

UNIVERSITY
OF TASMANIA



Research and
Research
Training
Management
Report
2005

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Part A

1 INTRODUCTION

The University of Tasmania is an established, research-led university located in Australia's smallest state. The University has some well-defined areas of research strength, especially in its six theme areas of Antarctic and Marine Studies, Community, Place and Change, Environment, Frontier Technologies, Population and Health and Sustainable Primary Production. Recognising that it cannot excel in every endeavour of research, the University seeks to build on its established research strengths, its areas of natural advantage, and to expand into strategically important new areas so that it makes a significant contribution to Australia's research effort and provides benefits to Tasmania.

The [University Plan](#) outlines a commitment to Excellence, Distinctiveness, Growth and Engagement, the so-called "EDGE-Agenda". The [University Plan](#) and the [Research and Research Training Management Plan 2005-07](#) seek to identify areas in which UTAS has a competitive advantage and to foster these by appropriate resourcing. Substantial growth in Research performance is envisaged over the next few years: for example, HDR load to increase from 690 EFTSU in 2003 to 1100 EFTSU by 2010.

One context for the growth of the University is an improving and more confident Tasmanian economy. The Tasmanian economy has been dependent upon agriculture, forestry and fisheries/aquaculture, on minerals and on a relatively small manufacturing sector (fast ferries, wood products and processed metals). Until the last few years the Tasmanian economy has performed substantially less well than the rest of Australia. However, in recent years Tasmania has experienced considerable improvement with Gross State Produce (\$13.5B in 2003-04) rising at an average of 3.3% per annum, unemployment at 5.9% (its lowest since 1981), population numbers increasing and business confidence at high levels. State debt will be largely retired by 2006-07.

With over 800,000 visitors annually spending \$1.2B, Tourism is an important contributor to the economy of Tasmania and to employment growth.

About half of all Tasmanian output is exported, some 30% interstate and 20% overseas, mainly to Japan, Hong Kong and the United States.

The University currently has a significant alignment of its research capabilities to the major activities contributing to wealth generation in the State, for example, agriculture, aquaculture and fisheries, forestry, minerals, and tourism. However, the industry base in the State is small and many companies have their headquarters elsewhere.

These factors pose significant challenges for research that links to State-based industry. To continue our ongoing commitment to areas of significant current economic importance we will look to enhancing links with national and international partners. A priority will be to participate in increasing the State's capacity to engage productively in the new global information economy.

Research depends on high quality staff and research candidates having access to appropriate infrastructure and project funding. In 2005 the university has 707 FTE academic staff, 720 EFTSU in domestic HDR load and 81 EFTSU in international HDR candidates (total 801 EFTSU). Its external research income (categories 1-4) for 2004 was \$38.2M. Using a definition of research activity (McKinnon-Walker benchmarking manual) as gaining external funding, or a DEST publication or supervising a HDR student, in 2004 approximately 68% of staff were research active.

2 USE OF RESEARCH BLOCK GRANTS AND SCHOLARSHIPS

2.1 STRATEGIES FOR ENSURING INFRASTRUCTURE SUPPORT

Major equipment support for science research is provided for the Central Science Laboratory, radio and optical telescopes, major aquaculture and fisheries facilities including a fleet of twelve research vessels as well as RV Challenger for estuarine and coastal work, an animal house and glasshouse facilities, the 334 ha University Farm in the Coal Valley, and an SGI 3400 supercomputer. The Central Science Laboratory has an annual budget of approximately \$1.6M, 14 full-time staff, and equipment with a replacement value of \$8M.

The University has taken the lead in ensuring that Tasmania is engaged with the Australian Partnership in Advanced Computing (APAC) through the development of the Tasmanian Partnership in Advanced Computing (TPAC). TPAC uses the peak SGI national facility in Canberra and the SG3400 machine housed at UTAS.

UTAS introduced a set of minimum infrastructure standards for post-graduate candidates in 2003 and monitors infrastructure via the Annual Reviews process of the Board of Graduate Research.

The Capital Management Plan Review Committee ensures that space requirements for HDR candidates are considered in capital planning.

2.2 EXPENDITURE OF RESEARCH BLOCK FUNDING

In 2004 the combined research block funding (RTS, IGS and RIBG) was \$27.5M. Of this, \$16.4M was allocated directly to Faculties, some \$5.3M to centrally administered research schemes, and \$1.4M to support strategic developments. In addition, \$1M is allocated through the Capital Management Plan, and \$3.4M supports university operations.

The \$16.4m allocated to Faculties is used to support such things as:

- academic staff salaries
- the cost of consumables to support research
- scholarships
- travel.

The Research Infrastructure Block Grant has been used to fund the Central Science Laboratory, the Animal House, and the Library as major University infrastructure. In addition, RIBG supports the Animal Welfare Officer and contributes to the support of the Animal Ethics Committee and the Human Research Ethics Committee. The remainder is allocated to Schools and Institutes/Centres through Faculties on the basis of relative performance in Australian Competitive Grants.

2.3 INTERNAL ALLOCATION MECHANISM FOR RIBG, IGS, RTS

The University research resource allocation model has a strong performance element. In 2005, \$2.165M of RIBG funds was distributed to the Faculties and Schools on the basis of their relative performance in Australian Competitive Grants using the most recent two years' performance.

The University looks to provide incentives for research through its budget model. For example, in order to provide suitable incentives on completions and load it has moved the HDR student load component entirely to its University RTS index (based on 50% completions, 35% load, 10% income and 5% publications). In order to provide incentives for external income generation, the University IGS index is driven largely by external income (85%) and publications (15%).

In 2005, close to 40% of the block funding was allocated to the five University research Institutes/Centres (Table 1). This mechanism rewards high levels of research performance and provides a means for sustainable funding of research areas of strength. In particular it enables areas that have received seed funding to receive ongoing funding.

Table 1: Research block funding to University Research Institutes/Centres

Institutes/Centres	2003 \$M	2004 \$M	2005 \$M
CODES	1.750	1.970	1.136
IASOS*	1.105	0.999	0.974
Menzies	0.727	0.787	0.712
TAFI	1.947	1.171	1.272
TIAR	2.376	2.302	2.533

* (includes block funding derived from ACE CRC income)

2.4 IDENTIFICATION AND REWARD OF QUALITY

The University maintains data on the performance of each School and allocates funding to those areas that maintain a high level of performance. In addition to the block performance allocation there is strategic allocation to facilitate the development of areas of significant potential. There is also a significant correlation between areas of research focus and the distribution of HDR candidates.

