports sciences and ICT.

²⁴ Otago, for example, is easily the largest employer in our home city of Dunedin, and one of the largest employers in the South Island.

²⁵ For example, a dentistry graduate requires specific professional skills that a law graduate does not.

This, in conjunction with an annual performance target for at least 90% of graduates to report the development of each attribute²⁶ and periodic employer feedback, enables us to monitor how well graduates develop each attribute, and the relevance (or need) of each attribute following graduation.

Having gathered feedback in this way for two decades now, we can map development and application over long periods, and identify and respond to increases in need.²⁷ The results of the graduate surveys are fed back to our academic departments to enable those at the teaching coalface to identify gaps and changes in attribute development and application, and address these in course and programme design and delivery.

Otago – as far as we know – is the only New Zealand university to set and report a performance target for the employment of its graduates.²⁸ The wider context in which we take this approach is an often ignored reality in which:

- The employment outcomes for graduates of New Zealand universities are amongst the best in the world;
- Almost without exception, university degrees – including a general arts, science or commerce degree – deliver a positive return on investment quite quickly;
- The short-term employment outcomes for degrees are far superior overall to those for lower level qualifications, and the attributes possessed by degree-level graduates leave them far better equipped for employment in the long term too.

Given these points, while we understand Government's desire to optimise employment outcomes for graduates, we find a number of steps being taken by agencies in this area to be simplistic and poorly conceived, and thus unlikely to prove useful.²⁹ Further comment on these matters is included below.

Based on our experience, a key to optimising employment outcomes is individually tailored academic and careers advice involving: supporting students to make study choices that are well-aligned to their area of academic strength and interest; including experiences within that study – and university life more generally – that add value in respect of employability; adding value with a careers guidance service that undertakes to meet the needs of employers as well as students.³⁰

An independent international perspective on the employability of Otago graduates is provided within the QS Stars assessment that led to our securing the maximum Five Stars Plus overall quality rating. Within this, Otago secured the maximum possible rating for employability, with perfect scores for employer reputation³¹ and our graduate employment rate.³²

²⁶ In recent years we have reached or exceeded the 90% target for 60-75% of the core attributes, and made progress towards the target in several others.

²⁷ The following trends are illustrative of what we have observed over the shorter timeframe of the past twelve years: the *ability to be creative* attribute has seen the biggest increase in need over this period, followed by *academic rigour*, *written communication skills* and the *ability to solve problems*. In each case, this has been matched by an increase in the extent to which graduates report they have been supported to develop these attributes while students at Otago; The same is true of *teamwork skills*, where Otago has put considerable effort into increasing development opportunities for teamwork over the same period (not an easy thing to achieve in some disciplines).

²⁸ Our target is 90% progression to employment or further study following completion of a qualification, with at least 85% in full-time work, full-time study or a combination thereof. Graduate outcomes are ascertained by a comprehensive graduate survey taken 18 months after graduation. The target is one of Otago's KPIs within its Statement of Service Performance, and has been exceeded in each of the past three years.

²⁹ Including both the Ministry of Education-led Employment Outcomes of Tertiary Education (EOTE) and the TEC's Information for Learners projects.

³⁰ Consistent with this, as well as providing traditional student and industry-linked careers services, Otago's careers service facilitates initiatives such as summer work programmes and internships for undergraduate students, and further initiatives to support postgraduate students.

³¹ As determined by the number of employers who have endorsed Otago in the QS Global Employer Survey, and the number of companies present at careers and other events on campus.

Otago's Focus for this Investment Plan Period

Otago will continue to test the relevance of what it delivers with employers and industry, and to make changes that enhance this relevance. We will also take further steps to develop our students' understanding of the attributes we seek to develop in them, the relevance of those attributes to future employment, and employment outcomes more generally.

Particular areas of focus for development will be as follows:

- Using feedback from recent graduates and employers to test the ongoing relevance of our graduate attributes and the extent to which we are successful in developing these;
- Making the development of graduate attributes a more obvious part of what we do, including greater and more direct promulgation of these attributes and their importance to both students and employers;
- Further developing the citizenship component of the Otago experience to produce well-rounded graduates who are ready and willing to contribute broadly to their workplace, community and wider society;
- Enhancing internship opportunities including, where appropriate, internships for academic credit;
- Continuing to support the Government's focus on STEM subjects;³³
- Further developing the use of advisory boards and other consultative groups to provide meaningful engagement with stakeholders;
- Working with local partners to launch and develop the Dunedin arm of the SIGNAL ICT Graduate School;
- Extending career guidance and transferable skills development opportunities for postgraduate research students;
- Providing students with outcome information in accordance with the requirements of the TEC's Information for Learners project;
- Reflecting on employment outcomes information provided from a variety of sources, and acting on this as appropriate.

Due to our standing as the country's leading health sciences university, Otago acknowledges a particular responsibility to continue to work with other institutions and health agencies to assess and respond to changes in the demand for graduates in the various health professions.

Last but not least, Otago notes that Government is currently placing a high priority on meeting increased demand for tertiary study from within the Auckland region, and has identified South Auckland as an area of special focus for this Investment Plan round.

Because Otago is often viewed in the context of its main campus location – Dunedin – the link between this priority and what we do could be easily overlooked. In terms of enrolments, Otago is the third most important university destination for Auckland school leavers (and those from South Auckland), behind Auckland University and AUT.

In recent years we have taken steps – such as investing in additional Residential College places – that enable us to play an increasing part in meeting Auckland's needs.³⁴ Our major Auckland-focused development for this plan period is the South Auckland Dental Initiative. This initiative, which is a collaboration with the Counties Manukau DHB, is fully explained in section 2.5.7

³² As determined by the proportion of graduates employed 12 months after graduation.

³³ The proportion of Otago's delivery in STEM areas has increased markedly over the past five years, and is expected to continue to do so over this Investment Plan period.

³⁴ In 2014 the number of Auckland region school leavers proceeding to study at Otago reached an all-time high of 659, which is over 20% of our first year roll. The total number of Auckland region students studying at Otago this year is just over 3,100.

below.

2.5.2 Boosting Achievement of Māori and Pasifika

Government's Position

Greatly improved outcomes are being sought in this area. Otago notes that the following are seen as key indicators of success:

- An increase in rates of progression for Māori and Pasifika from study at levels 1 to 3 to higher levels;
- Increased rates of Māori and Pasifika enrolling in and completing qualifications at levels 4 and above;
- Better employment outcomes for Māori and Pasifika graduates;
- Appropriate performance targets within institutions for Māori and Pasifika students;
- Appropriate targets within institutions around increasing the numbers of Māori and Pasifika teaching staff;
- Opportunities within institutions for Māori and Pasifika to undertake and participate in study and research that will engage them as Māori and Pasifika within tertiary education;
- Partnership with iwi in supporting Māori student recruitment and achievement;
- Engagement with Pasifika communities in the mentoring and pastoral care of Pasifika students.

Otago's Current Position

Advancing our activities in support of increased Māori and Pacific student participation and achievement has been a key focus for Otago in recent years. Our experience has led us to the same conclusions as Government around the key dimensions that will deliver these outcomes.

In respect of Māori, Otago commenced 2016 reflecting with pride on:

- Enrolling in 2015 a record number of Māori students and having them comprise a record percentage of our student roll;
- Producing, for the fifth year in succession, over 350 Māori graduates, including 96 with postgraduate qualifications;
- Seeing a dramatic increase since 2011 in the number of Māori gaining entry to our highly competitive health professional programmes³⁵ (a record admission of 84 Māori to these programmes including a commencing cohort for our most competitive degree – Medicine – that was 15.4% Māori);
- Securing a similarly strong increase in the number of Māori studying in the sciences at Otago (a 24% increase since 2011);
- Seeing a further improvement in the overall academic performance of our Māori cohort, which will (according to the TEC's most recent data) remain the best of any university in the country;
- Extending our treaty-based partnerships through a new agreement with Ōnuku rūnanga;
- A number of our initiatives in respect of Māori in the health sciences gaining international recognition as world-leading in both their approach and impact;
- A range of developments in our School of Business that have delivered increases in Māori student performance and increased opportunities for Māori students to develop as business entrepreneurs;

³⁵ From a previous average of 20-25 students per annum to 60+ per annum.

- An employment rate for our most recent cohort of Māori graduates that was superior to that of our overall cohort of graduates.

In 2016, Māori are set to exceed 10.0% of Otago's domestic roll for the first time, following a further significant increase in Māori enrolments, both at first year level and overall. We are also preparing to celebrate a major landmark for Māori medical graduates, with approximately 50 Māori set to complete MB ChB degrees at year's end. This will, in a single year, increase the number of Māori doctors in New Zealand by around 10 percent.

In respect of Pacific students, we commenced 2016 reflecting with pride on:

- Enrolling in 2015 a record number of Pacific students and having them comprise a record percentage of our student roll;
- Achieving, for the first time ever, population parity with the percentage of Pacific students gaining entry to the medical degree programme (as a part of a record admission of Pacific students to Otago's health sciences professional programmes);
- Securing a dramatic increase in the number of Pacific students studying in the sciences at Otago (a 55% increase since 2011);³⁶
- Seeing a further improvement in the overall academic performance of our Pacific student cohort;
- Our most recent cohort of Pacific graduates achieving a rate of progression to further study that was superior to that of our overall cohort of graduates.

In 2016, Pacific student enrolments are set to increase further and grow to a record proportion of Otago's domestic roll.

