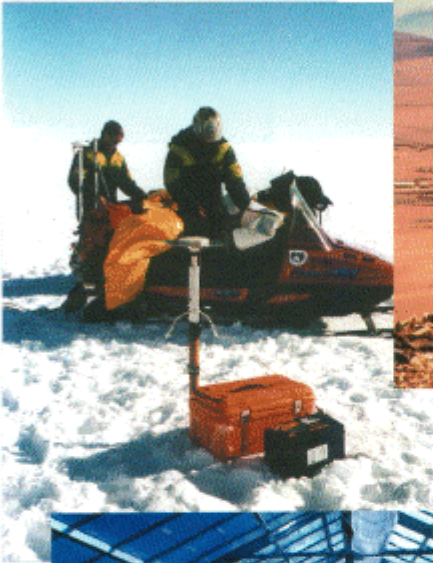




UNIVERSITY
OF TASMANIA



Research and
Research
Training
Management
Report

2001

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PART A

1. INTRODUCTION AND OVERVIEW

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.

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, 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.

Research depends on high quality staff and research students having access to appropriate infrastructure and other funding. In 2000 the university had 623 FTE academic staff, 615 EFTSU in domestic RHD load and 61.5 EFTSU in international RHD students. Its external research income (categories 1-3) for 2001 was \$22.7M. Using a definition of research activity as gaining external funding, or a DETYA publication or supervising a RHD student, in 1999 approximately 68% 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 annual budget of approximately \$975K, 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.

2. RESEARCH AND RESEARCH TRAINING OBJECTIVES

2.1 THE UNIVERSITY PLAN

The University's Strategic Plan (2001-2003) 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’
- a number of major research partnerships

In research the University of Tasmania aims *“To be one of the ‘top 10’ research universities in Australia producing scholarship of national and international standard”*.

Analysis of 1997-1999 national data on nine research performance indicators (on an FTE basis) show that the University of Tasmania has been in the top-ten in all but one indicator (Industry Funding) on at least one occasion, in six of the nine indicators in two years out of three, and in four of the indicators in all three years.

Performance Indicator	1997	1998	1999
Total Research Income	10 th	8 th	8 th
Australian Competitive Grants	11 th	10 th	7 th
Other Public Sector Funding	8 th	3 rd	1 st
Industry & Other Funding	13 th	14 th	16 th
DETYA Publications	6 th	6 th	13 th
RHD load (Proportion of RHD to total EFTSU)	14 th	10 th	11 th
ARC Large Grants	9 th	7 th	7 th
SPIRT Grants (1997 refers to Collaborative Grants)	7 th	4 th	4 th
NHMRC Funding	9 th	12 th	11 th

The University wishes to secure a regular position 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 it *“seeks mutually beneficial partnerships with industry, commerce, government business enterprises and the Tasmanian government in areas relevant to the needs of the state”*.

2.2 RESEARCH AND RESEARCH TRAINING MANAGEMENT PLAN

The University Research and Research Training Plan approved in 2000 outlines the future strategic direction for the University. The major elements of the Plan are as follows:

Research Priorities

- to focus research into areas of priority, especially the four theme areas
- to create an active research community producing scholarship of national and international standard
- to increase research income and partnerships

Research Training

- to provide high quality research training

Research Management

- to assist development of research through best practice in research management

Key Strategies

The Plan outlines a range of specific initiatives including:

- creation of the Research College in 2001
- the separation of funding streams for teaching and research, the allocation of funding on the basis of research performance and the creation of five institutes that are centrally funded
- specific strategic investments in new or existing areas of research focus
- enhancement of research through specific infrastructure initiatives and development of researchers
- enhancement of partnerships with other research providers
- commercialisation initiatives
- maintenance of scholarships, their allocation on the basis of quality of applicants, supervisory and infrastructure capacity of the research area, and the strategic priority of the University
- registration of supervisors, annual training modules for RHD supervisors, and co-supervision, and
- research management and benchmarking issues

2.3 GRADUATE ATTRIBUTES

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 intellectual property, 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,

- provision of advice on intellectual property, 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
- advice and assistance provided by the University's Careers and Employment Service

2.4 STRUCTURES AND BUDGETS

The Research College headed by the Pro-Vice-Chancellor (Research) is the arm of the University that embraces all research; all research-active staff are members of the College. The Board of the Research College provides advice to the Pro-Vice-Chancellor (Research) who also chairs the Board. It has both internal and external membership, as well as representation of the interests of postgraduate students through a postgraduate research student member and the Dean of Graduate Studies by Research. The latter chairs the Board of Graduate Studies. The Board of Graduate Studies deals with all issues of scholarships, applications, enrolments, candidature and examination. Both the Research College Board and the Board of Graduate Studies report to University Council through Academic Senate. Administratively the Research College Board is supported by the Research and Development Office, and the Board of Graduate Studies by the Research Higher Degrees Unit.

The University budget model identifies separate funding streams for research and teaching. It is estimated that the teaching budget contains about 10% of funds to support scholarship and research.