Table 2: Strategic investment in theme areas 2004-05

Theme area	\$M
Antarctic and Marine	1.180
Community, Place and Change	0.428
Environment	0.200
Frontier Technologies	0.364
Population and Health	0.250
Sustainable Primary Production	0.416

2.5 REVIEW OF INTERNAL ALLOCATION MECHANISMS.

The internal research allocation mechanism is reviewed annually by the Planning and Resources Committee, an advisory body to the Vice-Chancellor. The internal research resource allocation mechanism will be modified by the outcomes of the University Research Quality Index exercise being conducted in 2005.

3 MANAGING RESEARCH PERFORMANCE

3.1 RESEARCH STRUCTURES AND RESOURCES

The total resource to support research is \$68.4M, made up of \$38.2M external income, \$27.5M research performance block funding and \$2.5M in external scholarship funding (APA/IPRS).

The University budget model identifies separate funding streams for teaching and learning and research. Research funds are identified for:

- Performance based funding to Schools and Centres/Institutes through the Faculties
- Strategic research initiatives
- Support for infrastructure, internal research grants and scholarships.

The remainder of the funding is used to support a central postgraduate research scholarship program (\$2.6M), an internal research grants scheme (\$0.8M), plus research infrastructure and support funding (approximately \$1M). Some of this funding is used to support external applications for infrastructure funding. There is a formal process for the identification and funding of research infrastructure needs associated with Centres of Excellence and CRC bids.

The internal research grants scheme provides feedback to applications and some experience in grant proposal writing. In addition, the University from time to time engages the services of experienced

external experts to provide commentary on draft research proposals for the major funding schemes like the ARC and the NH&MRC.

3.2 MANAGING RESEARCH

The Research Services office administers grants, reminders to researchers in relation to all reports, and liaises with the Division of Finance and Administration in relation to research grant accounts. Ethics issues are handled through the Animal and Human Research Ethics Committees. The Tasmanian Department of Health and Human Services and the University of Tasmania have developed a unique approach to human research ethics through the establishment of a unified State-wide Human Research Ethics Committee.

The Research Services [web site](#) provides links to all relevant policies and procedures in relation to research including a [Researcher's Guide](#) that provides information on grants, intellectual property, contracts, consultancies, ethics, HDR supervision, Theme Areas, data collections, formula funding, reports and statistics.

Research Services has a [Service Charter](#) as well as a [Notice Board](#) that provides regular updates on research matters. Research Services was reviewed in 2003 and changes made to its operations in 2004-05. As part of the commitment to enhanced industry links, a survey of industry clients will again be carried out in 2006 with a view to establishing the degree of satisfaction with the University's R&D services. The most recent survey showed that 92% of those surveyed would recommend the University to other industry groups and 100% indicated they were dealt with in a professional manner, whilst 93% of respondents ranked the quality of researchers' work and reporting as good, very good or excellent.

3.2.1 Planning Processes

The [University Plan](#) is developed via a process involving groups within the institution and the University Council, that ultimately approves the Plan. The operational plans, such as the [Research and Research Training Management Plan 2005-2007](#), are developed to provide strategies, targets and timelines for the achievement of the goals identified in the University Plan. All Faculty Plans are developed to address the University Plan and indicate how specific Faculties will advance particular aspects of the plan.

The research planning process is coordinated through the Research College Board. The Board has three members nominated by the Vice-Chancellor, three nominated by Academic Senate, two *ex officio* members (the Chair of Academic Senate and the Dean of Graduate Research), plus a HDR postgraduate member. In addition to the internal membership, there are external members, including Dr Graham Harris, formerly of CSIRO and responsible for the establishment of the Flagship Program, the International Visitor, Professor James Adelstein, from Harvard University in the US, and Professor Fran Carr, an External Member from the University of Vermont.

The Board is chaired by the Pro Vice-Chancellor (Research). The composition of the Board is skills-based rather than representational. The Board provides advice to the Pro Vice-Chancellor (Research) and reports to Academic Senate, and then to University Council.

The Board of Graduate Research is chaired by a full-time Dean; this is an externally advertised five year contract position. The Board is elected by, and from, registered HDR supervisors and deals with all issues of candidature. It includes HDR student membership.

3.2.2 Resource Allocation Procedures

In addition to the performance driven research resource allocation, the University stimulates research by:

- strategic investments decided as part of the annual planning and budget cycle through the Planning and Resources Committee and the Budget Review group.
- investments in major research centre bids developed through the Research College Board and approved by University Council.
- allocation of internal research grants via an internal system of peer review panels recommending to the Research College Board.
- support for infrastructure developments with advice provided to the Pro Vice-Chancellor (Research) by a sub-committee of the Research College Board.
- allocation of research scholarships by a central scholarship allocation committee chaired by the Dean of Graduate Research.

3.2.3 Performance Monitoring Arrangements

The University has invested heavily in the development of software systems to enable it to monitor performance. Its Research Management Data Base software has been licensed to Callista Pty Ltd and has been marketed as Callista Research.

The Research College Board has an annual retreat at which it considers research performance statistics. These include:

- trend data on research income (by category), publications, HDR enrolments and completions for each School/Centre/Institute over a 4-5 year period.
- benchmarking of overall University performance by comparison to all other Australian Institutions using a raft of standard research KPIs.
- annual report to the University Council on research performance.
- web-based feedback to Schools/Centres/Institutes and Faculties on research performance.

In addition, the Dean of Graduate Research provides a comprehensive report to each Head of School on trend data on HDR enrolments, completions, withdrawals and suspensions for the School as a whole and each supervisor, plus the registration status of staff. The Dean visits Schools is regularly invited to visit schools to discuss these issues with staff and candidates. A comprehensive report on Research Higher Degree student matters, including load, completions, withdrawals and suspensions, is presented to Academic Senate annually.

The University has also developed a Web-based portal that contains the research performance of all research-active staff. This system – the [Web Access Research Portal](#) (WARP) – provides information on:

- research grants secured by source, amount and duration of funding and title of project
- successful HDR completions by date and thesis title.
- all research publications
- career best publications.

This information is publicly available; there is additional information available to researchers, Heads of Schools, Deans and the Senior Executive, e.g. in relation to reporting requirements of grants, commercial/IP matters and ethics requirements.

The WARP system is the basis for the Research Quality Index (RQI) exercise currently underway at UTAS to evaluate research quality. This process will involve close to 100 external, national and international assessors.

3.2.4 Identification of Research Performance

At the institutional level the University has demonstrated that it performs at a high level on most of the standard research performance indicators on a per capita basis (see Table 3). Using the allocation of total Commonwealth research performance funding (IGS, RTS, RIBG) as one measure, the University of Tasmania ranked in the top 10 on a per capita basis over the period 2001-04.

