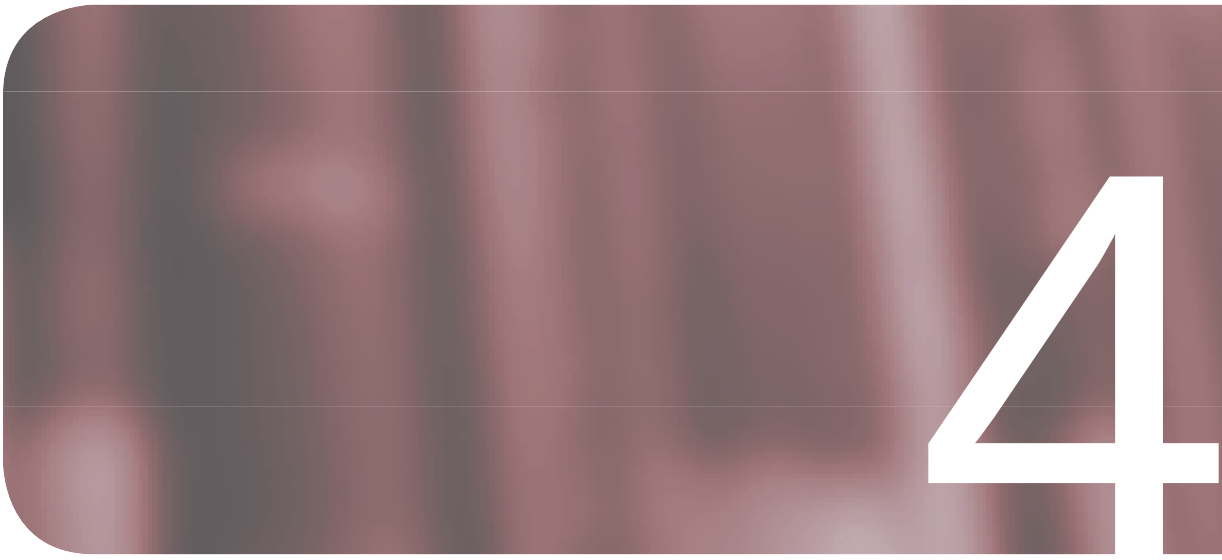

# 4

## Research and Research Training Allocations

# 4.1

## Framework for higher education research and research training

Universities are the nation's leading providers of training for our future research workforce and generate much of the new knowledge which is essential to Australia's long term economic growth and social cohesion. They form part of the broader research and innovation system.

### Current funding arrangements

In December 1999, the Government released Knowledge and Innovation: A policy statement on research and research training which introduced new funding arrangements for higher education research. The arrangements are designed to encourage institutions to be more flexible and responsive in developing a strategic portfolio of research activities and research training programmes, and in securing the benefits arising from the endeavours and achievements of individual researchers and teams.

The system involves a performance-based system for block funding of university research and research training activities administered by DEST and peer-reviewed competitive grants administered by various research granting agencies, of which the largest are the Australian Research Council (ARC), operating within the Education, Science and Training portfolio, and the National Health and Medical Research Council (NHMRC) within the Health and Ageing portfolio.

Funding for performance-based programmes is appropriated through HEFA. The individual programmes are listed below. Universities also expend a portion of their operating resources on research and research training.

#### Research training:

- Research Training Scheme;
- Australian Postgraduate Awards Scheme; and
- International Postgraduate Research Scholarships Scheme.

#### University research:

- Institutional Grants Scheme;
- Research Infrastructure Block Grants Scheme; and
- Systemic Infrastructure Initiative.

### Research and Research Training Management Reports

Universities have been required to provide Research and Research Training Management Reports (RRTMRs) as part of their profiles documentation since 2000. These reports were announced in Knowledge and Innovation and form a major part of the accountability requirements for universities. Amendments to HEFA make approval of grants under the block research funding schemes contingent on universities having an approved RRTMR in place.

The 2003 guidelines required institutions to describe their objectives for research and research training; their future directions, practises and policies for managing research and research training; processes used to ensure

quality research training ; their collaboration and partnerships; and their arrangements to manage intellectual property issues, commercialisation of research outcomes and contractual arrangements.

Institutions reported on their performance for all research in terms of three broad 'research clusters', namely:

- science and technology;
- health and medical research; and
- arts, humanities and social sciences.

The 2003 RRTMRs are published by DEST on its website.

## Priority research areas

In January 2002 the Minister announced four priority research areas for the ARC's 2003 funding round under the National Competitive Grants Programme. These were nano-materials and bio-materials, genome/phenome research, complex/intelligent systems, and photon science and technology.

A total of 34 per cent of the 2003 funding allocation for the ARC's National Competitive Grants Programme is being allocated to these designated priority areas. This has been achieved through the establishment of new Centres of Excellence as well as through grants to outstanding researchers.

## National Research Priorities

The setting of Australia's national research priorities is designed to focus research effort in key areas, in order to maximise the quality and impact of the research investment. In late 2002, the Prime Minister announced Australia's first set of priorities:

- An environmentally sustainable Australia.
- Promoting and maintaining good health.
- Frontier technologies for building and transforming Australian industries.
- Safeguarding Australia.

Each of these priorities is underpinned by a number of goals to focus the Australian Government's research effort. National research priorities apply broadly across the Australian Government's research agencies and funding bodies, including the ARC. They subsume the ARC's priority research areas referred to in the previous section.

Following the announcement of the priorities, research agencies and funding bodies were invited to develop plans outlining how they proposed to implement the priorities within their own organisation. Implementation plans were submitted to the Minister for Science in mid-May. Minister McGauran sought advice on the adequacy of the plans from a high level advisory committee chaired by Dr Jim Peacock, President of the Australian Academy of Science. The Government has subsequently approved the plans which are available from the national research priorities website at www.dest.gov.au/priorities.

