

1. THE OPERATING ENVIRONMENT

The University of Tasmania is an established, research active, regional university with some well-defined areas of research strength, especially in its four theme areas of *Antarctic and Southern Ocean Studies*, *National and State Development*, *Natural Environment and Wilderness*, and *Population and Community Studies*. 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.

1.1 THE STATE OF TASMANIA

The economy of Tasmania is heavily dependent on primary production with some 40% of the State's overseas exports derived from agriculture, forestry and aquaculture/fisheries. The mineral industry (iron ore, coal, zinc, tin, copper, silver and gold) contributes about \$275M of overseas exports annually; processed metals, particularly aluminium and zinc, contribute another \$650M. In manufacturing, food and beverages, wood products (including paper and furniture, processed metals, and catamarans are the major exports. Tourism is currently worth around \$650M annually and the State Business Plan for tourism envisages this expanding to \$1 billion by 2007.

During the previous decade, Tasmania had the worst performing economy in the nation. Labour market parameters, Gross State Product (GSP) per capita, economic growth rates and State debt as a percentage of GSP, were all inferior to other states. Significantly the Tasmanian economy is amongst the most export oriented, with exports contributing to more than 20% of GSP. While there has been some evidence of improved performance over the past year, it is clear that the State still lags behind other parts of the Commonwealth.

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, primary production, minerals, and tourism. However, it is clear that the industry base in the State is small, many companies have their headquarters elsewhere and many of the industries are best described as "old economy".

These factors pose significant challenges for research that links to 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. The University has already committed itself to significantly enhanced resourcing of this area. This, plus the Intelligent Island Funds derived from the Telstra 2, sale should facilitate this expansion.

1.2 PLANNING

The [University's Strategic Plan](#) includes the following Mission Statement:

"The University of Tasmania is committed to the creation, preservation, communication and application of knowledge. It will express this commitment through scholarship which is international in scope but which also reflects the distinctiveness of Tasmania and serves the needs of its community."

The following points demonstrate the University’s commitment to such a mission. It has:

- a long history of scholarship
- identifiable areas of international research excellence
- identified areas of comparative advantage, the ‘Theme Areas’, in 1996
- a number of major research partnerships

The goal for research is *“To be one of the ‘top 10’ research universities in Australia producing scholarship of national and international standard”*.

In recent years, the University has ranked in the top 14 *per capita* on many of the research performance indicators. Comparison of the 1997 and the 1998 national data indicates that the University has improved its relative position on a number of these indicators.

Performance Indicator	1997	1998
Total Research Income	10 th	8 th
National Competitive Grants	11 th	10 th
Other Public Sector Funding	8 th	3 rd
Industry & Other Funding	13 th	14 th
DETYA Publications	6 th	6 th
RHD load (Proportion of RHD to total EFTSU)	14 th	10 th
ARC Large Grants	9 th	7 th
SPIRT Grants (1997 refers to Collaborative Grants)	7 th	4 th
NHMRC Funding	9 th	12 th
Research Infrastructure Block Grant	11 th	12 th
Research Quantum Allocation	9 th	8 th

It wishes to secure a position regularly in the ‘top ten’. The University seeks to establish sustainable competitive advantage in Australia’s higher education system. To do this *“the University will concentrate resources in a limited number of areas where it already has, or has the potential to develop comparative strengths which exploit the University’s location”*.

The theme areas, and some other areas of strength, that build on particular advantages are important elements of the University’s planning for the future. The Plan also recognises the importance of developing strategic partnerships

“The University recognises its special responsibility as the only university in the state and the University seeks mutually beneficial partnerships with industry, commerce, government business enterprises and the Tasmanian government in areas relevant to the needs of the state”.

The following partnerships involve State Government and industry, the Tasmanian Institute for Agricultural Research (TIAR), the Tasmanian Aquaculture and Fisheries Institute (TAFI), the Tasmanian Electronic Commerce Centre (TECC), the Centre for Ore Deposit Research (CODES), the Menzies Centre for Population Health Research, and the Centre for Regional Economic Analysis (CREA) illustrate our commitment to this strategy.

1.3 A SNAPSHOT OF THE UNIVERSITY OF TASMANIA

Research depends on high quality staff and research students having access to appropriate infrastructure and other funding. In 1999 the university had 614 FTE academic staff, 577 EFTSU in domestic RHD load and 73 EFTSU in international

RHD students. Its external research income for 1999 was \$22.1M. Using a definition of research activity as gaining external funding, or a DETYA publication or supervising a RHD student, in 1998 approximately 64% of staff were research active.