The University has carried out benchmarking of its University Institutes/Centres. TAFI, TIAR, IASOS, Menzies Centre and CODES have collected benchmarking data from a number of interstate and international research organisations. That data was reported in the 2003 RRTMR. We are currently updating that data.

Benchmarking is now included as part of School reviews and Schools are asked to identify appropriate comparators. An external panel reviews each School within the University every five years.

Table 3: National benchmarking of UTAS research performance on a per capita basis (position against all other Australian universities)

Research block funding indicators	2001	2002	2003	2004
IGS	9	9	9	8
RTS	9	8	4	4
RIB	9	10	9	6
Income-related indicators				
Total research income	7	9	9	*
Australian Competitive Grants	7	7	8	*
Other public sector funding	1	3	11	*
Industry and other	16	23	28	*
CRC income	3	3	2	*
ARC Discovery/Large	5	13	7	7
ARC Linkage	3	10	11	5
Publication indicators				
Total publications	9	15	15	*
Journal articles	7	10	9	*
RHD student-related indicators				
RHD load	9	9	9	9
RHD completions	7	10	11	*
APA allocation	9	10	7	7

* Data not available

3.2.5 Incentives

The University aims to provide incentives for research in a number of ways. Centrally, it provides:

- Performance-based funding to sustain high performing areas
- Seed funding for new initiatives
- Early Career Researcher funding and funds for quality researchers who lack substantial funding.

In addition Faculties and Schools/Institutes have their own schemes to stimulate research.

The adoption of a research performance-based funding model for the University budget in 2001 has provided substantial incentives for areas of high performance. Of the \$27.7M allocated in 2005 in block funding, some \$17.4M was allocated directly to Schools/Institutes via Faculties using the University research allocation formulae. Close to 40% of this funding was allocated to the five University Research institutes (see Table 1). In addition to this research performance funding, the allocation of strategic funding in recent years has seeded the development of new initiatives such as:

- the Australian Centre of Excellence in Food Safety
- the Australian Centre for Separation Science
- the Tasmanian Institute for Law Enforcement Studies
- the Centre for Clinical Research
- enhanced facilities in super-computing and molecular biology
- increased postgraduate research scholarships.

In the last couple of years strategic investment has advanced the Theme Areas (see Table 2).

The University runs an internal research grants scheme, normally worth up to \$0.8M annually, to support researchers in all disciplines. It has a special focus on Early Career Researchers, and those more experienced quality researchers who have limited, or no, external funding. Internal discipline-group panels make recommendations on funding to the Pro Vice-Chancellor (Research) and the Research College Board. Some \$200K is reserved for Early Career Researchers.

3.2.6 Conflict of Interest Policies

The University has reviewed its [Conflict of Interest](#) policy (2005). Specific guidelines for researchers have been developed in a draft Code of Conduct currently under consideration. Advice has been received from the International Visitor to the Research College Board, and a proposal regarding the management of potential conflicts has been circulated to stakeholders for comment.

3.3 IDENTIFICATION OF RESEARCH PERFORMANCE

Research performance at the unit level is identified by a combination of the annual review process at the Research College Board retreat and the regular reviews of Schools and Centres. The performance of individuals is shown on the [WARP](#) system and is one of the factors of the annual Performance Management system.

3.4 PERFORMANCE TO DATE FOR ACHIEVING R&RT OBJECTIVES

The outcomes of the Research and Research Training Management Plan 2003-2005 have been evaluated and a Performance Against Plan document presented to Research College Board, Academic Senate and distributed to all Faculties and Schools. A short summary of key outcomes is shown in Table 4.

Table 4: Performance Against Plan

Indicator	2003-05 Target	Outcomes
Total Income	\$40.85M by 2005	\$38.2M in 2004
Total Share of National Research Funds	3% by 2005	2.7% by 2003
HDR Total Load	832 by 2005	801 in 2005
Centrally funded research scholarships (excluding co-funding)	\$2.3-2.5M p/a	\$2.9M in 2004 and \$3.5M in 2005
Significant partnership in CRCs	5-7 CRC partnerships	5 CRCs in 2004 (6 in 2005)
Income from CRCs	\$3.5-4.0M p/a	\$5M in 2004

3.5 PERFORMANCE: EXISTING AND EMERGING RESEARCH STRENGTHS

The University has increased its external funding significantly over the past six years from \$23.2M in 1999 to \$38.2M in 2004 (Figure 1). Weighted DEST category publications also rose from 507 to 730 over the same period (Figure 2). Most of this increase has been in identified areas of particular strategic importance, especially in the Theme Areas.

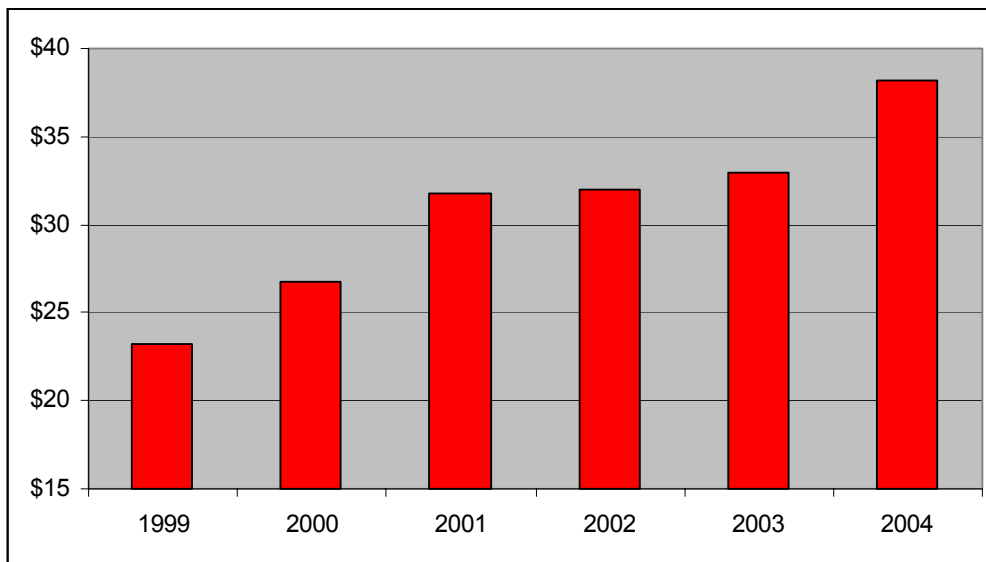
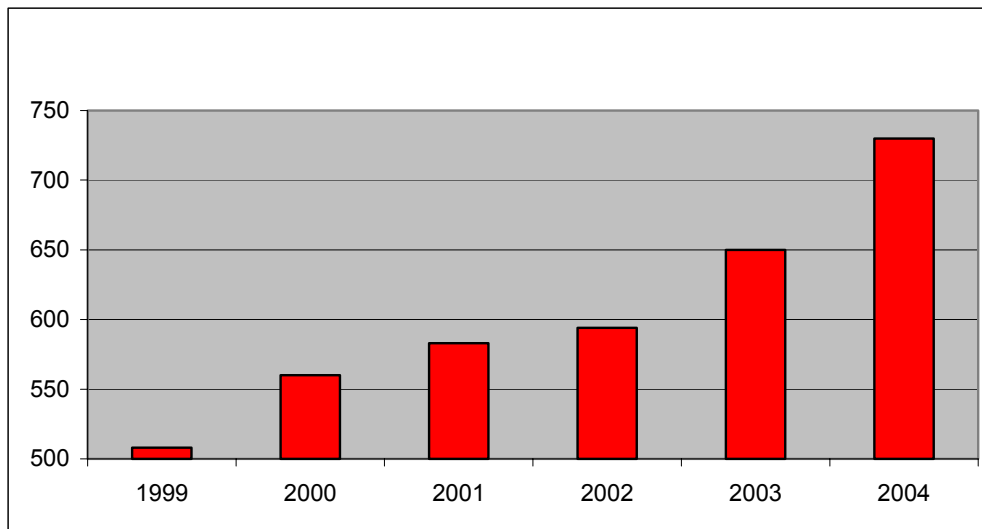
Figure 1: External Research Income