Running in parallel with the implementation of the priorities was a process to consider enhancements to the national research priorities to better reflect the contributions of social sciences and humanities research. In November 2003, the Government announced four goals and other editorial enhancements to the national research priorities framework. These enhancements can also be found on the national research priorities website.

# 4.2

# Block funding for research training

## Research Training Scheme

The Research Training Scheme (RTS) was one of the initiatives announced in the 1999 White Paper Knowledge and Innovation: A policy statement on research and research training. It allocates funding to institutions to provide higher degree research places on the basis of performance and thereby aims to improve the quality of the research training environment, reduce attrition rates and encourage timely completions for students.

As research students complete or discontinue their studies, the funding for vacated RTS places returns to a funding pool for reallocation through a performance-based formula. The formula distributes available funding across universities based on successful research completions (50 per cent), research income (40 per cent) and research publications (10 per cent).

Over the period 2002-2004, arrangements are in place to protect institutions from any major funding losses and allow time to adjust to the new framework. Institutions' funding gains are being 'capped' at 5 per cent above the previous year with surplus funds being redistributed to institutions incurring the highest proportional losses. Funding is being provided to regional institutions to reduce the impact of any decrease in total RTS and Institutional Grant Scheme funding incurred over this period.

In addition, special arrangements apply for designated 'smaller' institutions which are at an early stage in developing a research capacity. The institutions are: the University of the Sunshine Coast; the Australian Maritime College; Batchelor Institute of Indigenous Tertiary Education; and the University of Notre Dame Australia. To be eligible for this funding, these institutions are required to provide submissions demonstrating their capacity to deliver high quality research training in particular niche areas of research, consistent with the respective institution's Research and Research Training Management Report.

Table 4.1 details the amount of funds allocated to institutions in 2004 under the RTS.

Table 4.1: Research Training Scheme allocations by institution, 2004

| State/ Institution | Allocation ($) |
|---|---|
| New South Wales | |
| Charles Sturt University | 3 060 130 |
| Macquarie University | 12 228 568 |
| Southern Cross University | 2 774 619 |
| The University of New England | 8 718 335 |
| The University of New South Wales | 41 612 373 |
| The University of Newcastle | 12 473 468 |
| The University of Sydney | 56 732 551 |
| University of Technology, Sydney | 10 100 412 |
| University of Western Sydney | 8 301 897 |
| University of Wollongong | 13 540 826 |

Table 4.1: Research Training Scheme allocations by institution, 2004 (cont.)

| State/ Institution | Allocation ($) |
|---|---|
| Victoria | |
| Deakin University | 8 047 695 |
| La Trobe University | 13 576 316 |
| Melbourne College of Divinity | 99 221 |
| Monash University | 37 800 609 |
| Royal Melbourne Institute of Technology | 12 110 714 |
| Swinburne University of Technology | 4 946 000 |
| University of Ballarat | 1 048 968 |
| The University of Melbourne | 53 772 689 |
| Victoria University | 5 477 190 |
| Queensland | |
| Bond University | 28 309 |
| Central Queensland University | 2 798 580 |
| Griffith University | 11 957 766 |
| James Cook University | 8 423 322 |
| Queensland University of Technology | 9 887 670 |
| The University of Queensland | 52 096 884 |
| University of Southern Queensland | 2 236 515 |
| University of the Sunshine Coast | 566 925 |
| Western Australia | |
| Curtin University of Technology | 11 341 374 |
| Edith Cowan University | 3 937 219 |
| Murdoch University | 8 813 784 |
| The University of Notre Dame Australia | 135 566 |
| The University of Western Australia | 28 412 257 |
| South Australia | |
| The Flinders University of South Australia | 11 278 855 |
| The University of Adelaide | 29 161 228 |
| University of South Australia | 7 157 063 |
| Tasmania | |
| Australian Maritime College | 173 647 |
| University of Tasmania | 15 938 725 |
| Northern Territory | |
| Batchelor Institute of Indigenous Tertiary Education | 0 |
| Charles Darwin University (formerly Northern Territory University) | 2 276 166 |
| Australian Capital Territory | |
| The Australian National University | 24 009 218 |
| University of Canberra | 2 696 066 |
| Other | |
| Australian Catholic University | 1 047 280 |
| TOTAL | 540 797 000 |

## Australian Postgraduate Awards Scheme

The Australian Postgraduate Awards (APA) Scheme provides financial support to Australian postgraduate students of exceptional research promise who undertake their higher degree by research at an Australian higher education institution. Masters students may receive an award for a maximum of two years and Doctoral students for three years with a possible extension of six months. Students in receipt of an award receive an annual stipend and may qualify for other allowances.

The determination of institutional APA allocations is based on the performance-based formula used in the Research Training Scheme (RTS). In 2004, 1550 scholarships will be available to support Australian postgraduate research students.

The APA Scheme is currently in a period of transition towards new funding arrangements that will be fully implemented by 2005. During 2002 to 2004 funding allocations are based on two components, the pre-2002 component and the 2002 onwards component. Funding is reconciled annually to ensure that institutions receive sufficient funding to support their pre-2002 student cohort. This may result in variations to the institutional allocations detailed in Table 4.2.