The research budget of approximately \$19.2M is handled through the Research College. Funds are distributed to Schools and a small number of University Institutes/Centres on the basis of research performance. Research Performance funds (current Research Quantum) of some \$5.4M in 2001 is allocated on the basis of the University Research Index developed in 1999.

This Index contains the following elements:

- Research Income 60%(unweighted),
- RHD completions 20% (PhD 2:Masters 1 and 2.35 High:1 Low), and
- Publications 20% (all categories weighted to internal scale).

Of the \$12.6M allocated to the University in 2001 to support research training via the Research Training Scheme some \$8.1M was allocated directly to Schools and Institutes/Centres on the basis of performance using the RTS index. Some 60% of the Research Infrastructure Block Grant of approximately \$1.9M is used to support central University research facilities like the Central Science Laboratory, the Animal House and the Social Science Research Laboratory. The remainder is allocated directly to Schools and Institutes/Centres on the basis of their relative success in Australian Competitive Grants.

The University currently commits \$2.25M to support postgraduate research scholarships. A sub-committee of the Board of Graduate Studies chaired by the Dean allocates the scholarships. The allocation mechanism includes Honours grade, the Grade Point Average, prior research experience eg publications or industry experience, as well as a weighting for students studying in one of the four Theme Areas.

The University runs an internal research grants system worth approximately \$700-750K annually to support research in all disciplines. This is used to further the research of Early Career Researchers, and those more experienced staff who have limited, or no, external funding. Internal

discipline-based panels evaluate proposals and recommend on funding to the Pro-Vice-Chancellor (Research).

Strategic Research Funds (approximately \$0.7-1.0M) are used to support the development of new research initiatives, including facilities. Expenditure of these funds is approved by the Pro-Vice-Chancellor (Research).

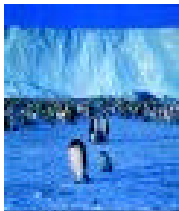
Deans, Heads of Schools and Directors of the Institutes/Centres are accountable to the Pro-Vice-Chancellor (Research) and the Board of the Research College for the expenditure of their research funding in line with the imperatives of the University Research and Research Training Plan

3. CURRENT AREAS OF RESEARCH STRENGTH

3.1 THE FOUR THEME AREAS

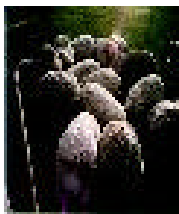
In 1996 the University adopted its four Theme Areas that built on areas of comparative advantage and strength. These are:

Antarctic and Southern Ocean Studies



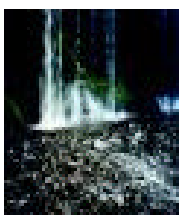
With the southerly geographical position of Tasmania, and the location of the Australian Antarctic Division and CSIRO Division of Marine Research in Hobart, research in Antarctica is a logical development for the University. Antarctic research focuses on both the physical and biological sciences and on law and policy issues. There has been a particular focus on climate change as a result of the development of the Antarctic CRC in Hobart.

National and State Development



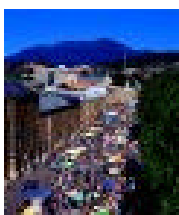
The University has consciously aligned some of its major research capabilities with major industries in the state. Thus there are large concentrations of researchers in agriculture (and Forestry), aquaculture and fisheries and exploration geosciences as well as in some of the enabling technologies like Chemistry. In addition the University is committed to enhancing research in Information Technology and Tourism.

Natural Environment and Wilderness



With its large areas of national and world heritage listed environments Tasmania is an obvious site for research into conservation biology and environmental measurement. In addition research in this Theme Area also focuses on social issues in relation to the environment, its representation, and how we think about environment and place.

Population and Community Studies








The nature and history of the Tasmanian population make it a valuable subject for research. It has been a rich subject for research into population health and the causes of disease in humans. In addition the rural and regional nature of the state make it a useful test site to explore a range of social, legal and educational issues.

In terms of the Research Field Classification and Discipline (RFCD) System the University of Tasmania has significant strengths in the Chemical Sciences (250000-259999), Earth Sciences (260000-269999), Biological Sciences (270000-279999), Agriculture, Veterinary and Environmental Sciences (300000-309999), and defined areas of Medical and Health Sciences (320000-329999).

The University funding model for research is performance driven. Both the Research Performance and Research Training funds are distributed essentially as they are earned by the institution. However, within the model we have identified a number of Institutes that have significant critical mass of researchers and research income and are funded directly through the model.

These are the Centre for Ore Deposit Research (CODES), Institute of Antarctic and Southern Ocean Studies (IASOS), Menzies Centre for Population Health Research, Tasmanian Aquaculture and Fisheries Institute (TAFI) and Tasmanian Institute of Agricultural Research (TIAR). Statistics for these Centres/Institutes are outlined in the table below.