The strategic context for Otago's achievements in respect of Māori and Pacific outcomes is a long-standing commitment that embraces the following key perspectives and approaches:

- Recognition that while the symptoms of Māori and Pacific under-representation and under-achievement may appear similar, the underlying drivers are complex and quite different. This in turn means that our engagement with learners and these communities to address this issue is quite different;³⁷
- Activities in respect of Māori being underpinned by a long-established Treaty partnership with Ngāi Tahu (renewed in 2013), and formal agreements with other iwi and iwi groups. Otago leads the way amongst New Zealand universities in the outcome-focus of these agreements;³⁸
- A Māori Strategic Framework that articulates both our overall approach and specific actions to be taken, and a Pacific Strategic Framework that serves the same purpose for Pasifika;
- A range of programmes that engage with Māori and Pacific students during their secondary schooling to raise their aspirations and knowledge in respect of university study;
- Providing tailored transition pathways to degree-level study, and providing focused support that helps Māori and Pacific students achieve to their potential;
- Allocating Government equity funding strategically to support appropriate initiatives while – due to the overall insufficiency of that funding – supplementing it with funding

³⁶ Over a third of 2015 Pacific student enrolments at Otago were in the sciences.

³⁷ Thus, while there is considerable commonality in the general approaches taken by Otago, we recognise in a strategic sense the need for extensive tailoring to fit the specific needs of Māori learners versus those from Pacific backgrounds.

³⁸ Many of these agreements are very specifically focused. For example, agreements with a number of Māori health organisations allow for senior Otago dental students to provide dental care in local communities. This results in outstanding learning opportunities for the students, while meeting a pressing community need for dental care.

from other sources.³⁹

In translating our strategic thinking into action, we are influenced by our own experience in this area, which shows that innovative approaches, often involving partnership and/or collaboration, are a key to success, as is undertaking and disseminating research related to Māori and Pacific student performance.

Some key points based on Otago's experience in this area are as follows:

- Issues with Māori and Pacific student performance in the school system are such that increasing participation and achievement to levels on a par with other learners will take a concentrated effort over a period far longer than this Investment Plan period;
- Increasing participation and achievement simultaneously is especially challenging;⁴⁰
- Targeted scholarships play a vital role in reducing the financial barriers to tertiary study that are a major concern for Māori and Pacific students and their families, especially those from low decile backgrounds.

Last but not least, Otago has made a strategic decision to give particular attention to increasing Māori and Pacific participation and achievement in the sciences and health sciences. The rationale for this includes the following:

- It plays to our strengths as New Zealand's most science and health science-focused university;
- Māori and Pacific peoples are poorly represented in the sciences, which are a Government priority area, and in health professions, which has implications for Māori and Pacific health and well-being.

In the past five years Otago has been particularly active in piloting new initiatives designed to enhance Māori and Pacific student transition to successful university study in these areas. An overview of Otago's key initiatives to support Māori appears as Attachment E and those relating to Pacific students as Attachment F.

Otago's Focus for this Investment Plan Period

Strategic Direction to 2020 makes specific statements in respect of Māori and Pacific advancement. For example:

- We will seek to recruit a higher proportion of Māori and Pacific students, and to provide an environment that supports their increased academic success;
- Our notable successes in Māori student transition [is an example of the way] in which we are leading the way nationally;
- [Our] flourishing partnership [with iwi groups] will include a continuation of innovative programmes to support transition into degree-level study, and ensure sustained success in that study;
- Locally and nationally, our Pacific focus will be on transition pathways into degree-level study, and on securing successful outcomes from that study.

The above statements signal that Otago remains ambitious in respect of participation and achievement for Māori and Pacific students, and that the approach we are currently taking – evolving and extending – will underpin our fulfilment of these ambitions.

³⁹ In 2015, we estimate that the University spent \$3.2 million on focused support for Māori and \$2.1 million on focused support for Pacific students. The equity funding received for these groups totalled \$0.7 million.

⁴⁰ In particular, our experience in this area has taught us to be cautious about seeking to lift participation until the achievement of those Māori and Pacific students we already have is satisfactory.

Our approach involves two types of targeted intervention: one type comprises a range of carefully focused programmes to raise Māori and Pacific student interest in degree-level study, and increase their academic preparedness to embark on such study; the other type engages Māori and Pacific students during that degree-level study, providing tailored support that optimises their chances of success.

The programmes themselves, the way in which they have operated (in partnership with iwi, community groups and other agencies), and systematic research embedded in them, is consistent with Government's thinking about how best to advance in this area.

The consolidation of these programmes within the overall portfolio of University activity will continue over the period of this Investment Plan. Otago will continue to extend these programmes where possible, while recognising that their success is partly due to their relatively small scale and accompanying focus.

Projects that support successful transition into sciences and health sciences study will remain a particular priority, both because these are areas in which Otago is especially strong, and because these are areas in which Māori and Pacific peoples are particularly under-represented as both students and graduates.⁴¹

Otago will also devote increased attention to improving Māori participation and achievement in business study to support ongoing Māori economic development.⁴²

Developments in respect of Māori will recognise that Otago is supporting its Māori students to achieve completion rates that are increasingly close to those of the general student population, and that the measures recently put in place provide a key ingredient for further success. Our current level of performance gives us confidence to pursue an approach that targets modest growth as well as higher levels of achievement from our Māori student cohort. Specific areas for attention over the period of this Investment Plan will include:

- Further increasing Māori as a proportion of domestic student enrolments;⁴³
- Further increasing Māori course completion and retention;
- Further increasing progression to postgraduate study and the number of Māori achieving postgraduate qualifications;⁴⁴
- Further developing existing programmes, including the community wānanga⁴⁵ and Tū Kahika⁴⁶ transition programmes, as part of an integrated system to facilitate successful Māori transitions to tertiary study;⁴⁷

⁴¹ An additional practical appeal of this focus is that the Ministry of Health is able to provide significant funding support for a number of our initiatives that support increases in the Māori and Pacific health workforce.

⁴² The prominence of our principal treaty partner, Ngāi Tahu, in southern business circles and our involvement in the Te Kupeka Umaka Māori Ki Araiteuru (KUMA) – the Māori Business Network for the Otago/Southland region – will facilitate our endeavours.

⁴³ Additional scholarships for commencing Māori students will assist the University in achieving this.

⁴⁴ The provision of transition, conference and publishing grants for Māori postgraduates, designated postgraduate scholarships for Māori, and the University's Māori postgraduate support programme will continue to play vital roles in respect of this.

⁴⁵ The community wānanga programme aims to increase the number of Māori leaving school with the necessary academic background to study in the sciences and health sciences. It was piloted in partnership with Ngāti Porou and schools in the Tolaga Bay area in 2008, and has since been extended to operate in partnership with Ngāi Tahu (in various locations), Ngāti Whātua (in Kaipara), Ngāti Kahungunu (Hastings), and Ngai te Rangi (Tauranga).

⁴⁶ Tū Kahika prepares Māori who have left school without the necessary academic background to study in the sciences and health sciences. It ran for the first time in 2010 and has been hugely successful, underpinning a 60% increase in the number of Māori who have gained entry to the University's health sciences professional programmes.

⁴⁷ These initiatives are currently being deployed to support increased Māori student enrolment and success in the sciences and health sciences. Both programmes were piloted with funding from the TEC (via Priorities for Focus) and Ministry of Health.

- Completing the pilot of the Te Kāika o Matauira (Whānau Housing) supervised flatting accommodation option for commencing Māori students who may, by virtue of age or other factors, find this more appropriate than the normal Residential College experience;
- Piloting a teacher education version of the Tū Kahika programme and extending the availability of our bilingual and Māori medium teacher education programmes;
- Maintaining an enhanced admission pathway for Māori as part of the University's enrolment limitation system, and continuing existing enhanced admission systems for Māori students seeking entry to professional programmes in the health sciences;
- Commencing a joint initiative with local Ngāi Tahu rūnanga operating a health facility in Caversham, a low-decile Dunedin suburb. This facility will enable students to gain practical experience as part of their health training in a setting that provides a major community health benefit;
- Developing a new enhanced admission pathway for Māori teacher education students;
- Further extending our relationships with iwi and other Māori partners;
- Further developing targeted mentoring and early-intervention measures to support Māori students early in their studies;
- Continuing to undertake research into these initiatives, sharing that research nationally and internationally, and learning from other research in this area.⁴⁸

Developments in respect of Pacific students will recognise that while it is important to continue the momentum provided by Otago's recent growth in Pacific enrolments, priority must be given to narrowing the gap between Pacific student achievement and that of the general student population. Specific areas for attention over the period of this Investment Plan will include:

- Increasing the rates of Pacific student course and programme completion, retention and progression to postgraduate study;
- Further developing the Fofoa supervised flatting accommodation option for commencing Pacific students who may, by virtue of age or other factors, find this more appropriate than the normal Residential College experience;
- Continuing the Pacific Foundation Programme as a key element in our drive to increase Pacific enrolments in the sciences and health sciences;⁴⁹
- Increasing Pacific student involvement in the Otago University Advanced School Sciences Academy (OUASSA);
- Maintaining an enhanced admission pathway for Pacific students as part of the University's new enrolment limitation system, and continuing existing enhanced admission systems for Pacific students seeking entry to professional programmes in the health sciences;
- Developing a new, enhanced admission pathway for Pacific teacher education students;
- Extending the range of targeted awards, scholarships and grants that recognise and support the achievements of high-calibre Pacific students;
- Supporting the ongoing development of a comprehensive programme to enhance the achievement of Pacific students in the health sciences, and using the experience gained through this programme to inform developments in other areas of the University;
- Piloting a Pasifika equivalent to the community wānanga programme;
- Developing a systematic programme of research into these initiatives, sharing that research nationally and internationally, and learning from other research in this area.

These points should be viewed in the context of Otago being a university with a high-performance focus, special strengths in discipline areas in which Māori and Pacific students are most poorly represented at both school and tertiary level, and a main campus located away from

⁴⁸ Ongoing work in association with Ako Aotearoa will play an important role in this.

⁴⁹ This is the Pasifika equivalent of the Tū Kahika transition programme. It commenced in 2012 with funding support from the Ministry of Health.

major concentrations of the Māori and Pacific population.

