



Australian Government

Australian Research Council

Research Networks

**Funding Rules for Funding commencing in
2004**

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Ethics

All research proposals should conform with the principles outlined in the Joint NHMRC/AVCC Statement and Guidelines on Research Practice (1997) (at <http://www.nhmrc.gov.au/issues/researchethics.htm>) and, as applicable, the principles outlined in the NHMRC's National Statement on Ethical Conduct in Research Involving Humans (at: <http://www.nhmrc.gov.au/publications/synopses/e35syn.htm>) and the principles outlined in the NHMRC's codes on animal research (at <http://www.nhmrc.gov.au/issues/animalethics.htm>).

Acknowledging ARC support

The ARC expects that research funded by the ARC will be appropriately acknowledged.

When the Administering Institution or a Network Participant publishes material, books, articles, television or radio programs, newsletters or other literary or artistic works which rely on financial assistance provided under *ARC Research Networks*, the Administering Institution or Network Participant shall acknowledge, at a prominent place in the publication, the support of the ARC in a form acceptable to the ARC.

Advice on acceptable forms of acknowledgement and use of the logo is provided on the ARC website at www.arc.gov.au.

Acronyms

The following acronyms are used in ARC Funding Rules.

AEST	Australian Eastern Standard Time
AIMS	Australian Institute of Marine Science
ANSTO	Australian Nuclear Science and Technology Organisation
APA	Australian Postgraduate Award
APAI	Australian Postgraduate Award (Industry)
APD	Australian Postdoctoral Fellowship
APDC	Australian Postdoctoral Fellowship (CSIRO)
APDI	Australian Postdoctoral Fellowship (Industry)
APF	Australian Professorial Fellowship
ARC	Australian Research Council
ARCIF	Australian Research Council International Fellowship
ARF	Australian Research Fellowship
AVCC	Australian Vice-Chancellors' Committee
CI	Chief Investigator
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DSTO	Defence Science and Technology Organisation
EAC	Expert Advisory Committee
ECR	Early Career Researcher
GA	Geoscience Australia
GAMS	Grant Application Management System
GST	Goods and Services Tax
HECS	Higher Education Contribution Scheme
KCTR	Key Centre for Teaching and Research
LASP	Learned Academies Special Projects
LIEF	Linkage Infrastructure Equipment and Facilities Program
LIF	Linkage Industry Fellowship
NC	Network Convenor
NCGP	National Competitive Grants Program
NHMRC	National Health and Medical Research Council
NP	Network Participant
PI	Partner Investigator
QEII	Queen Elizabeth II Fellowship
RIEF	Research Infrastructure Equipment and Facilities Scheme
SPIRT	Strategic Partnerships with Industry – Research and Training
SRC	Special Research Centres
URL	Universal Resource Locator

Australian Research Council
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1. Introduction

This document sets out the funding rules under the *Australian Research Council Act 2001* (the ARC Act) for the scheme known as *ARC Research Networks*, which is part of the Australian Research Council's National Competitive Grants Program (NCGP).

The *ARC Research Networks scheme* (hereinafter *Research Networks*) is an application-based scheme available for research teams.

These Funding Rules are written on the basis that it is the researchers who are the applicants. However, a proposal for *Research Networks* financial assistance must be submitted to the ARC by an eligible Higher Education Institution (Appendix 1 – hereinafter the Administering Institution). Funding Assistance is paid to the Administering Institution, not to individual researchers.

2. Objectives

The *ARC Research Networks* scheme builds on investments in excellent research undertaken by individual investigators and small teams to:

- Enhance the scale and focus of their research;
- Encourage more inter-disciplinary approaches to research; and
- Facilitate collaborative and innovative approaches to planning and undertaking research.

3. Description

Building on a strong platform of excellent research already selected for funding under the ARC's Discovery and Linkage programs, *ARC Research Networks* will provide an environment supporting highly creative, inter-disciplinary research that is not averse to risk-taking, and which aims to move a field of research forward or to follow significant new research directions, especially in areas of National Research Priority. They should comprise both a national and an international component, clearly directed at raising the international profile of Australian research in the chosen fields.

ARC Research Networks will assist groups of researchers to coordinate and communicate their research activities across disciplinary, organisational, institutional and geographical boundaries. Without duplicating established co-ordination bodies and mechanisms, they will favour research concentrations that encourage and support:

- open exchange of information and sharing of resources,

- development and implementation of coherent and integrated research plans among researchers working independently and in small teams on topics of common interest,
- efforts to nurture the careers of young investigators and research students by promoting a sense of community, collaboration and strong, effective mentoring, and encouraging them to shape the future direction of the research fields, and
- links with actual and potential end users, and with the broader community, especially in respect of the development of research plans, the absorption of international and national know-how, and the adoption of new discoveries made by researchers in the Network.

3.1. Project costs supported

The following are examples of costs supported under *Research Networks*:

a) Personnel salaries and on-costs, including

- The Network Convenor;
- Research Associates, professional officers, technicians, laboratory attendants, administrators, organisers and so forth; and
- Specialist professional staff located within major facilities and other appropriate settings.

b) Development or purchase of shared research resources that would not be eligible for funding by other ARC schemes, including:

- Social Surveys;
- Software tools; and
- Databases.

c) Activities bringing people together, including:

- Workshops and similar meetings;
- Planning, co-ordination and outreach activities; and
- Travel and accommodation.