2000	Research Income*	FTE Researchers	RHD Load (EFTSU)
 <u>CODES</u>	\$2.2M	10.6	31.5
 <u>IASOS**</u>	\$0.5M	9.0	37.0
 <u>Menzies Centre</u>	\$2.1M	8.1	4.5
 <u>TAFI</u>	\$4.3M	40.15	36.5
 <u>TIAR</u>	\$5.0M	42.9	57.5

*Categories 1 – 3 as reported in the 2001 HERD

** IASOS also benefits directly and indirectly from the category 4 income received from the Antarctic CRC (2000 totaled \$1.7M).

4. FUTURE DIRECTIONS FOR RESEARCH AND RESEARCH TRAINING

4.1 STRENGTHENING EXISTING AREAS

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
- Maintain an internal grant program (at least \$700K p.a.) including support for Early Career Researchers and foster research skill development
- Allocate funding of approximately \$14M on the basis of research performance to Schools and six to eight University research centres and institutes
- Allocate University funded RHD scholarships worth approximately \$2M to areas of high quality research, including the theme areas
- 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
- Commitment of \$275K to the Australian Partnership for Advanced Computing
- Molecular Biology facilities have been enhanced by the commitment of \$0.75M in 2001.
- Establish the Menzies Institute as an incorporated body (a controlled entity of the University) and maintain its allocation of research performance funds
- Foster the Centre for Microbial Food Safety and Quality within TIAR; this Centre was established in 2000 with initial funding of \$600K over three years equally from the University and the state government of Tasmania, and committed funding of an additional \$1.3M from rural R&D Corporations over the period 2001-2003
- Strengthen Analytical Chemistry research through the continued strategic funding of \$420K over three years (2000-2003) for the Australian Centre for Separation Science (ACROSS), with a view to this becoming the national and international leader in this field and applying for ARC Centre of Excellence funding in 2002
- Core membership of the CRC for Sustainable Aquaculture of Finfish (CRC Aquafin); TAFI is the largest single partner contributing \$8.9M in cash and in kind over the 7 years.
- Consolidate agricultural research through internationalisation e.g. via ACIAR and other sources
- Long-term planning for the continuation of the collaborative Antarctic research activity currently in the Antarctic CRC, including a third round bid for funding
- Long-term planning for the continuation of forestry research currently in the Forestry CRC, including a bid for third round funding
- Continued enhancement of the Centre for Ore Deposit Research as one of the top two or three exploration geoscience research centres in the world
- Foster expansion in the new School of Human Life Sciences
- Expansion of the Centre for Regional Economic Analysis and Centre for Research and Learning in Regional Australia to achieve external income targets of approximately \$500K annually

4.2 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.

We plan to increase research in the information technology through senior appointments, increased RHD load, and collaboration with the Tasmanian Intelligent Island Board to establish a

major Centre of Excellence in IT in the state with funding of \$19-20M over five years. In addition we will enhance our research in IT and e-commerce through membership of the Smart Internet Technology CRC and our equity partnership in the Tasmanian Electronic Commerce Centre Pty Ltd and Tasmanian Business Online Pty Ltd. The University and the state government are currently actively exploring the potential for the development of a joint Tasmanian Environmental Research Institute to deal with questions of the terrestrial environment. Target is for an external research income of approximately \$2M by 2003.

The Tasmanian Law Reform Institute will be established during 2001 in partnership with the state government to undertake all the scholarly research underpinning law reform in the state.

To strengthen health science research, we will make new appointments to Chairs in General Practice, Rural Health, and Obstetrics and Gynaecology. Areas of research focus identified through the Partners in Health Agreement between the state government and the University will be used to develop enhanced human capability. 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 enhanced links to Tourism Tasmania; a cultural heritage focus is being developed through a consortium of senior researchers from History, English and European Languages, Aboriginal Studies, and Tourism. A cultural heritage node of the CRC for Sustainable Tourism is proposed.

4.3 SHIFTS IN RHD LOAD

The University has already undertaken a detailed exercise to have some changes to its RHD load. Load targets for the distribution of the RTS places have been set for each School and Institute. This will involve some reduction in the number of places available in the Arts and increases in places available in Information Technology (Computing and Information System) and linked to the Menzies Institute.

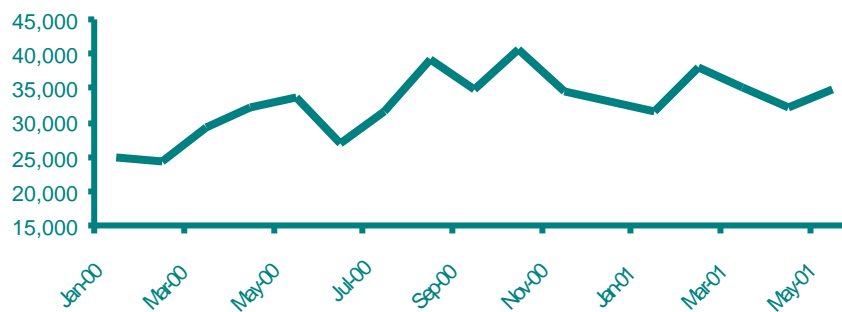
4.4 RESEARCH TARGETS

By 2002 our targets for income are as follows:

	1999 actual	2002 Target
Total (\$ cats 1-3)	\$22.1M	\$25M
National Position		
Total (%)	2.56%	2.7%
Australian Competitive Grants (%)	2.54%	2.6%
Other Public Sector Funding (%)	4.62%	4.6%
Industry and Other Funding (%)	1.54%	2.0%
Benchmark	1 st -16 th	10 th or better

5. MANAGING RESEARCH PERFORMANCE

The Research and Development Office (RDO) [web site](#) provides links to all relevant policies and procedures in relation to research including a [Researchers Guide](#) that provides information on grants, intellectual property, 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 January 2000.