Major equipment support for science research is provided through the Central Science Laboratory, radio telescopes, major aquaculture and fisheries facilities including eight research vessels, an animal house and glasshouse facilities and a CRAY supercomputer. The Central Science Laboratory has a budget of \$817K, 14 full-time staff, and equipment with a replacement value of \$12M. The Social Science Research Laboratory with a budget of \$60K and facilities worth approximately \$150K provides support for the social sciences.

1.4 STRUCTURES

The University Plan identifies separate budget streams for research and teaching. The latter will contain about 10% of funds for research and scholarship. The research budget of approximately \$16M will be handled through a Research College headed by the Pro-Vice-Chancellor (Research) who will receive advice from the Board of the College, and also from the Board of Graduate Studies by Research chaired by the Dean of Graduate Studies. The research performance component of the budget will be allocated on the basis of performance in the University Research Index (60% external research funding [unweighted], 20% on RHD completions, and 20% on publications). Funds to support research training will be allocated on the basis of weighted RHD load. These funds will be allocated directly to Schools, University Centres and Institutes. Heads of Schools and Directors of research institutes and centres will be accountable to the Pro-Vice-Chancellor (Research) for enhancing the University's research activity in line with the imperatives laid out in the University Plan. Research infrastructure and research grant funding will be allocated by the Pro-Vice-Chancellor (Research) upon advice from the Board of the Research College, or appropriate advisory committees.

2. PROPOSED DIRECTIONS

2.1 RESEARCH

To strengthen its research in areas in which it currently performs well, the University will:

- Ensure that it continues to recruit academic staff with appropriate research capability, especially in the theme areas
- Continue and expand Early Career Research support (\$200K p.a.), maintain an internal grant program (at least \$500K p.a.), and foster research skill development
- Allocate funding on the basis of research performance to Schools and six to eight University research centres and institutes
- Allocate RHD scholarships and places to areas of research strength, including the theme areas
- Encourage the establishment of areas of critical research mass in areas identified in the University Plan through strategic allocation of \$0.5 – 1.0M annually
- Create enhanced research infrastructure in areas of priority - current annual funding of \$1.15M for Central Science Laboratory, Animal House, Social Science Research Laboratory will be maintained, and there will be a

commitment of \$275K to the Australian Partnership for Advanced Computing

- Existing areas of strength will be enhanced strategically, through the:
- Creation of a new Environment Institute, with a targeted external income of \$2M by 2003
- Development of a Centre for Microbial Food Safety and Quality within TIAR, with a budget of \$500K by 2002 including significant industry funding
- Strengthening of Analytical Chemistry, with a view to becoming the national leader in this area, applying for ARC Centre of Excellence funding and an external income of \$500K by 2002
- Application for a CRC for Sustainable Finfish Aquaculture with links to TAFI.
- Enhancement of molecular epidemiology in the Menzies Centre and external funding of \$3.5 M by 2002
- Expansion of molecular biology facilities (approx. \$500K) to provide high-quality infrastructure for biomedical and life science research
- Long-term planning for the continuation of the collaborative Antarctic research activity currently in the Antarctic CRC
- Long-term planning for the continuation of forestry research currently in the Forestry CRC
- Continued internationalisation of research in CODES, especially in South America.

2.2 NEW DEVELOPMENTS

We wish to enhance research in other areas, in particular those that have been identified as important for the economic growth or social well being of Tasmania.

- Building on our partnership in regional e-commerce and on-line services through the TECC, we plan to increase substantially research in the information economy through senior appointments, increased RHD load, and application for Tasmanian Intelligent Island funds. By 2003 our target is an external income of \$750K p.a. and 20 EFTSU in RHD load.
- Advanced computing will be strengthened through the University's commitment of \$275K to the Australian Partnership in Advanced Computing. Discussions are taking place with the State government for significant funding to expand the CRAY supercomputer, develop visualisation facilities and enhance the expertise base. In particular, we plan to develop a Technology Diffusion capacity in advanced computing for Small and Medium Sized Enterprises (SMEs).
- To strengthen health science research, we will make new appointments to Chairs in General Practice, Medicine, Rural Health and Human Biology; identify areas of research focus more clearly; establish a new School of Human Life Sciences with appointments of research active staff, and continue to develop research in rural health. Federal Government funding will be used to strengthen research capability in rural health and general practice. We plan for an external research income of \$6M p.a. in health sciences, \$1.2M p.a. in NH&MRC funding and a benchmark position of 10th or better by 2002.
- Tourism research will be enhanced through senior appointments, membership of the Tourism CRC, links with Tourism Tasmania, and the University-Industry Tourism forum planned to start in September 2000.