3.2. National Research Priorities

The Minister for Education, Science and Training has designated the following areas as national research priorities for the 2004 funding round:

- Research Priority 1: An Environmentally Sustainable Australia
- Research Priority 2: Promoting and Maintaining Good Health
- Research Priority 3: Frontier Technologies for Building and Transforming Australian Industries
- Research Priority 4: Safeguarding Australia

These areas of research will be referred to as Designated National Research Priorities. Within each Research Priority is a number of Priority Goals which are listed below:

- Research Priority 1: An Environmentally Sustainable Australia
Priority Goals
 - PG 1 Water – a critical resource
 - PG 2 Transforming existing industries
 - PG 3 Overcoming soil loss, salinity and acidity
 - PG 4 Reducing and capturing emissions in transport and energy generation
 - PG 5 Sustainable use of Australia's biodiversity
 - PG 6 Developing deep earth resources
 - PG 7 Responding to climate change and variability
- Research Priority 2: Promoting and Maintaining good Health
Priority Goals
 - PG 1 A healthy start to life
 - PG 2 Ageing well, ageing productively
 - PG 3 Preventive healthcare
 - PG 4 Strengthening Australia's social and economic fabric
- Research Priority 3: Frontier Technologies for Building and Transforming Australian Industries
Priority Goals
 - PG 1 Breakthrough science
 - PG 2 Frontier technologies
 - PG 3 Advanced materials
 - PG 4 Smart information use
 - PG 5 Promoting an innovation culture and economy
- Research Priority 4: Safeguarding Australia
Priority Goals
 - PG 1 Critical infrastructure
 - PG 2 Understanding our region and the world
 - PG 3 Protecting Australia from invasive diseases and pests
 - PG 4 Protecting Australia from terrorism and crime
 - PG 5 Transformational defence technologies

Full descriptions of these Designated National Research Priorities and their associated Priority Goals can be found in Appendix 2, and on the ARC web site (www.arc.gov.au).

3.3. Applicant roles

There are two applicant roles available under *Research Networks*

- Network Convenor (NC)
- Network Participant (NP)

The eligibility requirements for each of these are described below.

4. Eligibility

To be eligible for consideration, each application must have *one* Network Convenor and *at least nine* initial Network Participants.

4.1. Eligibility criteria for Network Conveners

To be eligible to apply as a Network Convenor, the applicant must meet the following criteria:

- he/she will be responsible for the operation and performance of the Network. Network Convenors are likely to be active researchers with a reputation for effective collaborative, consultative leadership among their colleagues. Network Convenors will play a leading role in establishing consultative and collaborative governance across the Network, as well as overseeing Network planning and accountability;
- he/she must reside predominantly in Australia for the full term of the Network. If the applicant does not have permanent resident status he/she must obtain temporary resident status from the Department of Immigration and Multicultural and Indigenous Affairs before taking up the offer of funding; and
- he/she must meet one of the following two criteria:
 - be an employee of, and derive at least 50% of his/her salary from, an eligible higher education institution (as listed in Appendix 1); or
 - be the holder of an adjunct appointment at an eligible higher education institution (as listed in Appendix 1) who does not have a substantive position or paid appointment elsewhere.

Notwithstanding his/her eligibility under the criteria above, researchers in the following categories are not eligible to apply as Network Convenor:

- an undergraduate student; or
- a postgraduate student.

A Network Convenor may be an ARC Fellow funded under the Discovery-Projects or Linkage-Projects scheme.

The Network Convenor will be identified as the person “leading the Research Program” for the purposes of the ARC Act (paragraph 52(3)(c)). The Administering Institution will be required to seek the ARC’s permission to vary the Network Convenor.

Network Convenors must have fulfilled to the satisfaction of the ARC all obligations from previous and current ARC Grants (including final and progress reports).

Participants in existing Commonwealth-funded research Centres are encouraged to participate in *Research Networks*. However, as a consequence of their prior time commitment to the Centre, researchers who are closely associated with a Centre are not eligible to apply in the role of Network Convenor. The term “closely associated” encompasses the Director, Chief Investigators, Partner Investigators, and researchers receiving more than 20% of their salary from Centre funding.

4.2. Eligibility criteria for Network Participants

The Network Participant role may be filled by any person who contributes to the Network. A person may be a Network Participant in more than one Network.

A Network Convenor may be a Network Participant in another Network.

4.3. Number of ARC awards and applications

A person may apply as a Network Convenor in only one application. There are no other limits on the number of ARC awards or applications for *ARC Research Networks* in which a person may be involved.

5. Funding

5.1. Level of funding

The maximum ARC financial assistance for a Network funded under *Research Networks* is approximately \$500,000 per annum. Applications requesting less than \$100,000 per annum are discouraged, since they are unlikely to be competitive in scope and vision.

5.2. Duration of financial assistance

Financial assistance may be paid from 1 July 2004.

Research Networks financial assistance may be awarded for up to five years, subject to parliamentary appropriation. The ARC expects that most awards will be made for five years.

5.3. Areas of investigation/work not supported

Research Networks financial assistance does not support the following work:

- clinical medical and dental research and training, and public health research and training that are covered by the NHMRC;
- activities leading solely to the creation or performance of a work of art, including visual art, musical compositions, drama, dance, designs and literary works, for which Commonwealth Government support is provided through the Australia Council for the Arts;
- production of teaching materials, even though some research may be involved in their production;

- additional funding of existing projects funded or previously funded by the Commonwealth under an ARC scheme; and
- research activity *per se*. Research is more appropriately supported by other ARC programs, or through resources provided in other ways to the participants.