Figure 2: Research Publications

The Six Theme Areas

In 1996 the University adopted a Theme Area approach to research, building on areas of comparative advantage and strength based on staff profile, collaborative relations and opportunities in Tasmania. Following a review in 2003-04, UTAS expanded its Theme Areas from four to six (see Table 5). The current Theme Areas are:

- [Antarctic and Marine Studies](#)
- [Community, Place and Change](#)
- [Environment](#)
- [Frontier Technologies](#)
- [Population and Health](#)
- [Sustainable Primary Production](#)

UTAS is Australia's internationally recognised university for polar studies. Through its Institute for Antarctic and Southern Ocean Studies and the International Antarctic Institute, it has global links with key universities in polar studies including Cambridge, Tromso, Canterbury, and Brest. In its strong alliance with the Australian Antarctic Division, CSIRO Marine Research and the Bureau of Meteorology, the University has excellent access to infrastructure support and collaboration. Over the past decade UTAS has produced over 80% of all HDR completions in Antarctic studies in Australia. It is the only University partner (and the headquarters) of the Antarctic, Climate and Ecosystems CRC. Marine Science (and associated policy/law studies) at UTAS is internationally significant. It was following an analysis of marine science strength in Australia that CSIRO Marine Research established a substantial alliance with UTAS in the successful Quantitative Marine Science program, involving research training and joint research programs. With its Centre for Marine Science, UTAS has formal collaborative links with the French national marine science agency IFREMER, with Woods Hole Oceanographic Institute in the US, and James Cook University in Australia.

Community, Place and Change is one of the new themes at UTAS. It has internationally significant strength in historical and colonialism studies, an international reputation for its work in law and genetics and a national reputation for its work in law reform and law enforcement studies.

Its work in education is of state and national significance and the emerging area of Innovation research is attracting international as well as national attention. In the area of research and particularly research training in the creative arts, UTAS has been a national leader. There is a healthy and very significant HDR load (54 in 2004) with high completion rates (13 in 2004).

Research capacity in the Environment is distributed across a number of Schools and Institutes. UTAS is associated with three CRCs with a strong focus on environment, including the Bushfires CRC, the Forestry CRC and the Sustainable Tourism CRC. There is strength of national significance in resource management.

The major strengths in Frontier Technologies are astronomy, separation science and alternative energy technologies, especially hydrogen power. The astronomy group are of international significance through their many collaborative activities in, for example, Very Long Baseline Interferometry. There are two radio telescopes (in Tasmania and South Australia) and an optical telescope. The Australian Centre for Research on Separation Science (ACROSS) is a major, internationally competitive Centre in this field. It will have external income of close to \$1.3M for 2005. Research into hydrogen as an energy source is nationally significant, having developed new technologies for hybrid engines that may have wide application.

In Population and Health the Menzies Research Institute has an international reputation for its work on the epidemiology of disease. Work on diabetes, neurorepair and respiratory diseases are of international strength. Emerging areas of rural health and pharmacy (especially in the area of pharmacy informatics) have state and national significance.






The Sustainable Primary Production theme currently makes a major contribution to research performance. The Tasmanian Institute of Agricultural Research (TIAR) and the Tasmanian Aquaculture and Fisheries Institute (TAFI) have international significance in their fields of temperature agriculture and aquaculture/fisheries. In aquaculture UTAS is a partner in the Aquafin CRC. In forestry research UTAS produces more PhD graduates than any other Australian university. It is a partner in the Forestry CRC and a world leader in eucalypt genetics. In exploration geosciences UTAS is a world leader through its Centre for Ore Deposit Research (CODES), an ARC Centre of Excellence. CODES has a high level of support from its industry partners.

Table 5: Research in theme areas, 2004

Current themes	% income
Antarctic and Marine Studies	6.7
Community, Place and Change	4.3
Environment	8.1
Frontier Technologies	1.8
Population and Health	12.7
Sustainable Primary Production	47.7

The University has five University Research Institutes/Centres, viz the Centre for Ore Deposit Research (CODES), Institute of Antarctic and Southern Ocean Studies (IASOS), Menzies Research Institute, Tasmanian Aquaculture and Fisheries Institute (TAFI) and Tasmanian Institute of Agricultural Research (TIAR). Research statistics for these five Institutes/Centres are outlined in Table 5.

Table 6: Research Statistics for the University Research Institutes

2004	Research Income 2004	Actual Researchers 2005*	Current HDR Load (EFTSU) 2005
 <u>CODES</u>	1,994,251	17.75	26.1
 <u>IASOS**</u>	645,353	7.10	35.4
 <u>Menzies</u>	3,867,257	12.15	7.52
 <u>TAFI</u>	6,918,423	30.30	33
 <u>TIAR</u>	7,709,955	30.15	56.37

* Figures shown are all staff (including Academic and Research Assistants) with a 'Research' component as their work function.