2.3 RESEARCH TARGETS

By 2002 our targets for income are as follows:

	1998 actual	2002 target
Total (\$)	\$18.4M	\$25M
<i>National Position</i>		
Total (%)	2.29%	2.5%
NCG (%)	2.17%	2.4%
OPSF (%)	3.76%	3.9%
IOF (%)	1.76%	2.0%
Benchmark	8 th -14 th	10 th or better

2.4 POSTGRADUATE RESEARCH EDUCATION

The University will maintain a central fund of \$1.8M for postgraduate scholarships equivalent in value to Commonwealth funded Australian Postgraduate Awards. Some of this will be used to leverage additional scholarships from external sources. This investment will enable us to capitalise on the consistent high demand for postgraduate research education at this University. We have set a target of 6.5-7% of load as research higher degree students by 2003. Scholarships and RHD places will continue to be allocated on the basis of the quality of the applicants, the availability of appropriate supervision and infrastructure, and the strategic priority of particular areas.

Funding for RHD students will be part of the budget of the Research College and will be allocated to centres, institutes and schools on the basis of weighted RHD load.

From 2001 it is expected that a process of registration will be in place for all supervisors with maintenance of registration depending on continuing a high standard of supervision and ongoing supervision training. We are proposing to expand the supervisor training programs from 2001. To improve completion rates to 75% by 2003, we plan to establish better systems for monitoring the progress of candidates. Part of this will involve the development in 2001 of profiles of students "at risk" and a "case management" approach to RHD students. To assist in this we will continue to refine our systems for the review of RHD student research plans and annual reports. These should be in place by mid 2001 and reviewed in mid 2002.

To ensure that RHD students have the skills that will equip them for the workplace, we plan to introduce three generic skill modules in 2001 and a further three in 2002. We will review the program in 2003. Modules will include time and project management, career development and commercialisation.

Recognising the problems of both pedagogy and time in the current system of thesis examination, we are investigating the development of compulsory oral examinations via teleconference. We plan to have a decision by the end of 2000 and a trial in 2001 with a view of introducing compulsory orals for all students commencing in 2002. We would anticipate an average time for completion of six weeks when this system is fully introduced and a time of eight weeks by 2002.

2.5 DRAFT RESEARCH PLAN

The latest draft of the Operational Research Plan (Appendix 2) picks up the recent significant changes in budget allocation approved by Council and outlines specific strategic targets/outcomes in relation to the rest of this document.

3. A QUALITY RESEARCH EDUCATION EXPERIENCE

3.1 UNIVERSITY EXPECTATIONS

The University Research Higher Degrees Handbook 2000 contains a University-School Postgraduate candidate agreement, outlining what the University will provide and what it expects of candidates. They will have:

1. Access to quality information on which to base decisions for RHD training
2. Induction processes that enable them to understand the University and RHD candidature issues
3. High-quality supervision that will provide them with appropriate advice, counsel and training in key skills
4. Access to appropriate research support and infrastructure to enable them to complete their projects in reasonable time
5. Opportunities to satisfy a requirement to present their research findings within the institution and opportunities for presenting at national and/or international conferences
6. Direction and encouragement in publication and thesis preparation
7. A quality examination process in good time
8. Access to Graduate Careers advice when they seek employment

We provide or plan to provide the following services that will enable the University to fulfill its service obligations:

- We publish a Research Higher Degree Prospectus and a [Research Higher Degree Handbook](#). From 2001, we plan to establish an interactive web site that will provide information on research grants, recent publications and RHD students for all academic staff registered to undertake the education of RHD students. This will be accessible via names or key words.
- Current induction processes will be reviewed by the end of 2001 and revised for 2002. Any problems with existing processes are identified through the annual survey of satisfaction of RHD students.
- The establishment of RHD targets, the use of the database on the supervisory record of potential registered academic supervisors at the time of the admission of candidates, the annual survey and visits of the Dean of Graduate Studies to all schools during the year, will assist in the provision of high quality supervision. Supervisors who do not perform at a high level will have the right to sole supervision withdrawn.
- At the time of enrolment the nature of the infrastructure support must be established. This is progressed further when the full research proposal is submitted. Before this is accepted the school must indicate that appropriate infrastructure is available. The annual survey of RHD students and the annual visits of the Dean of Graduate Studies help to identify any problems with infrastructure.
- There will be a requirement from 2001 that all RHD students will present their research annually. It is expected that all students will present their findings at a national or international meeting at least once during their candidature.
- The major responsibility for encouraging publication will be the supervisor(s). This is the subject of the annual survey of candidates and the Dean of Graduate Studies' visits to schools.
- The current examinations process involves two external examiners, one of whom is normally international. The nomination of examiners is assessed at

both School level and by the Board of Graduate Studies. We plan to develop this by having a direct engagement between the candidates and examiners through teleconference oral examinations. We believe this will lend greater integrity to the process and, in providing a defined end point to it, reduce the time for examination.