5.4. Budget items not supported

Research Networks proposals must not apply for, nor must any *Research Networks* financial assistance be used to fund, the following budget items

- Capital works and general infrastructure;
- Salaries of Researchers; but salaries for Research Associates and Research Assistants may be funded.
- Special Studies Programs;
- International students' fees and Australian students' HECS liabilities;
- Computers and other information and communication facilities that duplicate existing capacity;
Proposals requesting funds for computer and other information and communications facilities must demonstrate how these facilities will complement or enhance existing infrastructure, such as the facilities offered by the Australian Partnership for Advanced Computing, or the Australian National Genomic Information Service. Any *Research Networks* financial assistance including support for such developments will be conditional on adherence to appropriate standards and on co-ordination with existing facilities.
- Basic research facilities;
Research Networks financial assistance is intended to add value to existing research activity, and to create opportunities for new research activities. It must not be used to replace or supplement commitments to provide basic facilities, resources and infrastructure for research activities undertaken by Network Participants.
- Publication Costs;
Funds are not provided to pay for publication costs, including page charges.
- Research support for Network Participants or other investigators not employed by an Australian organisation;
However, *Research Networks* financial assistance may be used to support travel and accommodation costs, and other research-related costs, of Network Participants not employed by an Australian organisation, while the Participants are visiting Australia. Any such expenditure must lead to a clear benefit to Australia.

Research Networks financial assistance must not be used to substitute for funding sought unsuccessfully from other ARC schemes.

6. Cross-program funding

The ARC will not fund research or research-related activities already funded by the Commonwealth Government. The ARC reserves the right to determine if a proposal

duplicates research or research-related activity that is already funded. It may declare ineligible, or reduce financial assistance to, any such proposal.

The ARC may liaise with other funding bodies to determine if there is any overlap between applications in order to avoid duplication of funding.

The ARC encourages proposals involving Network Participants employed by Australian organisations not normally eligible to receive ARC financial assistance. Such organisations include Australian publicly funded research agencies (such as AIMS, ANSTO, CSIRO, DSTO and GA), and any other Australian organisation with relevant capability. Competitive applications must include appropriate commitments of cash funding or in-kind support from these organisations to support their employees' participation in the Network. Participation by overseas researchers and by people from Australian industry and commerce (if appropriate) is also strongly encouraged.

7. Application process

7.1. Applications

Applicants must submit their proposal as a mature plan ready for implementation. The application must contain all the information necessary for assessment of the proposal without the need for further written or oral explanation, or reference to additional documentation, unless requested by the ARC or its Expert Advisory Committees. All details in the application must be current at the time of submission.

Applications must not be marked commercial-in-confidence as they cannot be assessed under the ARC procedures for peer assessment.

7.2. Certification

It is the responsibility of the Administering Institution to create and maintain a Register of Network Participants.

The purpose of the Register is to ensure, inter alia, that every initial Network Participant confirms his/her agreement to be listed as a Network Participant. All signatories to the Register, including initial Participants and people who later join as Participants, will verify that they have been informed about ARC policies regarding Ethics, Intellectual Property and Acknowledgement of ARC financial assistance, as well as the provisions of the Funding Agreement.

The Administering Institution will retain the signed Register of Network Participants for the duration of the Network and must provide evidence of signatures if requested.

7.3. Submission of applications

Applications consist of two parts

- Application form to be completed in the ARC Grant Application Management System (GAMS); and

- Additional text describing the proposed Network, explaining the proposed budget, and listing brief Curricula Vitae of the Network Convenor and some or all of the Participants.

As described in section 8.2.1, applicants may attach at the end of the additional text up to five Referee Reports providing assessments of the proposal.

Applicants will be invited to provide the URL of one web site on the World-Wide Web as part of the Application Form. This web site may contain additional information about the proposed Network. However, applicants should not assume that all assessors will have access to the web site. Accordingly, the additional text should not include references to materials in the web site.

7.3.1. Application format

All documents must be written in English and must comply strictly with the format and submission requirements.

All pages should be in black type, use a single column and 12-point font size on white A4 paper, printed on one side only and unbound, with at least 2 cm margins on each side. As applications are scanned electronically, applicants must use a highly legible font type, such as Arial, Courier, Palatino, Times New Roman and Helvetica. Variants such as mathematical typesetting languages may also be used. References may be reproduced in 10-point font size. Colour graphs or colour photographs may be included but they will be reproduced in black and white.

The pages of the application should be numbered consecutively starting from page one.

7.3.2. Application form and instructions to applicants

Applicants must use the application form produced by GAMS at the ARC web site (www.arc.gov.au).

Applicants should note that *Instructions to Applicants for Research Networks for Funding Commencing in 2004* are available from www.arc.gov.au to assist in preparing the GAMS application form.

Applicants must submit their prepared applications through the Research Office of the Administering Institution.

After preparation by the applicant, the Research Office must submit the application form in GAMS and forward the full paper application, to be received at the ARC before the advertised closing date.

7.3.3. Number of copies

An original and one identical paper copy only are required. The application must be clipped with NAL clips, not stapled. The application form should be submitted with the additional text, including supporting documentation, interleaved appropriately and numbered sequentially.

7.3.4. Closing date for applications

The paper original and one copy of applications must be received by the ARC, and application forms completed in GAMS must be submitted to the ARC 17:00 hrs (AEST) Monday 22 March 2004.

The ARC may, in its absolute discretion, extend closing dates for applications.

Applications may be withdrawn but may not be changed after submission. Additions, deletions or modifications will not be accepted after submission. The ARC will not accept applications that have not been submitted in GAMS and received by the ARC by the relevant closing date above.

