Australian Government

Australian Research Council

Linkage Infrastructure Equipment and Facilities

Funding Rules for Funding commencing in

2005

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Acronyms

The following acronyms are used throughout these guidelines.

ARC	Australian Research Council
AVCC	Australian Vice-Chancellors' Committee
EAC	Expert Advisory Committee
GAMS	Grant Application Management System
GST	Goods and Services Tax
LIEF	Linkage Infrastructure Equipment and Facilities Program
NCGP	National Competitive Grants Program
NHMRC	National Health and Medical Research Council
RIEF	Research Infrastructure Equipment and Facilities Scheme

Ethics

All research proposals should conform to the principles outlined in the Joint NHMRC/AVCC Statement and Guidelines on Research Practice (1997) (at http://www.nhmrc.gov.au/issues/researchethics.htm).

Proposed research involving humans should conform to 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). Proposed research involving animals should conform to 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 results arising from research funded by the ARC will acknowledge that support.

When, at any time during or after completion of a Project, the Institution publishes material, books, articles, television or radio programs, newsletters or other literary or artistic works which relate to the Project and/or Fellowship, the Institution 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.

Australian Research Council

Linkage Infrastructure Equipment and Facilities

Funding Rules for Funding commencing in 2005

1. Introduction

This document sets out the funding rules under the Australian Research Council Act 2001 (the ARC Act) for *Linkage Infrastructure Equipment and Facilities* (LIEF) which is part of the Australian Research Council's National Competitive Grants Program (NCGP).

The Australian Research Council's infrastructure fund has existed continuously for more than ten years. LIEF commenced in 2001, replacing the Research Infrastructure Equipment and Facilities (RIEF) Scheme. LIEF provides funding to institutions for research infrastructure that will be used to support high quality research projects. The Program is managed on an annual basis and funding is normally provided for one year only. However, funding may be provided for multiple years in the case of subscriptions to major international facilities. Applications for LIEF are submitted through the ARC's Grant Administration and Management System (GAMS).

2. Objectives

The LIEF Scheme aims to:

- encourage institutions to develop collaborative arrangements among themselves, across the higher education sector and with organisations outside the sector, in order to develop research infrastructure;
- support large-scale cooperative initiatives involving two or more institutions, thereby allowing expensive facilities to be shared;
- enhance support for areas of research strength; and
- ensure that researchers in fields of recognised research potential have access to the support necessary for development.

3. Description

Research infrastructure consists of the institutional resources essential for mounting high-quality research projects in a particular field, including associated indirect costs. It excludes any direct project costs that can be covered from other sources of funding.

3.1. National Research Priorities

The Minister for Education, Science and Training has designated the following areas as national research priorities for the 2005 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 (PG) 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 3 and on the ARC web site (www.arc.gov.au).

4. Eligibility

4.1. Eligibility of the institution

Appendix 1 lists the higher education institutions eligible to administer LIEF funding. Researchers will apply for LIEF funding through the administering institution. In general, applications should involve two or more eligible higher education institutions.

4.1.1. Single university applications

A single university application is defined as an application whose list of participants includes only one eligible higher education institution, as outlined in Appendix 1.

A single university application must demonstrate clearly that:

1) collaborative use of the new equipment by other higher education institutions is not practicable; and
2) the project does not duplicate equipment or a similar facility at another institution where collaborative arrangements would be practicable. If a similar facility is available at another institution, that institution may provide a letter explaining why the collaborative use of its facility is not practicable. If such a letter is provided, it should be attached to the application.

4.1.2. Applications involving other organisations

Applications involving organisations that are not higher education institutions, such as government research organisations and businesses, are also encouraged, provided that:

- at least one eligible higher education institution is involved in the application; and
- any funds allocated for equipment and/or facilities are used to build up infrastructure within the higher education sector.

If only one higher education institution is involved in an application, the application must be justified as a single university application. This applies both to applications submitted by only one university and no collaborating organisations, and applications that involve a number of industry or government partners but only one university partner.

Peak bodies representing the higher education community may act as catalysts in developing cooperative arrangements. In such cases, the peak body may apply on behalf of, and with the full written agreement of, the higher education institutions. Such applications must identify the mechanism for accountability and distribution of the funding between the eligible higher education institutions.

4.2. Eligibility of the project

4.2.1. Key criteria

4.2.1.1. Collaboration

Projects that demonstrate genuine collaboration between two or more eligible higher education institutions are preferred. Projects must relate to high-quality research activity and must be broadly in line with the research directions of the institution(s) involved.