It follows from this that Otago will continue to contribute by supporting excellent outcomes for students from these groups, and by making a nationally important difference for participation in specific fields where it is strong and where Māori and Pacific students are poorly represented at tertiary level and in the workforce.

A development of particular long-term significance to Māori and Pacific students and the future of the health workforce is the University's South Auckland Dental Initiative (see section 2.5.7 below).

Otago has proposed performance commitment targets appropriate to the points of focus identified in this section. Our ability to meet these targets is contingent on the provision of adequate funding,⁵⁰ and – especially in respect of qualification completion and retention – may also be influenced by changes in economic and labour market conditions.

Otago will also be proactive in increasing its number of Māori and Pacific academic staff, and developing clear targets in respect of these groups. Otago already has an active and ambitious Māori staff group, and our Māori staff members include a number of nationally-recognised stellar achievers.⁵¹

A collaborative approach encompassing iwi partners, the Pacific community, schools, and other tertiary providers is embedded in both our strategic approach and many of the specific programmes outlined above.

2.5.3 Growing International Linkages

Government's Priorities

The Government is seeking increased international activity, with a particular focus being on the value of international education. The following are seen as key indicators of success:

- An increase in the economic value of onshore enrolments at both undergraduate and postgraduate level;
- An increase in the economic value derived from the provision of education products and services delivered offshore;
- Research and education partnerships with overseas institutions that create enduring economic, social and cultural benefits;
- Increased movement of people and ideas between New Zealand and overseas institutions, particularly those of our key trading partners in Asia and the Pacific, including through strong research connections, greater recruitment of international students, and more New Zealand students being supported to study abroad.

A number of specific initiatives have been announced in the latest Government budget to support developments in this area, including the new Centres of Asia-Pacific Excellence (CAPEs).

⁵⁰ Effective transition programmes in particular are very costly on a per-student basis.

⁵¹ Most recently, Professor John Broughton (Otago's senior Māori academic) was made a Companion of the New Zealand Order of Merit (CNZM) for his services to Māori health, theatre, and the community, and Professor Jacinta Ruru won the 2016 Prime Minister's Supreme Award for Teaching Excellence. Professor Ruru's achievement followed that of two other Māori Otago academics, Associate Professor Suzanne Pitama and Dr Karyn Paringatai, who won the award in 2015 and 2014 respectively.

Otago's Current Position

International enrolments are back on a growth trajectory at Otago in 2016, after a period of decline between 2011 – when we recorded the highest international roll in our history – and 2015.

This recent decline was not uniform across all markets and was due to a complex interplay of factors, of which the most important were: the conclusion of a number of contracts with South East Asian governments; the high value of the New Zealand dollar; the pipeline impact of reduced international cohorts in New Zealand secondary schools; and the Canterbury earthquakes having a short-term adverse impact on the attractiveness of the South Island as a destination for international students.⁵²

Our recovery started with a return to first year international growth in 2015. The pipeline impact of this and a further first year increase in 2016 have resulted in strong overall international growth in 2016.

Otago's current position should be viewed in the context of a sometimes misunderstood approach to capping its international student roll (the current cap is 15%), and restricting the proportion of such students that it seeks from any one country to 25% of the total international cohort. Important perspectives in respect of this approach are as follows:

- In practice, the overall cap operates as much as a target as a cap, and in recent years the University has been seeking to grow our international roll towards the cap, not managing numbers down to it;
- The cap protects the attractiveness of Otago as a destination for top-calibre international students,⁵³ ensuring that international students are recruited to enrich both their experience and that of the New Zealand students with whom they live and study, while also ensuring that the University is buffered from over-exposure in any one international market.

A key consequence of this approach is that Otago's international student cohort is unusually diverse, with students from approximately 100 countries represented in 2015. The United States has been the largest single source of international students for Otago in recent years, followed in 2015 by China, Malaysia, India and the United Kingdom.⁵⁴

In the past two years, we have seen a post-earthquake recovery in enrolments from North America, ongoing strong growth from China, and growth from a number of important emerging markets such as Iran and Brazil. However, enrolments from two traditionally important markets for Otago – Malaysia and Western Europe – have declined.

Reciprocity is an important element of meaningful international relationships, and Otago leads the way nationally in having student exchange as a crucial dimension of internationalisation.⁵⁵ Conjoint or twinned degrees between Otago and overseas institutions are another area to which Otago has begun to give greater attention⁵⁶. Staff networks also play a vital role, and in this context it is relevant to note that over two thirds of Otago's academic staff hold qualifications from overseas universities.

⁵² The global economic situation has also impacted adversely on international recruitment, due to factors including the fact that the international recruitment market has become more competitive as major universities around the world seek to supplement static or decreasing government funding with international student fees.

⁵³ Such students take the cap as evidence of selectivity.

⁵⁴ Amongst the countries represented in Otago's 2015 international student cohort, 23 supplied 20 or more students.

⁵⁵ Otago has the highest percentage of students on exchange of any New Zealand university. Additionally, we have formal joint or secondary supervision arrangements in place with overseas institutions for over 50 current Otago PhD students.

Otago's Focus for this Investment Plan Period

The University's current approach to international education remains appropriate to its future strategic direction.

Developing a set of new initiatives to significantly increase international enrolments has been a key priority since 2014, and both leadership and structural changes have been made within the University to facilitate this. The further development and implementation of these initiatives will be a key focus for the University over the period of this Investment Plan.

The high-level goal Otago has set is to increase international student numbers to at least 3,000 individual students (generating 2,400 EFTS) by 2019.⁵⁷ This represents an increase of some 15% over current international enrolments.

The initiatives developed to deliver this growth include a number that are quite internally and/or process focused. Those with a clear external focus include the following:

- Strengthening our relationship with Education New Zealand (ENZ) and concentrating in particular on achieving growth from those markets identified by ENZ as high opportunity markets for New Zealand's wider international recruitment endeavours;
- Working as a key partner in Dunedin's Export Education Uplift project to support a doubling of the value of international education to Dunedin's regional economy by 2023;⁵⁸
- Leveraging the sister city relationship between Dunedin and Shanghai and our own relationships with key universities in and around Shanghai to increase exchange and postgraduate recruitment from this part of China;
- Utilising our networks with and strong knowledge of the North American study abroad market to increase enrolments of this type;⁵⁹
- Extending provision of our distance/online postgraduate programmes offshore in subject areas where we have particular international expertise;⁶⁰
- Continuing to develop and launch new one-year taught masters degrees that will appeal particularly to international students (see section 3.2.4 below for further details);
- Increasing the number of students undertaking international exchange, and better linking inbound undergraduate exchange students to opportunities to return for postgraduate study;
- Developing more 'twinning' programmes that enable students to seamlessly combine study at Otago with study at one or more of our overseas partner universities;
- Piloting an International Winter School;
- Using the international standing and re-developed and expanded facilities of our School of Dentistry to pursue international growth in this highly sought-after subject area;
- Continuing the recently introduced Work Ready Programme, which – operating in conjunction with Otago Polytechnic and the Dunedin City Council – aims to support international students seeking employment in New Zealand after graduation;⁶¹
- Involvement in the new Centres of Asia-Pacific Excellence (CAPEs) initiatives.

⁵⁷ These totals include overseas PhD candidates who are accorded domestic status for SAC funding purposes.

⁵⁸ This project is part of the wider economic development strategy for Dunedin, and includes a specific export education strand.

⁵⁹ The Institute of International Education in the United States wishes to significantly increase the number of US students studying abroad by the end of this decade.

⁶⁰ This currently occurs in the highly specialised field of aviation medicine, with our programmes taken by students in Asia, Australia, Europe, the Middle East and both North and South America.

⁶¹ Commencing in 2015, the Work Ready Programme is a free, extracurricular programme for international tertiary students in the Otago region. It runs over two months, and aims to create a greater understanding of the New Zealand workplace culture and expectations through workshops, seminars and events.

Implicit in the above points is a realisation that much of Otago's future opportunity in international education is at the postgraduate level. Undergraduate opportunity for Otago will, in the future, be apparent most often in study abroad and exchange-style short-term programmes, and in specialist subject areas.

Otago has no desire at this time to achieve growth through developing a campus presence offshore. Nor does it see the Massive Open Online Course (MOOC) mode of delivery as providing a significant offshore opportunity for Otago. As noted above, though, we do see potential for further offshore distance/online delivery in specialist (mainly postgraduate) areas, with the continued use of offshore 'residential school' components delivered internationally within predominantly online or distance mode courses.

2.5.4 Strengthening Research-based Institutions

Government's Priorities

Government wishes to see an increased use of university research to drive innovation and achieve productivity gains in the economy. There is a particular interest in:

- Universities working together and/or specialising in particular areas.
- Closer collaboration with other research organisations, and with industry.
- Building research capability, quality and reach through activities such as:
 - More internships and employer-linked postgraduate research;
 - More opportunities for staff from institutions and industry to share research activities, and to learn from each other's experience and skills.

Leveraging these improvements will also require that TEOs invest in the right areas that will deliver value to New Zealand.

Government has invested to support research in recent years through initiatives such as National Science Challenges and national Centres of Research Excellence that support collaboration in research, via increases to the PRBF funding pool and – in its latest budget – via major increases in key competitive research funds, and developments such as the Entrepreneurial Universities initiative.

Otago's Current Position

We are proud to be one of New Zealand's largest and most broadly capable research organisations. We set our expectations in respect of research with a mission statement that explicitly requires Otago to be a research-led institution, and with a strategic direction that has Research Excellence as a core strategic imperative.