Table 4.2: Allocation of Australian Postgraduate Awards and funding by institution, 2004[(a)]

| Institution | Notional Number of New Awards | Total Initial Grant ($) |
|---|---|---|
| New South Wales | | |
| Charles Sturt University | 8 | 452 511 |
| Southern Cross University | 12 | 575 082 |
| Macquarie University | 26 | 1 735 644 |
| University of New England | 21 | 1 248 469 |
| University of New South Wales | 121 | 7 176 114 |
| University of Newcastle | 33 | 2 092 174 |
| The University of Sydney | 148 | 8 526 391 |
| University of Technology, Sydney | 26 | 1 434 132 |
| University of Western Sydney | 22 | 1 314 335 |
| University of Wollongong | 30 | 1 764 456 |
| Victoria | | |
| Deakin University | 27 | 1 455 891 |
| La Trobe University | 38 | 2 291 636 |
| Monash University | 115 | 6 345 749 |
| Royal Melbourne Institute of Technology | 41 | 2 428 427 |
| Swinburne University of Technology | 15 | 858 693 |
| The University of Melbourne | 174 | 9 650 949 |
| University of Ballarat | 4 | 230 446 |
| Victoria University of Technology | 14 | 753 947 |
| Melbourne College of Divinity | 4 | 153 069 |

Table 4.2: Allocation of Australian Postgraduate Awards and funding by institution, 2004[(a)] (cont)

| Institution | Notional Number of New Awards | Total Initial Grant ($) |
|---|---|---|
| **Queensland** | | |
| Central Queensland University | 7 | 381 164 |
| Griffith University | 36 | 2 035 138 |
| James Cook University | 23 | 1 363 947 |
| Queensland University of Technology | 33 | 1 931 554 |
| The University of Queensland | 142 | 8 192 067 |
| University of Southern Queensland | 6 | 345 670 |
| University of the Sunshine Coast | 1 | 57 612 |
| Bond University | 1 | 57 612 |
| **Western Australia** | | |
| Curtin University of Technology | 33 | 1 937 291 |
| Edith Cowan University | 14 | 839 834 |
| Murdoch University | 26 | 1 403 761 |
| The University of Notre Dame, Australia | 1 | 57 612 |
| The University of Western Australia | 79 | 4 645 331 |
| **South Australia** | | |
| The Flinders University of South Australia | 30 | 1 819 589 |
| The University of Adelaide | 74 | 4 185 754 |
| University of South Australia | 26 | 1 520 147 |
| **Tasmania** | | |
| Australian Maritime College | 1 | 57 612 |
| University of Tasmania | 37 | 2 117 767 |
| **Northern Territory** | | |
| Charles Darwin University (formerly Northern Territory University) | 6 | 367 787 |
| **Australian Capital Territory** | | |
| The Australian National University | 80 | 4 642 328 |
| University of Canberra | 11 | 611 611 |
| **Multi-state** | | |
| Australian Catholic University | 4 | 238 700 |
| TOTAL | 1550 | $89 298 000 |

(a) In 2004, allocations are be determined in accordance with the Commonwealth Scholarships Guidelines of the new HESA. These Guidelines are subject to disallowance by Parliament and were tabled on 3 March 2004.

## International Postgraduate Research Scholarships Scheme

The International Postgraduate Research Scholarships (IPRS) are part of the new Endeavour Programme under which high-performing students from around the world will be able to study in Australia. The Endeavour programme encompasses both new and existing scholarships, with an extra $7.9 million committed over the next four years.

The IPRS scheme aims to attract students to areas of research strength in Australian higher education institutions and to develop international research linkages. Higher Education Providers are required to give preference to students from the regions identified as priorities under the Endeavour Programme. These regions are Asia, Europe, North and South America, and the Middle East. Masters students may receive a scholarship for two years and Doctoral students for three years with a possible extension of up to twelve months in certain circumstances. A scholarship covers the student's tuition fees and health insurance premiums.

The determination of institutional IPRS allocations is based on the performance-based formula used in the Research Training Scheme (RTS). In 2004, 330 scholarships will be available to support international postgraduate research students.

Table 4.3 sets out the allocations of IPRS and funding by higher education institution for 2004.

Table 4.3: Allocation of International Postgraduate Research Scholarships and funding by institution, 2004[(a)]

| Institution | Number of New Scholarships | Total Grant Allocation ($) |
|---|---|---|
| New South Wales | | |
| Charles Sturt University | 2 | 86 950 |
| Southern Cross University | 3 | 126 819 |
| Macquarie University | 6 | 333 378 |
| University of New England | 4 | 308 354 |
| University of New South Wales | 25 | 1 517 168 |
| University of Newcastle | 7 | 393 607 |
| The University of Sydney | 31 | 1 592 666 |
| University of Technology, Sydney | 5 | 242 611 |
| University of Western Sydney | 5 | 277 815 |
| University of Wollongong | 6 | 427 963 |
| Victoria | | |
| Deakin University | 6 | 247 277 |
| La Trobe University | 8 | 471 225 |
| Monash University | 24 | 1 163 855 |
| Royal Melbourne Institute of Technology | 9 | 535 271 |
| Swinburne University of Technology | 3 | 166 689 |
| The University of Melbourne | 37 | 1 740 693 |
| University of Ballarat | 1 | 55 563 |
| Victoria University of Technology | 3 | 153 541 |
| Melbourne College of Divinity | 1 | 44 535 |

Table 4.3: Allocation of International Postgraduate Research Scholarships and funding by institution, 2004[(a)] (cont)

| Institution | Number of New Scholarships | Total Grant Allocation ($) |
|---|---|---|
| **Queensland** | | |
| Central Queensland University | 1 | 66 591 |
| Griffith University | 8 | 356 282 |
| James Cook University | 5 | 348 223 |
| Queensland University of Technology | 7 | 364 765 |
| The University of Queensland | 30 | 1 666 891 |
| University of Southern Queensland | 1 | 55 563 |
| Bond University | 1 | 55 563 |
| **Western Australia** | | |
| Curtin University of Technology | 7 | 459 349 |
| Edith Cowan University | 3 | 166 689 |
| Murdoch University | 5 | 253 639 |
| The University of Notre Dame Australia | 1 | 55 563 |
| The University of Western Australia | 17 | 849 987 |
| **South Australia** | | |
| The Flinders University of South Australia | 6 | 327 016 |
| The University of Adelaide | 16 | 789 759 |
| University of South Australia | 6 | 298 174 |
| **Tasmania** | | |
| Australian Maritime College | 1 | 55 563 |
| The University of Tasmania | 8 | 385 124 |
| **Northern Territory** | | |
| Charles Darwin University (formerly Northern Territory University) | 1 | 55 563 |
| **Australian Capital Territory** | | |
| The Australian National University | 17 | 1 079 026 |
| University of Canberra | 2 | 111 126 |
| **Multi-state** | | |
| Australian Catholic University | 1 | 55 563 |
| TOTAL | 330 | 17 742 000 |