- The Graduate Careers Office provides advice for RHD students. During 2000 the office has become more involved in RHD matters and from 2001 workshops on careers development will be held.

3.2 UNIVERSITY PLANS

Recognising the large investment of time and resources by the University, the Commonwealth and candidates, we are moving to much more intensive management of RHD issues. Our objective is to capitalise on the high relative demand for research training, and to achieve the highest training standards and completion rates. A sub-committee of the Board of Graduate Studies allocates scholarships using a combination of honours grade, undergraduate grade point average, special considerations such as publications or additional research experience, and a weighting for research in the theme areas.

Induction for RHD students is the specific responsibility of Schools and they provide an induction booklet.

The provision of resources for RHD students is the responsibility of the School, Institute or Centre; such matters are the topic of the regular visits that the Dean of Graduate Studies makes to Schools, Institutes and Centres. There is significant co-supervision in the agricultural, aquacultural, life sciences, and biomedical sciences, involving State government, CSIRO and Antarctic Division researchers. The University's capacity to supervise RHD students is enhanced by Honorary Research Associates who normally are very experienced researchers.

The relationship between RHD student and supervisor is an important one. At its best it can be stimulating and of a very high quality. However, it also can break down. To minimise the potential for harm if this happens, the University has promoted co-supervision or joint supervision. Approximately 56% of students have more than one supervisor.

There is significant responsibility on supervisors and Schools for providing facilities and supervision. The quality assurance measures involve both the Annual Progress Report that is signed by students, supervisors and Heads of School, and examined by the Board of Graduate Studies, as well as the annual survey of graduate research students. The Dean of Graduate Studies 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. In the longer-term supervisors or Schools who fail to deliver the appropriate supervision or facilities will have significant restrictions on postgraduate student numbers.

4. COLLABORATION WITH OTHER INSTITUTIONS, INDUSTRY & OTHER BODIES

4.1 CRCs AND SRCs

The University Plan places significant emphasis on the development of appropriate partnerships (see Appendix D1 of the Plan). The University is involved in four CRCs – Antarctic, Aquaculture, Sustainable Production Forestry and Sustainable Tourism. These involve partnerships with four, 15, 16 and 22 research and industry partners respectively. The Antarctic and Forestry CRCs are headquartered at the

University. The Tasmanian arm of the CSIRO Division of Forestry is located on the University campus in Hobart. The Institute for Antarctic and Southern Ocean Studies (IASOS) and the Tasmanian Aquaculture and Fisheries Institute (TAFI) are the University structures for membership of the Antarctic and Aquaculture CRCs respectively. Planning for the continuation of the Antarctic and Forestry CRC research activities beyond 2003 and 2004 respectively has begun. The Centre for Ore Deposit Research (CODES) is an ARC Special Research Centre. It collaborates with five Australian universities, four other Australian research institutions, 11 Australian mining companies, 15 international mining companies, and 20 international research organisations or universities.

4.2 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.

Institute	Total 1999 Income	1999 Income from External Grants	1999 Income from State Government
TAFI	\$3.65M	\$871K	\$2.7M
TIAR	\$5.2M	\$2.9M	\$2.3M

The University signed a Memorandum of Understanding with the Inland Fisheries Service in 1999 with the objective of integrating all fisheries research in the State. The University and State Government established the Tasmanian Electronic Commerce Centre to provide solutions to electronic commerce, including R&D, to small and medium sized businesses in Tasmania.

Other partnerships with State Government include joint funding of the Centre for Regional Economic Analysis, in Health Research, co-location of the Environment and Land Management unit in the Faculty of Science & Engineering, agreement with the Government Analytical and Forensic Laboratory to co-ordinate major equipment purchases, and links in Tourism.

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.