Our standing as a leading research university is confirmed on a regular basis by independent national and international assessments, and by the success of our staff in competitive research rounds.⁶² While excellent research is undertaken at all New Zealand universities, taken in aggregate the results of these assessments and grant rounds place Otago and Auckland well ahead of other New Zealand universities in terms of the total amount of research we undertake, and the breadth, concentration, national and international impact of that research.⁶³

⁶² Including, most recently, our domination of the 2016 Health Research Council funding round.

⁶³ Otago and Auckland typically secure over 75 percent of Health Research Council funding, are the top-performing institutions in the Marsden Fund rounds, and secure the largest share of PBRF funding. Otago is a host or partner in five of the six new CoREs, and a host for two and partner in seven National Science Challenges.

The positive trajectory of research at Otago is shown by our recent gains in external research income. This increased by over seven percent from 2014-2015, and an equal or greater rate of increase is forecast for 2016. Our commercial and consulting income has also increased recently, rising by seven percent from 2014-15.

Importantly, while Otago is sometimes thought of as a predominately ‘blue skies’ research organisation, there is a rich tradition of Otago applying research for public good and commercial purposes, including to enhance social and environmental well-being, and human and animal health. Attachment G provides specific examples of that application.

An independent international perspective on Otago as a research-based institution is provided within the QS Stars assessment that led to our securing the maximum Five Stars Plus overall quality rating. Within this, Otago secured the maximum possible rating for research,⁶⁴ and the maximum score for international research collaborations. Within the innovation component of the QS Stars assessment, Otago secured maximum scores for patents and industrial research, and eight of a possible ten points for spin-off companies.

As this QS assessment suggests, our research finds commercial application via a wider range of routes, including contract research, licensing, and the formation of spin-off companies. The following points give a flavour of the scope and breadth of our activities in this area:

- In 2015 Otago had over 320 external/business relationships (80 with international partners), and we have partnered in over 1500 research contracts with businesses, government agencies, university and research institutions in areas such as horticulture, meat production, aquaculture, high performance sport, high value foods, pharmaceuticals, mining and transport;
- Otago also works closely with companies in the food, sheep and beef, dairy, wine, general manufacturing, infrastructure, biotechnology and media sectors;⁶⁵
- Otago has formed a number of spin-off companies to commercialise specific research discoveries,⁶⁶ and is currently pursuing exciting commercialisation opportunities in fields including novel gene therapies, drug delivery systems, software, measurement devices and vaccines.
- Otago has increasingly harnessed medical and health science expertise and applied this expertise to the primary industries – for example, in the areas of animal remedies, bee genetics and wool protein extraction;
- Otago has steadily increased the funding it receives from overseas sources to support research in recent years, and has also increased the number of sources of that funding over the same period;⁶⁷
- Otago research teams are now more engaged in ‘research/technology-pull’ rather than ‘research/technology-push’, as evidenced by increasing success in securing support from partnered funding pools.⁶⁸

⁶⁴ As determined by academic reputation, academic publications, citations, and our number of internationally recognised academic experts.

⁶⁵ Including Fonterra, Synlait Milk, Dairy NZ, Goodman Fielder, Beef + Lamb NZ, NZ Merino, Silver Fern Farms, Cadbury, Zespri, Rakon, Sirtrack, Seeka, WasteSolutions, ADInstruments, AbacusBio, Scott Technology, Haier NZ, Tetrapak, Air New Zealand, Delta and Natural History New Zealand (NHNZ).

⁶⁶ Two recently formed spin-offs that are in the public domain are Upstream Medical Technologies Ltd (formed to commercialise a suite of diagnostic markers developed at the University’s Christchurch School of Medicine) and Chitogel Ltd (formed to commercialise an Ear, Nose and Throat (ENT) surgical gel developed by the University’s Department of Chemistry).

⁶⁷ Funding has increased from \$3.8 million in 2011 to \$9.8 million in 2015. The range of funders involved is illustrated by the following list of selected overseas funders for 2015: the Bill and Melinda Gates Foundation; Massachusetts General Hospital; John Hopkins University; the World Health Organization; F Hoffman-La Roche Ltd; Meat & Livestock Australia Limited; Mead Johnson Nutrition (Asia Pacific).

⁶⁸ Including TechNZ, AGMARDT, and Sustainable Farming Fund support, as well as support through MBIE targeted research funding.

Increasingly, we have shown leadership in respect of collaborative relationships with other research organisations, using these to build scale and focus. Recent high-profile examples of this include:

- Our role as a host for one of the country's new Centres of Research Excellence (CoRE), co-host of a second, co-director status for a third, and involvement as a key partner in all but one of the others;
- Our role as a host for two of the country's new National Science Challenges, and involvement as a key partner in seven others;
- The joint Otago/NIWA team that won the Prime Minister's Science Prize for their research into climate change;
- The deployment of New Zealand Genomics Ltd capability to determine the origins of the PSA kiwifruit disease;
- Active partnership in the Consortia for Medical Devices and Technologies (CMDT);
- Our status as a founding member of the Matariki Network of Universities, a group of seven outstanding international universities, all of which are among the oldest and foremost places of learning in their respective countries;⁶⁹
- Our establishment of a seed fund to support proof-of-concept research projects that are partnered with end users and/or other research providers;
- Our role as one of five organisations collaborating on the Otago Participatory Science Platform.⁷⁰

While the primary focus of the Tertiary Education Strategy in respect of strengthening research-based institutions appears to be economic benefit, it is also vital to support the wider role that research plays in advancing society, the environment, health and well-being. This occurs both fairly directly – for example, via research that has obvious health benefits – and indirectly through the way in which leading edge research informs Government policy and public debate.

In part because Otago has such a strong health sciences focus, our research can often lead simultaneously to direct economic and social benefits. Large numbers of projects of these types are funded at Otago each year, including both long-running projects such as the internationally renowned Dunedin Longitudinal Study, and projects with a much more targeted focus.

A recent example of these multiple benefits is provided by the Freedom4 portable DNA diagnostic device, showcased by Otago in 2014. Developed by a multi-disciplinary team within the University, and partly supported by a Government New Economy Research Fund (NERF) grant, this technology is now in the spin-out phase via a partnership with New Zealand company Ubiquitome. It is poised to become a commonly used field tool for rapidly detecting suspected viruses or bacteria in samples, while also determining the level of infection. It has enormous potential health, economic and environmental benefits.

Similarly, the Resilient Urban Futures programme is aimed very specifically at enhanced social, economic and environmental outcomes, as are a number of the Otago projects supported in recent MBIE science investment rounds.

As a research-led university, Otago also places a high level of importance on research-intensive postgraduate programmes and, consistent with this approach, has a long-established

⁶⁹ The MNU members are Dartmouth College (USA), Durham University (UK), Queen's University (Canada), University of Otago (New Zealand), University of Tübingen (Germany), University of Western Australia and Uppsala University (Sweden). The network, which operates under the theme of *partnering for a better world*, was founded to support a range of activities, including enhanced student exchange, development of joint postgraduate programmes, social responsibility projects, research collaboration, visiting fellowships, staff exchange and secondments, benchmarking and sharing of best practice, and cultural and sporting activities.

⁷⁰ Part of the Ministry of Business, Innovation and Employment's Nation of Curious Minds strategy, this project – known as Otago Science in Action – aims to help local people and groups bring their research ideas to fruition.

commitment to increase research degree enrolments. These enrolments currently comprise just over 10.0% of total enrolments in headcount terms, and 8.6% in EFTS terms.

Internships and employer-linked postgraduate research have become increasingly important in recent years, and will continue to do so.⁷¹ Our relationship with a locally-based international company AbacusBio – which currently hosts three Otago PhD students – is illustrative of the types of arrangement that are possible.

This relationship is also illustrative of broader research synergy that exists between Otago and other non-university research-minded organisations. While elements of this synergy are long-standing and well embedded,⁷² this is a constantly evolving area. For example, Otago is a proposed partner in the privately-led Centre for Space Science Technology, which is being considered for funding under the Government's Regional Research Institute initiative.⁷³

We also deploy our research expertise to support local government in many fields.⁷⁴

Otago's Focus for this Investment Plan Period

Our research focus for this plan period is anchored in the commitments made under the Research Excellence imperative of *Strategic Direction to 2020*, and will find more specific expression in a soon-to-be-confirmed *Research Action Plan*.

The Research Excellence imperative of *Strategic Direction to 2020* requires Otago to continue to take decisive steps to advance our research culture and ethos. Within this overall drive, the following are highlighted as being especially important:

- Deploying our research to address questions of national and international importance;
- Developing our national and international research profile;
- Taking a leadership role in developing interdisciplinary research to address broad, complex issues;
- Applying our research to enhance social and environmental well-being and human and animal health, and paying increasing attention to research for economic and commercial benefit;
- Strengthening our commitment to kaupapa Māori research, especially that which supports iwi development;
- Fostering joint research programmes with other universities and research organisations, both within and beyond New Zealand;
- Increasing engagement with end-users of research;
- Attracting and retaining high-quality, research-active staff, and fostering their development in a supportive environment, and providing a similarly attractive and supportive environment for research students.

The group developing our *Research Action Plan* has identified five themes and a number of subsidiary objectives around which to cluster the key actions required to drive research success. These are included as Attachment H.

Two of these themes – *Leading the Research Agenda* and *Championing Research Translation and Commercialisation* – outline a much more ambitious positioning by Otago than has been

⁷¹ At present over 40 Otago PhD students have formal arrangements in place that provide joint or secondary supervision from external non-university research and commercial organisations.

⁷² For example, the extensive co-location of CRI and Otago researchers working on projects of joint interest.

⁷³ This Centre seeks to drive regional economic growth by enabling access to space-based measurements and developing products and solutions tailored to New Zealand's regional industries (focused on selected sectors including irrigation and agriculture, oceans, and regional and urban planning).

⁷⁴ For example, to assist the Otago Regional Council in the assessment and maintenance of water quality.

the case previously.