Collaboration will typically involve the shared use of facilities on different projects and/or collaborative projects. Where the equipment required will be located in more than one institution, the application must demonstrate clearly that:

- the facility is genuinely integrated and collaborative;
- the items of equipment are complementary in nature; and
- overall research outcomes will be enhanced.

4.2.1.2. Chief Investigators

A Chief Investigator should be an established researcher who will be primarily involved in the use of the equipment or facility. Normally, there will be at least one Chief Investigator from each of the collaborating institutions. Individual researchers must not be named as Chief Investigators on more than two LIEF applications in a year. Contravention of this limit may result in the exclusion of all LIEF applications involving that researcher as a Chief Investigator.

Chief Investigators must have fulfilled to the satisfaction of the ARC all obligations from previous and current ARC awards (including final and progress reports).

4.2.1.3. Expenditure on equipment and facilities

The amount of funding sought from the ARC must exceed $100,000 (net of GST). Funding may be sought only for expenditure related to research infrastructure and equipment and facilities such as:

- equipment purchase and installation;
- computing centres, centrifugation facilities, animal houses, herbaria, experimental farms but not including capital works (see Item 5.5);
- salaries if these are directly associated with creating and installing the facility;
- consortium membership costs, travel to the facility, and secretariat costs in the case of Australia's participation in significant international-scale projects; and
- library and information infrastructure (non-capital aspects only to support specific research projects). Applicants should refer to the advice at Appendix 2 of these Funding Rules.

4.2.2. Integrated facilities

LIEF supports major facilities and equipment. Minor items of equipment are the responsibility of institutions. However, there may be special circumstances in which a case can be made for an integrated facility consisting of a number of small items. Such applications will be considered

only where a convincing case can be made that an integrated facility is necessary to support research activities.

4.2.3. Ownership and location of equipment and facilities

Ownership of shared facilities and equipment provided under LIEF is to be vested in the administering higher education institution, listed in its assets register and located on campus. Collaborating institutions must reach agreement on time-sharing and access to equipment or facilities before applying for funding. Details of applicants' time-sharing and access arrangements must be included in their LIEF application.

It is recognised that it may be desirable, in very special circumstances, to fund and support the location of equipment or major national facilities outside a university campus, when access is provided to several institutions to better utilise research potential. In these circumstances, the terms of access must be guaranteed and agreed to by the parties in a contract prior to application. The costs of managing the equipment or facility should then be proportionally distributed across the users of the facility and agreed to prior to application. In such cases, ownership of the equipment or facility is vested with the institution that receives the LIEF funding. A copy of the signed agreement specifying location, access and sharing of recurrent costs must be attached to the application.

4.2.4. Cash contribution by institutions

The cost of acquiring equipment or facilities must be itemised on the application form as cash and in-kind contributions by participating institutions. The LIEF Program will fund up to a maximum of 75 per cent of the direct cost of purchasing the equipment or creating the facility (net of GST).

Salaries of support or academic staff and the cost of buildings or other infrastructure may not be counted as cash contributions towards the purchase of a new item of equipment or facility. Such items may be included only as in-kind contributions. Supplier discounts on infrastructure items must be included in the application but may not be identified as cash or in-kind contributions.

The Minister may approve a lesser amount of funding than that sought by an applicant. In such cases, each participating institution is nonetheless required to contribute pro-rata to the funded items at the rate identified in the funding application, irrespective of where those items are to be located. Institutions are required to contribute at a minimum the pro-rata sum required, but may maintain the original level of commitment offered. If a participating institution fails to make its required contribution, the ARC may recover all or part of the funding provided to the administering institution.

5. Funding

5.1. General funding issues

The minimum funding available for a grant under LIEF is $100,000. A total budget of approximately $25 million is available for distribution to LIEF projects in 2005. Additional allocations of expenditure cannot be accommodated once the Minister has approved the funding recommendations, as there are no additional funds available.

5.2. Duration of funding

Funding is normally for one year only. However, applications for multiple years of funding may be considered in the case of subscriptions to major international facilities. LIEF grants may be awarded for one to five years, subject to parliamentary appropriation.

5.2.1. Subscription to major international facilities

LIEF can be used to provide multiple year funding for subscription to a major international facility. Normally this would only occur under an international agreement approved by the ARC. The ARC will approve such agreements only if there are significant benefits to Australia by way of access to a facility not otherwise available to Australians. If funding is required for more than five years, a review of the project will be conducted early in the fourth year, before any application for further funding is considered.