4.3 OTHER PARTNERSHIPS

The Menzies Centre is supported by funding from the University, the State Government, the Menzies Foundation, medical research funds including NH&MRC, and industry, including Exgenix and Autogen. Industry funding of approx \$3.25M over five years has been committed to the Genetic Epidemiology Unit. The University will explore with the State Government the potential for new partnerships in for example, environment, IT, Food Safety, Tourism and Law Reform, with the objective of establishing one -two new partnerships by the end of 2002.

The Centre for Research and Learning in Regional Australia (CRLRA) is an ANTA funded (\$0.6M over three years) research partner centre with a focus on post-secondary learning in regional Australia. It has formed a partnership with several other universities and TAFE colleges.

The University has Memoranda of Understanding with the Australian Antarctic Division and CSIRO Marine Research.

4.4 PARTNERSHIPS WITH INDUSTRY

The University has research links with over 320 companies, including more than 80 that are based overseas. This information is maintained on an industry database that is updated on a monthly basis. In the Collaborative ARC and SPIRT schemes, the University has consistently performed well. In SPIRT funding per FTE for 1998, this University ranked 4th nationally with \$2.67K per FTE. SPIRT applications for 2001 funding increased by 79% over 2000. The target will be to increase funding by 20% by 2002 and to maintain a position in the top five on a per capita basis. We plan to increase the number of START grant applications with which we are involved to three annually by 2002. Nevertheless, in total dollar value the University performs less well in industry funding than in any of the other research performance indicators.

The University has identified growth in partnerships with industry as a major priority. To stimulate productive partnerships, it established an Industry-University Collaborative Grant scheme in 1998. This provides small amounts of seed funding along the lines of the SPIRT scheme so that partnerships can be fostered. Some \$50K p.a. will be allocated for this purpose over the period 2001-2003. The University will maintain its program of visits to industry groups to discover their needs for research. This will be included in the R&D capability marketing strategy in 2001. The University is a member of the Tasmanian Chamber of Commerce and Industry (TCCI), and has linkages to the Australian Institute of Company Directors. On the basis of these strategies, the University aims to increase industry funding to 2.0% of the national total by 2002.

4.5 COLLABORATIONS AND LINKS TO THEME AREAS

These existing major research partnerships relate very closely to the four theme areas and to the economy of the State. The new developments we have proposed should enhance the Tasmanian economy.

5. MANAGEMENT OF COMMERCIALISATION, INTELLECTUAL PROPERTY AND CONTRACTUAL ARRANGEMENTS

The Research and Development Office (RDO), reports to the Pro-Vice-Chancellor (Research) and is responsible for the administration of grants and consultancy operations within the University. The RDO provides workshops and seminars on grant writing and external feedback on applications for the major schemes. Programs for seminars are listed through the [RDO web site](#). To foster commercial linkages and to expedite contract research, templates have been developed through negotiation with industry and business for standard arrangements.

Internal and external consulting is governed by the University's [Consultancy Policy](#) which provides appropriate commercial costings and ensures that liability, intellectual property and insurance provisions are addressed. The Legal Office works closely with the RDO in contract negotiation and development, to provide advice to the Pro-Vice-Chancellor (Research) on contract risk and assessment. 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. Letters of offer (through Human Resources) to new employees, contractors and honorary staff members state clearly the University's policy on consultancies and paid outside work. This policy satisfies the self-assessment checklist developed by the New South Wales Auditor-General for consultancies in universities.

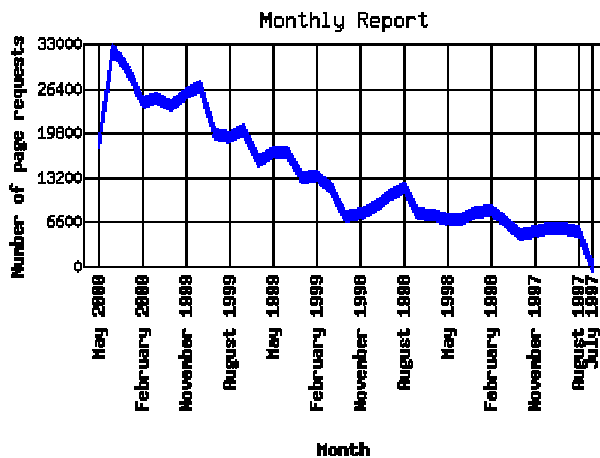
The University’s [Intellectual Property Policy](#) seeks to manage the nexus between protecting the University’s investment and facilitating industry involvement in commercial application of University intellectual property. Advice is available to staff and external users in relation to specifics of the policy’s implementation. Returns from benefits arising from the commercialisation of research are shared equally between the researchers, their Schools and the University.