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 and has a [Service Charter](#). 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 Pro-Vice-Chancellor (Research) has provided an extensive report to University Council on 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 College Board 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.

5.1 RESEARCH FUNDING

There has been an improvement in all areas of research funding since 1997.

Funding \$M	1997	1998	1999	2000	1997-00 increase
Total	16.2	18.4	22.1	22.7	+40.3%
ACG	8.0	8.7	11.2	10.4	+29.9%
OPSF	3.5	4.9	6.6	6.6	+90.6%
IOF	4.7	4.6	4.3	5.7	+20.9%

While academic staff numbers have decreased slightly since 1997 (by 24 FTE) total research income has increased from \$16.2M to \$22.7M in 2000. The combination of an increase in total income and reduced staff numbers means that total funding \$/FTE has risen from \$25.6K in 1997 to \$35.5K in 2000, an increase of 38%.

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

Indicator	Target	Outcome
Australian Competitive Grant Income	\$9M	\$10.4M
ARC Large Grant Income	\$2.5M	\$2.5M
NH&MRC Income	\$1.5M	\$1.1M
Value of all Research Grants	\$14M	\$21.6M

5.2 RESEARCH HIGHER DEGREE STUDENTS

Total research student numbers have risen from 611 in 1997 to 654 in 2001. This amounts to a 9% rise between 1997 and 2001. The EFTSU/FTE load has increased by 20% between 1997 and 2000.

RHD Candidature	1997	1998	1999	2000	2001
Operating Grant Load	539	557	577	615	587.4
International EFTSU	72	69.63	73	61.5	66.4
RHD EFTSU/FTE	0.88	0.97	0.98	1.09	1.06
% RHD to Total Load	5.94	6.17	6.18	6.51	6.48
Withdrawals	56	50	99	77	n/a
Scholarships					
Applications	269	239	262	277	226
Applications/FTE	0.44	0.42	0.42	0.46	0.37
Completions					
Completions	95	107	108	114	n/a
Masters	29	22	17	29	n/a
PhD	66	85	91	85	n/a
Weighted completions (Masters: PhD = 1:2)	161	192	199	201	n/a
Completions/FTE	0.26	0.33	0.34	0.32	n/a
Completion time* - Masters	2.12	2.39	3.34	3.03	n/a
Completion time* - PhD	3.69	3.72	3.81	3.95	n/a

*calculated using thesis submitted dates

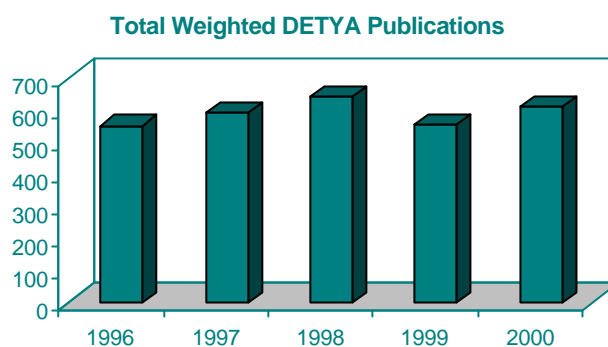
Since 1994 the University has collected annual data from RHD students on the quality of supervision and support. This 23-question survey is based on a 5-point scale where 1 reflects the highest satisfaction level. The data consistently returns an average response of between 1 and 2 (see Part B (iv) a).

Data from the national Graduate Destination Survey (GDS) show an average CEQ of 4.11 on a 1-5 scale (5 being the highest), a slight increase on 1999. Average commencement salaries for RHD graduates was approx \$52K with 96.2% in employment (see Part B (iv) a).

To enhance the reliability of the data we would like to conduct exit surveys of all RHD graduates. The investigation of a Graduate Outcomes Contract between the university and individual students in 2001 should enable us to explore the provision of appropriate coverage of important skill development.

5.3 PUBLICATIONS

The publication/FTE (using weighted DETYA publications) has increased by around 27% over the period 1996–2000.



5.4 RESEARCH ACTIVE ACADEMIC STAFF

Approximately 65% of academic staff have doctorates. This ranges from a low of 5% to a high of 100% in various Schools. The following table details the level of research active staff.