** IASOS also benefits directly and indirectly from the category 4 income received from the Antarctic CRC. Honorarium staff are not included.

These are significant areas of research strength with links to both State needs and National Research Priorities. Analysis of income, HDR load and publication output indicates that the University of Tasmania has significant research strength in:

- Marine sciences (aquaculture, fisheries, oceanography and ecology)
- Antarctic studies
- Agriculture (including forestry and food safety)
- Earth sciences
- Public health (epidemiology)
- Separation Science.

An [analysis](#) was undertaken for 2004 which maps UTAS theme areas, National Research Priority Areas and the CSIRO Flagship program, finding significant alignments.

4 RESEARCH AND RESEARCH TRAINING OBJECTIVES

4.1 R&RT OBJECTIVES

The current [Research and Research Training Management Plan 2005-2007](#), approved by University Council in late 2004, contains the following goals:

Reputation goals

- Goal 1** UTAS will strengthen its international reputation through enhanced performance, so that it is equal to one of the current Go8 universities.
- Goal 2** UTAS will maintain world leadership in key areas and will develop new areas of international recognition and collaboration.
- Goal 3** UTAS will be increasingly acknowledged by all levels of government as a vital partner in State, regional and national development, and will be recognised by the community for this contribution.

People goals

- Goal 4** UTAS will be renowned for its distinctive, quality student experience – ‘the natural choice’ for study in Australia and be a first choice destination for local, interstate and international candidates.
- Goal 5** UTAS will have a staff profile, an organisational culture and a working environment that supports its aspirations and recognises and rewards achievement.
- Goal 6** UTAS will enhance strategic alliances and demonstrate leadership in regional, national and global partnerships.

Position goals

- Goal 7** UTAS will have grown to critical mass, with a strategic mix of domestic and international candidates and staff from diverse backgrounds.
- Goal 8** UTAS will balance the development of campuses to maximise the advantages of community, location and networks. Campus profiles will be developed strategically, mixing and balancing courses, candidates and staff in real and virtual learning environments.
- Goal 9** UTAS will have administrative structures, budget processes, business systems and infrastructure that effectively and efficiently support its strategic priorities.

Key initiatives in the Plan include:

- Systematically targeting external sources of funding in order to increase total external research income in line with Go8 growth indicators.
- Strategic co-investment in new key research appointments.
- Establishing systematic benchmarking of research performance (publications, patents, HDR student load and completions, external income per FTE) for:
 - The whole University against all other Australian universities and selected universities in the UK, USA and New Zealand;
 - All Schools against selected Australian comparators and, where appropriate, international benchmarks, and

- All five University research institutes against leading centres nationally and internationally doing similar research.
- Maintaining the five current internationally significant University Research Institutes/Centres linked to Theme Areas by:
 - Developing Plans for the future funding of CODES.
 - Enhancing the critical mass of the Institute for Antarctic and Southern Ocean Studies (IASOS).
 - Growing the size of the Menzies Research Institute as the medical research institute in Tasmania.
 - Re-signing a ten year Joint Venture Agreement (JVA) with State Government for the continuation of the Tasmanian Aquaculture and Fisheries Institute (TAFI).
 - Expanding the activity of the Tasmanian Institute of Agricultural Research (TIAR) including the Australian Centre of Excellence in Food Safety.
- Seeking to establish 1-2 further Institutes/Centres linked to the Theme Areas.
- Maintaining current partnerships with State Government in agriculture (TIAR), aquaculture, fisheries and marine environment (TAFI), law reform (Law Reform Institute), law enforcement (TILES), housing (Housing Research Unit), health (Partners in Health) and education (with Department of Education).
- Exploring new initiatives with State Government in the areas of environment, particularly Natural Resource Management, Marine Sciences and Studies, Cultural Heritage and Tourism.
- Appointing academic staff with demonstrated high level research capability in strategic areas of research focus.
- Continuing to develop early career researchers through:
 - Targeted use of IRGS grants
 - Faculty research support including assistance with grant proposal writing
 - Mentoring programs including, assistance in applications for external funding;
 - Co-supervision of HDR candidates with experienced and successful supervisors.
- Identifying and develop future research leaders.
- Establishing international research collaboration in areas of strategic priority through allocation of funding and establishing network based, collaborative relationships with like-minded partners/institutions.
- Systematically developing links with major industry groups to enhance research funding from industry.
- Growing HDR load strategically whilst ensuring adequate resourcing is maintained.
- Increasing investment in HDR scholarships via centrally funded University research scholarships at a rate equivalent to Australian Postgraduate Award (APA) in order to attract quality candidates and meet HDR growth targets.
- Commercialising innovation either through ‘spin-off’ companies or licence arrangements via the University and distribute returns to staff, in line with the University Intellectual Property policy.

- Integrating research planning through the alignment of Research and Research Training Management Plan, with Faculty Research Plans and with the University Strategic Plan.

4.2 DESIRED GENERIC ATTRIBUTES OF HDR CANDIDATES

The University expects HDR candidates to develop:

- relevant knowledge and research skills
- written and oral skills, including presentation skills
- understanding of appropriate ethical guidelines and codes of research conduct
- appropriate skills in workplace issues such as safety and equity issues
- awareness of intellectual property, confidentiality, contractual arrangements
- industry interaction and experience where relevant
- employment potential.

More detail about these expectations can be found in the [Graduate Research Resource Book 2005](#). Such attributes will be developed through:

- Regular meetings with supervisor(s), training courses and, potentially, time spent in other institutions to learn new skills.
- Preparation of papers, presentations at institutional seminars, delivery of oral papers at national and international conferences as well as the completion of the final thesis.
- Induction and training programs in appropriate safety and equity issues;
- Generic skills workshops on various subjects (see Table 7).
- Provision of workshops on intellectual property and advice via the Research and Development Office in relation to contractual agreements.
- Links with industry research sponsors and potential for further collaboration via ARC Linkage or other grants.
- Advice and assistance provided by University Careers and Employment Service.

Table 7: Generic Skills workshops

Year	Number of Workshops	Attendees
2002	74	800
2003	85	815
2004	57	350*

* Reduction in number largely due to six-month absence of the Dean of Graduate Research

4.3 EMERGING AREAS OF NEED OR OPPORTUNITY IN R&RT

In alliance with Hydro Tasmania, UTAS is actively exploring a strengthening of research in renewable energy. This partnership has already created a major Hydrogen Research Laboratory. UTAS is in discussion with the managers of the Intelligent Island funds in relation to the establishment of an IT-related research activity.