Through strategic venture capital investment, the University seeks to return benefits to the university via defined royalty streams while maintaining productive relationships with external partners with the aim of facilitating the translation of research skills and project outcomes into profitable and socially useful products for industry and business.

The University is committed to developing a database of “tangible” and “intangible” Intellectual Property linked to the existing Research Management Database. The University will use these tools to manage commercial potential and to develop it in association with suitable partners.

6. QUALITY ASSURANCE MECHANISMS

The Research and Development Office (RDO) [web site](#) has all the policies and procedures in relation to research including a [Researchers Guide](#) that provides information on grants, IP, contracts, consultancies, ethics, RHD supervision, theme areas, data collections, formula funding, reports and statistics. The table below shows the increase in web site hits since July 1997.



The RDO provides a service in terms of grants, tenders and consultancies, reminders in relation to final reports, and liaises with the Finance Section in relation to research grant accounts. Ethics issues are handled through the Animal and Human Research Ethics Committees. Tasmanian research institutions active in research involving human subjects are significantly advanced in establishing a unified Tasmanian Human Research Ethics Committee.

The RDO has a [Notice Board](#) that provides regular updates on research matters. By early 2001 the RDO will have developed a Charter of Service. As part of the commitment to enhanced industry links a survey of industry clients commenced in 1999 with a view to establishing the degree of satisfaction with the university’s R&D services.

Since 1992, the PVC(R) has provided an extensive report to University Council of the research performance of the University for the previous year. This includes institutional level benchmarking against all other Australian universities, and a

detailed breakdown of income, publications, RHD load and completions by individual School and research institute or centre. These data form the basis for the annual Research Committee retreat. This evaluates performance against targets, and the strategies that have been implemented to improve research performance. The Performance Management System provides an opportunity of matching performance against stated Key Result Areas and of making adjustments for the future.

The [Research Performance Report](#) provides data on the number and average time for completions, the number of withdrawals from candidature and the reasons for students withdrawing. The annual progress report from RHD students gives them an opportunity to comment on the quality of supervision. In addition, the Dean of Graduate Studies visits every School annually and talks with supervisors and with candidates. Such visits contribute significantly to the annual report that the Dean makes to Academic Senate.

The University Plan also requires the Pro-Vice-Chancellor (Research) to report annually to Council on development of the theme areas, and on partnerships.

Using the 1-5 scale rating in the McKinnon Walker benchmarking manual we have made the following self-assessments (SA):

Benchmark		SA
8.1	Research Planning level	4
8.2	Staff participating in research (funding) level	5
8.3	Staff participation in research (publication/supervision) level	5
8.4	Research students experience (learning) level	4
8.5	Completion rates and times level	4
8.6	Research income trends level	4
8.8	Weighted Publications/FTE	4
8.9	Research Impact level	3

From 1999, all Schools were required in the annual research planning exercise to identify appropriate benchmark departments or Schools in other Australian institutions, or internationally, and to report on this.

The University has formed an international research benchmarking link with the University of Liverpool in the United Kingdom. Approximately 60% of its departments were 4 or 5 rated in the last Research Assessment Exercise, including Biological Sciences, Chemistry, Earth Sciences, Geography and the Environment. The two universities have signed an Memorandum of Understanding for co-operation. In addition to the exchange of data, exchanges of personnel are planned.

Key Comparative Data	98/99 UniLiv	1999 UTas
EFTSU - RHD students/FTE	1.09	0.94
Proportion of RHD to Total EFTSU	7.44%	6.12%
% of Research Income to Total Income	21.6%	13.2%
Research Income/FTE	£41K or \$AUD105K	\$37.5K

7. A REVIEW OF RECENT RESEARCH PERFORMANCE

7.1 RESEARCH FUNDING

There has been an improvement in most areas of research funding since 1996.

Funding	1996	1997	1998	1999	Increase
Total	14.7	16.1	18.4	22.1	50%
NCG	7.3	8.0	8.7	11.2	53%
OPSF	2.4	3.4	4.9	6.6	175%
IOF	4.8	4.7	4.6	4.3	-10%

During the period 1996-1999 the University has undergone a significant reduction in the number of academic staff in academic units (from 711 to 589). At the same time, total research income has increased from \$14.7M to \$22.1M. The combination of an increase in total income and reduced staff numbers means that total funding \$/FTE has risen from \$20.7K in 1996 to \$37.5K in 1999.