(a) In 2004, allocations are be determined in accordance with the Commonwealth Scholarships Guidelines of the new HESA. These Guidelines are subject to disallowance by Parliament and were tabled on 3 March 2004.

# 4.3

# Block funding for research

## Institutional Grants Scheme

The Institutional Grants Scheme (IGS) supports institutions' research and research training activities. The IGS commenced in 2002 and replaced the Research Quantum and Small Research Grants Scheme.

IGS funding is distributed across universities by a performance-based formula comprising research income (60 per cent), publications (10 per cent) and higher degree research student places (EFTSU) (30 per cent).

From 2003-2004 institutional gains in the IGS from the previous year will be capped at 5 per cent. Funds exceeding the cap will be distributed to institutions incurring the greatest proportional losses under the new arrangements. Funding will also be provided to regional institutions from the Regional Protection Fund, which was announced in Knowledge and Innovation to reduce the impact of any decrease in funding under the new system. Further information on these arrangements can be found under the section 'Regional and rural assistance' at the end of this chapter.

Table 4.4 details the amount of funds allocated to institutions in 2004 under the IGS.

Table 4.4: Institutional Grants Scheme allocations by institution, 2004

| State/ Institution | Allocation ($) |
|---|---|
| New South Wales | |
| Charles Sturt University | 1 300 509 |
| Macquarie University | 6 019 746 |
| Southern Cross University | 1 304 352 |
| The University of New England | 3 703 657 |
| The University of New South Wales | 24 518 694 |
| The University of Newcastle | 6 769 514 |
| The University of Sydney | 29 161 735 |
| University of Technology, Sydney | 3 864 921 |
| University of Western Sydney | 3 415 916 |
| University of Wollongong | 5 330 900 |
| Victoria | |
| Deakin University | 3 153 662 |
| La Trobe University | 6 046 080 |
| Melbourne College of Divinity | 154 079 |
| Monash University | 20 330 754 |
| Royal Melbourne Institute of Technology | 4 896 266 |
| Swinburne University of Technology | 1 876 062 |
| University of Ballarat | 510 745 |
| The University of Melbourne | 31 395 168 |
| Victoria University | 1 783 029 |
| Queensland | |
| Bond University | 64 500 |
| Central Queensland University | 1 043 461 |
| Griffith University | 6 517 683 |
| James Cook University | 4 076 749 |
| Queensland University of Technology | 4 902 656 |
| The University of Queensland | 28 947 186 |
| University of Southern Queensland | 965 513 |
| University of the Sunshine Coast | 137 834 |
| Western Australia | |
| Curtin University of Technology | 5 624 175 |
| Edith Cowan University | 1 534 666 |
| Murdoch University | 4 580 293 |
| The University of Notre Dame Australia | 101 540 |
| The University of Western Australia | 15 968 576 |
| South Australia | |
| The Flinders University of South Australia | 6 777 998 |
| The University of Adelaide | 15 950 625 |
| University of South Australia | 4 766 380 |
| Tasmania | |
| Australian Maritime College | 255 612 |
| University of Tasmania | 7 358 210 |
| Northern Territory | |
| Batchelor Institute of Indigenous Tertiary Education | 10 965 |
| Charles Darwin University (formerly Northern Territory University) | 1 188 849 |
| Australian Capital Territory | |
| The Australian National University | 15 969 556 |
| University of Canberra | 1 820 481 |
| Other | |
| Australian Catholic University | 514 703 |
| TOTAL | 284 614 000 |

## Research Infrastructure Block Grants Scheme

The Research Infrastructure Block Grants (RIBG) Scheme supports high quality research by:

- meeting project-related infrastructure costs associated with Australian competitive grants;
- ensuring that areas of recognised research potential have access to the support necessary for their development;
- enhancing support for areas of existing research strength; and
- remedying deficiencies in research infrastructure.

RIBG allocations totalling $160.3 million in 2004 have been distributed amongst institutions according to their share of Australian Competitive Grants income. The data source for 2004 RIBG allocations is income over the 2001 and 2002 calendar years as reported in the Higher Education Research Data Collection.

Table 4.5 details the amount of funds allocated to institutions in 2004 under RIBG.