5.3. Goods and Services Tax (GST)

Government-related entities do not pay GST on the funding transaction with the ARC. However, non government-related entities which are liable to pay GST on the transaction with the ARC will receive base funding plus GST.

If the organisation is able to claim input tax credits for the GST component in the cost of goods and services purchased in the course of carrying out the Project, then the GST component of these costs should not be included in the Project cost. The ARC will make GST adjustments to payments depending on whether the funding has been provided to a government-related or non-government-related entity. Applicants are therefore required to provide their budgets exclusive of GST.

5.4. Areas of investigation/work not supported

LIEF funding 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

5.5. Budget items not supported

The following items are not regarded as elements of research infrastructure, for the purposes of LIEF, and are not eligible for support:

- capital works (that is, the construction of buildings), because institutions receive operating grant funding for capital works;
- rental of accommodation;
- operational costs, including salaries of staff engaged in teaching and research, and in research only (including the cost of 'buying time' to free such staff to do more research) except, at the ARC's discretion, where subscriptions for major international facilities cover such costs;
- salaries of staff supporting research at the institutional level (for example, Deputy Vice-Chancellor Research, Research Grants Officer);
- stipends of postgraduate research students;

- travel costs directly associated with individual projects (with the exception of travel costs to allow participation in international consortia); and
- small pieces of equipment that should be funded by institutions (such as personal computers).

Applications that seek non-capital works aspects of library or information infrastructure may include salaries and minor pieces of equipment to build an integrated facility if the entire project is a cohesive attempt to provide infrastructure support to research. Please refer to Appendix 2 for further details.

6. Cross program funding

This item is not relevant to LIEF.

7. Application process

7.1. Applications

The application must contain all the information necessary for assessment of the project without the need for further written or oral explanation, or reference to additional documentation, including the World Wide Web, unless requested by the ARC or its Expert Advisory Committees. All details in the application, particularly concerning any successful grants, must be current.

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 obtain signatures of all participants named at Part B of the application form. These signatures are to be retained by the administering institution which must provide these certifications if requested. A pro forma is available for this purpose on the ARC web site (www.arc.gov.au).

7.3. Submission of applications

Applications under LIEF consist of two parts:

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

7.3.1. Application format

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

All pages must 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 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

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

Applicants should note that a separate document, *Linkage Infrastructure Equipment and Facilities* Instructions to Applicants for Funding Commencing in 2005, is available from www.arc.gov.au to assist in preparing the GAMS application form.

Applicants must submit their applications through the Research Office by the university's internal closing date. University Research Offices have access to GAMS and will allocate GAMS UserIDs and passwords to enable applicants at their university to access the system and create application forms. If an applicant has previously been allocated access to GAMS, his/her UserID and password should still be current.

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

7.3.2.1. Additional text

The additional text is to be no longer than ten pages. It should, within the required format, address the selection criteria listed in Item 8.1 of these Funding Rules and include the following details:

- a description of the research activities to be supported, stating how the research will be enhanced and why it is important. Comments must be related to the research priorities of the institution/s involved;
- the need and level of demand for the proposed equipment in Australia and the availability of comparable infrastructure elsewhere in the country;
- a description of the collaborative arrangements proposed, including the involvement of each institution. A single university applicant must justify why collaborative arrangements are not feasible or appropriate;
- a detailed budget justification that states the amount required for each item and the priority afforded each item (A, B or C). Note that each budget item and its priority must be justified;
- funding from sources other than the applicant institutions;
- details of staff, students and resources involved in the research activities; and
- the arrangements proposed for the purchase or construction of the equipment, its location, installation, day-to-day management and operation, maintenance, access by users to the facility, and the sharing of time and resources to maximise its use.

Applicants for library or information infrastructure must also address the issues identified in Appendix 2 of these Funding Rules. Note that applicants must list the specific research projects that will use the resource created by this library or information infrastructure proposal.

7.3.2.2. Supporting documentation and curricula vitae

All the documents listed below are mandatory except for the agreement on access. These documents are not included in the quota of pages for the additional text. Applicants must include:

- curriculum vitae (CV) for each Chief Investigator, each no more than one page in length (including publication details). CVs longer than one page will be removed from the application before assessment. CVs must include the following details:
  - name;
  - qualifications and current appointment;
  - relevant employment history;
  - a list of the ten most significant relevant publications for the last five years and the total number of peer-reviewed research publications over the last five years; and
  - brief details of all competitive grant funding for the last five years;
- summary of quotes for items to be purchased, one page in length, to be included in the application after the additional text and CVs
  - quotes must include all discounts to be provided by suppliers; and
  - quotes for items in foreign currency must include the exchange rate at the time of applying;
- if equipment is to be located outside an eligible higher education institution (as listed at Appendix 1), a copy of an agreement on access, use and maintenance between collaborators must be attached.