The University has achieved and surpassed three of its four targets for 1999 research income as set in the Research Management Plan 1998-2000.

Indicator	Target	Outcome
NCG	\$9M	\$11.2M
ARC Large	\$2.5M	\$2.76M
NH&MRC	\$1.5M	\$1.03M
Value of all Research Grants	\$14M	\$19.8M

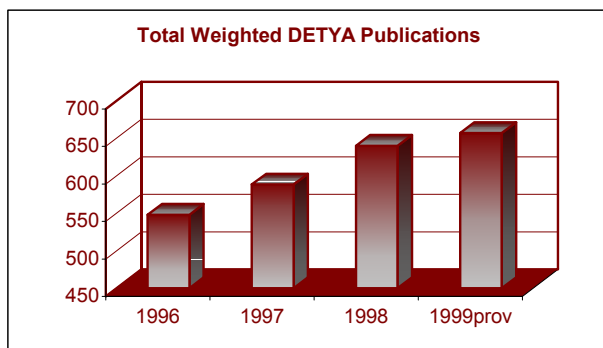
7.2 RESEARCH HIGHER DEGREE STUDENTS

Research student numbers (average of census 1 and 2 numbers) have risen from 504 in 1996 to 577 in 1999. Currently (May 2000) there are 614 EFTSU. This amounts to a 14.5% rise between 1996 and 1999 and, if the current figures are sustained by the mid-year entry, a 19% increase to 2000. Given that academic staff numbers have decreased over the same period, the EFTSU/FTE load has increased by 40% between 1996 and 1999.

	1996	1997	1998	1999	2000
RHD Operating Grant Load	504	539	557	577	614
RHD EFTSU/FTE	0.70	0.88	0.97	0.98	1.04
% RHD to Total Load	5.64	5.94	6.17	6.18	6.51
International EFTSU	72.83	72	69.63	73	61.5
Withdrawals	69	56	50	99	-
Scholarship Applications	235	269	239	262	277
Scholarship App's/FTE	0.33	0.44	0.42	0.42	0.46
Completions	110	95	107	108	-
Masters	37	29	22	17	-
PhD	73	66	85	91	-
Weighted completions (Masters/PhD = 1.2)	183	161	192	199	-
Completions/FTE	0.25	0.26	0.33	0.34	-
Completion time – Masters	2.53	2.12	2.39	3.34	-
Completion time – PhD	3.68	3.69	3.72	3.81	-

7.3 PUBLICATIONS

The publications data is confused by the national audit. To keep as constant a base as possible for comparative purposes, unaudited data has been used. Taking into account the decrease in staffing the publication/FTE has increased by around 45% over the period 1996 – 1999.



7.4 RECENT HIGHLIGHTS

In recent years, the University has:

- Established the Theme Areas in 1996;
- Established the Centre for Ore Deposit Earth Sciences SRC in 1997;
- Established Tasmanian Institute of Agricultural Research in 1997;
- Established Tasmanian Aquaculture & Fisheries Institute in 1998;
- Established the Genetic Epidemiology Unit within Menzies in 1998;
- Established Centre for Research Learning in Regional Australia in 1997, with renewed funding for 2000-2002.

Professor Tom McMeekin has been working on the biology of Antarctic microorganism since 1986 and has attracted in excess of \$4M in that time. The adoption of state of the art lipid chemistry and molecular techniques has placed the University of Tasmania at the forefront of research in the systematics, ecology and biotechnological potential of cold-adapted microorganisms.

Professor Ned Pankhurst has published extensively in fish biology particularly in the area of reproductive endocrinology. This research has significant implications for the aquaculture industry.

Assoc Professor Jane Watson has attracted ~\$750,000 for her work in the area of probability and statistics, contributing to research and professional communities' understanding of students' statistical reasoning. Dr Watson was awarded the 1999 Clunies Ross National Science and Technology Award for her research.

Professor Michael Clark is regarded as a world authority in muscle metabolism and the techniques associated with this field such as perfused rat muscle studies. His work on the biochemistry of diabetes has made significant contributions to understanding this disease in populations.

7.5 AREAS FOR IMPROVEMENT

The University's research goal is to be one the "top 10" Australian research universities on a *per capita* basis. As part of our strategy to achieve this, we have identified four major areas for improvement.

Increased Industry Funding Despite success in SPIRT grants, the University has not increased its funding from industry over the past few years. We rank 14th nationally on an FTE basis. The industry base in Tasmania is small and we need to be proactive in understanding the needs of state-based industry, and also in approaching industry nationally and internationally where we have demonstrated competitive advantages. The Industry-University Collaborative Grants Scheme will assist in the fostering of closer links between researchers and industry.