Table 4.5: Research Infrastructure Block Grants Scheme allocations by institution, 2004

| State/ Institution | Allocation ($) |
|---|---|
| **New South Wales** | |
| Charles Sturt University | 843 377 |
| Macquarie University | 2 495 128 |
| Southern Cross University | 450 402 |
| The University of New England | 2 012 574 |
| The University of New South Wales | 14 903 584 |
| The University of Newcastle | 3 903 952 |
| The University of Sydney | 17 395 230 |
| University of Technology, Sydney | 1 419 071 |
| University of Western Sydney | 1 425 752 |
| University of Wollongong | 2 739 082 |
| **Victoria** | |
| Deakin University | 1 589 712 |
| La Trobe University | 3 121 884 |
| Melbourne College of Divinity | 0 |
| Monash University | 11 037 862 |
| Royal Melbourne Institute of Technology | 1 106 856 |
| Swinburne University of Technology | 853 483 |
| University of Ballarat | 174 994 |
| The University of Melbourne | 21 901 068 |
| Victoria University of Technology | 607 736 |
| **Queensland** | |
| Bond University | 31 900 |
| Central Queensland University | 346 270 |
| Griffith University | 2 616 848 |
| James Cook University | 1 778 804 |
| Queensland University of Technology | 1 745 934 |
| The University of Queensland | 15 365 694 |
| University of Southern Queensland | 454 828 |
| University of the Sunshine Coast | 41 880 |
| **Western Australia** | |
| Curtin University of Technology | 1 563 468 |
| Edith Cowan University | 523 182 |
| Murdoch University | 2 408 825 |
| The University of Notre Dame Australia | 13 954 |
| The University of Western Australia | 12 420 404 |
| **South Australia** | |
| The Flinders University of South Australia | 3 481 966 |
| The University of Adelaide | 12 193 616 |
| University of South Australia | 1 328 726 |
| **Tasmania** | |
| Australian Maritime College | 111 292 |
| University of Tasmania | 4 264 053 |
| **Northern Territory** | |
| Batchelor Institute of Indigenous Tertiary Education | 0 |
| Charles Darwin University (formerly Northern Territory University) | 384 537 |
| **Australian Capital Territory** | |
| The Australian National University | 10 602 642 |
| University of Canberra | 463 091 |
| **Other** | |
| Australian Catholic University | 187 339 |
| **TOTAL** | 160 311 000 |

## Regional and rural assistance

The White Paper, Knowledge and Innovation, recognised that the new research funding arrangements might adversely impact upon institutions in regional areas. The Government has provided a special fund to ensure that no regional institution would suffer deterioration in its research funding in the first three years of the new arrangements. The fund will allow recipient institutions to develop their regional connections, concentrate their research activity into areas of strength and take advantage of opportunities presented through new fields of research.

Table 4.6 sets out Regional Protection Fund allocations by higher education institution for 2004.

### Table 4.6: Regional Protection Fund allocations by institution, 2004

| State/ Institution | Allocation ($) |
|---|---|
| Charles Sturt University | 50 890 |
| University of New England | 161 684 |
| University of Newcastle | 917 003 |
| La Trobe University | 603 153 |
| Central Queensland University | 11 745 |
| James Cook University | 231 469 |
| Charles Darwin University (formerly Northern Territory University) | 43 055 |
| Total | 2 019 000 |

Note: The intention is to provide additional funding under the Regional Protection Fund for institutions in 2004 to meet the policy objective under *Knowledge and Innovation: A policy statement on research and research training* which states that "no regional institution will suffer a deterioration in its research funding, from its starting position, in the first three years of the new arrangements"

# 4.4

# Other support for research

## Systemic Infrastructure Initiative

The Systemic Infrastructure Initiative (SII) was announced by the Government in January 2001 as part of Backing Australia's Ability. Over $246 million is being provided over five years for systemic research and research training infrastructure to support world-class research and research training at Australian universities.

Critical to Australia's future research capacity and future growth is robust research infrastructure. In 2002 a competitive process saw Systemic Infrastructure Initiative funding of more than $26 million directed towards 22 projects to strengthen 'overhead' resources to support high quality research and research training across a diverse range of areas, including bandwidth, data and information repositories, and interoperability. The total amount committed to these projects over the period 2002-2004 is in excess of $55 million.

During the latter part of 2002, the Minister decided to adopt a strategic approach to the allocation of Systemic Infrastructure Initiative funds from 2003 in two key areas, information infrastructure and bandwidth, based on the advice of two expert committees, the Higher Education Information Infrastructure Advisory Committee (HEIIAC) and the Higher Education Bandwidth Advisory Committee (HEBAC). Consequently, $42.5 million was committed over 2002–04 to establish the Australian Research and Education Network (AREN) as the next generation communications network for universities and the wider research community. A further $22 million was committed over 2003–06 to fund projects which will advance knowledge and its application in the effective management of research information, including storage, access and authentication issues.

Table 4.7 sets out SII allocations by higher education institution for 2004 and Table 4.8 provides additional SII allocations for 2003.

### Australian Research and Education Network

The AREN is a strategic framework for the development of a national high bandwidth backbone to serve Australian higher education institutions and the wider research community. It will extend and enhance the existing Australian Academic and Research Network (AARNet). On completion, the AREN will be comparable with the advanced research networks which exist in the US, Canada and Europe.

The Australian Research and Education Network Advisory Committee (ARENAC), chaired by Dr Mike Sargent, is overseeing the development of the AREN. ARENAC has supported stakeholders within regions, including State and Territory governments, universities and CSIRO, in developing collaborative proposals, to ensure that the best network possible can be secured with a combination of AREN and other stakeholders' contributions. Projects approved and announced by the Minister to date include:

- **Queensland** – A 2.5Gbps backbone link between Brisbane, Rockhampton and Townsville is being established in collaboration with Powerlink, the Queensland Government owned power utility. The Australian Government is

providing $5.5 million and Powerlink $2.0 million towards the project costs, with universities paying for recurrent costs and connections to campuses.

- **New South Wales** – A high capacity fibre link between Sydney and Wollongong will be established with the NSW Government and the Australian Government each contributing $4.2 million.
- **Victoria** – The Australian Government has allocated over $6.0 million to stage one of the Victorian Education and Research Network (VERN), a collaborative project between the Australian and Victorian Governments, Victorian universities and CSIRO. It will provide a central fibre loop connecting 13 major campuses in the Melbourne area where six of the AREN backbones converge. Stage one will also provide a link to Gippsland, via several university campuses, where it will connect with the Tasmanian Bass Link cable. Universities and other stakeholders are contributing almost $5.0 million towards this development.
- **Tasmania** – $7.0 million has been allocated by the Australian Government to the development of the Tasmanian Research and Education Network (TREN) which includes intra-state links and access to the Bass Link cable currently being laid across Bass Strait. In addition to the Australian Government's contribution, the other stakeholders, including the Tasmanian government, the University of Tasmania and the CSIRO, will contribute almost $6.0 million to the project.