Otago has long led the research agenda in particular areas. Our capacity to do so has been enhanced in the past decade through strategic investment in initiatives that have gone well beyond business as usual, such as our Leading Thinkers programme. Our recent success and close involvement in the latest CoRE projects and National Science Challenges provides a basis for even greater leadership in the coming years.

Research translation encompasses both translation for public good and commercial and economic return. Comment in this section focuses on developments in the commercial application of research, as this is what is most commonly understood as ‘research driven innovation.’

Otago’s position is that innovation in this context involves connecting both our research expertise and our graduates with business, industry and commercial opportunity, and that the internationalisation is inextricably linked to many opportunities in this area. Additionally, while in some instances a university may be and remain an investing partner in innovation for commercial purposes, in many instances this will not be the case.⁷⁵

A recent development that Otago will leverage in this context over the coming years is the multi-party Economic Development Strategy for Dunedin. This is the only strategy of its type in New Zealand in which a university has been engaged in all stages as a partner. Otago is one of six cornerstone partners in the Strategy,⁷⁶ and is the lead or key partner in three specific components of the strategy that will generate economic benefit from research-driven and research-informed innovation.

These components, and examples of the projects underway that connect with them, are as follows:

- **Alliances for innovation**, which aims to improve linkages between industry and research, increasing scale in innovative and tradable sectors. A developing project associated with this is the FoodSouth Otago initiative. This will see the University’s well-established business-facing Food Science capability partner with FoodSouth, the South Island hub of the New Zealand Food Innovation Network, and Grow Dunedin Partnership to grow food production and export capability within Dunedin and the lower South Island.
- **A hub of skills and talent**, which aims to attract and retain skilled jobs. The University, along with Otago Polytechnic, will be responsible for the Dunedin arm of the South Island ICT Graduate School, which will be physically based in the city’s new innovation precinct.
- **A compelling destination**, which includes export education within its ambit. Numerous initiatives that support this are referenced in other sections of this Investment Plan.

Over the period of this plan, Otago will also continue to provide incentives and structures to encourage relevant, innovative and connected research. These will include the provision of seed funding to encourage externally-connected research involving other research organisations and industry,⁷⁷ and an intellectual property policy that allows for a sharing of the proceeds of commercialisation between those who produce the underpinning intellectual property, their

⁷⁵ This saw \$25 million of private sector support matched by Government contributions fund the establishment of 25 high-profile academic positions and the funding of two key items of research infrastructure.

⁷⁶ Together this grouping of partners – Dunedin City Council, University of Otago, Ngāi Tahu, Otago Polytechnic, Chamber of Commerce and Employers Federation – comprise the Grow Dunedin Partnership (GDP).

⁷⁷ Using both our own Strategic Otago University Research Grants scheme, and the Priming Partnerships scheme that was funded by the TEC over the period of the last Investment Plan. Several initiatives seed-funded through these schemes developed into projects that have now secured long-term funding in recent Ministry of Business, Innovation and Employment Science Investment Rounds.

academic department and the University.⁷⁸

We will also continue to make strategic investments – including significant facilities investment – to foster growth in key areas where we see opportunities for increasing industry-linked research.

Otago will also invest to make the most of the opportunities offered by the significant multi-year increases to the Health Research Council and Marsden Fund contestable pools announced in the Government's 2016 budget, and the Government's exciting new Entrepreneurial Universities initiative. Additionally, we will seek to increase funding opportunities from non-New Zealand Government funding sources, both nationally and internationally, including funds that support research commercialisation.⁷⁹

2.5.5 Getting At-Risk Young People into a Career

Government's Priorities

A reduction in the number of young people not in employment, education or training is sought. As part of this, the tertiary education sector will develop better pathways from unemployment and inactivity to tertiary education. Improved employment outcomes are expected to flow from this. An increase in the percentage of 25-34 year olds having a qualification at level 4 or above will be a key measure of success in respect of the tertiary education contribution to this priority.

Otago's Current Position

This priority is not strongly applicable to Otago, as much of the focus is on initial transitions to sub-degree study, in which we have minimal involvement.

That said, Otago does have a long-standing small-scale involvement in providing foundation programmes, the domestic component of which has been particularly (though not exclusively) focused on providing transition pathways for Māori and Pacific students. These have delivered excellent results for Māori and Pacific students in particular, but also more generally with progression to higher levels of study for those who have not achieved to their potential at school.

Additionally, we operate special admission pathways into degree-level study for students who have not obtained University Entrance at school, with students entering through these pathways typically comprising around 2-3% of our commencing intake in recent years.

Our key observations in respect of what we do in this area are as follows:

- Students who have performed poorly at school generally struggle with degree-level study if they attempt it before 25 years of age, unless they have transitioned through a foundation-style programme;
- Those who are over 25 years of age can do appreciably better at degree level, though some study experience below degree level is still an advantage;
- Regardless of age, these students benefit from quite intensive learning support;
- For those at the younger end of the age spectrum, engagement with and support from the families and communities that are the key supporters of these students helps them to

⁷⁸ The sharing arrangement at Otago operates on a one-third/one-third/one-third basis, with the proceeds that flow back to the department being used to support further research.

⁷⁹ By way of example, in mid-2016 Otago signed up as a member of the Medical Research Commercialisation Fund, Australia's largest life science venture fund.

achieve adequate academic outcomes.⁸⁰

Otago's Focus for this Investment Plan Period

Our foundation studies programme will continue to play an important role in providing transition pathways for Māori and Pacific students in particular, and more generally for those who have not achieved to their potential in school. Opportunities we may give further consideration to are:

- Developing foundation transition pathways for Māori and Pacific students in a wider range of subject areas;
- Leveraging a presence in South Auckland (via our Dental Initiative) to motivate and support students with underlying academic potential who have not succeeded in the school system to transition to university study.

Otago also has a more general stream of work underway that is focused on the first year student experience and – within this – better identifying those students whose backgrounds mean they are likely to struggle to reach their potential without special support. Students who have achieved poorly at school and/or who have had poor employment outcomes after leaving school are within the scope of this work.

2.5.6 Improving Adult Literacy and Numeracy

Government's Priorities

Attention must be given to ensuring that more individuals across all age groups attain qualifications at level 2 or above. Included within this, is a focus on more industry involvement within tertiary education to support the up-skilling of the existing labour force. The key measure of success is literacy, language and numeracy skill improvements across all age groups.

Otago's Current Position

This point of focus is not directly applicable to Otago, as it is targeted at lower levels of tertiary education within which we, as a university, are not involved. That said, Otago does make a contribution in this area through research into teaching, learning and student performance. In particular, Otago's Educational Assessment Research Unit is involved in a range of projects, many under contract to the Ministry of Education, which inform the development of the school system and lay a foundation for improved outcomes at these lower tertiary levels.

Otago's Focus for this Investment Plan Period

Our work, as outlined above, will continue. Additionally, we will be looking at ways to support the English language needs of Syrian refugee families who are being settled in Dunedin under the Government's expanded refugee quota.

⁸⁰ This is especially important when students are the first in their immediate family to attend university, and includes engagement with iwi and rūnanga in respect of Māori students, and church-based community groups in respect of Pacific students.

2.5.7 *Specific Priorities for this Plan Period*

In this section of the Investment Plan we respond to the three specific priority areas identified by the TEC as points of focus for this plan round.

South Auckland

Otago is the third most common university destination for South Auckland students. In 2016 just under 200 school leavers from South Auckland chose to study at Otago and, in all, we have some 800 students from South Auckland studying with us.

Our South Auckland cohort is just under 20% Pasifika.

We already have a number of initiatives in place that support South Auckland school pupils to succeed in their studies, and raise their aspirations to university study. These include:

- A well-established after school homework centre in Mangere East, run by volunteers (including several Otago graduates) in conjunction with the EFKS community and church group;
- Opportunities (supported by scholarships) for senior secondary school students from all ethnic backgrounds (with a particular focus on mid to low-decile schools) to take part in a number of Otago outreach and academic experience programmes;
- Regular visits by our school liaison team to South Auckland schools, and periodic alumni events for graduates who live in the region;
- Scholarships for first year university study which, while not specifically targeted at South Auckland, do level the playing field for students from the region to proceed to university study at Otago.

We also have a number of established research programmes operating in South Auckland, many with a strong health focus.

That health focus will be elevated to an entirely new level over this plan period as Otago invests a planned \$14.7 million in a specialist dental teaching campus at Middlemore Hospital in a joint initiative with the Counties Manukau DHB.

In an approach that has already proved to be highly successful at the Dental School's main campus in Dunedin, the South Auckland facility will include a state-of-the-art Dental Teaching Hospital, fully equipped to provide dental care in a part of Auckland where there are low numbers of dentists and high rates of untreated dental disease.⁸¹

The South Auckland Dental Initiative provides a unique platform for combining the following:

- Direct educational benefits in the training of dentists and other oral health professionals (including enhanced opportunities for both New Zealand and international students);⁸²
- Direct health benefits for South Auckland, resulting in downstream gains in quality of life, and longer-term reductions in the need for expensive medical interventions;

⁸¹ Significant oral health issues are apparent in both children and adults in the Counties Manukau area, and are especially prevalent amongst Māori and Pasifika. These issues are particularly serious amongst adults, and amongst young people who have disengaged from the school system. Untreated dental disease results in pain and infection, which greatly affects quality of life. Adverse downstream impacts include poor educational outcomes and reduced employment prospects. Additionally, the inter-relationship between dental disease and diseases of poverty (such as rheumatic fever, obesity and diabetes) that are all too common in South Auckland is such that the treatments for these diseases is far more challenging and expensive when they occur in conjunction with each other.

⁸² It is expected that all graduates of our main dental degree (both domestic and international students) will spend time at the South Auckland facilities in the course of their studies. We will also be providing opportunities for students of AUT's allied dental profession programmes (trainee dental hygienists and therapists) at the facility.