Commercialisation A comprehensive IP database will be completed by 2001 which will form the basis for the commercial management of University IP in the future. Income from commercialisation may arise through licensing IP, assigning IP in exchange for a royalty or taking equity in new commercial developments.

IT Related Research Our partnership in the TECC should provide a major business focus for future research work in the uptake of e-commerce and on-line information in regional Australia. We are increasing the number of senior staff, including senior Research Fellows. The number of RHD places allocated to this area has been increased by 150% over the next triennium, and significant funds will be requested from the Tasmanian Intelligent Island Board.

Health Related Research Despite the success of the current Menzies Centre and some areas of preclinical medicine, the overall level of success in medical funding has been modest. To improve this, a small number of areas of research focus will be established; Chairs in General Practice, Medicine, Rural Health and Human Life Sciences will be filled; Rural Health research will be strengthened using Federal funding for this area; closer links between the Menzies Centre and Biochemistry are being explored.

8. GRADUATE OUTCOMES

The University expects RHD students 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 IP, confidentiality, contractual arrangements
- Industry interaction and experience where relevant
- Employment potential

Such attributes will be developed through:

- Regular meetings with supervisor(s), through 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 conferences, as well as the final thesis
- training by Schools in appropriate safety techniques, awareness of EEO issues
- provision of advice on IP, contractual matters and confidentiality through the School and the Research & Development Office

- Collaborative research schemes supported by SPIRT, and the Industry-University Scheme, to stimulate understanding of industry requirements as well as Industry-based associate supervisors

Since 1994 the University has collected annual data from RHD students on the quality of supervision and support. This 23-question survey is based on a 5-point scale where 1 reflects the highest satisfaction level. The data consistently returns an average response of between 1 and 2.

Data from the national Graduate Destination Survey (GDS) show an average of 4.06 on a 1-5 scale (5 being the highest). The GDS also shows that for this university the average commencement salaries for graduates with research Masters is \$43.9K and \$51.2K for PhD graduates. Of the 34% of the 1999 graduates who responded, 100% are currently in employment and a significant proportion (72%) are in research or senior management positions.

To enhance the reliability of the data we would like to conduct exit surveys of all RHD graduates. The development of a Graduate Outcomes Contract between the university and individual students during 2001 should enable us to ensure that there has been appropriate coverage of important skill development.

9. RESEARCH ACTIVE ACADEMIC STAFF

Approximately 64% of academic staff have doctorates. This ranges from a low of 5% to a high of 100% in various Schools. Using the previously defined criteria for research activity (see 1.3) the following table details the level of research active staff.

Research Activity	1998	1997-1999
External Funding	29%	40%
Published (DETYA)	44%	62%
Published (22 categories)	55%	70%
Published (all categories)	57%	73%
Supervised a RHD student	42%	55%

There is significant variation between Schools in the extent of research activity, however, there is no School without some research, albeit at a modest level.

Information on the research performance of the various areas of the University is given in the [Research Performance Report](#). As part of the commitment to provide information to potential employees or RHD students an interactive site will be developed in 2001 that will provide information on funding, publication and supervision down to the level of individual researchers. There is a significant relationship between research activity and the Theme Areas. For example 70-75% of all external research funding is in the Theme Areas.

10. CONCLUSION

The University is of the view that research will become increasingly competitive and global. To make a significant contribution of international standard to the Australian research effort, we will have to be judicious in our planning and use of our resources. In making a contribution of international significance we seek also to contribute to the economic, social and cultural wellbeing of Tasmania. Part of our role is to provide high standards of education for research higher degree students.

This Research Plan provides a blueprint for enhancing existing areas of strength and strategically improving some important areas where we have currently only a modest base.

WEB ADDRESSES

Strategic Plan	http://www.admin.utas.edu.au/download/publications/StratPlan2000.pdf
RDO home page	http://www.utas.research.edu.au
Consultancy Policy	http://www.research.utas.edu.au/policy.htm
Intellectual Property Policy	http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RULES/POLINT.html
Researchers Guide	http://www.research.utas.edu.au/Resguide/index.htm
RDO Notice Board	http://www.research.utas.edu.au/notice_board.htm
1998 Research Performance Report	http://www.research.utas.edu.au/ResPerform98/report.htm
2000 RHD Handbook	http://student.admin.utas.edu.au/handbooks/UTASHANDBOOKS/RHD/2000hdh.pdf