## Australian Research Information Infrastructure Committee

As part of the strategic approach to information repositories and interoperability, the Minister announced the establishment of the Australian Research Information Infrastructure Committee (ARIIC). The Committee is chaired by Professor Wyatt R. Hume, Vice-Chancellor of the University of New South Wales, and comprises representatives from the academic and research communities.

ARIIC advises the Government on the information infrastructure requirements of the Australian higher education sector and their intersection with the wider information and technical infrastructures utilised by the scholarly and research community. As part of this role, ARIIC is undertaking collaboration with national and international agencies and partners, and will oversee the four projects approved during 2003.

- **Meta Access Management System Project (MAMS)** – MAMS will provide an essential 'middleware' component to increase the efficiency and effectiveness of Australia's higher education research information infrastructure. It will develop a new conceptual architecture which is capable of supporting multiple, independent models, and which is implemented locally within organisations, with the potential for inter-institutional communication.
- **Towards an Australian Partnership for Sustainable Repositories (APSR)** – APSR will have an overall focus on the critical issues of the access, continuity and sustainability of digital collections. It will also build on a base of demonstrators for digital continuity and sustainability, embedded in developmental repository facilities within partner institutions.
- **The Australian Research Repositories Online to the World (ARROW)** – ARROW will identify and test a software solution or solutions to support best-practice institutional digital repositories comprising e-prints, digital theses and electronic publishing. It will develop a repository and associated metadata to support independent scholars (those not associated with institutions).
- **Australian Digital Theses Programme Expansion and Redevelopment (ADT)** – ADT will redevelop the existing central metadata repository of the Australian Digital Theses Programme (ADT) to

increase its coverage and utility to the national and international research community. The repository's content will expand to include metadata about all Australian higher degree theses.

## Australian Partnership for Advanced Computing

Announcing $29 million through SII for the proposed Australian Partnership for Advanced Computing Phase 2 (APAC2) over 2004–2006, the Minister has emphasised the strategic investment on the part of the Government to support world class research.

APAC Phase 1, established with Government funding of $19.5 million over 1999–2003, now has an organisation in each State as well as the Australian National University and CSIRO. The partnership involves 27 Universities. The APAC Grid Programme of APAC2 will focus on the development, installation and operation of an 'industrial strength' grid, integrating the partner facilities, providing an infrastructure for Australian researchers to get seamless access to the computational and data resources in the National Facility as well as a new range of services to support research collaboration, nationally and internationally.

The demand for computing systems with more capabilities has been traditionally driven by the need to model and simulate natural systems and processes. There is now an increasing demand to access large-scale scientific and technical data sets particularly as a result of applications such as fraud detection, risk assessment, market information, intelligence gathering and security.

The rapidly growing dependence on the computational approach to research is also requiring access to powerful computers, mass data storage systems, interactive visualisation systems and high-speed Internet services. The APAC National Facility has already met this need servicing 223 projects with 607 researchers working on physical, chemical, biological and environmental sciences as well as in astronomy, astrophysics, geophysics, mathematics and information technology. Researchers from different locations and institutions are brought together working on topics where collaboration leads to results not readily accessible in isolation.

Table 4.7: Systemic Infrastructure Initiative allocations by institution, 2004

| State/Institution | Project | Funding 2004 ($) |
|---|---|---|
| New South Wales | | |
| Macquarie University | Advanced Technology for a Clever Geoscience Future in Australia | 1 830 000 |
| | IMS Australia - Core Funding | 600 000 |
| | Meta Access Management System Project | 1 470 275 |
| The University of New South Wales | Business Intelligence Lab (BIT Lab) (Now known as the SIRCA Technology Centre) | 1 355 000 |
| | High Sensitivity, High Accuracy Mass Spectrometry for Advanced Molecular and Biomolecular Research | 158000 |
| The University of Sydney | Clinical Trial Data and Information Network | 470 000 |
| | Administrative Support and Project Management for Information Infrastructure | 200 000 |
| The University of Wollongong | Nanofabrication for Processing of Novel Multiplayer Materials | 487 500 |
| Victoria | | |
| La Trobe University | Australian Research Library Network | 349 600 |
| Monash University | Victorian Education and Research Network (VERN) | 6 060 000 |
| Swinburne University of Technology | Integrated Microfabrication Facility | 151 000 |
| The University of Melbourne | Joint Academic Scholarships On-line Network (JASON) | 20 000 |
| Queensland | | |
| James Cook University | Marine Research and Education Network | 3 440 000 |
| Western Australia | | |
| Curtin University of Technology | A SHRIMP Ion Microprobe Facility for Earth Sciences | 1 100 157 |
| The University of Western Australia | ACIGA-LIGO High Optical Power Test Facility | 2 080 000 |
| South Australia | | |
| The Flinders University of South Australia | South Australian Research and Education Network (SAREN) | 1 510 500 |
| The University of Adelaide | High Resolution 3D-Imaging of Intact Root Systems in Soil | 95 000 |
| Australian Capital Territory | | |
| The Australian National University | Upgrade Facilities at Siding Springs Observatory | 2 497 000 |
| | Australian Partnership for Advanced Computing - Phase 2 | 3 920 000 |
| Total | | 27 794 032 |