- Significant opportunities for research that will have downstream benefits for the provision of dental care in areas of socio-economic deprivation;
- Outreach and other activities that raise awareness in respect of oral health, and the aspirations of those in South Auckland toward future careers in oral health specifically, and health more generally.

A number of wider outreach, transition and aspiration-raising opportunities arise with this development, and these will be further explored over this plan period.⁸³ Preliminary discussions have already been held with potential partners in respect of a number of these.

Northland

Around 60 school leavers a year from the region choose to come to Otago, and, in all, we have some 340 students from Northland studying with us.⁸⁴ Our Northland cohort is over 20% Māori.

We have a number of initiatives in place that support Northland school pupils to succeed in their studies, to raise their aspirations to university study, and to study at Otago in particular. These include:

- Periodic science wānanga outreach programmes operating in Northland in collaboration with local iwi groups;
- Opportunities (supported by scholarships) for senior secondary school students from all ethnic backgrounds (with a particular focus on mid to low-decile schools) to take part in a number of Otago outreach and academic experience programmes outside of the region;
- Regular visits by our school liaison team to Northland schools, and periodic alumni events for graduates who live in the region;
- Scholarships for first year university study which, while not specifically targeted at Northland, do level the playing field for students from the region to proceed to university study at Otago.

We also have a number of established health outreach and research programmes operating in Northland.

At this stage we have no major plans to increase our presence in Northland, though we will continue to support good numbers of students from the region to attend Otago, especially those interested in specialist health sciences study.

Sub-degree Primary Industry-related Qualifications

While Otago delivers some degree-level teaching in this area, and carries out a considerable amount of research related to primary industries, we are not currently involved with sub-degree provision in this space.

We are, though, taking up an invitation to join a highly relevant new initiative that aims to prepare senior secondary school students for tertiary study and subsequent careers in agribusiness.

This initiative, the Centre of Excellence for Agricultural Science and Business, is a national project involving a number of secondary schools and universities working together to:

⁸³ Preliminary discussions have already been held with potential partners in respect of a number of these.

⁸⁴ Our recruitment from Northland is generally on a par with that of AUT, Victoria and Waikato.

- Construct an innovative senior secondary school agribusiness programme (at NCEA levels 2 and 3);
- Develop linkages and transition pathways between this programme, universities and agribusiness firms.

Because this initiative is currently in its initial pilot phase, and Otago's involvement is linked to the very recent confirmation of two local schools joining the programme, the exact nature of our contribution has yet to be finalised. However, we see opportunities to develop agribusiness options within our existing outreach programmes, and potential to organise our wide array of agribusiness-relevant degree-level papers in a more focused manner.⁸⁵

This initiative has the potential to produce engaged, well-qualified and capable young people who are enthusiastic about career opportunities in primary industry and the agribusiness sector.

2.5.8 Re-Enrolment and Employment Outcomes Review

As part of our focus on optimising student outcomes, Otago has reviewed patterns of re-enrolment at Otago using initial qualification, and sector-wide employment outcomes data provided as part of the Ministry of Education's EOTE project.

Re-enrolment Review

The aspect of re-enrolment we have focused on is that which involves a student completing a qualification, and then embarking on further study in another qualification at the same level.

At Otago this typically involves transition from one bachelor's degree to another. In the vast majority of cases, this involves entry to health sciences professional degrees (especially Medicine) following completion of a general undergraduate degree, typically in the biological sciences. Called graduate entry, this – along with competitive entry following a first year of health sciences study – is one of the two main pathways to health sciences professional degree study. It is an internationally common entrance pathway to health professional degree study, and is particularly important for those who have not been able to reach their full academic potential – especially in the core sciences that underpin the health professions – during their secondary school years.⁸⁶

Employment Outcomes Review

With respect to the employment outcomes data provided for review, we note the following:

- In respect of degree-level outcomes, some of the fundamental premises and methodologies being used for the EOTE project appear to be flawed at multiple levels. They are based on a narrow understanding of the purposes and benefits of a degree-level education, and of the role that individual factors and market forces play in determining student study choice;
- We understand that even the poorest employment outcomes at degree level are vastly superior to those at sub-degree level outcomes (and at least as good as those achieved in comparable countries overseas), so we would actually question why outcomes at degree level are any cause for concern;
- The data we have seen to date is sector-wide, not Otago-specific, so even if we were to consider it useful in a general sense, the picture for Otago is not necessarily the same. It would therefore be inappropriate to take action on the basis of this data.

⁸⁵ Leading, potentially, to an agribusiness major or minor within one of our existing qualifications.

⁸⁶ The graduate entry pathway is especially important to high-potential students from low-decile schools, including large numbers of Māori and Pasifika.

- An investment in a university degree is an investment for life, so employment outcomes should be measured over a longer period than three years;
- A number of subject areas identified as having lower employment outcomes are subjects that attract high proportions of female enrolments, so there may be an element of gender bias skewing the results.⁸⁷

Otago has been systematically gathering information on both employment outcomes for our graduates, and the skills they require following graduation, for years. This informs the development of academic programmes on an ongoing basis. We find it disturbing that an institution that rates very highly for employability by international standards (according to independent ratings), and is part of a wider national university sector that also rates well in this respect internationally, should be expected to respond to the crudely constructed EOTE analysis.

We note also that the EOTE project seems to be operating in complete isolation from the findings of the Graduate Longitudinal Study New Zealand (GLSNZ), which is the most comprehensive study of a country's university graduates the world has ever seen.⁸⁸

As an aside, in a number of subjects areas identified as 'of concern' by EOTE, enrolments – at Otago at least – have declined in recent years, and are likely to do so further over the period of this Investment Plan (see also section 2.6.3 below).

2.6 Other Major Initiatives, Changes and Challenges

2.6.1 Capital and Infrastructure Developments

Consistent with the long-term view it takes in respect of viability, the University will continue to make substantial capital investments over the period of this Plan, with land, buildings, IT infrastructure, computer and other equipment, and library resources being the major items.

These investments will take place within the context of the University's strategic direction and its soon to be refreshed *Campus Master Plan* (2010), which provides a 20-25 year vision for campus development.

Sitting under this overarching campus plan is a Priority Development Plan (PDP). Approved in mid-2014, and periodically updated, the latest PDP outlines a substantial programme of capital works to be undertaken by the University.

The PDP, which does not include major IT infrastructure projects, currently lists projects with a forecast cost of \$725.3 million. It is expected to account for approximately two thirds of the University's capital expenditure over this period.

⁸⁷ Women are more likely than men to progress to further study after completing an initial degree, and also more likely to take time out of employment for parenting.

⁸⁸ Conducted by the same team that runs the acclaimed Dunedin Longitudinal Study, GLSNZ commenced with a baseline survey of some 8,700 students from the graduating cohort of all eight New Zealand universities in 2011, with follow-up surveys being conducted at two, five and ten years post-graduation.

The plan includes the following projects that fall within the period of this Investment Plan:

Project	Details	Timing
Dental School	A redevelopment and expansion of the Dental School to replace ageing current facilities.	Underway, with completion due 2019
Science Precinct	A major renovation in the Dunedin campus Science Precinct involving redevelopment of key buildings and the construction of new teaching and research laboratories.	Underway, with completion due 2018
Research Project Facilities	A consolidation of research animal facilities (mainly for Health Sciences research) on a single site.	Late 2016-2018
Portobello Marine Studies Centre	Teaching, learning and research space as a medium-term replacement for space lost due to the closure of an earthquake-prone building at that facility.	Underway, with completion due late 2016
Commerce Building	Improvements to access and safety.	Late 2016-2018
Landscape and infrastructure projects	Extensive work along Castle Street, Castle Walk, and the Union Street Bridge areas.	Underway, with completion due late 2016
Christchurch Facility	A new facility in the Christchurch Health Precinct. Timing is dependent on the development timeline of that precinct.	2017-2019
Seismic strengthening and fire protection	Ongoing seismic and fire safety improvements resulting from building assessments completed over the last two years.	Underway

The plan includes the following major projects that are scheduled beyond the period of this Investment Plan:

Project	Details	Likely Timing
New Arts Building	Replacing the old multi-storey concrete Arts Building, and serving as the heart of a rejuvenated Humanities Precinct.	2019-2021
Biomedical Research Building	Concentrating research currently spread throughout the Dunedin campus in the one development in the south campus area.	2023-2026
Botany	New facilities and additional space for the country's only Botany Department.	2026-2027
Student Hub	A new hub for student and academic services in the area of the Union Lawn, in the heart of the Dunedin campus.	2027-2029
UNIPOL Building	Redevelopment of the former student gym.	2027
Marine Science	A new Marine Science teaching facility and aquarium, preferably in the harbour basin area.	tbc
Wellington Upgrade	Completion of the refurbishment and further seismic strengthening of our Wellington campus facilities.	tbc

The current timeline allows for the new PDP to be funded from cash reserves through to late 2017, at which time there will be a requirement for borrowing. Following initial discussions with the TEC, the University is preparing a formal application to increase its borrowing approval from the current level of \$30 million. This application will be submitted by the end of 2016.

Confirmation of the new Priority Development Plan comes following a period when the University completed the following key capital projects:

- Implementation of the University's new Student Management System (go-live was mid-2014);
- The repair and seismic strengthening of the main University of Otago, Christchurch,

- building (re-opened in 2013);
- New University childcare facilities offering 140 places to pre-school children (opened in 2014);
- The purchase and refurbishment of a facility for a new 128-bed Residential College, Te Rangi Hiroa (opened in 2014);
- Flood protection and access and aesthetic enhancements to Clocktower Reach of the Water of Leith (largely funded by the Otago Regional Council, and completed in late-2015).