The alliance between UTAS and the Department of Police and Public Safety is being strengthened with additional funding to meet the need for research in law enforcement. In 2005, additional funding, including a new senior position, was provided by UTAS and the Police.

The Tasmanian Institute of Agricultural Research (TIAR) has developed a number of significant research program activities, including one worth \$14.5M for the Australian potato industry. This emerging trend is away from a very large number of projects towards a smaller number of major programs. The University budget model allows the Institute to invest in new research capability to meet the needs of these program grants.

The emerging Quantitative Marine Science program has been highly successful in its first two years (2004-05), with 25 EFTSU in load on target for a load of over 40 EFTSU in steady state. Researchers with these skills are in major demand world-wide.

5 ENSURING A QUALITY RESEARCH TRAINING EXPERIENCE

The University maintains a central fund for postgraduate scholarships, equivalent in value to Commonwealth funded Australian Postgraduate Awards. In 2005, expenditure will be approximately \$4M. Some of this is used to leverage additional scholarships from both internal and external sources. In addition, the University will fund a number of fee-paying places and increase the number of international HDR candidates. This investment will enable us to capitalise on the consistent high demand for postgraduate research education at this University. We have set a target for research higher degree candidates of 832 EFTSU for 2005 and 1100 EFTSU by 2010. Scholarships and HDR places will continue to be allocated on the basis of the quality of the applicants, the availability of appropriate supervision, project support and infrastructure, and the strategic priority of particular research areas, especially the University Theme Areas. A sub-committee of the Board of Graduate Research allocates scholarships.

Funding for HDR scholarships is part of the budget of the Research College and support for HDR candidates is allocated to Centres, Institutes and Schools through faculties on the basis of the University RTS Index.

The policy of registration of Graduate Research Supervisors was implemented in 2002 and we have now entered the second cycle of registration. The policy has been revised and upon re-registration, supervisors are required to indicate supervision education and training they have undertaken in the past 3 years. Supervisors are encouraged to register with fIRST (Web based supervision training) and list their successful graduations. An additional sixty-one supervisors registered for online training through fIRST in 2004. All newly registered supervisors receive a copy of the Registration policy and a paper outlining 25 activities to improve their supervision. Workshops have been conducted with graduate research coordinators on supervision training within their Schools and Institutes and material has been provided for their dissemination. The Dean conducts sessions twice yearly in Hobart and Launceston as induction for new supervisors and for early career supervisors.

Generic Skills workshops are conducted on all campuses for HDR candidates. All workshops are evaluated and in the last group of 44 workshops in 2005, the overall learning experience was rated as 4.1 on a 5 point scale. On submission of their thesis, candidates are invited to complete a detailed exit survey. The results of these surveys have formed the basis for workshops for graduate research coordinators and are reported to Heads of School and to Academic Senate.

The [Graduate Research Resource Book](#) contains a University-School Graduate Research Candidate Agreement, outlining what the University will provide and what it expects from candidates. Under this agreement candidates have:

- access to quality information on which to base decisions for HDR training.
- Induction processes that enable them to understand the University and HDR candidature issues.
- high-quality supervision that will provide them with appropriate advice, counsel and training in key skills.
- access to appropriate research support and infrastructure to enable them to complete their projects in reasonable time.
- opportunities to satisfy a requirement to present their research findings within the institution and opportunities for presenting at national and/or international conferences.
- direction and encouragement in publication and thesis preparation.
- a quality examination process in good time.
- access to Graduate Careers advice when they seek employment.

We provide the following services that enable the University to fulfil its service obligations:

- The [Graduate Research Resource Book](#) contains information about the ‘six stages model’ which is integrated throughout various points of candidature.
- An interactive web site (WARP) that provides information on research grants, publications and supervision records for all staff. This is accessible via staff name or key word(s). This service gives potential candidates the opportunity to identify suitable supervisors. Included is the provision to directly email that staff member and also any currently supervised candidates.
- Six sessions for new staff and six induction sessions for new candidates are conducted annually by the Dean of Graduate Research. In 2004, three separate sessions were held for Early Career Supervisors, as well as training provided to CSIRO, TAFI and external partners.
- The examination process involves two external examiners, one of whom is international wherever possible. Schools nominate examiners; the Board of Graduate Research ratifies the nominees.
- The biennial HDR survey of supervision and infrastructure, and invited visits to Schools by the Dean of Graduate Research provide an ongoing quality assurance mechanism.

Induction for HDR candidates is the specific responsibility of Schools and they provide an induction booklet.

The provision of resources for HDR candidates is the responsibility of the School, Institute, or Centre; such matters are the topic of visits made to Schools, Institutes and Centres by the Dean of Graduate Research. There is significant co-supervision in agriculture, aquaculture, life sciences, and biomedical sciences, involving State Government, CSIRO and Antarctic Division researchers. The University’s capacity to supervise HDR candidates is enhanced by Honorary Research Associates who are normally very experienced researchers.

The relationship between a HDR student and supervisor(s) is an important one. Ninety six per cent of candidates have at least two supervisors, and candidates having only one supervisor and supervisors who exceed the 7 EFTSU limit are closely monitored by the Dean and the Board of Graduate Research.

There is significant responsibility on supervisors and Schools for providing facilities and supervision. The quality assurance measures involve the Preliminary Research Plan and the Annual Review of Progress that are signed by candidates, supervisors and Heads of School, and approved by the Dean of Graduate Research and reported to the Board of Graduate Research. The Dean of Graduate Research deals with problems with supervision and infrastructure identified through such surveys. The immediate solution to problems with facilities or supervision may involve the development of clear plans to indicate facilities can be provided or changes in the supervision team. The Board has formalised a process entitled the Candidature Management Plan to be implemented (in late 2005) when candidates receive a 'C' on the annual review. In the longer-term, supervisors or Schools that fail to deliver the appropriate supervision or facilities will have significant restrictions placed on them, limiting postgraduate student numbers.

6 COLLABORATION AND NATIONAL PRIORITIES

6.1 NATIONAL RESEARCH PRIORITIES

UTAS has a reasonable alignment of its research activity with National Research Priority Areas while also serving the needs of Tasmania (see Table 8).

Table 8: National Priority Areas and UTAS Funded Research 2004

NATIONAL PRIORITY AREA	UTAS FUNDED RESEARCH 2004
An Environmentally Sustainable Australia	41.9
Promoting & Maintaining good Health	21.9
Frontier Technologies for building & Transforming Australian Industries	3.9
Safeguarding Australia	74.8
TOTAL	74.8

In addition, the University is contributing to the rural research priorities announced by the Federal Government, particularly in:

- Sustainable natural resource management
- Food safety and integrity
- Protecting Australia from invasive diseases and pests
- Developing human capability.