Table 4.8: Additional Systemic Infrastructure Initiative allocations by institution, 2003

| State/Institution | Project | Funding 2004 ($) |
|---|---|---|
| New South Wales | | |
| Macquarie University | IMS Australia - Core Funding | 600 000 |
| | Meta Access Management System Project | 249 275 |
| The University of Sydney | ISI Web of Science | 3 500 000 |
| | Management and Administration of the Australian Research and Education Network Advisory Committee | 200 000 |
| | Administrative Support and Project Management for Information Infrastructure | 175 925 |
| The University of Wollongong | Broadband Link from the University of Wollongong to AARNet | 4 200 000 |
| South Australia & Tasmania | | |
| The Flinders University of South Australia | South Australian Research and Education Network (SAREN) | 2 289 500 |
| University of Tasmania | Tasmanian Research and Education Network (TREN) | 3 000 000 |
| Australian Capital Territory | | |
| University of Canberra | Administrative Support for Australian Research and Education Network Implementation Group | 10 500 |
| The Australian National University | Australian Partnership for Advanced Computing - Phase 2 | 9 080 000 |
| | High Bandwidth Link to the United States of America | 8 000 000 |
| | Provision of Technical Expertise to the Australian Research and Education Network Advisory Committee | 500 000 |
| Total | | 31 805 200 |

## Australian Research Council

The Australian Research Council (ARC) is an independent agency within the Education, Science and Training portfolio. It was established and operates under the *Australian Research Council Act 2001* (ARCA), which came into effect on 1 July 2001.

The ARC plays a key role in the Government's investment in research and innovation which contributes significantly to the future prosperity and well-being of the Australian community.

- It is a primary source of policy advice to the Government on investment in the national research effort.
- Under the National Competitive Grants Programme, it supports the highest quality of research and research training in all fields of science, social sciences and the humanities.
- It brokers investment partnerships between researchers and industry, government and community organisations as well as the international community.

Further information about the ARC can be found in the ARC's annual report and on its website at www.arc.gov.au.

### National Competitive Grants Programme

The ARC has responsibility for administering the National Competitive Grants Programme (NCGP). The Minister has responsibility for determining the amounts of financial assistance to be made available under each element of the NCGP and for approving financial assistance to individual research projects. The ARC provides advice to the Minister on these and a range of other matters.

Table 4.9: National Competitive Grants Programme allocations, 2004 to 2006–07

| Type of Grant | Jan–Jun 2004[a], [b] ($m) | FY 2004–05 ($m) | FY 2005–06 ($m) | FY 2006–07 ($m) |
|---|---|---|---|---|
| Discovery – Projects (includes Fellowships) | 102.089 | 235.582 | 269.224 | 275.319 |
| Discovery – Indigenous Researchers Development | 0.118 | 0.235 | 0.235 | 0.235 |
| Federation Fellowships | 11.747 | 27.392 | 35.188 | 39.670 |
| *Sub-total Discovery* | *113.954* | *263.209* | *304.647* | *315.224* |
| Linkage – Projects | 43.790 | 104.751 | 124.427 | 130.692 |
| Linkage – Infrastructure Equipment and Facilities | 12.897 | 25.794 | 25.794 | 25.794 |
| Linkage – International | 1.572 | 3.080 | 2.888 | 2.855 |
| Linkage – Centres[c] | 34.150 | 85.103 | 102.353 | 97.415 |
| Linkage – Other | | | | |
| – Australian Postdoctoral Fellowships CSIRO | 0.179 | 0.358 | 0.358 | 0.358 |
| – Learned Academies Special Projects | 0.236 | 0.472 | 0.472 | 0.472 |
| – Special Research Initiatives | 0.138 | 0.275 | 0.275 | 0.275 |
| – ANZCCART | 0.015 | 0.030 | 0.030 | 0.030 |
| *Sub-total Linkage* | *92.976* | *219.863* | *256.597* | *257.891* |
| Total ARC Program Budget | 206.929 | 483.072 | 561.244 | 573.115 |

Source: Australian Research Council

(a) Funding split approved by the Minister.

(b) The *Higher Education Legislation Amendment Act 2003* changed the ARC's programme funding to a financial year basis. To make the transition from calendar to financial years, the ARC Act treats the period 1 January 2004 to 30 June 2004 as a financial year.

(c) Includes Centres of Excellence in Biotechnology and Information and Communications Technology, ARC Centres of Excellence, the Australian Centre for Plant Functional Genomics, Special Research Centres and Key Centres of Teaching and Research.

Financial assistance is provided under the NCGP on the basis of open competition among investigator-initiated research proposals that are the subject of national and international peer assessment.

Allocations against the main elements of the NCGP from 2004 to 2006–07 are shown in Table 4.9.

## Funding for research projects commencing in 2003

The outcomes of applications for funding in the 2004 ARC new funding round under the NCGP were announced by the Minister on 15 October 2003. A total of 965 new grants for Discovery and Linkage research projects were approved for funding totalling $274 million over the period 2004–08. An additional 214 reserve Discovery grants were funded in November 2003 bringing the total funding over the period 2004-08 for 1179 new grants to $314 million.