Research Activity (Academic RO and T&R staff @ 31/3/99)	1999	1998-2000
External Funding	31.7%	42.8%
Published (DETYA)	40.7%	63.1%
Published (22 categories)	52.9%	76.1%
Published (all categories)	57.2%	79.3%
Supervised a RHD student	50.9%	57.8%
External funding OR DETYA publication OR Supervised a RHD student	67.8%	79.3%
External funding AND DETYA publication AND Supervised a RHD student	16.2%	28.5%

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 foreshadowed in the 2001-03 RRTMP submitted to DETYA in 2000, an interactive web site the Web Access Research Portal (WARP) has been developed. This site allows the general public, researchers, RHD students, Heads of Schools and Deans to directly access live research data. WARP has been extensively utilized, for example in the recent call for school Research and Research Training Management Plans.

5.5 BENCHMARKING

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	4-5
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	3-4

Since 1999, all Schools have been requested to identify and report on appropriate benchmark departments or Schools in other Australian institutions, or internationally in the annual research planning exercise.

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.

Key Comparative Data	99/00 UniLiv	2000 UTas
EFTSU - RHD students/FTE	1.34	0.99
Proportion of RHD to Total EFTSU	7.47%	6.76%
% of Research Income to Total Income	22.2%	15.3%*
Research Income/FTE	£44.1K	\$41.8K*

* calculated using categories 1-4

5.6 AREAS FOR IMPROVEMENT

The University's research goal remains achieving status as one of 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.

5.6.1 Increased Industry Funding

Despite success in SPIRT grants, and a 20% increase in industry funding in 2000 we wish to enhance our research links to industry. In 1999 we ranked 16th nationally on an FTE basis. We wish to improve this to 10th or better. 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.

5.6.2 Commercialisation

The University has developed a strategy for commercialisation of innovation that involves a regular trawling of schools, centres and institutes for intellectual property by the Commercialisation Unit. Together with the regular updating of the University's Intellectual Property Register and the use of appropriate external consultants to provide evaluation and to

assist in securing industry partners, the University is able to identify promising early stage research with commercial potential.

To provide staff with additional incentives, the revised University Intellectual Property Policy provides University staff with 50% of the financial returns the University receives from commercialisation.

The University has established a Pre-Commercialisation Fund of \$2.5 M to facilitate the conversion of intellectual property from 'idea' stage to 'proof of concept' stage.

5.6.3 IT Related Research

The University is working with the Intelligent Island Board to develop a major Centre of Excellence in IT in Tasmania. This will have a core budget of \$19-20M over 5 years and will seek substantial industry funding. Our partnership in the TECC provides a major business focus for future research work in the uptake of e-commerce and on-line information in regional Australia. Already we have increased the number of senior staff, including senior Research Fellows. The number of RHD places allocated to this area has recently been increased by 150% over the next triennium, and should increase significantly when the Centre of Excellence is formed.

5.6.4 Health Related Research

Despite the success of the current Menzies Centre and some areas of pre-clinical medicine, the overall level of success in medical funding has been modest. To improve this, a small number of areas of research focus have been identified; new Chair appointments in General Practice, Medicine, Rural Health and Human Life Sciences will provide senior research leadership; Rural Health research will be strengthened using Federal funding for this area; closer research links between the Menzies Centre and Biochemistry are being explored.

5.7 INCENTIVES FOR RESEARCH

The current research funding model allocates significant funding (approximately \$14M) directly to Schools and Research Institutes/Centres on a performance basis. In addition strategic funding is being used to stimulate new activities like the Centre for Food Safety and Quality and the Australian Centre for Research in Separation Science (ACROSS), or to enhance infrastructure like the recent Molecular Biology facility within the Central Science Laboratory.

The internal research grants process provides support for Early Career researchers, and for those more experienced researchers who have either limited or no external funding. Some \$200K is reserved for Early Career researchers. This process provides some experience in grant proposal writing. In addition for the major funding schemes like the ARC and the NHMRC the University engages the services of experienced external experts to provide commentary on draft research proposals.

6. ENSURING A QUALITY RESEARCH TRAINING EXPERIENCE

The University will maintain a central fund of \$2M 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. In addition the University will fund a number of fee-paying places and increase the number of international RHD students. 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 is part of the budget of the Research College and is allocated to centres, institutes and schools on the basis of the Commonwealth RTS Index.

From 2001 a process of registration has been instituted for all supervisors with maintenance of registration depending on continuing a high standard of supervision and ongoing supervision training. The supervisor training program has been expanded 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 late 2001 and reviewed in 2002.

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

6.1 A QUALITY RESEARCH EDUCATION EXPERIENCE: UNIVERSITY EXPECTATIONS

The University Research Higher Degrees Handbook 2001 contains a University-School Postgraduate candidate agreement, outlining what the University will provide and what it expects of candidates. They will have:

- Access to quality information on which to base decisions for RHD training
- Induction processes that enable them to understand the University and RHD 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 fulfill its service obligations:

- We publish a Research Higher Degree Prospectus and a [Research Higher Degree Handbook](#).
- 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 enables potential students the opportunity to identify suitable potential supervisors. Included is the provision to directly email that staff member and also any currently supervised students.
- Annual induction seminars are conducted for all [new staff](#) and RHD students (as described in the [RHD Handbook under Candidature](#)).
- Annual [supervision training seminars](#) are conducted on a range of issues relating to supervision. Topics for 2001 include 'Expectations candidates have of their supervisors', 'Orientation and discussion for new RHD supervisors' and 'Intellectual Property and issues

of authorship'. Participation in annual seminars will become a requirement for registration as a supervisor. It is anticipated that the supervision status for individual staff will be included in the WARP reports by the end of 2001.