6.2 SIGNIFICANT RESEARCH COLLABORATIONS

6.2.1 CRCs and Centres of Excellence

The University is involved in six current CRCs – [Antarctic, Climate and Ecosystems](#), [Aquafin](#), [Bushfires](#), [Forestry](#), [Smart Internet Technology](#), and [Sustainable Tourism](#). Links to the Bushfires CRC was established in 2005 following discussions in 2004.

The University has a policy of seeking significant involvement in a small number of CRCs that fit with its strategic directions and the needs of the State.

The University was awarded an ARC Centre of Excellence for the [Centre for Ore Deposit Research](#) (CODES) in the 2004 round. CODES will receive ARC funding of \$15M over five years plus an additional \$15M over five years from industry, State Government and UTAS. It was the only Centre to receive all the funding it requested.

6.2.2 Partnerships with State Government

The University and the State Government have formed major research partnerships in agriculture, and aquaculture and fisheries, namely the Tasmanian Institute of Agricultural Research (TIAR) established in 1997, and the Tasmanian Aquaculture and Fisheries Institute (TAFI) established in 1998. The University and State Government have signed renewals of both these Joint Ventures for a period of 10 years (with a further 10 year option) in 2004 (TIAR) and 2005 (TAFI).

In 2000 the University and the State Government signed a very extensive partnership agreement with sixteen specific schedules and the capacity for new ones to be added. In research the schedules related to:

- the enhancement of the Menzies Research Institute, and the provision of State Government icon funding of \$500K annually.
- the establishment of the Tasmanian Law Reform Institute within the University of Tasmania (established in 2001).
- the development of incubator activities and enhancement of commercialisation opportunities (In-tellinc Pty Ltd established 2001).

Subsequently the University and the State Government agreed to the enhancement of research in Housing and Urban issues and the University joined the Australian Housing and Urban Research Institute (AHURI). The Tasmanian Institute of Law Enforcement Studies commenced in 2002, with joint funding from the Department of Police and Public Safety and the University.

The original Partnership Agreement had specific targets and milestones and was managed by a Working Party consisting of the senior executive of the University and the Heads of the major government agencies. In 2005 a new Partnership Agreement was signed, and a new six-person senior executive group established. A set of major new projects are being developed including Marine Science, Environment and Ageing.

Other collaborations with State Government include:

- in Health Research there is a Partners in Health Agreement between the Faculty of Health Science and the State Department of Health and Human Services.
- the Centre for Clinical Research was established in 2002 with joint funding from the University and the State Department of Health and Human Services.
- links with Tourism Tasmania in relation to a cultural heritage initiative, through the CRC for Sustainable Tourism.
- links in education and training and research with the State Department of Education.

The continuation of these partnerships and the delivery of quality outcomes to the University and State Government will be part of an annual review process.

6.2.3 Partnerships with Industry

The University received funding in 2004 from 273 entities, including 189 from non-government entities; some 32 of these were based overseas. A summary of funding sources is outlined below in Table 9. A new Collaborative agreement was signed in 2005 with the Tasmanian Museum and Art Gallery. This will involve joint research programs, use of facilities and cooperation in research training.

Table 9: Summary of Funding Sources 2001-04

Type of Funding Body	Number of Funding Bodies			
	2001	2002	2003	2004
Commonwealth Government	32	29	31	32
Tasmanian Government	10	8	14	21
Local Government – Tasmanian	7	7	8	8
Other Government	11	13	17	21
CRCs	4	3	2	2
Other Australian Universities	9	12	11	14
R&D Corporations/Council/Board	10	10	11	11
Industry – Tasmanian	41	43	48	45
Industry- Other Australian	37	44	46	51
Australian Foundations/Charities/Non-Profit	22	25	25	34
Overseas	19	21	27	32
Total External Funding Bodies	202	215	243	273

In the ARC Linkage Grants Scheme (and its predecessors Collaborative and SPIRT schemes), the University consistently has performed well.

The University has identified growth in partnerships with industry as a major priority.

The University is a member of the Tasmanian Chamber of Commerce and Industry (TCCI), and has linkages to the Australian Institute of Company Directors.

6.2.4 Other Partnerships

In addition to its funding from the State Government the Menzies Research Institute is currently supported by funding from the Menzies Foundation, medical research funds including NHMRC, and other industry funds.

UTAS and CSIRO Marine Research have established a significant partnership in Quantitative Marine Science. This PhD program involves compulsory summer and winter schools and these are taught jointly by UTAS and CSIRO staff. There are a number of jointly funded senior positions (Level D/E) between UTAS and CSIRO Marine Research as well as a major post-doctoral program with UTAS committing \$2M to this activity. Cooperation agreements with Woods Hole Oceanographic Institute in the US, the French national marine science agency IFREMER, and with James Cook University provide both national and international dimensions to the Marine Science Program.

In 2005 UTAS and the University of Vermont (UVM) in the US signed an MOU for cooperation in research and research management. This involves not only a commitment to support joint research but to sharing research management experience, e.g. the Vice President (Research) at UVM and the Pro Vice-Chancellor (Research) at UTAS have reciprocal membership of research committees, the Deans of Graduate Research will work together and the two Research Offices will cooperate in data management and exchange.

RMIT and Monash University have joined with the University of Tasmania in the establishment of the Australian Centre for Research on Separation Science (ACROSS) with headquarters at the University of Tasmania.

7 IP, COMMERCIALISATION AND CONTRACTUAL ARRANGEMENTS

Over the period 2003-04 UTAS went through a process of review and planning in relation to its Research and Development Office and its Commercialisation Unit. From the start of 2005 all commercialisation, consultancy and full cost recovery contract research is administered through the university owned company UTAS Innovation Ltd. The Company has a board of experienced local business people. A Service Agreement between the University and UTAS Innovation Ltd governs the services to be provided. Research activity and commercial undertakings will be assisted by a number of faculty-based Research Managers.

The University makes a claim on intellectual property (IP) generated by its employees in the course of their employment. Whilst the University generally makes no claim over IP developed by candidates, candidates associated with projects with commercial potential are asked to assign their intellectual property to the University in exchange for being treated as staff for the purposes of the distribution of any returns from commercialisation.