7.3.5. How to complete and submit applications

Research Offices should send applications

By mail to:

Program Coordinator (Research Networks)
Australian Research Council
GPO Box 2702
CANBERRA ACT 2601

By courier to:

Program Coordinator (Research Networks)
Australian Research Council
Geoscience Australia Building
Cnr Jerrabomberra Avenue and Hindmarsh
Drive
SYMONSTON ACT 2609

8. Selection and approval process

8.1. Selection criteria

When the ARC is assessing applications, it applies weightings to each selection criterion:

Network strengths (30%)

- Breadth of engagement and standing of participants in the Network
 - Breadth and standing of relevant national and international participation
 - Capacity to raise the profile of the Network's research portfolio globally
- Coherence and cooperation
 - Strength and extent of collaboration and co-ordination within the Network
- Cross-cutting & innovation
 - Potential for the Network to foster genuinely broad, cross-disciplinary, innovative research
 - Plans for providing support for new partnerships and linkages

Research strengths and opportunities (30%)

- The research programs encompassed by the Network

- Excellence of current and prospective research programs conducted by Network Participants
- Opportunities to add value to Australian research programs encompassed by the Network
- Participant track record, relative to opportunity
 - Track record of the Network Convenor and Network Participants in research and research student supervision, where appropriate
 - The Network Convenor’s track record as a research co-ordinator, relative to opportunities
 - Arrangements to encourage researchers who have less than 15 years postdoctoral experience to build research leadership and management skills within the Network

National Benefit (20%)

- National Research Priorities
 - Capacity of the Network to be catalysed by National Research Priorities
- Contribution to the Australian economy, environment, society and culture
- Communication and Outreach
 - The nature and extent of the Network’s strategic approach to communication and outreach

Funding and governance (20%)

- Adequacy of the Budget plan
 - The impact of Network Funding in adding value to existing investments in research
 - Strength of the case for the requested funding relative to the Network’s proposed programs
- Governance
 - Efficiency and effectiveness of the proposed governance arrangements in relation to the Network’s vision
 - Capacity of the governance arrangements to transcend disciplinary, geographical, and institutional boundaries and cultures, to achieve the Network’s objectives

8.2. Assessment and selection procedure

An Advisory Committee selected from the members of the ARC’s Expert Advisory Committees (EACs) undertakes assessment of the applications. The Advisory Committee may seek assessments from other members of the EACs. The Advisory Committee has the right to make decisions and recommendations solely based on members’ expertise and may:

- rank each application relative to the others on the basis of the applications;

- assess and recommend budgets; and
- prepare funding recommendations that are submitted to the ARC Board and, subject to its views, then to the Minister for approval.

The ARC has procedures for managing any institutional and personal conflicts of interest experienced by Committee members, and for enabling members to withdraw from considering particular applications.

8.2.1. Referee reports

Reports from up to five external referees may be included at the end of the additional text (Section 7.3). Referees' reports must be signed and should not exceed 500 words each. They should provide an assessment of the application against the selection criteria.

The quality and standing of the referees as well as their comments will be taken into account in the assessment of applications.

8.2.2. Exclusion

Exclusion of ineligible applications by the ARC may take place at any time during the selection process. Every effort will be made to exclude ineligible applications and inform applicants early in the assessment process. Applications that contravene the Funding Rules in any way may be excluded. Grounds for exclusion include, but are not limited to:

- failing to submit the application through the appropriate Research Office/Chief Executive Officer for certification;
- not meeting eligibility criteria for the Network Convenor
- providing incomplete or misleading information
- designating all or any part of the application as 'commercial-in-confidence'.

8.2.3. Ministerial approval

A recommendation from the ARC Board is sent to the Minister for consideration. The Minister determines which applications will be offered financial assistance. The Minister's decision is final (subject to an appeals process).

8.3. Offer of financial assistance

Successful Administering Institutions will be notified in a letter of offer that will indicate the financial assistance to be provided and include the Funding Agreement.

A Network may not begin, nor may financial assistance be expended, before the Funding Agreement is signed by the Administering Institution and the ARC.

9. Appeals process

Appeals will be considered only against process issues and not against the decisions of the Advisory Committee. Appeals must be made on the appeals form available on the ARC website (www.arc.gov.au).

The form must be lodged through the Administering Institution's Research Office to, and be received **within 28 days** of the date on the letter notifying the outcome of applications by:

The Appeals Officer
Australian Research Council
GPO Box 2702
CANBERRA ACT 2601

10. Administration of funding

10.1. Funding Agreement

Successful applicants should familiarise themselves with the Funding Agreement. They must accept the terms of the Funding Agreement and the Administering Institution must sign the Funding Agreement before funds can be paid.

A Network must commence as required by the Funding Agreement. Failure to do so will result in termination of financial assistance.

Administering Institutions should note that the Funding Agreement covers the post-award management including reporting requirements and financial management. The draft Funding Agreement can be viewed on the ARC website (www.arc.gov.au).

10.1.1. Title of the Network

The ARC will determine the title of the Network in consultation with the Administering Institution and Network Convenor of successful applications. The form of the title will normally be "ARC Research Network for/in XXX."

10.1.2. Varying the Funding Agreement

Requests to vary the Funding Agreement must be forwarded in writing by the Administering Institution's Research Office, or equivalent, to the ARC. Forms are available for variation requests on the ARC website (www.arc.gov.au).

10.1.3. Varying the Funding Approval

Requests to vary the Funding Approval for a Network must be forwarded in writing by the Administering Institution's Research Office, or equivalent, to the ARC. The Funding Approval may be varied where:

- the Administering Institution's involvement with the Network ends;
- the Network changes so that it is no longer consistent with the description in the Funding Approval; or
- the person named in the funding approval as the person leading the Network ceases to lead the Network.

10.1.4. Reports

Administering Institutions are required to submit reports concerning funded networks to the ARC, in the format and by the due dates detailed in the Funding Agreement.

10.1.5. Network agreement

The ARC will require in the Funding Agreement that the Administering Institution of any successful proposal under *Research Networks* must enter into a written agreement with each organisation providing or receiving Network cash funding. The Network Agreement will cover the role of each organisation in the Network, including :

- payment of Network funds to and by each organisation;
- commitment to provide information required in Network reports to the ARC;
- intellectual property arrangements; and
- an undertaking by all organisations to adhere to the Funding Agreement.