- From late 2000 RHD application form includes a [section \(F\)](#) that requires the school to sign off on the level of infrastructure that is required for the conduct of the project.
- The examinations process involves two external examiners, one of whom is international wherever possible. Schools nominate examiners, the nominees are ratified by the Board of Graduate Studies.
- The annual RHD survey and the visits by the Dean of Graduate Studies provide an ongoing quality assurance mechanism.

6.2 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 a RHD student and supervisor is an important one. At its best it can be stimulating and of a very high quality. To minimise the potential for harm if the supervisor-student relationship breaks down, the University now encourages co-supervision and/or joint supervision. Some 74% of RHD 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 placed on postgraduate student numbers.

7. COLLABORATION AND PARTNERSHIPS

7.1 CRCs AND SRCs

The University is involved in three current CRCs – Antarctic and Southern Ocean Environment, Sustainable Production Forestry and Sustainable Tourism. Planning for the continuation of the Antarctic and Forestry CRC research activities beyond 2003 and 2004 respectively has begun. Two new collaborations with the CRC for Smart Internet Technology and the CRC for Sustainable Aquaculture of Finfish will be finalised by mid 2001.

The University is also home to an ARC Special Research Centre – Centre for Ore Deposit Research. 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.

7.2 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.

In 2000 the University and the state government signed a very extensive partnership agreement with 16 specific schedules and the capacity for new ones to be added. In research the schedules related to

- the enhancement of the Menzies Institute, especially its incorporation as a controlled business entity of the University and the provision of state government icon funding of \$500K annually.
- exploration of the establishment of the Tasmanian Environmental Research Institute (TERI) within the University of Tasmania
- the establishment of the Tasmanian Law Reform Institute within the University of Tasmania
- the development of incubator activities and enhancement of commercialisation opportunities

Subsequently the University and the state government have agreed to the enhancement of research in Housing and Urban issues and the University is joining the Australian Housing and Urban Research Institute (AHURI) with universities from South Australia and the Northern Territory.

The Partnership Agreement has specific targets and milestones and is managed by a Working Party consisting of the senior executive of the University and the Heads of the major government agencies.

Institute	Total 2000 Income	2000 Income from State Government	2000 Income from Other Sources
TAFI	\$4.3M	\$2.4M	\$1.9M
TIAR	\$5.0M	\$1.8M	\$3.2M

Other collaborations with state government include:

- in 2000 the University and the state government renewed funding for the Centre for Regional Economic Analysis (CREA); Treasury has committed \$575K over 5 years

- in Health Research there is a Partners in Health Agreement between the Faculty of Health Sciences and the State Department of Health and Human Services
- there is 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
- links with Tourism Tasmania in relation to a cultural heritage initiative, through the CRC for Sustainable 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.

7.3 OTHER PARTNERSHIPS

In addition to its funding from the state government the Menzies Centre is currently supported by funding from the Menzies Foundation, medical research funds including NHMRC, and other industry funds. Industry funding of approx \$3.25M over five years has been committed to the Genetic Epidemiology Unit.

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

The University has Memoranda of Understanding with the Australian Antarctic Division, Inland Fisheries and CSIRO Marine Research, in relation to Southern Ocean and fisheries research.

Negotiations with RMIT and Monash for the establishment of the Australian Centre for Research on Separation Science (ACROSS) to be located at the University of Tasmania, should be finalised by the end of 2001.

7.4 PARTNERSHIPS WITH INDUSTRY

The University received funding in 2000 from 175 non-government entities, including at least 20 that are based overseas. A summary of funding sources is outlined below.

Type of Funding Body	1997	1998	1999	2000
Commonwealth Government	23	23	23	36
Tasmanian Government	8	7	8	9
Local Government – Tasmanian	2	2	4	10
Other Government	3	2	8	9
CRCs	2	3	5	5
Other Australian Universities	1	2	6	6
R&D Corporations/Council/Board	12	13	13	10
Industry – Tasmanian	16	19	35	59
Industry- Other Australian	20	33	52	54
Australian Foundations/Charities/Non-Profit	13	14	24	27
Overseas	5	11	18	20
Total External Funding Bodies	105	129	196	245

In the Collaborative ARC and SPIRT schemes, the University has consistently performed well. The target is to increase funding by an additional 20% by 2002 and to re-claim a position in the top five on a per capita basis.

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 scheme provides small amounts of seed funding along the lines of the SPIRT scheme so that partnerships can be fostered. To date the University has committed over \$64K to this scheme, with industry partners contributing nearly \$70K.

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.

8. INTELLECTUAL PROPERTY, COMMERCIALISATION 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. 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](#). This 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.