### Impact of *Backing Australia's Ability*

In its January 2001 Innovation Action Plan, *Backing Australia's Ability* (BAA), the Government committed an additional $736 million over five years (2002–2006) to double the financial assistance for research available under the NCGP. As a result of funding increases under BAA:

- 25 Federation Fellowships were awarded in 2002 and a further 24 Federation Fellowships were awarded in 2003. The total of 49 includes 14 (29 per cent) awarded to returning Australians and three (6 per cent) awarded to foreign nationals who will pursue their research in Australia.
- The number of new Australian Postdoctoral Fellowships awarded doubled from 55 in 2001, to 110 in 2002, 2003 and 2004.
- Between 2001 and 2003, the salaries of new and existing ARC fellowship recipients increased by between 15 per cent and 40 per cent.
- The average grant size for Discovery – Projects, over the life of the project, increased from $178 581 in 2001 to $247 013 in 2002, $249 240 in 2003 and $271 939 in 2004.
- Over the life of the project, the average size of Linkage – Projects grants increased from $130 879 in 2001 to $163 145 in 2002, $178 762 in 2003 and $219 112 in 2004 (Round One only).
- The success rate for applications under Discovery – Projects increased from 21.1 per cent in 2001 to 25.5 per cent in 2002, 25.8 per cent in 2003 and 27.0 per cent in 2004.
- The success rate for applications under Linkage – Projects increased from 44.6 per cent in 2001 to 51.8 per cent in 2002 and was 49.2 per cent in 2003. In 2004 the success rate is 49.6 per cent for Round One.
- Over four years from 2003, the Government will contribute $176 million to the funding of the two world-class centres of excellence—in Biotechnology and in Information and Communications Technology. The new centres were announced in May 2002.

## Health and Ageing Portfolio

Along with other research organisations conducting health and medical research, universities are able to compete for funding allocated by the National Health and Medical Research Council (NHMRC) within the Health and Ageing Portfolio. In addition to the grants administered by the NHMRC, universities may also compete for other health-related research funding provided under the Health and Ageing Portfolio, including the Australian Health Ministers Advisory Council, Commonwealth AIDS Research Grants, Cochrane Collaborative Groups' Funding Scheme, General Practice Evaluation Programme and National Drug Law Enforcement Research Fund. The research income obtained by universities from these two sources in 2001 and 2002 is outlined in Table 4.10.

Table 4.10: Health and Ageing Portfolio grants, 2001 and 2002

| | 2001 ($m) | 2002 ($m) |
|---|---|---|
| National Health and Medical Research Council | $147.9 | $184.4 |
| Other Health and Ageing Portfolio Funding | $15.1 | $11.4 |

Source: Higher Education Research Data Collection

## Cooperative Research Centres and Major National Research Facilities Programmes

The Education, Science and Training portfolio includes the Cooperative Research Centres (CRCs) and Major National Research Facilities (MNRFs) Programmes.

Universities are major beneficiaries of both Programmes with many CRCs and MNRFs located at universities. CRCs and MNRFs are multi-institutional, as a result funds flow to a centre or facility agent rather than directly to participant organisations. Table 4.11 shows the total funding allocation for each Programme. Universities are indirect recipients of a significant proportion of these funds. Under the MNRF Programme, universities can approach any facility for access on a commercial basis.

A list of current CRCs and MNRFs, with participating universities, is at Appendix B.

Table 4.11: CRC and MNRF grants, 2001–2002 to 2003–2004

| Programme | 2001–02 ($m) | 2002–03 ($m) | 2003–04 ($m) |
|---|---|---|---|
| Cooperative Research Centres | 146.5 | 148.6 | 202.0 |
| Major National Research Facilities | 4.5 | 25.0 | 38.1 |

## Other sources of Australian Government research funding

### Learned Academies

In the 2003-2004 financial year a total of $1.7 million in grants-in-aid is being provided through the Education, Science and Training portfolio to support the operation of the National Academies Forum and the Four Learned Academies: the Australian Academy of Science, the Academy of the Social Sciences in Australia, the Australian Academy of Technological Sciences and Engineering, and the Australian Academy of the Humanities. These grants assist the Academies in promoting research and scholarship, and in pursuing activities of national interest, including the provision of independent advice to the Government.

### Anglo-Australian Telescope Board

The Education, Science and Training portfolio provides annual funding to the Anglo-Australian Telescope Board (AATB), an independent bi-national authority established under the *Anglo-Australian Telescope Agreement Act 1970*. The AATB is jointly funded by the governments of Australia and the United Kingdom. Its appropriation from the Australian Government for 2003-2004 is $4 million.

The AATB allocates observation time to researchers and manages the facilities of the Anglo-Australian Telescope and the United Kingdom's Schmidt Telescopes at Siding Spring, near Coonabarabran in New South Wales, and a laboratory in the Sydney suburb of Epping. Telescope observing time is shared by the United Kingdom and Australia. The AATB's Australian Time Assignment Committee has responsibility for allocating the Australian share of observing time on the AAT. The Anglo-Australian Observatory (AAO) has been a world leader in astronomical research and instrumentation since it was opened in 1971.

## Australian and New Zealand Association for the Advancement of Science

The Education, Science and Training portfolio provided a grant-in-aid of $16 000 in 2003 to the Australian and New Zealand Association for the Advancement of Science (ANZAAS). This funding was provided to support travel costs for six high-school science students from each Australian state and territory to attend the annual Youth ANZAAS Conference.

### Table 4.12: Other sources of research funding by portfolio, 2001 and 2002

| Year | 2001 ($m) | 2002 ($m) |
|---|---|---|
| Competitive Grants[a] | | |
| Agriculture, Fisheries and Forestry Australia | 55.6 | 55.9 |
| Education, Training and Youth Affairs | 2.3 | 2.2 |
| Environment and Heritage | 1.6 | 1.2 |
| Foreign Affairs and Trade | 12.0 | 12.9 |
| Industry, Science and Resources | 2.8 | 0.0 |
| Other Australian Government competitive research grants[b] | 1.2 | 1.7 |
| Other Australian Government research income[c] | 93.6 | 106.0 |
| Total | 169.1 | 179.9 |

Source: Higher Education Research Data Collection

(a) 'Category 1' Australian Government competitive research grants, for the purposes of the Higher Education Research Data Collection (HERDC).

(b) Competitive research grants administered by Attorney General's, Australian Greenhouse Office, Defence and Veteran's Affairs.

(c) 'Category 2' Australian Government research income, for the purposes of the HERDC.