A significant programme of seismic assessment and strengthening has also taken place over the past five years, during which the University has also supported a number of Residential College improvements and expansions at affiliated colleges, and undertaken a substantial upgrade of its Local Area Network (LAN) and the progressive roll-out of wireless networks across the campus.

2.6.2 Quality Assurance Reviews

Otago is subject to, and in some cases initiates, a range of quality assurance reviews. The following table groups these reviews according to type and provides an overview of each type:

Review Type	Comment
Universities NZ Academic Audit (NZUAAU) Reviews	These take place across all of the country's universities on a rolling cycle. Otago's last audit took place in April 2016, with the NZAAU report due to be released later in the year. The verbal feedback given to Otago by the panel chair post-audit was very positive. Otago will be responding to the commendations, affirmations, and recommendations in the written report in accordance with the established process once the final version of that report is received.
Graduating Year Reviews	Like all New Zealand universities, Otago also takes part in Universities New Zealand's Graduating Year Review process. This sees all new programmes undergo review soon after the first cohort of students in the programme have graduated.
Accreditation Reviews	Where appropriate, specific disciplines within Otago are subject to periodic accreditation reviews. These are typically undertaken by or on behalf of professional bodies to maintain accreditation for professional programmes, or to provide internationally recognised 'stamps of approval' (e.g. for the University's School of Business). These reviews play an important role in ensuring that qualifications develop to meet changing industry and employer requirements. They also help maintain close connections between industry and specific areas of the University. The University holds accreditation for its professional programmes, and is committed to maintaining accreditation. ⁸⁹ It is also committed to maintaining Business School accreditation with the two leading international agencies in this area. ⁹⁰
Internally-initiated Quality Reviews	The University itself operates a comprehensive quality review process, covering all academic departments, programmes and administration on a yearly cycle. Otago reviews have an improvement focus, and take place according to terms of reference that are aligned to the University's strategic direction. The reviews are undertaken by panels that include representation from at least one other university (including a representative from outside New Zealand), from a relevant industry group, and from a student or recent graduate. Reports typically include commendations, affirmations and recommendations.

⁸⁹ Areas in which professional accreditation is maintained include accountancy, clothing and textile sciences, dentistry, dietetics, medical laboratory science, medicine, pharmacy, psychology, physiotherapy, planning, social work, surveying and teacher education. As well as national accreditations (many of which are recognised overseas), we hold 40 international accreditations.

⁹⁰ These agencies are EQUIS (European Quality Improvement System) and AACSB (The Association to Advance Collegiate Schools of Business, based in the United States).

2.6.3 *Adjusting Capacity and Capability*

Otago has faced increased financial pressure in recent years, along with ongoing shifts in enrolment demand by subject area. The challenges are a normal part of business for universities around the world, and require thoughtful, future-focused structural responses.

A number of adjustments have been made in Otago's academic areas in recent areas, including the closure of one academic department, and a major re-organisation of our School of Business.

Two further projects are currently underway as follows:

- A comprehensive review of the University's support services, covering both the capacity and capability of those services, and their structural location within the University. This project has been underway for some months, and has recently moved from the preliminary investigation to the solution design phase. Recommendations around changes to be made will be considered in the first quarter of 2017, with changes to follow during the course of that year;⁹¹
- A review of academic staffing levels and the academic structures within the University's Division of Humanities. This review is a response to declining enrolment demand in a number of subject areas, accompanied by a desire to consider structural changes that will best equip Humanities at Otago for the future.⁹²

⁹¹ It is worth noting that this is the widest-ranging review of support services undertaken in the past two decades at Otago, and that equivalent reviews have either recently occurred or are underway at other leading universities in Australasia.

⁹² As a result of this review, management of change has been initiated in the following humanities departments: Anthropology and Archaeology; English and Linguistics; History (incorporating Art History); Languages and Cultures; Music. It is also probable that change processes will be initiated in the College of Education in early 2017. Further departments – Philosophy, Social Work, and Classics – will be reassessed at the end of 2017.

3.0 Summary of Activity

This section provides a high-level summary of forecasts that are presented at a greater level of detail in attached documents. The University seeks TEC funding support for all eligible forecast enrolments.

3.1 Key Forecasting Assumptions

3.1.1 Overview of Key Forecasting Factors

Otago takes account of a wide range of factors when forecasting enrolments.

External factors that merit particular consideration are the availability of SAC EFTS funding, specific changes in Government policy that may impact directly or indirectly on enrolments, national and regional demographic projections, the national economic outlook, the global economic outlook and exchange rates. Key internal factors include pipeline effects which result from intakes in previous years and the impact of specific changes such as the introduction of new programmes and the phasing out of existing programmes.

Distinguishing points in respect of domestic enrolments at Otago include the following:

- A very high proportion of our domestic commencing student cohort are school leavers coming from outside Dunedin, and the vast majority of these will not come to Otago unless they gain a place in a Residential College;
- Because the number of applicants for places in Residential Colleges has normally exceeded the number of available places, Otago has in the past been buffered against changes in commencing student demand, whether driven by demographic or economic factors;
- The University has a very high proportion of students engaged in full-time study towards multi-year qualifications. This provides an inherent stability in student retention from year to year.

In addition to these long-standing features, and well-established roll capping mechanisms for professional programmes, Otago has in recent years introduced Limitation of Enrolment provisions for all undergraduate qualifications at Otago, and has also put in place more stringent academic progress criteria. Over the medium to long term these measures have promoted greater stability and predictability around domestic enrolments, especially at the undergraduate level. International enrolments are inherently challenging to forecast, as complexities such as exchange rates and competition for students on a global scale come into play. Diversification across a range of international markets, as practised by Otago, provides some protection from major fluctuations, though this is at best a partial protection, especially in times of significant and general global uncertainty.

3.1.2 Long-Term Expectations

Otago's current long-term forecast envisages an enrolment growth rate of 0.75% per annum over the next 25-30 years. This is approximately half the average annual growth rate achieved by the University between 1996 and 2015, and would equal the lowest growth rate ever achieved by the University across a period of 2-3 decades.

There is an expectation that the University would manage its growth to maintain a clear focus

on excellence (as opposed to volume) and for reasons of affordability in terms of infrastructure. The revised *Campus Master Plan* forecast envisages this growth being split approximately 50:50 in volume terms between undergraduate and postgraduate. This would, over 25-30 years, see postgraduate enrolments increase from the current 17.2% of EFTS to 24.1% of EFTS.⁹³

3.1.3 Overview of Key Forecasting Factors for 2017-2019

The key assumptions that underpin the forecast, and which are expanded on below, are as follows:

- A steady state for undergraduate domestic first year enrolments in 2017, with modest growth of 60 EFTS in 2018 due to an expected upturn in school leaver numbers;
- Overall domestic enrolments are expected to be flat in 2017, with the impact of a larger first year cohort in 2016 being offset by negative pipeline effects from previous years;
- Modest overall undergraduate domestic decline of 34 EFTS, driven by the following factors:
 - The significant first year decline that Otago saw in 2015 is expected to offset this year's first year growth, as well as the period of more modest growth in 2012-2014;
 - Significant pipeline growth in Science subjects, largely due to this year's record intake in the Health Sciences First Year course;
 - Pipeline decline in Physical Education, Music and Performing Arts;
 - A modest increase in Dentistry and Medicine enrolments, due to the ongoing pipeline effects of cap increases in recent years.
- Modest postgraduate taught growth due to the initiatives detailed below;
- Modest pipeline postgraduate research growth from 2018 onwards;
- A continuation of international growth totalling 149 EFTS over the period 2017-2019, which is expected to be concentrated in new taught masters programmes.

⁹³ These percentages include international full-fee enrolments.

3.2 Enrolment Forecast Summary

3.2.1 The Overall Enrolment Forecast

The data provided in the following tables show actual final EFTS for 2012-2015, Otago's latest forecast for final 2016 EFTS, and further forecasts for 2017, 2018 and 2019 which form the basis of our longer-term planning.

EFTS Summary 2012-2019

	2012	2013	2014	2015	2016 ⁹⁴	2017	2018	2019
SAC Eligible EFTS ⁹⁵	17,399	17,219	17,275	16,867	16,880	16,885	17,087	17,179
Other TEC Funded EFTS ⁹⁶	35	0	0	0	0	0	0	0
Other EFTS ⁹⁷	1,763	1,656	1,556	1,553	1,631	1,701	1,750	1,781
Total	19,197	18,875	18,830	18,421	18,512	18,587	18,837	18,960
<i>EFTS change over previous year</i>	-371	-322	-44	-410	91	75	250	123
<i>Percentage change over previous year</i>	-1.9%	-1.7%	-0.2%	-2.2%	0.5%	0.4%	1.3%	0.7%

As the above table shows, Otago's domestic enrolments have stabilised in 2016 following a year of significant decline in 2015. Last year's decrease was almost entirely due to a reduction in first year domestic enrolments (379 EFTS), which largely reflected the introduction of a more stringent University Entrance standard in 2014.⁹⁸

The recovery in SAC EFTS to a stable level is primarily due to this year's domestic first year growth (274 EFTS), which has seen enrolment numbers increase across all four divisions at Otago, particularly in the Division of Health Sciences.

Overall, Otago is forecasting an increase of 75 EFTS (0.4%) in 2017, followed by growth of 250 EFTS (1.3%) in 2018, and 123 EFTS (0.7%) in 2019. The dimensions of this growth, including an increased proportion of postgraduate enrolments and changes in subject mix consistent with Government expectations, are considered in more detail below.

Otago is forecasting a steady state in respect of domestic enrolments in 2017 (an increase of 5 EFTS), followed by growth of 202 EFTS (1.2%) in 2018 and 92 EFTS (0.5%) in 2019. International and other non-SAC EFTS are expected to increase by 70 EFTS (4.3%) in 2017, 49 EFTS (2.9%) in 2018, and 31 EFTS (1.8%) in 2019.