The University's [Intellectual Property Policy](#) seeks to manage the nexus between protecting the University's investment in research and facilitating industry involvement in commercial application of University intellectual property. The University makes a claim on intellectual property generated by its employees. Students 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. 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 between staff (50%), their Schools (20%) and the University (30%).

The University has established a Commercialisation Unit within the Research and Development Office. This Unit 'trawls' for innovation and IP being developed within Schools, Centres and Institutes. Information is stored on the University's IP Register. After initial internal evaluation of the register, external consultants are engaged who follow up with researchers in order to provide a detailed technical evaluation. Potential commercial partners are then sought. The University aims to facilitate the conversion of promising research ideas or data into profitable and socially useful products or processes for industry and business. The University has recently established a Pre-Commercialisation Fund of \$2.5M to take promising technology to 'proof of concept' stage. The University is in discussions about a potential joint venture arrangement. Whatever, the final shape of the partnership, the funding will be managed through a holding company with a commercial board that will oversee the investment in promising technology.

The University is an equity partner in a company, running the IT Incubator in Tasmania. This company, funded through the Intelligent Island program will take promising IT technology emerging from the University that requires incubation into the IT Incubator.

The University is investigating the possibilities of spin-off companies to develop University technologies. License agreements for the commercial exploitation of several software packages and products are also under negotiation.

PART B

PERFORMANCE AND DIRECTIONS STATEMENTS

(i) AREAS OF DESIGNATED RESEARCH STRENGTH

Theme Area	HDR Students (EFTSU) 2000 Commencing	HDR Students (EFTSU) 2000 Continuing	HDR Students (EFTSU) 2000 TOTAL
Antarctic and Southern Ocean Studies	29.07	6.85*	35.92
National and State Development	65.33	110.44*	175.77
National Environment and Wilderness	30.11	45.55*	75.65
Population and Community Studies	37.48	56.43*	93.91
Research Outside the Theme Areas	69.51	242.24*	311.75
Total	231.50	461.50	693.00

*as currently identified

(ii) RESEARCH INCOME IN 2000

	Category 1	Category 2	Category 3	Category 4	Grand Total
Science & technology	6,452,601	3,134,362	2,341,188	690,120	12,618,271
Health & medical research	1,095,941	623,784	1,068,861		2,788,586
Arts, hum & social science	1,093,328	266,809	605,477	173,856	2,139,469
Cross-disciplinary	1,779,889	2,604,238	1,663,874	3,135,431	9,183,431
Total	10,421,758	6,629,192	5,679,401	3,999,407	26,729,757

(iii) ACADEMIC STAFF IN 2000 WHO WERE ACTIVE IN THE FOLLOWING CATEGORIES

	No of staff who generated research income	Number of staff who generated DETYA publications	Number of staff eligible to supervise HDR students	Number of staff who supervised* HDR students
Science & technology	143.8	192	226	198
Health & medical research	41.3	68	77	34
Arts, hum & social sciences	49.1	126	206	173
Cross-disciplinary	62.8	54		52
Total	297.0	440	509	457

*Includes all types of supervisors (Supervisor, Co-supervisor, Research Supervisor, Associate Supervisor, Consultant)

(IV) QUALITY OF RESEARCH TRAINING EXPERIENCE

(a) Graduate Destination Survey and Postgraduate Research Evaluation Questionnaire

Graduate Destination Survey 2000		# Responses	Permanent Residency Aust.	Residency Intern.	Total
Overall Course Satisfaction		46			
- Dissatisfied (1-2)			3	-	6.5%
- Broadly Satisfied (3-5)			36	7	93.5%
- Satisfied (4-5)			33	7	87.0%
Current Employment Status		53			
- Full-time			40	7	88.7%
- Part-time			4	-	7.5%
- Seeking Work			2	-	3.8%
Type of Employment		52			
- Self Employed			3	-	5.8%
- Education (Public or Private)			14	5	36.5%
- Government (Federal, State or Local)			17	1	34.6%
- Private Sector			7	1	15.4%
- Non-Profit and Other Organisations			4	-	9.6%
Gross Annual Salary		45			
- Masters (Research)		9	\$53,021	\$49,000	\$52,574
- PhD		36	\$45,687	\$91,044	\$51,987
Undertaking Further Study		6			
- PhD			4	-	7.0%
- Other Course			2	-	3.5%
Current Location		57			
- Australia			49	1	87.7%
- Overseas			1	6	12.3%
Aboriginal or Torres Strait Islander		52	2	-	3.8%
Non-English Speaking Background		52	6	2	15.4%
Relocated to undertake course		52			
- city/town/district	<i>Mutually exclusive</i>		6	1	13.5%
- interstate			10	2	23.1%

There were 57 or 52% RHD (Masters (Research) and PhD) graduates who responded to the survey for 2000, however not all respondents answered all questions.