11. Other matters

11.1. Applicable law

The ARC is required to comply with the requirements of the *Privacy Act 1988* and the *Freedom of Information Act 1982*. Information about the *Privacy Act* is available at <http://www.privacy.gov.au/act/index.html>

11.2. Confidentiality

Information contained in applications is regarded as confidential unless otherwise stated and, subject to the need to provide applications to assessors, and statutory requirements for the ARC to provide information to Parliament and other organisations, applications will be received and treated as confidential.

Notwithstanding the above, the ARC may publicise and report offers or awards of funding, including information about the proposed research, the name and institution of any applicant, the identity of the administering Institution and any other institution or organisation involved in the Network, the title and summary descriptions of the Network and its intended outcomes, and the level and nature of financial assistance from the ARC.

11.3. Intellectual property

Applicants must agree to comply with the National Principles of Intellectual Property Management for Publicly Funded Research (available at www.arc.gov.au) and act in accordance with any intellectual property policies of the applicant's institution.

11.4. Incomplete or misleading information

It is a serious offence to provide false or misleading information to the Commonwealth.

If an application is incomplete, inaccurate or contains misleading information, it may be excluded from any further consideration.

If the ARC believes that omissions or inclusion of misleading information are intentional, or if there is evidence of malpractice, the ARC will refer the matter for investigation with a view to prosecution under Commonwealth criminal law. The Commonwealth Government is committed to protecting its revenue, expenditure and property from any attempt, by members of the public, contractors, sub-contractors, agents, intermediaries or its own employees, to gain financial or other benefits by deceit.

Examples of malpractice include, but are not restricted to:

- providing fictitious track records; or
- falsifying claims in publications records (such as describing a paper as accepted for publication when it has only been submitted).

11.5. Insurance and liabilities

Institutions are subject to the liability, indemnity and insurance provisions of the Funding Agreement. The draft Funding Agreement can be viewed on the ARC website (www.arc.gov.au).

11.6. Contact points

For further information, the Administering Institution's Research Office should be contacted in the first instance.

Enquiries about *Research Networks* may be addressed to
Program Coordinator (Research Networks)
Australian Research Council
GPO Box 2702
CANBERRA ACT 2601

Email	ncgp@arc.gov.au
Phone	02 6284 6600
Fax	02 6284 6638
Web address	www.arc.gov.au

Appendix 1. Eligible Higher Education Institutions

New South Wales

Charles Sturt University
Macquarie University
Southern Cross University
The University of New England
The University of New South Wales
The University of Newcastle
The University of Sydney
University of Technology, Sydney
University of Western Sydney
University of Wollongong

Victoria

Deakin University
La Trobe University
Melbourne College of Divinity
Monash University
RMIT University
Swinburne University of Technology
The University of Melbourne
University of Ballarat
Victoria University

Queensland

Bond University
Central Queensland University
Griffith University
James Cook University
Queensland University of Technology
The University of Queensland
The University of the Sunshine Coast
University of Southern Queensland

Western Australia

Curtin University of Technology
Edith Cowan University
Murdoch University
The University of Notre Dame Australia
The University of Western Australia

South Australia

The Flinders University of South Australia
The University of Adelaide
University of South Australia

Tasmania

Australian Maritime College
University of Tasmania

Northern Territory
Charles Darwin University
Batchelor College

Australian Capital Territory
The Australian National University
University of Canberra

Multi-State
Australian Catholic University

Appendix 2. Descriptions of Designated National Research Priorities and associated Priority Goals

Research Priority 1: An Environmentally Sustainable Australia

Transforming the way we utilise our land, water, mineral and energy resources through a better understanding of human and environmental systems and the use of new technologies

Natural resources have traditionally fuelled our national and regional economies. They have the potential to generate further wealth and employment opportunities in the future. But our natural resources and biodiversity must be used on a sustainable basis so that the benefits continue to be enjoyed by future generations.

Australia faces significant environmental challenges:

- Efficient and sustainable water use is a critically important issue for our economic and social development;
- Significant land degradation issues, such as salinity, need to be arrested to underpin our agricultural production systems;
- Climate change can be expected to have complex, long-term consequences for the environment, for our agricultural and marine production systems and for communities; and
- The cleanliness and efficiency of our energy production systems should be enhanced.

There is substantial effort underway to develop more efficient water utilisation practices, to protect our rivers and groundwater resources, and to protect and remediate our fragile soils.

Our agricultural and mining industries are being transformed through the adoption of new technologies, and the development of new types of foods.

This will help to revitalise our regional communities and generate substantial export earnings for the nation over the coming decades.

The Government is committed to meeting the greenhouse gas emissions target set for Australia at Kyoto.

Australia is well placed to take an international lead in developing new and improved energy technologies and in capturing and 'sequestering' carbon dioxide.

Other opportunities lie in managing and using our unique, rich land- and marine-based biodiversity, and in developing our deep earth resources.

Australia has a strong record of achievement in research in fields in the natural sciences, such as agriculture, natural resource management, climate change, horticulture, forestry, mining, energy, and marine sciences, as well as in the social sciences and humanities.

We must build on these strengths to improve our competitive advantages while enhancing our understanding of natural systems and the interplay of human activities.

In particular, there needs to be an increased understanding of the contributions of human behaviour to environmental and climate change, and on appropriate adaptive responses and strategies.

To understand and manage these complex interactions better will require significant collaboration within the research community and with other stakeholders.

Priority goals for research fall in the seven areas of water utilisation, transforming resource-based industries, overcoming land degradation, developing cleaner, more efficient fuels and energy sources, managing biodiversity, deep earth resources and responding to climate change and variability.

Priority Goals

- **Water – a critical resource**

Sustainable ways of improving water productivity, using less water in agriculture and other industries, providing increased protection of rivers and groundwater and the re-use of urban and industrial waste waters.