⁹⁴ This is the current projected final result for 2016.

⁹⁵ SAC EFTS are enrolments in formal courses of study which are eligible for Government support via the Vote Tertiary Education budget. They include the overwhelming majority of EFTS generated by domestic student enrolments, and a small number of EFTS generated by overseas students (e.g. international PhDs) whom the New Zealand Government deems eligible for EFTS funding support.

⁹⁶ Other TEC funded EFTS comprise those funded through the Adult and Community Education (ACE) pool.

⁹⁷ The majority of 'Other EFTS' are full-cost international students. This group also includes small numbers of students funded via Vote Health, and doctoral students who have exceeded the 4.0 EFTS limit for SAC funding.

⁹⁸ This, and Otago's decision to hold firm in not admitting students who had not met the new standard, contributed to a loss of school leaver market share in 2015. This loss was largely recovered in 2016.

3.2.2 Mix of Provision for 2017

The detailed mix of provision by funding subject area and level appears in tabular form as Attachment I. This reflects, at a level of greater detail, the assumptions and trends described in summary form above and below.

Except where otherwise stated, this commentary relates to SAC-eligible EFTS only, and where comparisons are made with 2016 they are made with our latest forecast final result for 2016.⁹⁹

A change in mix by level is forecast as follows:

- In accordance with Otago's strategic direction and Government expectations, the balance of enrolments continues to shift towards postgraduates. In 2017, postgraduate SAC-eligible enrolments are forecast to increase by 62 EFTS (2.2%) over 2016 and to comprise 17.0% of all SAC-eligible EFTS (up from 16.6% in 2016). This growth is expected to be concentrated in new taught masters' degrees and the new online stream of our MBA programme (which has been extremely popular this year);
- Undergraduate SAC-eligible enrolments are forecast to be 34 EFTS (0.2%) lower than the likely final result for 2016. The major drivers of this decrease are noted in section 3.1.3 above.
- Domestic enrolments at sub-degree level are forecast to decrease by 23 EFTS (15.0%) in 2017, due to a projected fall in the number of students enrolled for our Foundation Year programme.¹⁰⁰

A change in enrolment mix by subject area, as alluded to above, is also forecast.

This forecast sees a continuation of the shift to a greater proportion of EFTS in the sciences and health sciences (including health sciences professional programmes) that has been a trend at Otago for several years. This trend is consistent with the Government's priorities around subject areas, and its wish for universities to differentiate themselves around areas of unique or specific strength.

3.2.3 Mix of Provision for 2018 and 2019

There is uncertainty around funding beyond 2017. No decision has yet been made by Government on SAC funding rates for 2018/2019 or on the total amount of funding to be provided for universities in these years, or the exact means by which it will be allocated.

This being so, the mix of provision signalled in this Investment Plan for 2018 and 2019 is provisional. The University reserves the right to update its forecasts for those years in response to changes in the enrolment and funding environment, and notes most importantly that its ability to meet both enrolment and performance targets is contingent on the provision of adequate funding, including appropriate indexation for rising costs.

The general expectations for this period are of a continuation of the key trends identified above for domestic enrolments, and solid growth in international full-cost enrolments.

⁹⁹ This forecast is an updated version of that supplied as part of the April SDR, and takes account of the latest information we have on second semester enrolments.

¹⁰⁰ This reflects a probable decline in school leaver numbers, and the likelihood of a further improvement in University Entrance achievement rates.

This would see the following main shifts occur by 2019:

- 299 EFTS (1.8%) of growth in SAC-eligible EFTS over 2016, concentrated as follows:
 - Postgraduate SAC-eligible EFTS increasing by 149 EFTS (5.3%) over 2016 and increasing to 17.2% of all SAC-eligible EFTS. Over three quarters of this forecast growth is in postgraduate taught activity;
 - Undergraduate degree SAC-eligible enrolments are forecast to increase by 173 EFTS (1.2%) over 2016. The major drivers of this undergraduate growth are the pipeline effects of first year growth in 2016, along with a modest increase in school leaver numbers in 2018;
 - Enrolments in Science courses¹⁰¹ are expected to comprise over 30% of Otago's total SAC provision by the end of the period covered by this plan.
- 149 EFTS (9.2%) growth in non-SAC EFTS over 2016. This is largely due to full-fee international growth at postgraduate taught level as more new coursework masters' degrees become available. A smaller portion of this international growth reflects new contracts with IMU (Malaysia) for undergraduate provision in the health sciences.

3.2.4 *Planned Programme Changes*

The University currently offers some 200 qualifications and, within those qualifications, a wide range of major subjects and subject-specific endorsements. The forecasts of planned enrolments provided with this Investment Plan take account of changes in the number and mix of qualifications offered by the University. All significant changes to teaching and learning activities are considered in relation to the University's key strategic goals and objectives. Consultation with, and endorsement by, internal and external stakeholders is also required for all new qualifications, majors and endorsements.

The focus at Otago over the period of this Investment Plan will be the ongoing development and implementation of new taught masters' degrees. This focus, which was signaled in our previous Investment Plan, responds to the opportunities that follow Universities New Zealand's approval for one-year (180-credit) coursework masters' degrees. Such degrees are key to Otago's international growth, as well as supporting our overall push for increased postgraduate enrolments.

Recent and planned programme developments are as follows:

- A Doctor of Business Administration degree, comprising two streams. The first stream of this programme will be wholly taught by the University of Otago in Dunedin, and will be open to both domestic and international students (from 2017). The second stream will be taught in conjunction with Shanghai Jiao Tong University's Overseas Education College (from October 2016);¹⁰²
- Coursework masters' degrees in Economics, Oral Health, Chaplaincy, Politics, Nursing Science, and Dentistry, all introduced from 2016;
- A Master of Māori and Indigenous Business degree, to be jointly taught with five other New Zealand universities (from 2017, subject to approval);
- Further masters' degrees in Marketing, International Business, and Sustainable Business, for introduction in 2017;
- Other postgraduate diplomas and certificates in Bioethics and Health Law, Chaplaincy, and Science Communication (from 2016);
- A suite of postgraduate qualifications in Medical Imaging;

¹⁰¹ Courses in classification #18.

¹⁰² Shanghai Jiao Tong University is one of China's leading universities, ranking as one of China's top five internationally by QS.

- A new four-year Bachelor of Arts and Science (BASc) degree;¹⁰³
- The revival of our dormant Bachelor of Health Sciences degree, with majors in Community Health Care, Māori Health, Pacific and Global Health, and Public Health (from 2018, subject to approval);
- A suite of ICT programmes, jointly delivered with two other universities and two polytechnics, as part of the ICT Graduate School initiative.

Next year will also see the discontinuation of Certificate in Health Promotion, which is the University's last remaining sub-degree programme outside of our Foundation Studies subsidiary. Other recent or future programme deletions include the following:

- Master of Design (from 2017);¹⁰⁴
- Postgraduate Diploma in Technology and Entrepreneurship (from 2016);
- Postgraduate Diploma in Natural History Filmmaking and Communication (from 2016).¹⁰⁵

The University also plans to build on existing areas of expertise and strengthen study pathways to postgraduate study by introducing one new major subject in 2017 (Quantitative Genetics), and by rationalizing its offerings by exiting from a number of previously offered majors or endorsements. Details of these changes appear as Attachment J. Consideration is also being given to a new major subject that will bring together our science and business expertise relating to agriculture and rural economies.

¹⁰³ The aim of this programme – which is the first of its kind in Australasia – is to enable undergraduate students to gain a firm grounding in both science and the humanities, without the need to complete a five-year double degree, as at present. It is anticipated that the new degree will encourage more students to undertake postgraduate study in their fifth year of study.

¹⁰⁴ The University's entire suite of Design for Technology programmes is also being deleted (see Attachment J).

¹⁰⁵ Replaced by a named endorsement for the new Postgraduate Diploma in Science Communication.

4.0 Performance Commitments

4.1 TEC Performance Commitments

In accordance with Investment Plan requirements, the University has completed the Performance Commitments template supplied by the TEC. This appears as Attachment K.

When considering the targets Otago is proposing for the TEC-mandated performance indicators, it should be noted that:

- The University is not prepared to commit to shifts in performance that are inconsistent with the direction of the Council-determined objectives and indicators contained in its Statement of Objectives;
- Actual performance in relation to a number of the measures may be significantly influenced by factors beyond the institution's control (for example, economic recovery will tend to impact adversely on retention);
- There is likely to be some 'natural' year-to-year fluctuation in performance in many of the areas for which targets are required;¹⁰⁶
- The underlying methodology for the qualification completion measures is significantly flawed.¹⁰⁷

Otago's approach in respect of setting targets for these indicators has been as follows:

- To commit to little or no change in areas where we are already performing well above New Zealand university sector averages, and where further increases in performance could only really be achieved by a lowering of standards as opposed to a real increase in performance (for example, in overall course completion rates);
- To commit to change in areas where we are performing to a lesser level, and which we have already identified as areas for improvement in our Statement of Objectives (for example, in the educational performance of our Pacific students);
- To align all targets, as far as possible, with those of our Statement of Objectives.

4.2 Forecast Statement of Service Performance

Otago's Statement of Objectives for 2017-2019 appears as Attachment L.

This is an updated version of the Statement of Objectives adopted by Council for 2016. The reporting of performance against the indicators and targets in the Statement of Objectives will occur in the normal way, via a Statement of Service Performance in the 2017 University of Otago Annual Report.

¹⁰⁶ Where this has clearly been the case in past years, Otago has moved towards measuring its own performance using multi-year rolling averages.

¹⁰⁷ Flawed to such an extent that the picture they provide is of virtually no use (and, indeed, is potentially misleading) except at times when an institution's commencing enrolments have been in a steady state for several years.

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