Evaluation of Quality of Supervision and the Research Environment	Sep 00 mean answer	Sep 99 to Sep 00
Supervision		
has directed me to resources useful for starting my project	1.88	0.05
demonstrates expertise in my research topic	1.85	0.02
effectively communicates his/her expertise	1.82	-0.01
encourages me in my research	1.65	-0.04
requires me to think independently	1.45	0.07
is available for discussion when needed	1.86	-0.08
gives competent advice on research methodology when asked	1.80	0.19
requires me to plan my work and meet deadlines	2.04	0.08
provides timely feedback on written work	1.95	-0.05
provides constructive criticism	1.76	-0.04
promotes opportunities for self direction	1.62	0.04
Research Environment		
I have been given an adequate introduction to the School and its facilities	2.27	-0.28
I have been advised about School supervision practices	2.36	-0.02
I have adequate workspace within the School	2.02	-0.09
I have adequate access to the facilities I need for my research	2.09	0.11
I am aware of the standards expected for my degree	2.08	-0.01
I have opportunities to develop my presentation skills	1.94	-0.07
I am encouraged to present my work at school seminars	1.98	-0.03
I am encouraged to write papers or regular research reports	2.04	-0.18
I am assisted in presenting my work at major conferences	2.47	-0.47
I am offered some financial support to attend conferences	2.50	-0.40
I consider that I am part of the School	2.09	-0.05
The funding arrangements for my research have been explained to me	2.61	-0.32
The annual review meeting has assisted the progress of my research	2.67	-0.36
MEAN over all questions	2.02	-0.07

Responses ranged from 1 (strongly agree) to 5 (strongly disagree). A positive difference indicates an improvement. Total responses were 280.

(b) Qualities of staff who supervised HDR students in 2000

	Share of supervising staff (%)
Hold Higher degree by research qualifications	91.2%
Have undertaken supervisor training in the year	26.3%
Have supervised HDR students to completion in the year	34.4%

NOTES ON COMPILATION OF DATA

(i) Areas of Designated Research Strength

Numbers are as at first semester 2000. As University of Tasmania have only been collecting one RFCD per HDR student, data is not available on cross-disciplinary research for 2000.

(iii) Academic Staff in 2000 who were active in the following categories

Numbers of staff that generated income and publications includes Honorary Research Associates and Casuals (as per advice received from DETYA 22 May 01).

Income was apportioned to clusters on a proportional basis for each individual. University of Tasmania collects up to three RFCD codes for each grant and consultancy, which were matched to the actual income reported in the HERD.

If a staff member was named on more than one publication and their amalgamated RFCDs crossed broad fields then the staff member was included in the count for 'cross-disciplinary' research. The University currently collects one RFCD code per publication.

'Staff who are eligible to supervise' includes those academics that are known to have a Research Masters or PhD. Staff were assigned to a cluster according to their school.

(iv)(b) Qualities of staff who supervised HDR students in 2000

Includes all types of supervisors (Supervisor, Co-supervisor, Research Supervisor, Associate Supervisor, Consultant).

INDEX OF WEB ADDRESSES

University's Strategic Plan	http://www.admin.utas.edu.au/download/publications/StratPlan2000.pdf
University Research and Research Training Plan	http://www.research.utas.edu.au/rescollege/docs/Operational_RR_TMP0102.pdf
Centre for Ore Deposit Research (CODES)	http://www.geol.utas.edu.au/codes/index.html
Institute of Antarctic and Southern Ocean Studies (IASOS)	http://www.iasos.utas.edu.au/iasos/
Menzies Centre for Population Health Research	http://www.menzies.utas.edu.au/
Tasmanian Aquaculture and Fisheries Institute (TAFI)	http://www.utas.edu.au/docs/tafi/TAFI_Homepage.html
Tasmanian Institute of Agricultural Research (TIAR)	http://www.tiar.tas.edu.au/
RDO web site	http://www.research.utas.edu.au/
Researchers Guide	http://www.research.utas.edu.au/Resguide/index.htm
Notice Board	http://www.research.utas.edu.au/rdo/notice/notice_board.htm
Service Charter	http://www.research.utas.edu.au/RDO/office/service_charter_final.pdf
Research Performance Report	http://www.research.utas.edu.au/rescollege/reports.htm
Research Higher Degree Handbook	http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RHD/01.html
WARP	http://www.research.utas.edu.au/WARP/kick_off.htm
Staff induction process	http://www.admin.utas.edu.au/hr/staff/sum_process.html
Student induction process (under candidature)	http://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/RHD/01.html
Supervision training seminars	http://www.research.utas.edu.au/ResCollege/bogsr.htm
RHD application form	http://www.research.utas.edu.au/RHDunit/Docs/rhd_app.pdf
CRC - Antarctic and Southern Ocean Environment	http://www.antcrc.utas.edu.au/antcrc/
CRC - Sustainable Production Forestry	http://www.forestry.crc.org.au/
CRC- Sustainable Tourism	http://www.crctourism.com.au/
Centre for Ore Deposit Research	http://www.geol.utas.edu.au/codes/index.html
Consultancy Policy	http://www.research.utas.edu.au/rescollege/policies.htm
Intellectual Property Policy	http://www.research.utas.edu.au/rescollege/policies.htm