7.3.3. Number of copies

An original and one identical 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 (see *Linkage Infrastructure Equipment and Facilities* Instructions to Applicants for Funding Commencing in 2005).

7.3.4. Closing date for applications

Paper originals of the applications for *Linkage Infrastructure Equipment and Facilities* must be received by the ARC, and the application form completed using GAMS, must be submitted by close of business 5:00pm AEST 14 May 2004. Applications may be withdrawn but may not be changed after submission. Additions, deletions and modifications will not be accepted after submission. Applications received after close of business 5:00pm AEST 14 May 2004 will not be accepted.

7.3.5. How to complete and submit applications

Linkage Infrastructure Equipment and Facilities application forms are produced using the ARC's web-based GAMS. Applicants applying through a university should submit their applications through the Research Office by the university's closing date. University Research Offices have access to GAMS and will allocate GAMS User IDs and passwords to enable applicants at their university to access the system and create application forms. If an applicant has previously been allocated access to GAMS, her/his User ID and password should still be current.

Researchers in organisations other than higher education institutions should complete their application forms using GAMS. Organisations should identify a GAMS Contact who should contact the ARC directly. The ARC will assist the GAMS Contact to gain access to the system and to create applications.

University Research Offices and other administering institutions should submit application forms in GAMS and forward the full paper application. Applicants who require an alternative means to submitting the form on-line should contact their institution's Research Office or the GAMS Contact in organisations other than universities. Applications should be sent to:

by mail, to

Linkage Infrastructure Equipment and Facilities (Program Coordinator)
Disciplines and Programs
Australian Research Council
GPO Box 2702
CANBERRA ACT 2601

by courier, to

Linkage Infrastructure Equipment and Facilities (Program Coordinator)
Disciplines and Programs
Australian Research Council
Geoscience Australia Building
cnr Hindmarsh Drive and
Jerrabomberra Avenue
SYMONSTON ACT 2609

8. Selection and approval process

8.1. Selection criteria

Assessment will be based on the following criteria:

- *Need and level of demand for the proposed equipment or facilities in Australia.*
  The application should indicate the relevance of the proposed infrastructure to National Research Priorities and national needs, and the availability of comparable infrastructure elsewhere in Australia.
- *Excellence of the researchers and research activity to be supported.*
  Evidence must be presented to show that the proposed research and the Chief Investigators' track records are of high quality, including details of the research proposed, complemented in the attached curricula vitae of the principal proponents by details of recent relevant publications and competitive grants. This evaluation will take into account the opportunities that have been made available to the researchers to date.
- *Effectiveness of the cooperative arrangements between institutions, including access and resource sharing.*
  The application should detail the nature and degree of cooperation involved between the collaborating institutions. Where possible (and relevant), applications should also detail past and present cooperation and collaboration between the institutions concerned. Where the application seeks an extension of existing equipment facilities and/or additional equipment for a facility previously funded under LIEF or the *Research Infrastructure Equipment and Facilities* (RIEF) Scheme, then the extent of the current usage should be set out.

- *The commitment of each collaborating institution.*
  The application must provide clear evidence of the extent of financial and other support from the collaborating institutions and partners, and must be consistent with the institutions' research management plans.

8.2. Assessment and selection procedure

Assessment of applications is undertaken by the ARC with the assistance of an Advisory Committee consisting of representatives from the ARC's Expert Advisory Committees (EACs), which have the right to make decisions and recommendations solely on the basis of their expertise, and which may:

- exclude ineligible applications;
- rank each application relative to the others on the basis of the application;
- assess and recommend budgets; and
- prepare funding recommendations that are submitted to the ARC Board for endorsement and then to the Minister for Education, Science and Training for approval.

The ARC has procedures for declaring conflicts of interest and for members and assessors to withdraw from consideration of particular applications.

8.2.1. 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:

- failing to submit the application through the appropriate Research Office/Chief Executive Officer for certification;
- not meeting the funding threshold when inappropriate budget items are removed;
- exceeding the limits on the number of applications permissible;
- providing incomplete or misleading information; and
- designating all or any part of the application as 'commercial-in-confidence'.

8.2.2. Recommendations

The LIEF Advisory Committee ranks each application relative to the others on the basis of the application. The Committee assesses and recommends budgets. The LIEF Advisory Committee's funding recommendations are submitted to the ARC Board.

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 funding. The Minister's decision is final (subject to an appeals process).

8.3. Offer of grant

The successful administering institution will be notified in a letter of offer that will indicate the funding to be provided and will include the Funding Contract.

A project may not begin, nor grant funds be expended before the Funding Contract is signed.

Collaborating institutions will be advised of the details of relevant funding offers.

9. Appeals process

Appeals will be considered only against process issues and not against committee decisions or assessor ratings and comments. Appeals must be made on the appeals form available from 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 grants

10.1. Funding Contract

Applicants should familiarise themselves with the Funding Contract. The successful applicants must accept the terms of the Funding Contract and the administering institution must sign the Funding contract before grant payments can be made.

Projects must commence as required by the Funding Contract. Failure to do so will result in termination of funding.

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

10.1.1. Varying the Funding Contract

Requests to vary the Funding Approval or the Funding Contract must be forwarded in writing by the institution's Research Office, or equivalent, to the ARC. The Funding Approval may be varied where any of the circumstances described in subsection 55(3) of the *Australian Research Council Act 2001* occurs namely:

- the organisation's involvement with the research program ends;
- the research program changes so that it is no longer consistent with the description in the Funding Approval;
- the person named in the funding approval as the person leading the research program ceases to lead the program; and
- any other such circumstances as the ARC may, in its discretion, determine.

10.1.2. Reports

Administering organisations are required to submit reports concerning funded projects to the ARC on a regular basis, as detailed in the Funding Contract.

11. Other matters

11.1. Applicable legislation

The Institution agrees to comply with the requirements of the Privacy Act 1988 and the Freedom of Information Act 1982 to the extent this legislation applies to the activities undertaken under this Contract. Researchers seeking advice on the provisions of these Acts should contact their institution's Research Offices.

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.

11.3. Publicity and Announcements

Notwithstanding Item 11.2, the ARC may announce publicly an offer of grant, and include in that announcement information about the proposed research. This information may include, but is not restricted to, the name and institution of any applicant, the title and summary descriptions of the project and its intended outcomes, and the level of funding from the ARC and any other organisation involved in the project.

11.4. 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.

11.5. 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 for funding.

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 Australian 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).

11.6. Contact points

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

Enquiries about Linkage Infrastructure Equipment and Facilities may be addressed to:

Linkage Infrastructure Equipment and Facilities
(Program Coordinator)
Disciplines and Programs
Australian Research Council
GPO Box 2702
CANBERRA ACT 2601

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

Appendix 1. Eligible Higher Education Institutions

Higher education institutions receiving Commonwealth funding on a triennial basis

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. Library and information infrastructure

Applications for library and information infrastructure must address the matters raised here in addition to the requirements specified in the body of these Funding Rules.

One of the aims of the LIEF Program is to fund the development of library and information infrastructure that enhances high-quality research projects. Applications in this category must demonstrate that they will enhance specific high-quality research projects, and that they will benefit researchers and scholars nationally. Applications must be collaborative in nature.

All applications for library and information infrastructure should demonstrate:

- how the infrastructure enhances/ will enhance the ability of Australian researchers to access or use information resources effectively and efficiently;
- that the project will not duplicate existing library and information infrastructure, but will link to existing infrastructure in Australia and overseas;
- that the project has the capacity for future development and enhancements;
- that the outcomes are sustainable; and
- that current developments in the information sciences, including international standards and protocols, systems and software to further library and information network inter-operability, are understood and applied.

All applications for library and information infrastructure should address one or more of the following elements of the national library and information infrastructure:

- the development of improvements in access to information resources that can be made available nationally. This may include
  - developing services that provide access to integrated print and electronic information resources, and/or
  - improving the level and quality of access through developing significant new directory, cataloguing or indexing services;
- the testing, development and implementation of innovative and sustainable models that will lead to improved access to distributed information and research library resources;
- the purchase or development of information resources of national significance, whether in electronic form or otherwise, that can be made available nationally. This will include
  - the development of information resources to meet Australian research priorities, and/or
  - proposals to meet or provide resources that will fill significant gaps in the research resources available to the nation.

Applications for library and information infrastructure must outline:

- how access to the resources will be managed (e.g. through subscription to a database); and
- how the resource will be sustained following the period of LIEF funding. When addressing this point, applicants should note that in general it is desirable that publicly funded databases should be made available to members of the public, unless there are specific reasons for this not to be the case (e.g. copyright).

Appendix 3. 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.