Australia is one of the driest continents and is dependent upon access to freshwater supplies for economic and social development. It has a complex geological structure, a highly variable climate, unique ecosystems, flora and fauna and a distinctive indigenous and settler history. Enhancing our understanding of the links between these factors and water availability will result in a better understanding of sustainable water management practices.

- **Transforming existing industries**

New technologies for resource-based industries to deliver substantial increases in national wealth while minimising environmental impacts on land and sea.

Resource-based industries underpin much of Australia's prosperity and have the potential to do so in the future. For example, Australia remains highly prospective for minerals discoveries and highly attractive for the development of new era foods from agricultural and marine sources. Our competitive advantage and national well being will depend on research and on the development and adoption of new technologies.

- **Overcoming soil loss, salinity and acidity**

Identifying causes and solutions to land degradation using a multidisciplinary approach to restore land surfaces.

The Australian landscape is fragile: soil salinity, acidity, and nutrient levels pose significant, long term challenges for agriculture and the environment. Research is helping to find solutions to these problems. For example, the National Land and Water Resources Audit shows the extent of salinity, soil erosion and soil acidification in the Australian environment and illustrates Australia's leading edge in national mapping of critical resource data. Further multidisciplinary effort is required to develop sustainable land management practices that are appropriate for Australian conditions and mitigate major land degradation processes and increase biodiversity.

- **Reducing and capturing emissions in transport and energy generation**
Alternative transport technologies and clean combustion and efficient new power generation systems and capture and sequestration of carbon dioxide.
 Australia is well positioned to produce world class solutions to reduce and capture greenhouse gas emissions and the Government is committed to meeting the emissions target set for Australia at Kyoto. We are also well placed to develop alternative energy technologies and ecologically sustainable transport and power generation systems.
- **Sustainable use of Australia's biodiversity**
Managing and protecting Australia's terrestrial and marine biodiversity both for its own value and to develop long term use of ecosystem goods and services ranging from fisheries to ecotourism.
 Australia has a unique and rich flora and fauna. Many of our complex ecosystems – on which our agricultural, fisheries and tourism industries depend - have adapted to events such as drought and fire, and have been shaped by indigenous and settler management practices. There is a need for a more comprehensive understanding of these natural systems and the interplay with human activities, and the effects of management and protection measures.
- **Developing deep earth resources**
Smart high-technology exploration methodologies, including imaging and mapping the deep earth and ocean floors, and novel efficient ways of commodity extraction and processing (examples include minerals, oil and gas) while minimising negative ecological and social impacts.
 Many of Australia's known mineral assets may be nearly exhausted within the next decade. New land-based deposits are believed to be buried deeper in the crust and the deep marine areas surrounding Australia are also largely unexplored. New technologies, such as remote sensing, indicate scientists are on the brink of being able to 'see' inside the earth and identify deeply buried deposits.
- **Responding to climate change and variability**
Increasing our understanding of the impact of climate change and variability at the regional level across Australia, and addressing the consequences of these factors on the environment and on communities.
 Australia already has a highly variable climate, and climate change can be expected to have further significant impacts. It is important to enhance our understanding of the consequences of climate change and variability at the regional level across Australia, and the implications for the environment and for communities. It is also important to explore beneficial adaptation strategies to climate change and variability to ensure ongoing social, economic and environmental well being.

Research Priority 2: Promoting and Maintaining Good Health

Promoting good health and well being for all Australians

Average life expectancies have increased markedly in recent decades. Australians also expect to lead longer and healthier lives in the future, and to remain productive and independent over an extended period.

Enabling individuals and families to make choices that lead to healthy, productive and fulfilling lives will yield economic and social benefits and add materially to national well being.

Australians expect that their children and grandchildren should have a healthy start to life.

Developing strategies to promote the healthy development of young Australians, and addressing the causes and reducing the impact of the genetic, social and environmental factors which diminish their life potential will be critical.

A revolution is also underway at the other end of the life cycle. Australia, like many other developed nations, is undergoing a major demographic shift involving significant growth in the aged population.

To meet this challenge, it will be important to promote healthy ageing by developing better social and medical strategies to ensure that older Australians enjoy healthy and productive lives.

Informed insights into the causes of disease and of mental and physical degeneration will contribute to the achievement of this goal.

All Australians stand to benefit from preventive healthcare through the adoption of healthier attitudes, habits and lifestyles.

Evidence-based preventive interventions may help reduce the incidence and severity of many diseases, including major health problems such as cardiovascular and neurodegenerative diseases, mental ill-health, obesity, diabetes, asthma and chronic inflammatory conditions. These could include interventions that reduce exposure to contamination of the physical environment (eg air pollution).

Improvements in the health and well being of the young, of older Australians and in preventive healthcare will be underpinned by research.

However, while Australia has an enviable record in health and medical research, the research effort is spread across the many universities, hospitals and health and medical research institutes, resulting in critical mass only in limited areas of research.

There is also a need to draw on multidisciplinary approaches that include research contributions from the social sciences and humanities.

This priority is designed to promote health and prevent disease through a more focused and collaborative effort.

Priority goals for research fall in the four areas of a healthy start to life, ageing well, ageing productively, preventive healthcare and strengthening Australia's social and economic fabric.

Priority Goals

- **A healthy start to life**
Counteracting the impact of genetic, social and environmental factors which predispose infants and children to ill health and reduce their well being and life potential.
Human health in the developing foetus and in early childhood is critical to the future well being of the adult. Research shows that health and well being in early childhood is predictive of later positive outcomes, and that health in middle and late childhood is also crucial. This goal supports the Government's National Agenda for Early Childhood initiative.
- **Ageing well, ageing productively**
Developing better social, medical and population health strategies to improve the mental and physical capacities of ageing people.
Australia's population is ageing, with a significant projected increase in the number of people aged over 65 and over 85. While Australia is relatively well placed compared with many OECD nations, major shifts in cultural expectations and attitudes about ageing are necessary to respond constructively, at both an individual and population level. A healthy aged population will contribute actively to the life of the nation through participation in the labour market or through voluntary work. This goal supports the Government's National Strategy for an Ageing Australia.
- **Preventive healthcare**
New ethical, evidence-based strategies to promote health and prevent disease through the adoption of healthier lifestyles and diet, and the development of health-promoting products.
Preventive healthcare research will improve the prediction and prevention of disease and injury for all Australians through the adoption of healthier behaviours, lifestyles and environments. Research will generate an improvement in the design, delivery and uptake of programmes such as exercise-based rehabilitation. There are several major disease targets amenable to immediate study, such as cardiovascular health, neurodegenerative diseases, mental ill-health, obesity, diabetes, asthma and chronic inflammatory conditions. Research on prevention will emphasise interdisciplinary approaches, including research on ethics, drawing on contributions from the social sciences and humanities, as well as from the health and medical sciences. It will also focus on developing new health promoting foods and nutraceuticals. This goal supports the Government's Focus on Prevention initiative.
- **Strengthening Australia's social and economic fabric**
Understanding and strengthening key elements of Australia's social and economic fabric to help families and individuals live healthy, productive, and fulfilling lives.
Living in today's society involves a complex web of choices, yet many of the traditional support structures are weaker than they have been in the past. Enabling people to make choices that lead to positive pathways to self reliance and supportive family structures is more important than ever. The interactions between the social safety net, social and

economic participation, financial incentives and community and private sources of support are critical in helping people maximise their potential and achieve good, healthy, lifetime outcomes. In the decade ahead, it will be vital to understand and support the drivers for workforce participation and the broader social and economic trends influencing Australian families and communities. This goal supports the Government's welfare reform and participation agendas. Research in this area will emphasise interdisciplinary approaches, drawing on contributions from the economic, behavioural and social sciences.

Research Priority 3: Frontier Technologies for Building and Transforming Australian Industries

Stimulating the growth of world-class Australian industries using innovative technologies developed from cutting-edge research

Progress and wealth often derive from the unforeseen application of new discoveries. Australia must be at the leading edge if it is to stay abreast of international developments and take advantage of opportunities.

Our national capabilities in emerging sciences and their underpinning disciplines determine our capacity to develop and implement new technologies. Australia has a strong base of expertise, skills and technological capacities in the fundamental sciences and key technologies.

Our strengths are in a wide range of areas such as biotechnology, material sciences, information and communications technology (ICT), photonics, nanotechnology and sensor technology.

ICT is currently the critical enabling technology and is a major contributor to national productivity and growth.

But breakthrough science underpins technological advancements in many areas and Australia needs to foster an environment that stimulates creativity and innovation.

Applications for frontier technologies are potentially very large. Australia has the capacity to exploit niche markets for new products and services.

Australia also has an enviable track record as an innovator and developer of advanced materials and must grasp the opportunity to stay ahead.

Smart information use involving improved data management, intelligent transport systems and digital media to develop creative applications for digital technologies provides huge opportunities to improve the performance of key Australian industries.

Australia needs to invest in this research area as it is fundamental to our future competitiveness and well being.

This priority will help to strengthen the capacity of Australian researchers to participate in new areas of research, enhance Australia's international scientific reputation, stimulate local expertise, and help create vibrant new industries.

A better understanding of the conditions that are conducive to innovation will ensure that Australia's investment in research will maximise the benefits for Australia.

Enhanced research effort will also be achieved through initiatives that develop a critical mass of researchers in key areas.

Priority goals for research fall in the five areas of breakthrough science, frontier technologies, advanced materials, smart information use, and promoting an innovation culture and economy.

Priority Goals

- **Breakthrough science**

Better understanding of the fundamental processes that will advance knowledge and facilitate the development of technological innovations.

Breakthrough science underpins technological innovation across a range of industries critical to maintaining Australia's position as a developed country. Some examples include bio-, cultural- and geo-informatics, nano-assembly and quantum computing. Technological advances are often unexpected and a strong foundation in mathematics and the fundamental sciences will provide an environment that fosters creativity and innovation. Early participation in leading edge areas of research will enable Australian researchers to benefit more fully from international developments.

- **Frontier technologies**

Enhanced capacity in frontier technologies to power world-class industries of the future and build on Australia's strengths in research and innovation (examples include nanotechnology, biotechnology, ICT, photonics, genomics/phenomics, and complex systems).

The potential applications of frontier technologies across a range of industries in Australia are vast. Australia has significant capacity to exploit niche markets for new products and services emerging from frontier technologies. Australia has world-class research expertise in many such areas. Some examples include nanotechnology, biotechnology, ICT, photonics, genomics and phenomics. Also important are advanced frameworks such as complex systems in which these technologies are applied. Future directions in this priority area need to target the cutting-edge science critical for each emerging technology.

- **Advanced materials**

Advanced materials for applications in construction, communications, transport, agriculture and medicine (examples include ceramics, organics, biomaterials, smart material and fabrics, composites, polymers and light metals).

The development of advanced materials will underpin growth in many areas of industrial and economic activity in Australia. Australia has substantial infrastructure in this area and an enviable track record as an innovator and developer of advanced materials. The era of advanced materials is just beginning, in spite of the tremendous progress in recent years. Substantial scientific and technological challenges remain ahead, including the development of more sophisticated and specialised materials. Some examples include ceramics, organics, biomaterials, smart materials and fabrics, composites, polymers, and light metals.

- **Smart information use**

Improved data management for existing and new business applications and creative applications for digital technologies (examples include e-finance, interactive systems, multi-platform media, creative industries, digital media creative design, content generation and imaging).

ICT applications are providing huge opportunities to deliver new systems, products, business solutions, and to make more efficient use of infrastructure. Examples include e-finance, multi-media, content generation and imaging. Improved data management is central to the future competitiveness of key industries such as agriculture, biotechnology, finance, banking, education, transport, government, and health and 'info-tainment'. The ability of organisations to operate virtually and collaborate across huge distances in Australia and internationally hinges on our capabilities in this area. The media and creative industries are among the fastest growing sectors of the new economy. Research is needed to exploit the huge potential in the digital media industry.

- **Promoting an innovation culture and economy**

Maximising Australia's creative and technological capability by understanding the factors conducive to innovation and its acceptance.

Understanding the factors that lead to highly creative and innovative ideas and concepts, and the conditions that lead to their introduction, transfer and uptake is critical for any nation that aspires to lead the world in breakthrough science, frontier technologies, and in other forms of innovation. Promoting an innovation culture and economy requires research with a focus on developing and fostering human talent, societal and cultural values favourable to creativity and innovation, and structures and processes for encouraging and managing innovation.

Research Priority 4: Safeguarding Australia

Safeguarding Australia from terrorism, crime, invasive diseases and pests, strengthening our understanding of Australia's place in the region and the world, and securing our infrastructure, particularly with respect to our digital systems.

The importance of security and safety to Australia has been underscored by recent events.

Australia has to be capable of anticipating and tackling critical threats to society, strategic areas of the national economy and the environment.

The threats can potentially come from within and outside Australia.

The world is now characterised by the widespread and rapid movements of people, digitally coded data, goods and services, and exotic biological agents.

Critical infrastructure in Australia is increasingly dependent on digital technology for its management and integration.

Information protection and the integrity of security systems are now more important than ever before.

It is also necessary to protect the status of Australia as a nation free of many of the diseases affecting primary production around the world.

Terrorism has emerged as a very real global threat and crime is taking a significant toll on Australian society and economy.

Maintaining the operational advantage of Australia's defence forces through superior capabilities is also fundamental to our national security.

Enhancing our nation's understanding of social, political and cultural issues will help Australia to engage with our neighbours and the wider global community and to respond to emerging issues.

Leading edge research in Australia is already yielding high dividends and as a national research priority will improve the effectiveness of that contribution.

Stronger research capabilities will ensure that solutions are tailored to Australia's unique circumstances, reflecting its geographic features and small population.

Greater collaboration within the research community and with other stakeholders will allow us to better understand and manage potential threats to Australia.

Harnessing the knowledge and capabilities across Australia offers us the best chance of developing innovative and rapid solutions to serious threats.

Australia's international relations and its regional influence will be strengthened through new collaborative approaches and new science and technologies that enhance security and safety.

The heightened interest in personal and electronic security across the world also provides opportunities for Australian solutions.

Priority goals for research fall in the five areas of critical infrastructure, understanding our region and the world, protecting Australia from invasive diseases and pests, protecting Australia from terrorism and crime, and transformational defence technologies.

Priority goals

- **Critical infrastructure**

Protecting Australia's critical infrastructure including our financial, energy, communications, and transport systems.

Protecting our critical infrastructure is important to national security and to the social and economic well being of Australia. An important aspect of this priority goal is e-security which is an enabler of e-commerce. Maintaining a critical mass of research in e-security will be essential in providing Australia with the tools to protect our way of life.

- **Understanding our region and the world**

Enhancing Australia's capacity to interpret and engage with its regional and global environment through a greater understanding of languages, societies, politics and cultures.

Social, cultural and religious issues are of growing significance due to the insecurities of globalisation and the increasing role of non-state players in the security environment. Australia's capacity to interpret and engage with its regional and global environment will be substantially improved by enhancing its research base in apposite languages, societies and cultures. An approach that enhances Australia's capacity to interpret itself to the rest of the world is also needed.

- **Protecting Australia from invasive diseases and pests**

Counteract the impact of invasive species through the application of new technologies and by integrating approaches across agencies and jurisdictions.

Australia is free of many of the pests and diseases affecting primary production around the world. This status needs to be protected as the introduction of exotic species has the potential to adversely affect our exports and the environment. Australia already has strong skills and expertise in this area of research and further work will offer immediate benefits to the community. A greater level of coordination of our research effort will mean that Australia can more effectively develop innovative and rapid solutions to serious threats.

- **Protecting Australia from terrorism and crime**

By promoting a healthy and diverse research and development system that anticipates threats and supports core competencies in modern and rapid identification techniques.

Protecting Australia from terrorism is now more important than ever before in light of recent events and our involvement in the 'war on terror'. The new threat requires a more sophisticated response which should harness Australia's research capabilities, and which will focus on all phases of counter-terrorism; prevention, preparedness, detection, response and recovery. Crime takes a significant toll on Australian society and economy. The June 2000 report from the Prime Minister's Science, Engineering and Innovation Council estimated that crime costs Australia at least \$18 billion per annum. Personal identification, information protection and the integrity of security systems are fundamental towards ensuring the national security of Australia. An effective solution will include building on Australia's existing strengths in rapid detection using new analytical technologies and managing significant data collections.

- **Transformational defence technologies**

Transform military operations for the defence of Australia by providing superior technologies, better information and improved ways of operation.

Australia has a small defence force to protect a large continent and a substantial maritime region of responsibility. Its operational advantage has been maintained through a superior capability which is dependent on leveraging innovative technologies. Although some benefits can be gained from overseas research, Australia has to conduct its own research to address uniquely Australian demands. A systems approach which harnesses the research capabilities of all stakeholders is essential to the successful development and introduction of innovative technologies.