The University's [Intellectual Property Policy](#) seeks to manage the nexus between protecting the University's investment in research and facilitating industry involvement in the commercial application of University intellectual property. It also seeks to encourage innovation by granting employees a right to share in the returns derived from commercialisation of University IP. Currently income derived from commercialisation of IP is split as follows: staff (50%), their schools (20%) and the University (30%). Equity in spin off companies set up to commercialise University IP will need to be negotiated on a case by case basis.

The commercialisation process includes all activities associated with identifying, developing and managing University IP from early stage idea through to proof of concept, ongoing development and taking to market. UTAS Innovation Ltd 'trawls' Schools, Centres and Institutes for innovation with potential market application. Members of staff are encouraged to contact the company if they are aware of such innovation. This information is then stored on the University's IP Register and evaluated internally. After this initial evaluation, external consultants are engaged to provide a detailed technical evaluation. If the technology appears to have market potential UTAS Innovation, with external advice, works out a plan to develop the technology, including potential industry partners/investors.

To assist this process, an Internal Pre-Seed Fund of \$2.5M has been established to take promising technology to 'proof of concept' stage and invest in the commercialisation of University IP. Normally UTAS would expect co-investment from an external source in order to commit Pre-Seed funds.

The University may sell or licence technology or establish spin-off companies: for example, it has sold breeding technology in relation to the pyrethrum industry, it has licensed its Research

Management Data Base software to Callista, and it has established a spin-off company 'Southern Ice Porcelain Pty Ltd' arising out of research in the School of Art in Hobart.

The University is a trust member of the SciVenturesTM Pre-Seed Fund with an investment of \$500K.

The University is an equity partner in In-tellinc Pty Ltd, the BITS Incubator in Tasmania. This company, funded originally through the Intelligent Island program and currently through the BITS-2 program, invests in promising IT technology.

The University's [Consultancy Policy](#) governs internal and external consulting. This provides appropriate commercial costings and ensures that liability, intellectual property and insurance provisions are addressed. UTAS Innovation Ltd and the University manage the contract negotiation and risk assessment respectively. University Council, through the Finance Committee has approved a set of costing and pricing schedules to ensure compliance in relation to issues of competitive neutrality.

Part B

TABLE 1: Higher degree research (HDR) candidates (by EFTSL) in 2004

	All HDR candidates (EFTSL)	HDR candidates commencing in 2004 (EFTSL)
All research - by research cluster		
Science & technology	375.6	42.65
Health & medical research	65.06	8.6
Arts, humanities & social sciences	280.59	36.46
Total - All research	721.25	87.7
Areas of research strength	All HDR candidates	HDR candidates commencing in 2004
Antarctic and Marine Studies	61.0	6.4
Community, Place and Change	125.4	20.3
Environment	107.2	12.4
Frontier Technologies	39.8	5.5
Population and Health	79.7	12.9
Sustainable Primary Production	178.3	15.9
Total - Areas of research strength	591.4	73.4

TABLE 2: RESEARCH INCOME 2004

All research - by research cluster	Category 1	Category 2	Category 3	Category 4
Science and Technology	15,602,222	5,724,768	1,909,608	4,951,052
Health and Medical Research	3,324,487	1,670,575	1,948,497	0
Arts, Humanities and Social Sciences	1,999,247	636,130	143,827	331,709
Total - All Research Active	20,925,956	8,031,473	4,001,932	5,282,761
Areas of Research Strength (Theme areas)				
Antarctic and Marine Studies	900,947	69,205	206,385	1,396,000
Community, Place and Change	1,169,889	191,031	173,514	110,095
Environment	1,942,511	150,700	232,825	752,779
Frontier Technologies	396,405	81,912	105,116	112,944
Population and Health	2,060,062	1,612,197	1,179,132	
Sustainable Primary Production	9,490,968	5,168,353	666,362	2,910,943
Total - Areas of research strength	15,960,782	7,273,398	2,563,334	5,282,761

TABLE 3: RESEARCH ACTIVE STAFF IN 2004

	Number of research active staff	Number of staff who generated research income	Number of staff who generated publications	Number of staff eligible to supervise HDR candidates*	Number of staff supervising HDR candidates**
All research - by research cluster					
Science and Technology	350	290	240	205	163
Health and Medical Research	89	76	54	58	46
Arts, Humanities and Social Sciences	222	91	211	129	93
Total - All Research Active	661	456	504	392	302
Areas of Research Strength (Theme areas)					
Antarctic and Marine Studies	42	30	29	29	20
Community, Place and Change	120	54	113	100	63
Environment	73	45	62	61	56
Frontier Technologies	38	20	33	29	14
Population and Health	92	52	79	61	29
Sustainable Primary Production	135	89	112	94	85
Total - Areas of research strength	500	290	428	374	267

NOTES ON DATA IN TABLE 3

* The area of research strength in this column is drawn from staff expertise.

** The area of research strength in this column is drawn from the student project.

Definition of Research Active: Any staff member who has supervised a HDR candidate, produced a DEST publication, or received external research income (McKinnon Walker).

TABLE 4: QUALIFICATIONS AND ACTIVITY OF STAFF WHO SUPERVISED HDR CANDIDATES IN 2004

	Number of supervisors holding a higher degree qualification	Number of supervisors who undertook formal supervisor training	Number of staff who have supervised at least one HDR student to completion in 2004
All research – by research cluster⁴			
Science and technology	234	136	59
Health & medical research	40	73	11
Arts, humanities & social sciences	93	63	39
Total - All research	407**	Total - All research	Total - All research
Areas of research strengths⁵			
Antarctic and Marine Studies	20	17	6
Community, Place and Change	60	47	18
Environment	52	40	16
Frontier Technologies	14	11	4
Population and Health	15	12	5
Sustainable Primary Production	83	63	25
Total – Areas of research strength	244	Total – Areas of research strength	Total – Areas of research strength

Notes on Data in Table 4

Eligible staff are those who are Registered Supervisors according to the specifications set out in [Rule 127, Registration of Graduate Research Supervisors](#)).

“Primary Supervisor” means a supervisor who has the key responsibility for coordinating, communicating and managing the candidature as well as overall responsibility for guidance, direction and advancement of the thesis and ensuring that the candidate is informed about the quality of the thesis (from [Rule 127, Registration of Graduate Research Supervisors](#)).

VICE-CHANCELLOR'S CERTIFICATION STATEMENT

I, Professor Daryl Le Grew

being the Vice-Chancellor/President (or delegated officer) of

the University of Tasmania

hereby certify that the information in these documents has been compiled in accordance with the guidelines for the 2005 Research and Research Training Management Reports issued by the Department of Education, Science and Training, and that the information contained therein is correct.

Signed:

Title:

Date: