Annual Report 1991-92

1992
Dear Prime Minister

This is the annual report of the Australian Science and Technology Council for the financial year ending 30 June 1992 prepared in accordance with section 27 of the Australian Science and Technology Council Act 1978, subsection 25(6) of the Public Service Act 1922 and with the requirements referred to in subsection 25(7) of the Public Service Act 1922.

Subsection 34C(2) of the Acts Interpretation Act 1901 requires the report to be furnished to you as soon as practicable and in any event by 31 December 1992. Subsection 25(8) of the Public Service Act 1922 requires you to cause a copy of the report to be laid before each House of the Parliament within fifteen sitting days after the day on which you received the report.

I recommend that it be made available to members of Parliament.

Yours sincerely

(L M Birt)
Chairman

24 September 1992

For and on behalf of

D A Aitkin          A Henderson-Sellers          J G McLeod
G J Clark          M A Jackson          R L Martin (past Chairman)
A W Goldsworthy          R D Johnston          D J Nicklin
R G Gregory          P J Laver          A E-S Tay
                                      L S Zampatti
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CORPORATE OBJECTIVE

To provide information and high level advice to the Government on matters relating to science and technology, based on ASTEC's independent status, its broad, longer term perspective and its links with the science and technology community.

FUNCTIONS

The Australian Science and Technology Council was established as a statutory authority on 28 February 1979 under the Australian Science and Technology Council Act 1978. The Council, usually known by the acronym ASTEC, is the Government's principal source of independent advice on a wide range of policies and programs related to science and technology and concerning Commonwealth departments and agencies, higher education institutions and private enterprise.

The statutory functions of the Council as set out in the enabling legislation are:

- the advancement of scientific knowledge
- the development and application of science and technology in relation to the furtherance of the national well-being
- the adequacy, effectiveness and overall balance of scientific and technological activities in Australia
- the identification and support of new ideas in science and technology likely to be of national importance
- the practical development and application of scientific discoveries
- the fostering of scientific and technological innovation in industry, and
- the means of improving efficiency in the use of resources by the application of science and technology.

ASTEC is empowered to operate by conducting inquiries, gathering information, engaging consultants, appointing committees and producing reports. Reports may be initiated by the Prime Minister or the Council and are tabled in Parliament. ASTEC reports to the Prime Minister. In everyday matters ASTEC works closely with the Minister Assisting the Prime Minister.
1 CHAIRMAN’S INTRODUCTION

Innovation and improvements in technology are central to industrial growth and ultimately to the social and economic development of nations worldwide. However, they are not the only determinants of economic growth. Effective use of science and technology requires careful linking of technological capacity to other natural and human endowments and to the created capacities of a nation. Australia is a technically advanced nation, but has a small population, narrow industrial base, is geographically isolated and faces challenging economic problems. It needs to manage its scientific and technological capabilities to help overcome these disadvantages and thereby maintain the quality and standard of life of its citizens.

Science has proved itself to be a powerful tool for advancing understanding of our world by adopting a particular basis for inquiry, namely, the methods of the ‘natural sciences’. Technology works in parallel with science, in some situations stimulating scientific inquiry and in others applying scientific knowledge, and leads to improvements in commercial production, human communication, and management of our environment.

These considerations make it apparent why the Australian Government, our industrial and commercial organisations, and our university systems, have devoted much thought and effort to strengthening activities in science and technology, and to enhancing cooperation between the various groupings developing, or using, science and technology.

Since its inception, ASTEC has been concerned with promoting the development of Australian science and technology and their application in industry, commerce and society. It is able to make a unique contribution to this task because of its membership which is drawn from the Australian science and technology community, from the universities, and from industry and commerce. This membership ensures that the Council is well-placed to advise the Government on opportunities and threats posed by the impact of technological developments in the Australian community and to recommend actions to deal with these.

This is, of course, the first occasion on which I have been able to contribute to the ASTEC Annual Report, as its Chairman. I count it a privilege to serve on the Council, and to follow in the footsteps of a colleague and friend of long standing, Professor Ray Martin. He has ensured that the Council has developed an effective means of identifying the elements of its work program by a close interaction between the Council and the Office of ASTEC, and of communicating the outcomes of its work through widely-distributed reports and papers. This process of dissemination of information, analyses and proposals for action offers a powerful method of alerting our society generally to the utility and relevance of Australian science and technology. It requires careful selection of topics chosen for investigation and report.

These comments lead me to the position that the fundamental role of ASTEC is to identify specific ways in which science and technology in Australia can promote the development of our society. In consequence, it is necessary for ASTEC to identify topics of national importance which require considered analysis and which ASTEC is particularly competent
to examine. Wide consultation in identifying these topics to form its work program is essential if the Council is to maintain its authority as the Government’s principal source of independent advice on science and technology.

Once a particular topic of major importance has been identified, the most effective process for ASTEC to follow is for:

(i) the Council to form a working party to examine in detail the issues involved, and possibilities for action;
(ii) the working party to consult widely and to report regularly on progress to the Council before providing a draft report;
(iii) the Council to consider in detail the draft report of the working party (including any proposals for action) and when appropriate to publish it for public comment and discussion; and, finally
(iv) the Council to revise the draft and transmit the final report to the Prime Minister.

In addition to identifying and examining major issues in science and technology in this way, ASTEC also publishes papers in which the primary focus is on deepening or extending the information publicly available about particular fields of science and technology. Such publications are designed to improve the general understanding of current developments and issues in science and technology, and to assist in the wider dissemination of information. Many of the steps I have outlined are tried and proven practices of ASTEC, others are a strengthening of existing practices and some are new. I believe these steps will enhance ASTEC’s contribution to science and technology policy.

This account of the operation of ASTEC makes it clear, I believe, that the Council has an increasingly important and varied role to play in scientific and technological developments in Australia. It remains fully committed to maintaining that contribution in the years ahead.

Professor Birt at the Big Science Forum, May 1992. (Peter West - Australian Photographic Service).
2 ACTIVITIES OF ASTEC

This section of the report reflects on the Chairmanship of Professor Ray Martin, describes ASTEC’s study program, its technology assessment role and its coordination activities.

RETIREMENT OF PROFESSOR R L MARTIN
CHAIRMAN OF COUNCIL, 1988-1992

This annual report affords the opportunity to reflect on the considerable contribution of Professor Ray Martin, and more generally of those Council members, serving and now retired, who worked together during the period of Ray’s chairmanship to produce an outstanding record of performance through the production of reports and in other ways advising the Prime Minister and Government on science and technology in Australia. The S&T capabilities of the nation have continued to change and, in many areas, advance considerably. As this process of change occurred ASTEC performed a vital function in identifying issues which needed to be addressed and in setting the directions for change, often itself acting as the agent of change. For example, the report Future Directions for CSIRO of 1985, identified the key changes needed to make CSIRO’s research more applicable to the priority needs of Australian industry. During Ray Martin’s term, ASTEC has continued to strengthen and broaden this theme of examining the direction and balance of science and technology funding and performance. The various contributions which reflect successive steps in pursuing this theme are outlined in the following diagram.

Two landmark reports Setting Directions for Australian Research, September 1990, and Research and Technology: Future Directions, September 1991, established a new approach to the way in which the Government, industry, academia, the Academies and the wider S&T community would work together in identifying important issues, explore options and finally set directions for S&T in Australia at regular intervals into the future. The first cycle of this exciting and more cohesive approach to the planning and management of Australia’s S&T system will reach completion with the issuing of a Science and Technology White Paper by the Minister Assisting the Prime Minister and Minister for Science and Technology, Ross Free, MP, in August 1992.

As shown in the diagram, there are five categories within which ASTEC prepared reports and papers, each category addressing basic elements of the theme of assessing and directing the S&T system or infrastructure. The cohesive manner in which Ray Martin guided the Council to accord sufficient emphasis to each element ultimately created the milieu which engendered confidence and respect from Government, the science agencies, academia and the general S&T community; and ensured that the advice and guidance ASTEC offered received serious consideration, and in most instances, was substantially implemented.
HEALTH OF AUSTRALIAN SCIENCE

- Profile of Australian Science (1989)
- Government Funding of Academic and Related Research (1990)

INFRASTRUCTURE OF AUSTRALIAN SCIENCE

- The Future of Australian Astronomy (1989)
- Small Country Big Science (1990)
- An Australian International Gravitational Observatory (1991)
- Major National Research Facilities: A National Program (1992)

Planning & Priority Setting

Science, Technology and Australia's Future (1990)
Setting Directions for Australian Research (1990)
Research and Technology: Future Directions (1991)

Environmental Research in Australia

Compendium (1990)
A Review (1990)
The Issues (1990)
Case Studies (1991)

Technological Change

Casting the Net: Post-Harvest Technologies and Opportunities in the Fishing Industry (1988)
Health Politics Trade: Controlling Chemical Residues in Agricultural Products
Your Word is my Command (1990)
Australia is characterised by a narrow industrial base, with very few internationally active manufacturing firms generating a strong demand for new technological knowledge. As a result, the S&T infrastructure and the manufacturing industry have evolved separately with limited interaction. Moreover, Australia's industry is technology-based only in specialised areas and without sufficient export orientation. ASTEC has consistently recommended that the S&T infrastructure be better orientated to help industry become more innovative and technologically advanced. One by one each of the Commonwealth science agencies, often on the recommendation of ASTEC, has directed greater attention to the needs of Australian industry. However, Australian industry remains weak with respect to its ability to be innovative and aggressively competitive in global markets. This will be a major issue for the attention of industry and government as we progress to the 21st Century. Importantly, the S&T infrastructure is now better able to support Australia's manufacturing and international trading sectors. ASTEC members, and Ray Martin in particular, can take considerable credit for their contribution to re-shaping and strengthening the capabilities of the nation's S&T system. As a result, Australia is better prepared for the formidable challenges now facing the nation.

Throughout his term of office, Ray Martin worked closely with the Prime Minister, the Minister Assisting the Prime Minister for Science and, more recently, the Minister Assisting the Prime Minister. ASTEC welcomed the appointment of the Hon. Ross Free, MP, to Minister Assisting the Prime Minister on 27 December 1992. In ASTEC's view, this broadening of responsibilities reflects the Government's recognition of the importance of integrating science and technology into other areas of Government policy. During the year, the Hon. Ross Free, MP, addressed the September 1991 meeting of the Council, and opened both the Canberra Forum on Research and Technology: Future Directions in November 1991 and the Big Science Forum in May 1992. The Council has welcomed the active interest and involvement of the Minister in ASTEC's activities.

**COMPLETED STUDIES**

The studies program in 1991-92 saw the completion of two reports; *Research and Technology: Future Directions* and *Major National Research Facilities: A National Program*. As well, the final product of the environmental research study *Environmental Research in Australia: Case Studies* was published.
Research and Technology: Future Directions

ASTEC has long argued for a more cohesive, planned approach to the formulation of Government policy directions on science and technology. In its 1990 report Setting Directions for Australian Research ASTEC recommended to the Prime Minister that a White Paper process be established which regularly sets national directions for Australian research and development. It further recommended that:

i The objective for national direction-setting should be to set broad and coordinated government guidelines for research and development policy in Australia, within which departments, agencies and researchers can set more specific strategic and operational priorities.

ii The process should take place every four years, include a longer term perspective of eight to twelve years and relate to annual reviews of research priorities at the strategic and operational level within agencies as part of the triennial rolling budget process.

iii The mechanism should be a White Paper tabled by the Prime Minister, endorsed by the Prime Minister’s Science Council, drafted by the Coordination Committee on Science and Technology, and based on an issues and options paper prepared by the Australian Science and Technology Council following wide consultation with the research community, industry and other users of research.

In response to Setting Directions for Australian Research the Prime Minister requested that ASTEC initiate the process leading to a White Paper on science and technology.

The preparation of the issues and options paper Research and Technology: Future Directions proved to be a more broad-ranging and complex task than ASTEC’s usual studies, involving a call for submissions and extensive consultations, as well as literature review and quantitative analysis.

In a departure from usual practice, all Council members were involved in the development of the report. A Management Group, comprising Professor Ray Martin, Professor Don Aitkin and Professor Ron Johnston directed the process, while Council members met in three Working Groups to consider specific issues, and also reviewed the report as a whole. The process of dialogue with interested parties was central. Following preliminary discussions, ASTEC undertook a comprehensive consultation program with industry, government and higher education sectors.
It sought the views of a wide range of policy advisers and funders, performers and users of research and technology in Australia and overseas, including members of state government science and technology advisory bodies and other state government departments and agencies.

Some 190 submissions were received from a wide cross-section of individuals and organisations in the private and public sectors in all states and territories; meetings with over 200 people were held in capital cities; and an intensive interview program with more than 150 top level managers sought their views on industry-specific matters. Australia’s network of Industry, Science and Technology Counsellors provided current information on overseas policy development and several Council members held consultations overseas.

Throughout the study, ASTEC maintained close contact with senior managers in the industry, government and higher education sectors which enabled ASTEC to explore a broad range of problems and opportunities facing Australia, and to identify the major issues for which policy or other actions could be developed.

A number of major issues, and several options for action for each issue, were identified in the report. The main areas dealt with were research, technology and international competitiveness; energy and the environment; quality of Australian life; managing Australia’s research resources; and Commonwealth and States issues.

To complete the consultation process, a series of fora were held in Canberra, Perth and Brisbane to launch the report, to inform the wider community about the report and its development, and to obtain feedback.

Three companion volumes to Research and Technology: Future Directions were planned: A Summary Report was published late in 1991, and an ASTEC Occasional Paper (based on the series of industry related interviews), and the proceedings of the Canberra forum on the report will be published in 1992. Through these publications and extensive consultations, the future directions process created a great deal of interest and raised issues in relation to the broad questions of setting national directions for Australian research and technology.

The White Paper, to which Research and Technology: Future Directions has made a significant contribution, is being drafted by an Interdepartmental Committee, chaired by the Chief Scientist in the Department of the Prime Minister and Cabinet, Professor Ralph Slatyer. It is to be released in August 1992 in conjunction with the Budget.
Major National Research Facilities

ASTEC's report, *The Future of Australian Astronomy (1990)*, highlighted the need for a more considered approach to the identification of likely funding needs for large facilities. In March 1990, the Coordination Committee on Science and Technology recommended that ASTEC develop criteria for assessing proposals for major facilities and apply the

**TERMS OF REFERENCE - MAJOR NATIONAL RESEARCH FACILITIES**

i To establish criteria for assigning relative priorities to proposals for funding major national research facilities (major facilities are those costing in excess of $5 million).

ii To identify any proposals likely to be developed over the next five to ten years, including proposals for the replacement or upgrading of existing facilities.

iii To assess the relevance and importance of the proposals likely to be developed in the context of Australia's needs and priorities for science and technology.

criteria to any proposals known to be under development. As a result the Prime Minister in April 1991, commissioned ASTEC to carry out a study of major national research facilities which are likely to require Government decisions on their funding over the next ten years.

ASTEC commenced the study by calling for Expressions of Interest for major national research facilities from all government-funded research performing bodies (through the Coordination Committee on Science and Technology).

Over 90 proposals were received. To provide information to the science and technology community about the facilities proposed by Australian research bodies, ASTEC published Occasional Paper No 19 *Major National Research Facilities: Expressions of Interest* (October 1991) which listed the facility titles, organisations, and funds required.

ASTEC developed criteria for assessing proposals for facilities in accordance with the Terms of Reference. These criteria were applied to identify the proposals which ASTEC considered would be the highest priority for possible funding by Government. The criteria were a major outcome of the study.
BENEFITS TO SCIENCE AND TECHNOLOGY

Scientific Objectives and their Significance

- Does the proposal develop an area of scientific or engineering research of great importance to Australia and which is at the leading edge of international research?
- What are the key scientific questions that can be answered by having access to the proposed national facility?
- Why are the answers to the questions significant for Australian science and technology?
- Will the proposed national facility be made available to outside researchers subject to independent peer review?

Established Need

- Is the case for the proposed national facility appropriate in terms of Australia’s current national priorities?
- Does the proposal involve a major source of expenditure on a piece of equipment of a scale such that it could not be developed incrementally or funded by an institution or consortium of institutions without serious disruption to other commitments of equal or higher priority?
- Is there a community of outstanding Australian scientists and technologists committed to the success of the proposed national facility?

Unique Characteristics

- Are there characteristics of the proposed national facility that are uniquely appropriate for Australia?

Degree of Impact

- What impact will the proposed national facility have on fostering interdisciplinary research?
- Will the proposed national facility provide new opportunities for doctoral and post-doctoral training in research?
- Will the proposed facility contribute to public pride and national prestige of Australia’s science and technology?

International Characteristics

- Will the proposed national facility encourage international scientific collaboration by attracting researchers from overseas to spend time in Australia?
- Could the proposed national facility be located with advantage overseas in partnership with one or more other countries?
- Would the proposed national facility, if located in Australia, attract international partners?

Criteria for assigning relative priority to a major national research facility
BENEFITS TO THE NATION

Industry Objectives and their Significance

- Will the construction of the proposed national facility provide a technological stimulus to Australian industry?
- Will the proposed national facility provide unique services of benefit to Australian industry?
- Could the proposed national facility lead to better linkages between academic and research institutions, and industry?
- Will the research outputs from the proposed national facility foster the development of new Australian enterprises?
- What contribution will the proposed national facility make to enhancing the skills base and training level of Australian technologists?

Social Objectives and their Significance

- Is the proposed national facility of high national priority for the advancement of knowledge, economic growth, health, welfare or national security?
- Does the proposed national facility contribute to a better understanding and management of our environment?
- Will the proposed national facility lead to an improved understanding and appreciation by the Australian community of the accomplishments of science and technology?

International Standing

- Will the proposed national facility project and enhance Australia’s image as a technologically advanced nation?
- Will Australia’s position in international negotiations be strengthened as a result of the proposed national facility?

Criteria for assigning relative priority to a major national research facility (continued)
The study identified seven proposals for likely development over the next decade:

- Australia Telescope
- High Flux Research Reactor
- Marine Geoscience Research Vessel
- Mining Materials Research Facility
- Synchrotron Research Facility
- Tropical Marine Research Network
- Very High Speed Research Data Network.

Several of these proposals involve the upgrading or replacement of existing facilities. Another eight proposals were identified in the report as of high merit.

RECOMMENDATIONS - MAJOR NATIONAL RESEARCH FACILITIES

ASTEC recommends

that the development of major national research facilities in Australia, including the operation of existing facilities, be recognised as a national program subject to periodic review;

that the review process be undertaken every four years in conjunction with the proposed White Paper process; and

that the review process give consideration to new proposals for inclusion in the program, access to major international research facilities and the phasing out of facilities that no longer have high national priority.

Recommendation 1

ASTEC recommends that the criteria developed for this report be used to assign relative priorities to proposals for the establishment, upgrading or replacement of major national research facilities.

Recommendation 2

ASTEC recommends that a budgetary allocation of $40 million per annum be provided by the Government for funding a national program for major national research facilities over the next ten years.

Recommendation 3

The report’s major recommendation is that a National Program be established for the assessment and funding of major national research facilities to replace the current ‘ad hoc’ approach to identifying major facilities.

The report, Major National Research Facilities: A National Program, was tabled in Parliament by the Minister Assisting the Prime Minister and Minister for Science and Technology, the Hon Ross Free MP, on 30 April 1992. The Minister said that it was
recognised internationally that major national research facilities are too important for decisions to be made on an ad hoc basis. He also said that: ASTEC has produced a valuable report which will enable us to establish procedures for assessing the relative benefits to Australia of proposals for major national research facilities, and that: The value of this report is its recognition of the need for a national program, and identification of criteria by which various proposals can be judged.

**Big Science Forum**

As a follow-up to the Major National Research Facilities study, the OECD meeting on Big Science (Paris, March 1992) and the International Workshop on Equipping Science for the 21st Century (Amsterdam, April 1992), ASTEC held a Forum on National and International Developments in Big Science to promote awareness of the current issues. The Forum, held on 29 May 1992 in Canberra, was restricted to key policy makers; forty five people attended.

The Minister Assisting the Prime Minister and the Minister for Science and Technology, the Hon Ross Free MP, opened the Forum. There were two presentations on the recent international meetings, a presentation on the Major National Research Facilities Report, and three case studies highlighted in the major national research facilities study: Research Reactors and Recent Australian Nuclear Science and Technology Organisation Developments; the Marine Geoscience Research Facility; and the Australian Academic Research Network.

Abstracts of presentations given at the Forum will be included in an ASTEC Occasional Paper on big science related matters to be published later in 1992.

![Participants at the Big Science Forum](image-url)  
*Participants at the Big Science Forum (L-R) Professor Ralph Slatyer, Former Chairman ASTEC; Professor Ray Martin, former Chairman ASTEC; the Hon. Ross Free MP, Minister Assisting the Prime Minister; Professor Michael Birt, Chairman ASTEC. (Peter West - Australian Photographic Service).*
Review of Environmental Research in Australia

The final publication in the environmental research study was published in November 1991. *Environmental Research in Australia: Case Studies* consists of seven different Australian environmental resource-use case studies which are historically significant in outlining Australia’s application of environmental research to natural resource-use decision making. The individual case studies are:

- Wesley-Vale Bleached Eucalypt Kraft Pulp Mill;
- Latrobe Valley Air-Shed Study;
- Wet Tropics of North-East Queensland;
- Salinity and Waterlogging in the Murray-Darling Basin;
- Bauxite Mining in the Darling Ranges;
- The Crown-of-Thorns Starfish in the Great Barrier Reef; and
- Southern Bluefin Tuna.

**CURRENT STUDIES**

During the extensive consultation program undertaken in preparing *Research and Technology: Future Directions*, a number of high priority issues were identified, especially by industry, from which ASTEC has developed its current work program. Issues which have been identified for detailed study are tropical research and technology; energy research and technology; and the social sciences, humanities, science and technology in economic development.

**Research and Technology in Tropical Australia and their Application to the Development of the Region**

The importance of tropical zone research and technology as a critical area of economic and social benefit to Australia was especially highlighted during consultations for ASTEC’s study on *Research and Technology: Future Directions*. In that report, the Council concluded that ‘the unique opportunity for Australia to exploit its natural competitive advantage in tropical agriculture, medicine and technology is being neglected’.

The Council responded to this community concern by identifying tropical R&D as a topic of high priority for the new work program. As a result, in April 1992, the Prime Minister requested ASTEC to undertake a study of research and technology in tropical Australia and their application to the development of the region.

In announcing the study the Ministers, Assisting the Prime Minister for Northern Australia and Assisting the Prime Minister commented:

*The Australian tropics are characterised by a huge diversity of physical environments and a unique biota and culture. These factors, together with the remoteness of the region, provide both immense opportunities and significant problems. Were these opportunities to be realised, and the problems overcome, Australia could become a world leader in dry and wet/dry tropical zone products and services. It could realise significant economic, social and environmental benefits for Northern Australia, and for tropical regions in other countries.*
### TERMS OF REFERENCE - RESEARCH AND TECHNOLOGY IN TROPICAL AUSTRALIA

1. **Review** the distribution, organisation and funding of research and development (R&D) activities relevant to tropical Australia.

   **Assess** these activities in terms of:

   - their effectiveness in relation to the realisation of opportunities in the region, to the resolution of problems in the region and to national well-being; and
   - their potential contribution to furthering international collaboration.

2. **Identify** opportunities for tropical zone R&D and associated technologies for the next decade.

3. **Recommend** appropriate action to capitalise on identified opportunities and to rectify any deficiencies.

In developing the terms of reference for the study, ASTEC consulted with the governments of Queensland, Western Australia and the Northern Territory as well as with industry, research organisations and other interested parties. The Prime Minister has drawn attention to the fact that a significant area of northern Australia is under Aboriginal ownership or control, raising issues which merit particular attention.

The focus of the study is on research and technology relevant to tropical Australia (i.e., north of the Tropic of Capricorn, 23°26.5'S, and comprising the wet, wet/dry and dry tropics and the maritime area), but recognising that many research and other activities outside this geographical region are relevant to the tropical zone and must be taken into consideration.

An extensive program of consultations is an integral part of the study. ASTEC has already undertaken consultations in Darwin, Brisbane and Perth, and the response from the State and Territory governments, industry and research sectors has been positive. Further consultations across northern Australia are planned, including two symposia to be held in Townsville and Darwin in late 1992. The symposia will provide a forum for discussions on the contribution that research and technology have made to the social and economic development of tropical Australia and to assess the way forward.

### WORKING PARTY MEMBERS - RESEARCH AND TECHNOLOGY IN TROPICAL AUSTRALIA

- **Professor Jim McLeod** (Convenor)
  - University of Sydney
- **Mr Russell Birrell**
  - Geochemex Australia
- **Dr Ted Henzell**
  - CSIRO Institute of Plant Production and Processing
- **Professor Rhondda Jones**
  - James Cook University
- **Professor Malcolm Nairn**
  - Northern Territory University
- **Dr Jim Peacock**
  - CSIRO Division of Plant Industry
- **Mr John Vines**
  - Association of Professional Engineers and Scientists, Australia
ASTEC is working closely with the newly established federal Office of Northern Development (OND) on aspects of the study. ASTEC and OND have jointly commissioned a compendium of northern Australian research. Consultants have been asked to identify those organisations performing relevant R&D and to provide information on research projects, objectives and funding. The Council has identified the research compendium as an important outcome of the study and the information will be made publicly available.

A call for public submissions to the study will be made in July 1992. The Prime Minister has asked ASTEC to complete the study by mid 1993.

**Future Directions in Energy Research and Technology**

The Council is undertaking a study of energy research and technology in order to identify ways to make these activities in Australia more effective. A Working Party has been appointed and will consult widely among those involved in carrying out, funding or using research and technology relevant to energy production and use.

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<th>TERMS OF REFERENCE - ENERGY RESEARCH AND TECHNOLOGY</th>
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<tr>
<td>i Define the appropriate role for research, development and demonstration (RD&amp;D) in supporting Australia's competitive position in the changing world environment and energy market.</td>
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<tr>
<td>ii Review the distribution, organisation and funding of Australian RD&amp;D activities relevant to energy production and use.</td>
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<td>iii Recommend appropriate action to increase the effectiveness of Australia's energy RD&amp;D activities.</td>
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ASTEC first reported on energy research in *Energy Research and Development in Australia*, tabled in 1978, which recommended initiatives that included the establishment of the National Energy Research, Development and Demonstration Council. In 1991, ASTEC revisited energy issues in *Research and Technology: Future Directions*. In the context of sustainable development, this report highlighted conservation and efficient management of energy, strategic research on reducing greenhouse gas emissions, and a long-term strategy for renewable energy.

ASTEC’s study will pay particular attention to energy efficiency and the principal industry sectors, including coal, electricity, gas, oil, nuclear and renewables.
The study will attempt to identify Australia's appropriate role in the global energy economy. It will ask how energy RD&D can improve the competitiveness and flexibility of Australian energy-related industries, and seek to identify appropriate niches for Australian RD&D.

The study will also ask how energy RD&D can help us respond to:

- environmental concerns, including ecologically sustainable development and greenhouse gases;
- economic and social needs and strategies;
- national and international interests;
- short-term and long-term interests.

### The Social Sciences, Humanities, Science and Technology in Economic Development

The broad issue of the social sciences and the humanities in economic development has come up in various contexts but was consistently raised during the consultation process (including industry interviews) for Research and Technology: Future Directions.

### TERMS OF REFERENCE - THE SOCIAL SCIENCES, HUMANITIES, SCIENCE AND TECHNOLOGY IN ECONOMIC DEVELOPMENT

Recognising the wide-ranging benefits of the social sciences and the humanities to Australia's economic, social and cultural well-being:

i. Identify and evaluate the role of the social sciences and the humanities in the contribution of science and technology to economic development.

ii. Identify and assess the infrastructure, organisation and funding of research and education in the social sciences and the humanities which are or could be relevant to economic activity.

iii. Make recommendations to improve the effectiveness of the role of the social sciences and the humanities in enhancing the contribution of science and technology to economic development.

A frequently expressed perception was that research in the social sciences and humanities seems unrelated to contemporary national concerns, and needs to be aligned more closely with economic and social imperatives. In addition, there is a growing recognition that a balanced science and technology system needs to recognise the importance of research in

### WORKING PARTY MEMBERS - ENERGY RESEARCH AND TECHNOLOGY

- **Ms Margaret Jackson**, (Convenor) KPMG Peat Marwick
- **Professor Bill Charters** University of Melbourne
- **Mr Bob Foster** formerly BHP Ltd
- **Mr Bruce Godfrey** Energy R & D Corporation
- **Professor Ann Henderson-Sellers** Macquarie University
- **Dr Jan Kolm** formerly NERDDC
- **Professor Don Nicklin** University of Queensland
- **Mr Bob Rollinson** Pacific Power
the social sciences and humanities, not just as cultural activities but as being necessary to improve Australia’s economic performance and social environment.

ASTEC has begun a study which will examine specific aspects of this topic. The Working Party has invited a number of people to join a reference group which will be asked to comment on drafts and offer specialist advice on a range of issues. The Group will be drawn from the industry, government and higher education sectors, and include practitioners and users of the social sciences and the humanities.

Consultation will be an important part of the study. Early in 1992, the Working Party met with the Australian Academy of the Humanities and the Academy of the Social Sciences in Australia and undertook some preliminary consultations in Canberra. A discussion paper will elicit submissions from a targetted group of people with an interest in the social sciences and the humanities, and science and technology. Further meetings are planned. In addition, literature review and statistical analysis will augment the detailed development of the report. The report is planned for completion in December.

TECHNOLOGY ASSESSMENT

Consistent with its responsibility to perform a technology assessment role for Government, ASTEC is undertaking studies of nanotechnology and of gene technology. Both topics were put forward, in May 1992, as possible presentations to the Prime Minister’s Science Council (PMSC).

Nanotechnology Study

The drive for miniaturisation and higher precision across a widening range of manufacturing activities is continuing globally. This puts demands on industry for new capabilities for machining, positioning and control and measurement to nanometre tolerances; it also calls for improved understanding of materials and processes at the molecular or atomic level. This gives rise to the development of the technological activities of nanotechnology.

Nanotechnology is the technology of manufacture where dimensions or tolerances of 0.1 nanometre to 100 nanometres play a critical role (1 nanometre being 10^{-9} metre). It is both an enabling technology which will provide the basis for other technological developments and also cross-sectoral as it has applications in areas such as optics, electronics and sensors.
In April 1992, Council agreed to prepare a discussion paper on nanotechnology which would serve as an input to the PMSC meeting to be held in late 1992. ASTEC is also undertaking a full study on the topic. A Working Party comprising experts drawn from industry, academia and research organisations has been appointed.

ASTEC will review Australia’s capabilities, while other countries’ activities (especially Japan and the US) will provide the basis for discussion of Australia’s policy for possible development in these areas. Currently, the technologies are at the pre-competitive stage worldwide; for example, there is a ten year MIT research project in nanotechnology worth hundreds of millions of dollars. Australia has considerable expertise mainly in CSIRO and the universities but is constrained by a lack of modern equipment and capital investment.

**WORKING PARTY MEMBERS - NANOTECHNOLOGY**

Professor Don Nicklin (Convenor)  
University of Queensland

Dr Gregory Clark  
IBM (Australia) Limited

Professor Robert Clark  
University of New South Wales

Dr Bruce Cornell  
CSIRO Division of Food Processing

Mr Owen Hill  
AWA MicroElectronics Pty Ltd

Dr Ian Pollock  
CSIRO Division of Applied Physics

**TERMS OF REFERENCE - NANOTECHNOLOGY**

i. Define nanotechnology, examine its scientific promise and its role in contributing to economic development.

ii. Recommend appropriate action to capitalise on this emerging technology.

Since nanotechnology has a core of general techniques relating to manufacture, measurement and materials it is potentially of great significance to many aspects of industry including communications, aerospace, health, environment, mining and agriculture.

The Working Party will consider how Australia can best make use of these technologies to increase our international competitiveness.
Gene Technology - Opportunities for Australia

The study is intended to complement the recent publication of a report *Genetic Manipulation: the Threat or the Glory* by the House of Representatives Standing Committee on Industry, Science and Technology.

**TERMS OF REFERENCE - GENE TECHNOLOGY**

i. Examine the existing and likely impacts of gene technology on Australian society.

ii. Review research into gene technology and the opportunities for its application in developing pharmaceuticals and in medical, food, agricultural and environmental sciences.

The study is being conducted in collaboration with the Department of Industry, Technology and Commerce and will renew ASTEC’s contribution to the topic following its 1982 report *Biotechnology in Australia*. In the same period, the then Department of Science published two reports on biotechnology, relating to the prospects for its application to industry in Australia.

The study will have two products: first the material for a possible presentation to the PMSC and second the preparation of an ASTEC Occasional Paper which will be more comprehensive in scope. The draft of this paper will be circulated widely and used as the basis for a specialist symposium on the topic.

The chief intent in proposing the topic for presentation to the PMSC is to better inform key Ministers with responsibility for different aspects of genetic manipulation on the current status of research on gene technology and of opportunities for its application in medical science, agriculture and industry in the immediate future.

**WORKING PARTY MEMBERS - GENE TECHNOLOGY**

- **Dr Jim Peacock** (Convenor)
  - CSIRO Division of Plant Industry
- **Professor Jim McLeod**
  - University of Sydney
- **Professor John Shine**
  - Garvan Institute of Medical Research
- **Dr Elizabeth Dennis**
  - CSIRO Division of Plant Industry

As well as the Working Party, an extended external reference group has been established to ensure the top specialists in research and industry provide substantial input to the preparation of the Occasional Paper and participate in the presentation to the PMSC.
CONSULTATION AND COORDINATION

As part of its consultative and monitoring role inside and outside of government, ASTEC’s work program during the year included diverse coordination activities.

Interaction with State Science and Technology Bodies

ASTEC has continued to foster close contact between state and territory agencies responsible for science and technology, and New Zealand counterparts, through its twice yearly meetings. These meetings are an important focus for identifying and discussing areas of joint interest. They are also an opportunity to provide briefings on recent Commonwealth initiatives and programs.

A workshop was held in conjunction with each of the two meetings in 1991-92. At the November 1991 meeting in Canberra, a workshop was held on research data and, at the June 1992 meeting in Hobart, a workshop was held on technology parks.

Impetus for the Research Data Workshop came from the Department of State Development, New South Wales, and from the Centre for Research Policy, University of Wollongong, which joined ASTEC in organising and sponsoring the event. The workshop was held to exchange information on, and to discuss problems with, the collection, coordination and use of data (particularly quantitative data) on research and development activities in Australia. Actions that might be pursued were identified:

- the production of a directory of R&D data resources;
- the establishment of a ‘one-stop shop’ for research data;
- the formation of a steering committee of collectors, custodians and users of R&D data;
- further support for development of the Australian Standard Research Classification (ASRC);
- changing accounting standards to encourage the reporting of business R&D expenditure; and
- the inclusion of a science and technology representative on the Australian Statistics Advisory Committee.

The workshop noted that several of these options would require a significant commitment of resources. However, they could lead to better data, better decision making and thus cost savings. The proceedings of the November workshop have been published as Occasional Paper No 20.

Following interest at the November 1991 meeting, a workshop on technology parks was held at the June 1992 meeting in Hobart. Presentations were made by Mr Barry Orr, Chief Executive Officer, Technology Development Corporation; Dr Richard Joseph, University of Wollongong; Hon Mal Bryce, Chairperson, Western Australian Technology and Industry Advisory Council; and Dr Greg Tegart, Secretary ASTEC. The workshop looked at the benefits of linkages between parks, making parks more relevant and the future directions for technology parks. The roundtable discussions following the
presentations focused on the activities in the States and future directions. The proceedings of the workshop will be published as a working paper.

Participants at the Joint Meeting of S&T Advisory Bodies of Australia and New Zealand (L to R) Hon. Mal Bryce, WA; Dr Colin Adrian, ACT; Professor Don Nicklin, Member, ASTEC; Mr Ron Arbuckle, New Zealand; Dr Greg Tegart, Secretary, ASTEC (Photographer - Jonathan Jones).

International Developments in Measuring Research, Science and Technology

In March 1992, ASTEC hosted a seminar on ‘International developments in measuring research, science and technology’. Mr Bill Pattinson (ABS), spoke on the OECD’s expert conference in Rome to prepare a revision of the ‘Frascati Manual’ for R&D statistics. Dr Kevin Bryant, director of DITAC’s S&T Resource Analysis Section, looked at issues to be discussed at a meeting of the OECD’s Group of National Experts on S&T Indicators (NESTI) in April. The seminar attracted about twenty people from Canberra and further afield. Similar seminars may be held in relation to future international meetings on R&D statistics.

Federalism Workshop

As reported in the 1990-91 Annual Report, ASTEC and the Federalism Research Centre (Australian National University) jointly sponsored the workshop Australian Federalism: Getting the Best from the System, at the Australian National University in April 1991. The proceedings of the workshop were published in September 1991 as ASTEC Occasional Paper No 18.
Global Climate Change Program

In 1991-92, the Secretary of ASTEC has continued his commitment to the topic of global climate change through his role as Principal Australian Delegate to the Intergovernmental Panel on Climate Change (IPCC) and as Co-Vice-Chair of Working Group II on Impacts. The financial and staff support to carry out this function are provided through the Climate Change Section in the Department of the Arts, Sport, the Environment and Territories. Involvement of the Secretary in this activity provides a unique opportunity for ASTEC to be up-to-date in environmental issues in the international scene as a background to ASTEC’s own studies in the area. The opportunities for overseas travel provided by the involvement in IPCC are well beyond the limited budget of ASTEC.

1. The International Scene

The IPCC was set up in late 1988 under the auspices of the World Meteorological Organisation (WMO) and the United Nations Environment Program (UNEP) to provide a critical assessment of the information on the science of, impacts of, and responses to global climate change for the Second World Climate Conference in late 1990. The assignment was completed and detailed reports of the three IPCC Working Groups were published by early 1991.

The reports highlighted a number of uncertainties in both the science of global climate change and of its potential impacts. WMO and UNEP decided to continue IPCC and a new work program was drawn up at the Fifth Plenary Session in Geneva in early 1991. The six following tasks were addressed:

Task 1: Assessment of net greenhouse gas emissions

Task 2: Predictions of the regional distribution of climate change and associated impact studies

Task 3: Energy and industry-related issues

Task 4: Agriculture and forestry related issues

Task 5: Vulnerability to sea level rise

Task 6: Emissions scenarios.

The bulk of the work was carried out within the previous Working Group structure, but a conscious attempt was made to link specialists working on cross-cutting issues such as impacts of sea level rise and coastal zone management, forestry and agriculture as sources and sinks of greenhouse gases, etc, by running end-on sessions of the Working Groups and broadly based workshops.
Against a tight schedule, the 1992 IPCC Supplement was produced for final approval at the Seventh Plenary Session in Geneva in February 1992. The Supplement was then circulated widely to provide a strong input to the UNCED meeting on Sustainable Development held in Rio de Janeiro in June 1992.

2. The National Scene

The strong involvement of Australian experts in all three Working Groups has continued during the past year. A major contribution was again made to the activities of Working Group I through a meeting of experts on 18 December 1991 at the Bureau of Meteorology. As well as familiarising Australians with the content of the Supplement, valuable feedback was provided to the UK Drafting Committee.

A major activity organised by officers of the Departments of Primary Industries and Energy and of the Arts, Sport, the Environment and Territories was the international workshop on ‘Assessing Technology and Management Systems for Agriculture and Forestry in Relation to Global Climate Change’ held in Canberra on 20-23 January 1992. This provided an opportunity to bring together some of the activities of Working Groups II and III under the auspices of the Agriculture and Forestry Subgroup (AFOS) of WG III. A number of Australian experts made contributions.

Another major international workshop on ‘The Rising Challenge of the Sea’ was held in Venezuela on 9-13 March and again it brought together some of the activities of Working Groups II and III under the auspices of the Coastal Zone Management (CZM) Sub-Group of WG III. Several Australian experts presented case studies.

A major forum on ‘Climate Change Science - Where Now? What Next?’ sponsored by the Ministers for the Arts, Sport, the Environment and Territories and for Science and Technology was held in Canberra on 14 May 1992. This drew heavily on the 1992 IPCC Supplement and highlighted Australian expertise in science and impacts.

3. Secretary’s Involvement

In his role as Co-Vice Chair of WG II, the Secretary was involved with several of the cross-cutting issues referred to earlier and thus participated in some of the WG III activities as well as those of WG II. In 1991 he travelled to Geneva on three occasions for meetings of WG II, III and IPCC Bureau (5-13 August), for the Sixth Plenary of IPCC (28 October-1 November) and for the WG II Lead Authors and Editorial Board meeting (9-13 December). In 1992, he travelled to Geneva for meetings of WG II and III and the Seventh Plenary of IPCC (5-13 February).

He presented a paper at the AFOS workshop in Canberra in January and at the CZM workshop in Venezuela in March, where he also presented a case study on behalf of the Government of Kiribati.

Currently, he is involved in editing the WG II Supporting Material for the 1992 IPCC Supplement.
3 PUBLICATIONS DURING 1991-92

REPORTS

Research and Technology: Future Directions (September 1991)

Annual Report 1990-91 (October 1991)

Major National Research Facilities: A National Program (March 1992)

ADDITIONAL PUBLICATIONS

Research and Technology: Future Directions Summary Report (October 1991)

Environmental Research in Australia: Case Studies (November 1991)

OCCASIONAL PAPERS

No 17 Seminar Proceedings: Setting Directions for Australian Research, October 1990 (July 1991)

No 18 Science and Technology and Australian Federalism: Getting the Best from the System (September 1991)

No 19 Major National Research Facilities: Expressions of Interest (October 1991)

4 CHANGES IN CHAIRMANSHIP AND COUNCIL MEMBERSHIP

Professor R L Martin retired as Chairman of Council at the completion of his term of appointment on 14 April 1992. Under his leadership, the Council continued its work against the background of the Chairman's concerns for the consequences of the run-down in funding for S&T infrastructure in Australia, particularly in the higher education sector.

During Professor Martin's period of four and a half years as Chairman, a major report was prepared on the profile of Australian S&T which, for the first time in Australia, used citation indices coupled with peer review to produce a comprehensive view of Australia's strengths and weaknesses in various disciplines and its position in world S&T ratings.

Professor Martin convened the Working Party for the 1990 study Setting Directions for Australian Research, which has the potential to be the most significant report by ASTEC for several years. The report recommended that the Government periodically set policy directions or guidelines for Australian research, in the form of a White Paper prepared every four years.

The first White Paper, to be released in August 1992, was preceded by an issues paper prepared by ASTEC after its most extensive consultation ever with government, industry and researchers. The wide-ranging nature of the consultations and the breadth of the issues tackled made this report one of the most thought-provoking documents produced by ASTEC and the follow-up fora in different cities have shown that it has stimulated a new intensity of debate in Australia, particularly in relation to the role of the social sciences and the humanities. The report clearly picked up the responsibilities given to ASTEC with the demise of the Technological Change Committee.

As a further contribution to the White Paper, ASTEC was requested by the Prime Minister to carry out a study of the needs for major national research facilities in Australia for the next decade. This study developed criteria to enable proposals to be assessed on their contributions to the scientific and economic development of Australia, and recommended a national program with stable long-term funding.

It is fitting that Professor Martin's term as Chairman should end with tabling Major National Research Facilities: A National Program, which so clearly reflects ASTEC's concerns about inadequate infrastructure for S&T expressed so strongly throughout his Chairmanship.

Professor L M Birt was appointed as Chairman on 15 April 1992 for five years.

In announcing Professor Birt's appointment the Minister Assisting the Prime Minister, the Hon. Ross Free, MP said

Professor Martin has been instrumental in enhancing the profile of science and technology in Australian society, industry and government. Professor Birt is eminently qualified to foster this important role for ASTEC and to advise the
Government of key research, science and technology matters He was Chair of the NSW Science and Technology Advisory Council from 1980 to 1985 and was Foundation Vice Chancellor of the University of Wollongong and later Vice Chancellor at the University of NSW. Professor Birt held all these positions with distinction.

Professor Birt comes to ASTEC at a time when science, technology and innovation are increasingly seen as vital to the future of the Australian economy, the environment and the nation's quality of life.

Mr L S Zampatti retired as Deputy Chairman at the completion of his term of appointment on 17 September 1991. Other Council members to retire at the completion of their terms were Professor D A Aitkin and Professor R G Gregory on 27 February 1992, and Professor A Goldsworthy and Professor A E-S Tay on 30 June 1992.

Professor L M Birt was appointed as Chairman on 15 April 1992 for five years. Dr W J Peacock and Mr J D Vines were appointed to Council on 24 July 1991 for three years.

Professor D J Nicklin and Professor R D Johnston, whose initial terms of appointment expired on 30 June 1992, were reappointed for three years on 1 July 1992.

Council membership was 14 for most of the period 1 July 1991 to 30 June 1992.
MEMBERS OF ASTEC

**Professor R L Martin, AO FAA FTS**
(Chairman from 18 January 1988 to 14 April 1992)

Professor Ray Martin, AO FAA FTS, retired as Chairman of ASTEC on 14 April 1992. He has had a distinguished career and, before his retirement in 1992, he was Professor of Chemistry at Monash University. He was Vice-Chancellor of Monash University for ten years until 1987. Professor Martin’s career as a teacher and researcher in inorganic chemistry spans three decades, and includes periods of work in higher education and industry in Australia, the United Kingdom, the United States of America and Germany. Professor Martin has published widely during his career, and has received numerous awards for his work, in Australia and overseas.

**Professor L M Birt, AO, CBE**
(Chairman from 15 April 1992 to 14 April 1997)

Professor Michael Birt was appointed to the position of Chairman of ASTEC on 15 April 1992 for a five year term.

He is Vice-Chancellor and Principal of the University of New South Wales and in that capacity is Deputy Chairman of Unisearch Ltd, Deputy Chairman of the Garvan Institute of Medical Research, and a member of the Board of Management of the Australian Graduate School of Management, the Eastern Sydney Area Health Service, and the Board of Governors of the Charles Sturt University.

Besides his University commitments, Professor Birt is a member of the Board of the International Association of Universities, the Council of the Hong Kong University of Science and Technology, and the Police Board of New South Wales.

His career covers appointments as Senior Lecturer in Biochemistry at the Universities of Melbourne and Sheffield from 1960-1967; Foundation Professor and Head of Department of Biochemistry at the Australian National University from 1967-1973; Vice-Chancellor designate, Wollongong University College of the University of New South Wales from 1973-1975; Vice-Chancellor, University of Wollongong from 1975-1981 when he was appointed Vice-Chancellor of the University of New South Wales.
Mr L S Zampatti  
(Member from 9 June 1983 to 17 September 1986 and Deputy Chairman from 18 September 1986 to 17 September 1991)

Lloyd Zampatti is managing director of Bretts Limited and Bretts Wharves & Stevedoring Co (Pty) Limited, Queensland based companies with activities in timber plantations, steel distribution, hardware retailing and wharf operations. Prior to joining Bretts he was Chief Executive of Castlemaine Tooheys Limited from 1981-1985 and Chief Executive of The Swan Brewery Company Limited from 1971-1981. From 1957-1967, he was resident in Singapore as Managing Director of the Kiwi Polish Co. (Malaya) Limited, involved in marketing and manufacturing activities from Pakistan to Japan. He has been Chairman of the Economics Committee of the Business Council of Australia, Chairman of the Associated Brewers of Australia, and twice Chairman of the Singapore Manufacturers’ Association.

Professor D A Aitkin, FASSA  
(from 13 March 1986 to 27 February 1992)

Don Aitkin is Vice Chancellor of the University of Canberra. From 1988-1990, he was the first Chairman of the Australian Research Council and a full-time executive member of the National Board of Employment, Education and Training. His academic career was in Political Science, and included periods as Professor at Macquarie University (1971-1979) and the Australian National University (1980-1988). He was born in Sydney in 1937, attended schools in Canberra and Armidale, and was further educated at the University of New England (MA, 1961) and The Australian National University (PhD, 1964). He was elected a Fellow of the Academy of the Social Sciences in Australia in 1975.

Dr G J Clark FTS  
(from 28 February 1990 to 27 February 1993)

Greg Clark is Director, Science and Technology IBM. He has spent much of his career in research in the USA. He joined IBM (USA) in 1979 as a research scientist in the T J Watson Research Laboratories, Yorktown Heights, New York. He had previously held positions in the UK Atomic Energy Authority (Harwell Fellow) and the CSIRO. He is a Fellow of the American Physical Society, the Australian Academy of Technological Sciences and Engineering, and the Bohmische Physikalische Gesellschaft in Germany.

He has received several significant scientific awards, including the 1976 Pawsey Medal from the Australian Academy of Science. In addition, he has received various IBM Corporate and Divisional Awards. He holds five patents for IBM. His special fields of
competence are solid state physics, microelectronics and information technology. He is an
Adjunct Professor at the Australian National University, Director of the Collaborative
Information Technology Research Institute (CITRI), and Director of the Australian
Computing and Communications Institute (ACCI).

Professor A W Goldsworth, OBE *
(from 31 July 1989 to 30 June 1992)

Ashley Goldsworthy is Dean of the School of Business, Bond
University. He is on the Board of Strarch International Ltd
(Deputy Chairman); CIRCIT Ltd (Chairman); Australian Centre
for Strategic Alliances (ACSA) (Chairman); Australian
Computer Society; Executive Director and CEO, Centre of
Excellence on Information Technology (Chairman); and a
consultant to several public and private companies. He is also
Federal President, Liberal Party of Australia (1990-). He has been Dean of the School of
Business, Bond University since 1991. Until 1990, he was Managing Director and CEO
of Jennings Group Ltd; from 1979-87, he was CEO of Suncorp Building Society; from
1970-79, a deputy to the CEO of the State Government Insurance Office Qld; and prior to
that, Director of Economic Statistics in the Bureau of Statistics.

Professor R G Gregory, FASSA *
(from 13 March 1986 to 27 February 1992)

Bob Gregory is Professor of Economics and Director of the
Centre for Economic Policy Research, Research School of Social
Sciences at the Australian National University. He is a graduate
of the University of Melbourne and the London School of
Economics. He was First Assistant Commissioner for the
Industries Assistance Commission from 1973-75 and Professor of
Australian Studies at Harvard University from 1983-84. He is
currently a Member of the Board of the Reserve Bank of
Australia and a Member of the Commonwealth Committee on Higher Education Funding.

Professor A Henderson-Sellers
(from 28 February 1990 to 27 February 1993)

Ann Henderson-Sellers is the Director of the Climatic Impacts
Centre and Professor of Physical Geography in the School of
Earth Sciences at Macquarie University. Currently, she chairs
the Australian Academy of Sciences National Committee on
Climate and Atmospheric Sciences and is a member of the
Federal National Greenhouse Advisory Committee.

She chairs the joint Global Energy and Water Cycle Experiment
and Working Group on Numerical Experimentations International Project for the
Intercomparison of Land-Surface Parameterization Schemes. She is also a Principal
Investigator on NASA's Earth Observing System program and a member of the International Geosphere-Biosphere's Global Analysis, Interpretation and Modelling Committee. Professor Henderson-Sellers has recently been invited to lead the International Model Evaluation Consortium for the Climate Change Analysis team. She previously held a personal chair at Liverpool University, UK.

Ms M A Jackson
(from 30 August 1990 to 27 February 1993)

Margaret Jackson was admitted as a partner of KPMG Peat Marwick in 1990 and is currently a Partner of the Management Consulting Division. She completed the final year of her MBA with distinction at Melbourne University in 1982 and is an Accounting-Management Services specialist. She is Director of the Australian Telecommunications Corporation (Telecom), Chairman of the Victorian State Council of the Institute of Chartered Accountants (ICA), a Member of National Council of the ICA, and a former Director of the Australian Wool Corporation and former Member of the Pharmaceutical Remuneration Benefits Tribunal.

Professor R D Johnston, FTS
(from 28 February 1989 to 27 February 1995)

Ron Johnston is Executive Director of the Australian Centre for Innovation and International Competitiveness at the University of Sydney. From 1983-92 he was Director of the Centre for Technology and Social Change and from 1991-92 Director of the Australian Research Council Special Research Centre for Research Policy, both at the University of Wollongong.

He obtained a Bachelor of Science (1964) from the University of New South Wales and a PhD (1968) from the University of Manchester. Other professional appointments have included membership of the ASTEC Technological Change Committee (1984-88), the Australian Manufacturing Council (1984-86) and the Commonwealth Recombinant DNA Monitoring Committee (1981-85).
Mr P J Laver  
(from 30 June 1989 to 27 February 1994)

Peter Laver is Corporate General Manager External Affairs, Broken Hill Proprietary Company Ltd.

He is a Director also of a number of BHP subsidiary and associated companies, of the Wool Research and Development Corporation and the Australian Centre for Innovation and International Competitiveness. Since 1991, he has been Chair of the National Board of Employment, Education and Training.

Prior to his present appointment, he held a number of other positions within BHP, including Corporate General Manager Technology and Development (1990-92), General Manager Transport (1988-90), General Manager BHP Steel International (1982-88), Mine Manager and General Manager Mt Newman Mining (1972-82). Earlier experience was principally in metallurgical and operations management roles in various BHP steel plants.

Professor J G McLeod, AO FAA FTS  
(from 28 February 1987 to 27 February 1993)

Jim McLeod is Bosch Professor of Medicine, Bushell Professor of Neurology and Pro-Dean of the Faculty of Medicine at the University of Sydney and is Head of the Department of Neurology and the Institute of Clinical Neurosciences at Royal Prince Alfred Hospital. He is a member of the Medical Research Committee of the National Health and Medical Research Council.

He is a past Council Member and Vice-President of the Australian Academy of Science and is a member of its National Committee for Medicine.

Professor D J Nicklin, FTS  
(from 28 February 1989 to 27 February 1995)

Don Nicklin is Pro-Vice-Chancellor (Physical Sciences and Engineering) at the University of Queensland having previously served as Head of the Department of Chemical Engineering, and Dean of the Faculty of Engineering.

After completing his PhD in Cambridge in 1961, he worked for du Pont of Canada and for EI Du Pont de Nemours. He has had brief periods of secondment to Mount Isa Mines, Southern Pacific Petroleum, the Babinda Cooperative Sugar Mill, and the Queensland Government (as Chairman of the Multi-Function Polis Task Force). He was Chairman of the Board of Trustees of Brisbane Grammar School for seven years, and is Deputy Chairman of the Board of Trustees of the Queensland Museum.
Dr W J Peacock FAIAS FTS FAA FRS
(from 25 July 1991 to 24 July 1994)

Jim Peacock is Chief of the Division of Plant Industry, CSIRO, in Canberra. His research laboratory has world prominence in the field of plant molecular biology. During his research career in CSIRO, he has held a number of visiting professorships of biology, biochemistry and molecular biology in universities in the United States; these include Stanford University, University of California San Diego, University of California, Los Angeles and the University of Oregon.

He is a Fellow of the Australian Academy of Science, The Royal Society of London, and of the Australian Academy of Technological Sciences and Engineering. In 1990, he was elected as a Foreign Associate of the US Academy of Sciences and a Foreign Fellow of the Indian National Science Academy. In February 1988, he was awarded the BHP Bicentennial Prize for the Pursuit of Excellence in Science and Technology. In December 1989, he was awarded a CSIRO Medal for his leadership of the Division of Plant Industry. He is Co-Director of the Plant Science Centre, one of the Cooperative Research Centres recently set up in Australia.

He is immediate past Chairman of the International Board for Plant Genetic Resources, Rome, and is on the Scientific Council for the Gene Expression Centre of the USDA, in Albany, California.

Professor A E-S Tay, AM FASSA *
(from 28 February 1989 to 30 June 1992)

Alice Tay is Challis Professor of Jurisprudence in the University of Sydney.

She was President of the International Association for Philosophy of Law and Social Philosophy from 1987-91, Vice President and Executive Committee Member of the same from 1975-87, and was Chairperson and member of the Committee for International Humanitarian Law of the NSW Division of the Australian Red Cross Society from 1984 and Fellow and Executive Council Member of the Research Institute for Asia and the Pacific in the University of Sydney from 1987. She was part-time Commissioner of the Australian Law Reform Commission from 1982-87.

Professor Tay was member of the Technological Change Committee of ASTEC from 1984-89. She has been Visiting Fellow, Visiting Professor and Distinguished Visiting Professor in universities in Australia, Canada, China, the former USSR, Italy, and the USA, and is Permanent Honorary Visiting Professor Jurisprudence in the South Central Institute of Politics and Law, Wuhan, China. In addition she is Titulaire Academicien of the International Academy of Comparative Law, Paris.
Mr J D Vines
(from 25 July 1991 to 24 July 1994)

John Vines is the Executive Director of the Association of Professional Engineers and Scientists, Australia (APESA). He is also a member of the Federal Government’s Industry Task Force on Leadership and Management Skills. He holds tertiary qualifications in Civil Engineering and Economics and is a Fellow of the Institution of Engineers, Australia. John Vines has been Executive Director of APESA since September 1984. Prior to that he was the Association’s Senior Industrial Officer from December 1980 to September 1984 and had previously held Industrial Relations positions with the Victorian Teachers’ Union and the Federation of College Academics.

* Retired from Council at end of term during 1991-92
MEETINGS OF ASTEC

During 1991-92 ASTEC met on seven occasions.

The Hon. Ross Free MP, the then Minister for Science and Technology and Minister Assisting the Prime Minister for Science, addressed the September 1991 meeting and had informal discussions with Council and office staff over lunch. The Minister was accompanied by his Senior Private Secretary, Mr Phillip Tardif.

At the November 1991 meeting Mr Gordon Neil, Industry, Science and Technology Counsellor Designate to OECD and France, Department of Industry, Technology and Commerce (DITAC), gave a short presentation to Council on the DITAC Counsellor network and OECD activities.

Mr Neil Edwards, First Assistant Secretary, Office of Multicultural Affairs, Department of the Prime Minister and Cabinet addressed the February 1992 Council meeting on recent developments in the Office of Multicultural Affairs.

Dr Martin Wardrop attended the February 1992 meeting as an observer before formally taking up his appointment to ASTEC as Director, Studies and Research Branch.

At the April 1992 meeting, Professor Ray Martin was farewelled as Chairman of ASTEC.

Professor Michael Birt was welcomed as Chairman of ASTEC at the May 1992 meeting. Also at the May meeting Dr John Bell, Deputy Secretary, Department of Industry, Technology and Commerce gave a short presentation to Council about the OECD Big Science Forum in July 1992.
CHAIRMAN’S ACTIVITIES

Overseas trips

Professor Martin’s visit, in June and July 1991, to the United Kingdom, Germany and Italy was described in the 1990/91 Annual Report.

In March 1992, Professor Martin visited New Zealand to discuss the impact of the radical reform of research and development policy in New Zealand. He met with the Vice-Chancellor of the University of Auckland; the Chief Executive of the Ministry of Research, Science and Technology; the Chairman and General Manager of the Foundation for Research, Science and Technology; the Convenor of the Crown Research Institute Implementation Steering Committee; and the Director General of the Department of Scientific and Industrial Research.

Meetings

In fulfilling ASTEC’s role of providing independent advice to the Government on a wide range of policies and programs related to science and technology, the Chairman met with the Prime Minister several times throughout the year, and with the Minister for Science and Technology. He also met regularly with Professor Slatyer, Chief Scientist and Mr Mike Codd, Secretary, Department of the Prime Minister and Cabinet and other senior government officials. The Chairman is a member of the Prime Minister’s Science Council; Professor Martin attended the December 1991 meeting and Professor Birt attended the May 1992 meeting. The Chairman also attended meetings of the Coordination Committee for Science and Technology.

Professor Martin met with the Chairman and members of the Board of ANSTO on 12 June 1991. In August, he held discussions with members of the Australian Space Office in August, following his visit to Italy; met with the Chairman of the UK Science and Engineering Research Council; held discussions with the Science and Technology Committee of the Australian Mining Industry Council; and met the Shadow Minister for Education. He also met the Secretary of the Spanish Interministerial Commission of Science and Technology and the Vice-President of the Council for Scientific Research (CSIC) who visited ASTEC.

In October, Professor Martin met with senior Cabinet Ministers to brief them on Research and Technology: Future Directions, including the Minister for Primary Industries and Energy, the Minister for Industry, Technology and Commerce and the Ministers for the Employment, Education and Training, and Higher Education and Employment Services. Professor Martin represented ASTEC at the 1991 Invitation Symposium held by the Australian Academy of Technological Sciences and Engineering, and the Annual Metal Trades Industries Association Dinner.

In November, Professor Martin convened the ASTEC Forum on Research and
Technology: Future Directions, and a two-day meeting of the science and technology representatives of the States and Territories. He also attended the inaugural Science and Technology Awards given by the Ian Clunies Ross Foundation.

Professor Martin held discussions in February with the new Scientific Attaché, Italian Embassy.

Lectures and Addresses

Professor Martin gave the introductory paper at ASTEC's Environmental Research Seminar at the Australian National University, 12 June 1991.

He took part in the 1991 Melbourne National Science and Technology Advisory Group (NSTAG) meeting 'Investment in New Technology' 31 October, and the November NSTAG meeting held in Canberra.

In December, Professor Martin addressed a Conference on 'The Role of Management in Commercialising Research and Technology'; his topic was 'Research, Technology and International Competitiveness'. He also delivered the Occasional Address at the Science and Engineering Graduation Ceremony at the Australian Defence Force Academy.

In February, Professor Martin chaired a meeting of the Australian Academy of Technological Sciences and Engineering Symposium Committee; the 1992 topic is to be 'Globalisation of Technology - Threats and Opportunities', and attended, by invitation, the Business Council of Australia's 3rd National Business Summit - 'Understanding our Future in Asia and the Pacific'.

In April, Professor Martin participated in a seminar on 'Science and Technology Issues in Management Education' organised by the National Board of Employment, Education and Training (NBEET).
ACTIVITIES OF THE OFFICE OF ASTEC

International S&T Activities

The Secretary travelled overseas on four occasions in his capacity as Principal Australian Delegate to the Intergovernmental Panel on Climate Change. These visits are discussed under the Global Climate Change Program (Section 4).

In March 1992, following an International Workshop on ‘The Rising Challenge of the Sea’ in Venezuela, the Secretary visited a number of S&T policy bodies in Washington and in Paris. He then participated, together with Dr Burch, in the International Workshop on ‘Equipping Science for the 21st Century’ in Amsterdam in early April.

During the year, the Secretary continued his activities as Chairman of the International Relations Committee of the Australian Academy of Technological Sciences and Engineering. In that role, he visited Stockholm in late October 1991 to represent the Academy at the Annual General Meeting of the Royal Swedish Academy of Engineering Sciences (IVA) and to receive his Diploma as Foreign Member of IVA from the King of Sweden. In mid-May 1992, he represented the Academy at the Convocation and Governing Board Meeting of the Council of the Academies of Engineering and Technological Sciences in Copenhagen.

Visitors to ASTEC

As in previous years the Office of ASTEC received numerous overseas and local visitors. Meetings with visitors to the Office provided opportunities for the exchange of ideas and to find out about developments nationally and internationally.

Science and technology policy issues were discussed with a number of visitors including:

1. In July 1991, Dr George F Stuart of New Zealand visited the Office to gather information for his paper on Australia-New Zealand relations.

2. In August 1991, Mr Qin Zhang, new Counsellor (Science and Technology) of the Embassy of the People’s Republic of China met with the Secretary.


4. In September 1991, Professor Luis Oro, Secretary of the Spanish Interministerial Commission of Science and Technology, and Mr Salvador de Aza, Vice-President of the Council for Scientific Research (CSIC) met with the Chairman and Secretary. Spain’s Ambassador to Australia, HE José Luis Pardos and DITAC’s Mr Guy Howe also attended.
In November 1991, Dr Cho Wan Kyoo, Chairman of the Korea Science and Engineering Foundation and Korea Academy of Industrial Technology visited the Office as part of the Department of Foreign Affairs and Trade Special Visit Program.

In February 1991, Dr Sylvio Toltorini, new Scientific Attaché to the Embassy of Italy visited the Secretary.

In April 1992, Dr Dieter Kimble of OECD visited for discussions on a proposal to hold an international conference in 1993 on the effect of information technology.

In June 1992, Dr George F Stuart, Manager of Policy in the Ministry of Research Science and Technology, New Zealand visited the Office to discuss developments in S&T policy in New Zealand.

The Centre for Research Policy Advisory Board, University of Wollongong, met at ASTEC in August 1991 and in March 1992. Dr Tegart is a Member of the Board.

The Industry, Science and Technology Counsellors to the United Kingdom, Federal Republic of Germany and Japan, Mr John McLucas, Dr Alan Jones and Mr Don Corcoran respectively, visited the Office during the year. Mr McLucas visiting in July 1991, Dr Jones in November 1991 with Dr Dieter Kolb, Industry, Science and Technology Counsellor, Federal Republic of Germany, and Mr Corcoran visiting in March 1992.

Lectures and Addresses

In January 1992, Dr Tegart presented a paper on ‘The Relationship Between Impacts of Climate Change and Response Strategies (With Reference to Forestry and Agriculture)’ to the IPCC AFOS Workshop on ‘Assessing Technologies and Management Systems for Agriculture and Forestry in relation to Global Climate Change’ in Canberra.

In February 1992, the Secretary gave an address on the operation of ASTEC to a group of Indonesian S&T policy makers at the Centre for Research Policy, University of Wollongong.

In early March 1992, he addressed the MTIA National Business Strategy Group in Canberra on the topic of ‘Engineering Technology and Competitiveness - Strategies for the 90s’.

In mid-March 1992, Dr Tegart presented a paper on ‘The Relationship between Impacts of Climate Change and Response Strategies (With Reference to Sea Level Rise)’ to the IPCC CZM International Workshop on ‘The Rising Challenge of the Sea’ in Venezuela.

In early April 1992, the Secretary chaired a session at the International Workshop on ‘Equipping Science for the 21st Century’ in Amsterdam. At the Workshop, Dr Burch delivered a paper ‘Big Science for Small Nations: Evaluating Options to Invest in Research Facilities’ jointly authored with the Secretary.
In April 1992, Dr Burch, as National President of the Australian Institute of Agricultural Science (AIAS), gave the opening address to the AIAS National Conference, ‘Agricultural Research - Your Country, Your Future’ in Orange, NSW.

In early May 1992, Dr Tegart chaired a session at the Climate Science Forum in Canberra, convened by Ministers Free and Kelly.

In May 1992, Dr Wardrop addressed Master of Technology students, University of Wollongong on ‘The Development of Australian Telecommunications Industry Policy’.

In May 1992, Dr Burch gave an address on the roles and responsibilities of ASTEC at the CSIRO Centre for Environmental Mechanics in Canberra.

In late May 1992, Dr Tegart and Dr Burch jointly presented a paper on the ASTEC approach to advising on major national research facilities to the ASTEC Forum on ‘Big Science’ in Canberra.

In early June 1992, Dr Tegart gave an address on ‘Sophia Antipolis - A Flourishing Technology Park’ to the ASTEC/States Meeting in Hobart.

In June 1992, Dr Wardrop presented a paper ‘Research and Development: Future Directions for Telecommunications’ at the IIR Conference on Developing Australia’s Telecommunications Industry.

In late June 1992, Dr Burch gave an address to the CSIRO Officers Association Amalgamation Dinner in Canberra on the topic ‘A New Vision for the S&T Community in Australia’.
APPENDIX 5

PUBLICATIONS OF ASTEC 1977 - 1992

REPORTS

1977

Future Arrangements for the Australian Science and Technology Council
Energy Research and Development in Australia
Report of the Interim ASTEC for the period 29 April 1976 to 29 March 1977

1978

Science and Technology in Australia 1977-78, Volume 1A
The Bureau of Mineral Resources, Geology and Geophysics
Supplement to the Report of the Bureau of Mineral Resources
Science and Technology in Australia 1977-78, Volume 2
The Direct Funding of Basic Research
Report of ASTEC for the period 30 March 1977 to 30 June 1978

1979

Science and Technology in Australia 1977-78, Volume 1B
Science and Technology in Australia - Summary and Recommendations
The Next Generation of Australian Telescopes
Marine Sciences and Technologies in Australia - Immediate Issues
Report for the Period 1 July 1978 to 30 June 1979

1980

Marine Sciences and Technologies in Australia - Priorities for Additional Research and Development 1980-81
Interaction Between Industry, High Education and Government Laboratories
Annual Report 1979-80
Industrial Research and Development: Proposals for Additional Incentives

1981

Basic Research and National Objectives
Towards a Marine Sciences and Technologies Program for the 1980s
Australia: Characteristics Relevant to Science and Technology
Annual Report 1980-81
Microelectronics
Medical Research in Australia, Parts 1 and 2
1982

Office of the Supervising Scientist
Earth Resources Satellites: Australian Facilities
New Telescopes for Australian Astronomy in the 1980s
Australian Science and Technology in International Co-operation and Development Assistance
Robots
Annual Report 1981-82
Biotechnology in Australia
Biotechnology in Australia - Supplementary Report
The Australian National Animal Health Laboratory - The Use of Live Exotic Animal Pathogens

1983

Technological Change and Employment
Incentives for Innovation in Australian Industry
Videotext in Australia - Interactive Information Services
Annual Report 1982-83
Operation of National Research Granting Schemes

1984

Guidelines for the Operation of National Research Facilities
Technology and Handicapped People
Australia's Role in the Nuclear Fuel Cycle
Australia's Broad-Spectrum Bilateral Science and Technology Agreements
Government Purchasing and Offsets Policies in Industrial Innovation
Annual Report 1983-84

1985

Computer-Related Technologies in the Metal Trades Industry
Annual Report 1984-85
Nuclear Science and Technology in Australia
Public Investment in Research and Development in Australia
Future Directions for CSIRO
Telecommunications Research and Development

1986

New Office Technology: Review and Discussion
Mechanisms for Technology Transfer into Australia
Towards a Cashless Society?
New Office Technology, The Report
Annual Report 1985-86
The Defence Science and Technology Organisation and National Objectives
1987

Improving the Research Performance of Australia’s Universities and Other Higher Education Institutions
After the Harvest: Opportunities and Technologies in Horticulture
Computerised Assistants: New Tools for Society
Annual Report 1986-87
Improving Australia’s Competitiveness through Industrial Research and Development
Education and National Needs
Wealth from Skills: Measures to Raise the Skills of the Workforce
Wealth from Skills: Measures to Raise the Skills of the Workforce - Appendix

1988

Casting the Net: Post-Harvest Technologies and Opportunities in the Fishing Industry
Annual Report 1987/88

1989

Health Politics Trade: Controlling Chemical Residues in Agricultural Products
The Core Capacity of Australian Science
Profile of Australian Science
The Future of Australian Astronomy, September
Annual Report 1988-89

1990

Science, Technology and Australia’s Future
Small Country - Big Science
Environmental Research in Australia: A Review
Setting Directions for Australian Research
Government Funding of Academic and Related Research
Annual Report 1989-90
Environmental Research in Australia: The Issues

1991

An Australian International Gravitational Observatory
Research and Technology: Future Directions
Annual Report 1990-91

1992 (to 30 June)

Major National Research Facilities: A National Program
ADDITIONAL PUBLICATIONS

1979

Industrial Innovation - A Discussion Paper

1987

The Advanced Facility at the National Acoustic Laboratories

1989

Controlling the Genie, The Human-Computer Interface: Issues and Opportunities, A Discussion Paper

1990

Profile of Australian Science Forum Proceedings
Your Word Is My Command
Policy Choices in Industry and Technology - Joint Symposium with PCEK and AMC
Environmental Research in Australia: Compendium
Corporate Plan 1990-1992
National Purposes, Federal Government

1991

Environmental Research in Australia: Case Studies
Research and Technology: Future Directions. Summary Report

OCCASIONAL PAPERS

1988

1 Key Technologies and their Role in Economic Development of Small Countries
2 Superconductivity
3 After the Myers Report: Improving the Management of Technological Change
4 Government Purchasing Policy and Industrial Innovation

1989

5 The Contribution of Science and Technology to Australia’s Balance of Payments to the Year 2000 - Service Sector
6 Comments on the ASTEC Review of CSIRO
7 The Contribution of Science and Technology to Australia’s Balance of Payments to the Year 2000 - Manufacturing Sector
8 The Contribution of Science and Technology to Australia’s Balance of Payments to the Year 2000 - Private Sector
Public Policies for the ‘Exploitable Areas of Science’: A comparison of the United Kingdom, Japan, the Netherlands, and Sweden

1990

10 Report on Overseas Study Tour of Science and Technology, Policies in Selected Small Countries (Netherlands, Norway, Sweden and Finland)
11 Decision Making and Evaluation in Publicly-Funded Science and Technology
12 The Interaction Between National and International Programs in Science and Technology, With Particular Reference to Europe
13 Education For Change: The Role of Engineering in Australia in a Changing World Economy

1991

14 Funding the Fabric: Should Commonwealth Government Competitive Research Granting Schemes Contribute more to Research Infrastructure Costs?
15 The Assessment of Impacts of Climate Change by Working Group 2 of the Intergovernmental Panel on Climate Change
16 The Demand and Supply of Scientists and Engineers in Australia
17 Seminar Proceedings: Setting Directions For Australian Research October 1990
18 Science, Technology and Australian Federalism: Getting the Best from the System
19 Major National Research Facilities: Expressions of Interest

1992

20 Research Data in Australia. Proceedings of a Workshop held on 14 November 1991
21 Research and Technology: Perspectives on Industry

WORKING PAPERS

1990

2/90 Notes on Visit to Hungary - 4-7 September 1990, by W J McG Tegart
4/90 Setting Course for the 1990s - Science and Technology Since May 1989, by W J McG Tegart, NSTAG Forum, Canberra
1991

1/91  Notes on Visit to the Republic of Korea - 30 October-9 November 1990, R L Martin

2/91  Notes on Trip to France, March 1991, W J McG Tegart

3/91  Notes on Visit to Austria and Hungary, 31 May - 7 June 1991, W J McG Tegart
THE OFFICE OF ASTEC

Staffing

Promoting a workplace with opportunities for its staff was a continuing priority for ASTEC in 1991-92.

As a small agency, temporary transfers and secondments were essential during the year and added positively to ASTEC’s profile by complementing and enhancing the expertise and experience available. Staff movements included secondments to ASTEC from the ANSTO and CSIRO, and transfers from DITAC and the RAC. These staff undertook specific tasks and on completion either returned to their home agency or transferred to another. One officer, on secondment from the Bureau of Rural Resources, will not depart ASTEC until early in 1993.

Two members of staff on extended leave in 1990-91, one on long service leave and the other, on leave without pay in the public interest, returned to duty at ASTEC in 1991-92. Another employee on extended leave in 1990-91 resigned. As at 30 June 1992, ASTEC had two officers on leave under the mobility provisions of Part IV of the Public Service Act 1922. Several temporary employees were engaged on short term contracts.

The Average Staffing Level for ASTEC for 1991-92 was 19.9 with an outcome of 16.7. An establishment chart for the Office of ASTEC at 30 June 1992 is shown at the end of this Appendix.

Staff Development

Staff development and training continued to be a priority for ASTEC. ASTEC staff participated in Middle Management Development Programs conducted by the Department of the Prime Minister and Cabinet, and Middle Management Modules conducted by the Public Service Commission. During 1991-92 over $23,000 was spent on training and conferences.

Management Issues

On 28 April 1992, Minister Ross Free announced that an independent review of ASTEC would be undertaken. Progress by the end of June included the establishment of a Review Committee, finalisation of the terms of reference and the contracting of two consultants to provide an independent assessment and analysis of ASTEC’s outputs, influence and performance.
The Review Committee comprises six members and is chaired by Sir Rupert Myers, President, Australian Academy of Technological Sciences and Engineering. It is anticipated that the Review Committee will report by 30 September 1992.

ASTEC's Management Committee met regularly throughout the year and all staff were kept informed and involved in decisions and issues through Branch meetings and weekly staff meetings.

The Management Committee comprises the Secretary of ASTEC (Chair), the Chairman and Deputy Chairman of ASTEC, Branch Director - Studies and Research, Branch Director - Assessment and Management and the Executive Officer (Secretary of the Management Committee).

The Management Committee aims to:

- promote effective Council-Office working relationships;
- coordinate the program structure within the Office of ASTEC;
- set policies for Human Resource Management within the Office of ASTEC; and
- consider and endorse recommendations on issues such as Occupational Health and Safety, Industrial Relations, Information Technology.

In line with initiatives to introduce performance appraisal throughout the Public Service, ASTEC examined the possibility of adopting the Department of the Prime Minister and Cabinet's endorsed guidelines for Senior Officers.

Financial Management

ASTEC's total Running Costs appropriation in 1991-92 was $1,782,882: $1,719,000 in Appropriation Act No 1, $51,000 in Appropriation Act No. 3 and $12,822 through ASTEC's Section 35 Account. Total expenditure in 1991-92 was $1,736,728.

1. Accounts Received and Processed

During 1991-92, 675 accounts were received for payment of which seven were received prior to the end of the financial year and not processed for payment.

ASTEC endeavours to ensure that the Government's policy to pay its accounts on the due date is adhered to. The Financial Management Information System (FMIS), which ASTEC currently operates, does not provide detailed information on the number of accounts processed prior to the due date, on the due date, within 30 days of the due date or 30 days after the due date. The current FMIS is to be replaced in 1992-93.

Financial Statements (Appendix 9) also refer.
2. Consultancies

The total cost associated with the engagement of consultants in 1991-92 was $70,863. No consultancies were publicly advertised in 1991-92 and the engagement of all the consultants was based on relevant expertise.

Details of consultancies during 1991-92 are provided below:

<table>
<thead>
<tr>
<th>Consultant</th>
<th>Service</th>
<th>Cost $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illawarra Technology Corporation</td>
<td>Conduct survey of Industry Leaders of the Role of Research and Technology in Australia.</td>
<td>24,000</td>
</tr>
<tr>
<td>Dr J Stewart</td>
<td>Research and drafting of two items for Research and Technology: Future Directions.</td>
<td>2,040</td>
</tr>
<tr>
<td>Australian Writers Service</td>
<td>Editorial work for Research and Technology: Future Directions.</td>
<td>2,988</td>
</tr>
<tr>
<td>Mr D Harman</td>
<td>Seminar and Report - A Preliminary Overview of Australian Energy R&amp;D</td>
<td>3,075</td>
</tr>
<tr>
<td>Department of Finance</td>
<td>Financial Management Systems Consultancy</td>
<td>13,000</td>
</tr>
<tr>
<td>Northern Territory University</td>
<td>Compendium of Northern Australia Research</td>
<td>15,000</td>
</tr>
<tr>
<td>Don Scott-Kemmis</td>
<td>Evaluation of ASTEC reports in relation to the ASTEC Review</td>
<td>10,750</td>
</tr>
<tr>
<td>Centre for Research Policy</td>
<td>Design and conduct survey in relation to ASTEC Review</td>
<td>4,200</td>
</tr>
</tbody>
</table>
3. Property Usage

The Office of ASTEC occupies leased office accommodation in the AMA Building, 42 Macquarie Street, Barton. The total office area occupied by ASTEC is 546.8m² at a cost of $315 per m² per annum. ASTEC’s office fitout was carried out by the Australian Property Group in accordance with Government guidelines.

4. Fraud Control

During 1991-92, ASTEC continued to participate in the Department of the Prime Minister and Cabinet’s Fraud Control Plan. In accordance with government requirements, the risk to ASTEC is assessed every two years.

No cases of fraud were referred by ASTEC to the Australian Federal Police during 1991-92, nor were there any internal investigations conducted.

5. Claims and Losses

ASTEC had no claims or losses which individually resulted in net costs to the Commonwealth.

6. Purchasing

During the 1991-92 financial year, twelve items with a value above $2,000 were notified in the Commonwealth (Purchase and Disposal) Gazette. Nine items were gazetted within three months, one within four months, one within eight months and one has yet to be gazetted. The failure to gazette items within three months was due to an administrative oversight.

Information Technology Purchasing Arrangements

ASTEC’s Information Technology (IT) Committee is responsible for reviewing and assessing IT requirements and purchases. IT acquisitions for 1991-92 were all made under various common use contracts and in accordance with Government IT purchasing policies.

Advertising and Market Surveys

Total expenditure for non-campaign advertising in 1991-92 was $3,109.55.

Reports by the Auditor-General

During the year, the Auditor-General tabled Audit Report No. 23 1991-92 - Aggregate and Departmental Financial Statements 1990-91 in Parliament which referred to the operation
of ASTEC. ASTEC’s financial statements were unqualified for 1990-91 and the audit of the accounts and records was concluded with satisfactory results except for the following:

- recovery of amounts owed to ASTEC not recovered in a timely manner;
- a stocktake of assets had not been undertaken during 1990-91; and
- ASTEC’s computerised accounting system had some limitations which would need to be addressed when a new system is evaluated.

Freedom of Information

There were no requests received under the Freedom of Information Act 1982. Inquiries may be directed to:

Executive Officer
Australian Science and Technology Council
PO Box E439
Queen Victoria Terrace ACT 2600
(Telephone: (06) 273 4966)

Privacy

Although the Department of the Prime Minister and Cabinet is responsible for maintaining ASTEC’s personnel records and salary details, ASTEC does retain copies of some documentation regarding the employment of its staff. No reports or determinations under the Privacy Act 1988 were served on ASTEC by the Privacy Commissioner.

Environmental Matters

On moving to 42 Macquarie Street, Barton, ASTEC arranged for the recycling of all unclassified paper waste. In addition, recycled stationery products have also been introduced.

ASTEC promotes, as far as practicable, a sensible approach to conserving energy, including fuel and electricity consumption.

Equal Employment Opportunity

ASTEC’s EEO plan has continued to be implemented throughout the year. An extension to the existing plan, which is due for revision, was sought from the Public Service Commission until 31 October 1992. Elements of the EEO plan have been incorporated into ASTEC’s day-to-day activities and include:

- participation by staff on training courses to address specific career and development needs of target groups,
- development and secondment opportunities offered to develop the skills base of
target groups and, in turn, the organisation,
- advertisements for vacant positions state that ASTEC is an equal opportunity employer.

### Representation of EEO Groups within Salary Levels as at 30 June 1992

<table>
<thead>
<tr>
<th>Salary Level</th>
<th>Total</th>
<th>Women</th>
<th>NESB1</th>
<th>NESB2</th>
<th>ATSI</th>
<th>PWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below $22622 (includes ASO1)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$22623 to $25687 (includes ASO2)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$25688 to $28475 (includes ASO3)</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$28476 to $31929 (includes ASO4)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$31930 to $34778 (includes ASO5)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$34779 to $40693 (includes ASO6)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$40694 to $45546 (includes SOGC)</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$45547 to $59120 (includes SOGB)</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above $59121 (includes SEB1A and Secretary)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>17</strong></td>
<td><strong>11</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NESB1: Non-English Speaking Background, First Generation  
NESB2: Non-English Speaking Background, Second Generation  
ATSI: Aboriginal or Torres Strait Islander  
PWD: People with a Disability

* Includes Temporary Staff  
Excludes Unattached and Seconded Staff
Social Justice

ASTEC continued to reflect the social justice objectives of the Government by the way its studies, advising and reporting activities were conducted. Many of the studies conducted by ASTEC relate to the understanding and adoption of science and technology by industry, government and the wider community. This involves important considerations relating to the skills, training and employment of all Australians. In conducting its studies, ASTEC consults widely and consciously takes into account all aspects relating to social justice when reporting to government on these issues.

Access and Equity

ASTEC continued to participate in the Department of the Prime Minister and Cabinet’s Access and Equity Plan by:

- consulting widely with interested parties during the preparation of studies, and
- monitoring trends relating to science and technology, and contributing to the community’s awareness of complex social and technical issues, which are directly relevant to people of non-English speaking backgrounds as well as those who are Australian-born.

Occupational Health and Safety

No incidences of occupational accidents, occupational overuse syndrome or occupational stress were reported during 1991-92. Eyesight testing is regularly reviewed and all new staff are tested.

ASTEC currently uses the Department of Prime Minister and Cabinet’s Occupational Health and Safety Policy. Although a policy for ASTEC had been identified as a priority issue for 1991-92, no separate policy was endorsed.

Industrial Democracy

In line with ASTEC’s Industrial Democracy Plan, ASTEC continues to:

- have consultative meetings to discuss matters affecting staff, which aim to resolve differences, reach agreement and allow implementation of decisions made by those meetings,
- ensure that plans and strategies, arising from these meetings, have the support of staff and that staff are able to influence more directly the process by which decisions are made on a range of issues,
- improve mutual understanding of management and staff issues though effective communication, and,
- promote industrial democracy and participative work practices in decision making.

The existing industrial democracy plan reflects the organisation’s commitment to these principles and encourages staff participation within ASTEC.
Information and Library Services

ASTEC is a very active user of information and library services which are provided under a formal agreement with the Department of Prime Minister and Cabinet. These services are managed by the Department’s library under the guidance of a small committee which monitors information needs and expenditure.

The committee organises surveys to ensure that staff needs are met effectively and economically, advises on budgeting and supervises arrangements for display and storage of material.
Organisation Chart as at 30 June 1992

MANAGEMENT & ASSESSMENT BRANCH

Dr G Burch
Branch Director

Ms K Curtis
SOGC

Ms E Sanderson
SOGC

Ms B Anderson
AS03

Ms R Cruikshank
AS03

Ms Y Genier
AS02

STUDIES & RESEARCH BRANCH

Dr M Wardrop
Branch Director

Mr J Madden
SOGB

Ms E Smith
SOGB

Ms P Berman
SOGC

Dr G Thompson
SOGB

Dr S Garrett-Jones
SOGC

Ms L Quilter
AS03

Mr A Saptari
Dr R Williams

SOGC
STAFF PROFILES - 30 JUNE 1992

Dr W J McG Tegart, AM, FTS, FAIE, FIEAust

Greg Tegart was appointed the Secretary of the Australian Science and Technology Council in 1987.

He is a Council Member of the Australian Academy of Technological Sciences and Engineering, and Chairman of its International Relations Committee. He is a Foreign Member of the Royal Swedish Academy of Engineering Sciences. Currently, he is Australia’s Principal Delegate to the Intergovernmental Panel on Climate Change and Co-Vice-Chair for Working Group II. He was Secretary of the Department of Science from 1984-87 and Secretary of the Department of Science and Technology from 1981-84. From 1979-81, he was a Member of the Executive of the Commonwealth Scientific and Industrial Research Organisation. From 1968-78, he worked for BHP as Manager, BHP Melbourne Research Laboratories and, from 1978-79, he was Executive Assistant to the Chief General Manager, BHP Co Ltd. From 1966-68, he was Professor of Materials, College of Aeronautics, Cranfield, UK and, from 1955-66, he was a staff member in the Department of Metallurgy at the University of Sheffield.

STUDIES AND RESEARCH BRANCH

Dr Martin Wardrop

Martin Wardrop is responsible for the operations of ASTEC’s Studies and Research Branch. Prior to joining ASTEC in February 1992, he worked with the Department of Industry, Technology and Commerce on industry development policy for the telecommunications and computer industries. He has had 12 years experience in the Commonwealth and State Governments in developing industry and technology policy and managing programs, including a period working with ASTEC from 1981 to 1984. From 1988 to 1990, Dr Wardrop took part in an exchange with the UK Department of Trade and Industry where he was the manager of a large technology transfer program in materials and processes. Before 1981, he worked as a physicist in Sweden, the United Kingdom and Australia after graduating in physics and mathematics. He holds BSc (hon) and MSc degrees in mathematics and DPhil in physics.

Ms Elizabeth Smith

Elizabeth Smith is a Principal Adviser in the Studies and Research Branch. Elizabeth worked on the ASTEC study Setting Directions for Australian Research, and was closely involved, as part of a team, in the development and drafting of the Research and Technology: Future Directions report. She is now secretary to the ASTEC Working Group which is examining aspects of the contribution of the social sciences and the humanities to issues such as
innovation and wealth creation in Australia. Before joining ASTEC, Elizabeth worked in the Department of Industry, Technology and Commerce and Department of Science.

Her previous experience was in the academic sector until she completed a Master of Public Administration in 1980.

**Dr Geoff Thompson**

Geoff Thompson is a Principal Adviser with the Studies and Research Branch. He was part of the team that developed and drafted the *Research and Technology: Future Directions* report, and is now secretary to the ASTEC Working Group on energy research.

Before joining ASTEC in 1990, Geoff was Director of the Centre for Environmental Toxicology, a joint venture of the NSW State Pollution Control Commission and the University of Technology, Sydney. He was responsible for teaching and research in ecotoxicology, management of chemicals in the environment, and assessment of the impact of chemicals on ecosystems. From 1974 to 1983, Geoff was in charge of marine pollution research in the Agriculture and Fisheries Department, Government of Hong Kong. Geoff’s qualifications are in zoology and marine biology.

**Ms Patricia Berman**

Patricia Berman is a Senior Adviser in the Studies and Research Branch. Since joining ASTEC in 1990, she has contributed to ASTEC’s environmental research study, the report *Research and Technology: Future Directions* and the major national research facilities study. She is currently joint manager of ASTEC’s study on research and technology in tropical Australia.

Patricia has a broad background of consultancy work for industry, higher education and government in information technology, education and human resource development, and the environment. Before joining ASTEC, she established and managed the National Software Coordination Unit (DEET) being responsible for national policy in this area. As a CRA Science Fellow, Patricia reviewed Science and Technology education policy and practice in USA and Japan. Her qualifications include a Bachelor of Science degree, a Diploma of Education and a Graduate Diploma in Curriculum (Computing).

**Dr Sam Garrett-Jones**

Sam Garrett-Jones is a Senior Adviser with the Studies and Research Branch. He is currently engaged on ASTEC’s study of research and technology in tropical Australia and their contribution to the development of the region. Sam has also been responsible for ASTEC’s studies into academic and related research expenditure and research infrastructure funding and has contributed to the report *Research and Technology: Future Directions* and the major national research facilities study.

Sam has been closely involved in science and technology policy development since 1984. Before joining ASTEC in 1989 he was Assistant Director, Information and Communications
Technologies, DITAC. He holds postgraduate qualifications in science and technology policy (MSc, Manchester) and in tropical ecology (PhD, ANU) and has worked as a research scientist at the ANU and in universities in the United Kingdom and United States.

Ms Liz Quilter

Liz Quilter is Studies Coordinator in the Studies and Research Branch. She provides support to the Branch and liaises between ASTEC and higher education, industry and government bodies. Liz joined ASTEC in May 1991 after completing studies in Rural Business Administration at the University of New England - Orange Agricultural College.

ASSESSMENT AND MANAGEMENT BRANCH

Dr Gordon Burch

Gordon Burch is the Branch Director of the Assessment and Management Branch, and joined ASTEC in April 1991. He was formerly an Assistant Director of the Bureau of Rural Resources (BRR) where he headed up the Plant and Land Resources Branch.

Gordon has a Master of Rural Science degree and PhD from the University of New England. He was a Principal Research Scientist with the CSIRO Division of Water Resources before joining BRR. He is active in numerous professional organisations, including current National President of the Australian Institute of Agricultural Science (AIAS), past President and member of the Australian Geoscience Council (AGC), board member (for AGC) of the Federation of Australian Scientific and Technological Societies (FASTS) and has held executive office in the Australian Society of Soil Science (ASSS).

Ms Karen Curtis

Karen Curtis is a Principal Adviser in the Assessment and Management Branch. Since joining ASTEC in 1989, she has had responsibility for management of Council meetings, general briefing, coordination and liaison. Karen is presently managing the nanotechnology study.

Karen has 12 years experience in the Public Service mostly in policy areas dealing with science and technology issues. She has worked on industry policy and international cooperation matters both in the former Department of Science and the Department of Industry, Technology and Commerce. Karen is a university graduate in Arts and Law.

Mr John Madden

John Madden is a Principal Adviser in the Assessment and Management Branch and secretary to the Review of ASTEC. He returned to ASTEC in February 1992 after spending two years with the Centre for Technology and Social Change. He managed the Canberra Office of TASC and its Research Policy program. He is currently working part time on a Ph.D. with the Centre for Research Policy.
John started with ASTEC in 1985 participating in studies of the National Acoustic Laboratories, the Bureau of Meteorology, the *Profile of Australian Science* and the *Core Capacity of Australian Science and Technology*.

Before joining ASTEC John, worked in the Office of the Executive of CSIRO and as a consultant in the Science and Technology Policy Division of the OECD.

**Ms Lynne Thomson**

Lynne Thomson is a Senior Adviser in the Assessment and Management Branch of ASTEC working on both science and technology policy issues and corporate policy issues. Lynne is also working on aspects of the nanotechnology study.

Prior to joining ASTEC, Lynne worked in other areas of the Commonwealth Government and has broad experience in science and technology policy. In particular, her experience has covered policies for particular sectors of research activity, bilateral relations in science and technology in North Asia, and the use of indicators for policy development. Lynne is a graduate with qualifications in the visual arts and education.

**Ms Eva Sanderson**

Eva Sanderson joined ASTEC in November 1991 as the Executive Officer responsible for managing and coordinating the activities of the Administration Unit. The range of services provided by the Administration Unit to Council and to the Office include personnel, finance, budgeting, office services and information technology.

Prior to her commencement at ASTEC, Eva was with the Governor-General’s Office for three and a half years as the Administrative and Finance Officer. Eva has twelve years experience in the Australian Public Service largely in corporate service areas and has a BA in Social Sciences.

**Ms Bridget Anderson**

Bridget Anderson is the Systems Administrator. Bridget provides administrative services including personnel, purchasing, asset management and computer help. Before joining ASTEC in March 1991, Bridget worked for five years in executive assistant positions.

**Ms Beth Mason**

Beth Mason is Executive Assistant to Dr Tegart and to the Chairman. She is also ASTEC’s Cabinet Liaison Officer. Beth has extensive experience in both private and public sectors providing assistance to senior managers. Part-time, she is undertaking further study towards a Bachelor of Arts at the Australian National University.
Ms Rhonda Cruikshank

Rhonda Cruikshank is responsible for accounts and overseeing travel for Council members and staff of the Office of ASTEC. As well, Rhonda undertakes arrangements and support for Council and Working Party meetings. Rhonda has a varied background in administrative and secretarial work in the public and private sectors.

Ms Vicki Genter

Vicki Genter is responsible for the information flow of the office and is the first point of contact for visitors to ASTEC. Vicki has a varied background in administrative and secretarial work. Her experience covers both private and public sectors. Vicki joined the ASTEC team in April 1992 after spending 12 months with the Attorney-General's Department.

Ms Ann Harkness

Ann Harkness is Personal Assistant to the Director of Assessment and Management Branch. She joined ASTEC in August 1991 after moving to Canberra from Queensland where she worked for James Cook University. Ann also provides administrative support to members of the Assessment and Management Branch and to the Executive Officer of ASTEC.

Ms Lidia Hrvatin

Lidia is the Librarian Grade 2 responsible for the provision of and coordination of library services to ASTEC through a formal agreement with the Department of Prime Minister and Cabinet. Before starting to work for ASTEC in 1990, Lidia worked as a Librarian for the Universities of Melbourne and Canberra. Lidia's particular area of expertise is in online searches and more detailed reference work. Lidia is a graduate in Arts and History and has a postgraduate degree in Librarianship.
## OFFICE OF ASTEC - STAFF AS AT 30 JUNE 1992

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms B Anderson</td>
<td>Administrative Service Officer 5 Systems Administrator</td>
</tr>
<tr>
<td>Ms P Berman</td>
<td>Senior Officer Grade C Senior Adviser</td>
</tr>
<tr>
<td>Dr G Burch</td>
<td>SES Band 1 Branch Director</td>
</tr>
<tr>
<td>Mrs R Cruikshank</td>
<td>Administrative Service Officer 3 Finance Officer</td>
</tr>
<tr>
<td>Ms K Curtis</td>
<td>Senior Officer Grade B Principal Adviser</td>
</tr>
<tr>
<td>Dr S Garrett-Jones</td>
<td>Senior Officer Grade C Senior Adviser</td>
</tr>
<tr>
<td>Ms V Genter</td>
<td>Administrative Service Officer 2 Receptionist</td>
</tr>
<tr>
<td>Ms A Harkness</td>
<td>Administrative Service Officer 3 Personal Assistant</td>
</tr>
<tr>
<td>Mr J Madden</td>
<td>Senior Officer Grade B Principal Adviser</td>
</tr>
<tr>
<td>Ms E Mason</td>
<td>Administrative Service Officer 4 Executive Assistant</td>
</tr>
<tr>
<td>Ms E Quilter</td>
<td>Administrative Service Officer 3 Temporary</td>
</tr>
<tr>
<td>Ms E Sanderson</td>
<td>Senior Officer Grade C Executive Officer</td>
</tr>
<tr>
<td>Ms E Smith</td>
<td>Senior Officer Grade B Principal Adviser</td>
</tr>
<tr>
<td>Dr W J McG Tegart</td>
<td>Secretary</td>
</tr>
</tbody>
</table>
Dr G Thompson
Senior Officer Grade B
Principal Adviser

Ms L Thomson
Senior Officer Grade C
Senior Adviser
Permanent Part-Time

Dr M Wardrop
SES Band 1
Branch Director

Unattached Staff as at 30 June 1992

Dr J Stewart
Senior Officer Grade B
Mobility Provisions - 1st Tier

Mrs M Borucinski
Administrative Service Officer 1
Mobility Provisions - 1st Tier
FINANCIAL STATEMENTS

1991 - 92

CONTENTS

Financial Statements

Certification of the Financial Statements
Aggregate Statement of Transactions by Fund
Detailed Statement of Transactions by Fund
Program Statement
Statement of Supplementary Financial Information
Notes to the Financial Statements
Glossary of Terms

Audit Report

Audit Report
STATEMENT BY THE DEPARTMENTAL SECRETARY

AND

PRINCIPAL ACCOUNTING OFFICER

CERTIFICATION

We certify that, in our opinion, the attached financial statements for the year ended 30 June 1992 are in agreement with the Australian Science and Technology Council's (ASTEC) accounts and records, and the financial statements have been prepared in accordance with the disclosure requirements of the Financial Statements Guidelines for Departmental Secretaries issued in February 1992 and amended in July 1992.

Signed

G. Burch
Acting Departmental Secretary
Dated: 4 September 1992

K. Curtis
Acting Branch Director
Assessment and Management Branch
Dated: 24 September 1992
This Statement shows aggregate cash transactions, for which the Australian Science and Technology Council is responsible, for the Consolidated Revenue Fund, a component of the Commonwealth Public Account (CPA).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>CONSOLIDATED REVENUE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FUND (CRF)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Receipts</td>
<td>10 381</td>
<td>Nil</td>
<td>13 723</td>
</tr>
<tr>
<td>Expenditure from</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Special Appropriations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenditure from</td>
<td>1 552 547</td>
<td>1 719 000</td>
<td>1 736 728</td>
</tr>
<tr>
<td>Annual Appropriations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>1 552 547</td>
<td>1 719 000</td>
<td>1 736 728</td>
</tr>
</tbody>
</table>

_The Australian Science and Technology Council is not responsible for Special Appropriations, or transactions on the Loan Fund or the Trust Fund._
AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL
DETAILED STATEMENT OF TRANSACTIONS BY FUND
FOR THE YEAR ENDED 30 JUNE 1992

This Statement shows details of cash transactions, for which the Australian Science and Technology Council is responsible, for the Consolidated Revenue Fund. ASTEC is not responsible for any transactions of the Loan Fund or the Trust Fund.

CONSOLIDATED REVENUE FUND (CRF)

RECEIPTS TO THE CRF

The CRF is the main working fund of the Commonwealth and consists of all current moneys received by the Commonwealth (excluding loan raisings and moneys received by the Trust Fund). The department is responsible for the following receipt items:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>5 760</td>
<td>Section 35 of the Audit Act 1901, to be credited to Running Costs</td>
<td>6.1</td>
<td>Nil</td>
</tr>
<tr>
<td>4 621</td>
<td>Miscellaneous Receipts</td>
<td>Nil</td>
<td>841</td>
</tr>
<tr>
<td><strong>10 381</strong></td>
<td><strong>TOTAL RECEIPTS TO CRF</strong></td>
<td><strong>Nil</strong></td>
<td><strong>13 723</strong></td>
</tr>
</tbody>
</table>
EXPENDITURE FROM CRF

The Constitution requires that an appropriation of moneys by the Parliament is required before any expenditure can be made from the CRF. Appropriations follow two forms:

- special (or standing) appropriations; and
- annual appropriations.

ASTEC is responsible for the following expenditure items:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTUAL</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Nil</td>
<td>Special Appropriations</td>
<td>Nil</td>
</tr>
<tr>
<td>1 552 547*</td>
<td>(Appropriation Act No 1)</td>
<td>1 719 000</td>
</tr>
<tr>
<td></td>
<td>(Annotated Appropriations)</td>
<td>12 882</td>
</tr>
<tr>
<td></td>
<td>(of the Audit Act 1901)</td>
<td>)</td>
</tr>
<tr>
<td>1 552 547</td>
<td>Total Expenditure from Annual Appropriations</td>
<td>1 782 882</td>
</tr>
</tbody>
</table>

1 552 547 TOTAL EXPENDITURE FROM CRF

*Expenditure from Appropriation Acts No 1 and 4.
### APPROPRIATION ACTS NOS 1 AND 3

**Division 501. - Australian Science and Technology Council**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1,552,547</td>
<td>1. - Running Costs 6.1</td>
<td>1,782,882</td>
<td>1,736,728</td>
</tr>
<tr>
<td>(Annotated Appropriation see Note 2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**1,552,547 Total Expenditure from Annual Appropriations**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,782,882</td>
<td>1,736,728</td>
</tr>
</tbody>
</table>
This Statement shows details of expenditure from annual appropriations for the sub-program administered by the Council. Each 'annual' appropriation item contributing to the sub-program is identified by its description followed by its appropriation code in brackets. This statement also shows details of revenue for the sub-program. Appropriations are through the Prime Minister and Cabinet portfolio, Program 6: Portfolio Policy Advising Agencies, Sub-program 1 - Australian Science and Technology Council.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian Science and Technology Council</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Running Costs (501.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>993</td>
<td></td>
<td>1 133</td>
<td>1 101</td>
</tr>
<tr>
<td>Salaries</td>
<td></td>
<td>586</td>
<td>636</td>
</tr>
<tr>
<td>Administrative Expenses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>560</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 553</td>
<td></td>
<td>1 719</td>
<td>1 737</td>
</tr>
<tr>
<td>Expenditure from Appropriations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less : Receipts offset within Outlays</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Section 35 of the Audit Act 1901 to be credited to Running costs</td>
<td>Nil</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Miscellaneous Receipts</td>
<td>Nil</td>
<td>1</td>
</tr>
<tr>
<td>1 542</td>
<td>Outlays</td>
<td>1 719</td>
<td>1 723</td>
</tr>
<tr>
<td></td>
<td>1990-91 $'000</td>
<td>1991-92 $'000</td>
<td>NOTES</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------</td>
<td>---------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>CURRENT ASSETS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Receivables</td>
<td></td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td>Prepayment*</td>
<td></td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td><strong>NON-CURRENT ASSETS</strong></td>
<td></td>
<td>229</td>
<td>5</td>
</tr>
<tr>
<td>269 Property, Plant and Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CURRENT LIABILITIES</strong></td>
<td></td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>19 Trade Creditors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Liabilities*</td>
<td></td>
<td>224</td>
<td>7</td>
</tr>
<tr>
<td><strong>NON-CURRENT LIABILITIES</strong></td>
<td></td>
<td>319</td>
<td>7</td>
</tr>
<tr>
<td>Other Liabilities*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* This item has not been reported in previous financial years.
NOTE 1 STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

(a) The financial statements have been prepared in accordance with the Financial Statements Guidelines for Departmental Secretaries issued in February 1992 and amended in July 1992 by the Minister for Finance.

(b) The financial statements have been prepared on a cash basis with the exception of the Statement of Supplementary Financial Information which includes certain accrual-type information.

(c) Amounts shown in the Aggregate Statement of Transactions by Fund and the Detailed Statement of Transactions by Fund have been rounded to the nearest $1; other amounts have been rounded up if the three end digits are greater than 500, or down if the three end digits are less than 500. If the three end digits equal 500 then the amount is rounded up or down to an even figure. All totals are rounded additions of unrounded figures.

(d) Assets costings are based on historical cost conventions. Assets include all items that have a value equal to or greater than $2,000.

(e) Salaries, wages and related benefits payable to officers and employees of the Australian Science and Technology Council have not been accounted for in the balance of creditors in the Statement of Supplementary Financial Information.

(f) Foreign currency transactions which have occurred during the year have been converted at the rate of exchange prevailing at the date of each transaction.

NOTE 2 RUNNING COSTS (Annotated Appropriations)

The following 1991-92 Appropriations were annotated pursuant to section 35 of the Audit Act 1901 to allow the crediting of certain receipts:

The arrangements relating to the annotation of the appropriation(s) include the crediting of receipts received from the following:

contributions from officers towards the provision of motor vehicles;
reimbursement of officer liability for semi official telephones;

sale of surplus or underperforming assets;

contributions from participants towards the cost of conducting conferences; and

FOI charges.

<table>
<thead>
<tr>
<th>Net Appropriations</th>
<th>Receipts</th>
<th>Appropriation</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,770,000</td>
<td>$12,882</td>
<td>$1,782,882</td>
<td>$1,736,728</td>
</tr>
</tbody>
</table>

NOTE 3 CURRENT ASSETS

A petty cash advance of $500 as at 30 June 1992 is not shown in the Statement of Supplementary Financial Information in accordance with accounting policies described in Note 1 (c). No investments or Trust Fund balances are applicable.

NOTE 4 PREPAYMENTS

Administrative Expenses $13,000

NOTE 5 PROPERTY PLANT AND EQUIPMENT

The value of property plant and equipment for 1990-91 included categories for furniture and fittings, computer equipment and electronic equipment valued at less than $2,000. The 1991-92 closing balance of $229,000 reflects actual asset costs for all items equal to or greater than $2,000.

NOTE 6 TRADE CREDITORS

As at 30 June 1992 an amount of $15,000 outstanding. There were no amounts overdue.

NOTE 7 OTHER LIABILITIES

Property expenses relating to the provision of office space occupied by the Australian Science and Technology Council in Canberra, including cleaning, was budgeted for and met from appropriations administered by the Department of the Prime Minister and Cabinet.
Current Liabilities

This category comprises consultants engaged for services for which ASTEC is liable and liabilities associated with ASTEC’s current lease for office accommodation (rent, APG fees and other outgoings).

Non-Current Liabilities

This category comprises components associated with ASTEC’s current lease for office accommodation only (rent, APG fees and other outgoings).

NOTE 8 UNACQUITTED ADVANCES

There were no unacquitted advances as at 30 June 1992.

NOTE 9 FORWARD OBLIGATIONS

The following forward obligations were entered into by the Australian Science and Technology Council as at 30 June 1992 and are due for payment:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Operating Expenses*</td>
<td>$20,840</td>
<td>$17,854</td>
<td>$9,466</td>
</tr>
</tbody>
</table>

* Appropriated to the Department of the Prime Minister and Cabinet in 1991-92 and not reported in previous years.

NOTE 10 ACT OF GRACE PAYMENTS

No payments were made during the 1991-92 financial year pursuant to authorisations given under section 34A of the Audit Act 1901.

NOTE 11 WAIVER OF RIGHTS TO PAYMENTS OF MONEYS

No payments were waived during the 1991-92 financial year under subsection 70C(2) of the Audit Act 1901.
NOTE 12   AMOUNTS WRITTEN OFF

No amounts were written off during the 1991-92 financial year under subsection 70C(1) of the Audit Act 1901.

NOTE 13   LOSSES AND DEFICIENCIES ETC IN PUBLIC MONEY AND OTHER PROPERTY

No action was taken during the 1991-92 financial year under Part XIIA of the Audit Act 1901.

NOTE 14   CONTINGENT LIABILITIES

The Australian Science and Technology Council had no contingent liabilities at 30 June 1992.

NOTE 15   GUARANTEES AND UNDERTAKINGS

The Australian Science and Technology Council had no guarantees or undertakings as at 30 June 1992.

NOTE 16   RESOURCES RECEIVED FREE OF CHARGE

During the 1991-92 financial year, a number of services were provided to the Australian Science and Technology Council without charge. The major services received include the following:

Department of the Prime Minister and Cabinet

Salary and personnel services.*

Registry and some office services.*

Department of Finance

The provision of accounting and budgetary services in the form of computerised Finance Ledger and payroll services.*

NOTE 17   AUDIT FEES

The Australian National Audit Office estimates that the cost for auditing ASTEC’s 1991-92 Financial Statements is $14,000.

* Unable to quantify.
GLOSSARY OF TERMS

ACT OF GRACE PAYMENTS

Section 34A of the Audit Act 1901 provides that, in special circumstances, the Commonwealth may pay an amount to a person notwithstanding that the Commonwealth is not under any legal liability to do so.

ADMINISTRATIVE EXPENSES

Includes not just expenditure on office-based activities but all operational expenditure (excepting salaries). The item includes both direct costs and overhead expenditure: it includes inter alia, minor capital expenditure (ie items less than $250,000) which is considered part of ordinary annual services; it does not include, inter alia, major capital expenditure, grants, loans or subsidies.

ADVANCE TO THE MINISTER FOR FINANCE (AMF)

The contingency provisions appropriated in the two Supply Acts and the two annual Appropriation Acts to enable funding of urgent expenditures not foreseen at the time of preparation of the relevant Bills. These funds may also be used in the case of changes in expenditure priorities to enable ‘transfers’ of moneys from the purpose for which they were originally appropriated to another purpose pending specific appropriation.

ANNUAL APPROPRIATIONS

Acts which appropriate moneys for expenditure in relation to the Government’s activities during the financial year. Such appropriations lapse on 30 June. They are Appropriation Acts.

APPROPRIATION

Authorisation by Parliament to expend public moneys from the Consolidated Revenue Fund or Loan Fund for a particular purpose, or the amounts so authorised. All expenditure (ie outflows of moneys) from the Commonwealth Public Account must be appropriated (ie authorised by Parliament). The authority for expenditure from individual trust accounts is provided under the Audit Act 1901 or ‘Annual Appropriations’ and ‘Special Appropriations’.

APPROPRIATION ACT (No 1)

An Act to appropriate moneys from the Consolidated Revenue Fund for the ordinary annual services of Government.
APPROPRIATION ACT (No 2)

An Act to appropriate moneys from the Consolidated Revenue Fund for other than ordinary annual services. Under existing arrangements between the two Houses of Parliament, the Act includes appropriations in respect of new policies (apart from those funded under Special Appropriations), capital works and services, plant and equipment and payments to the States and the Northern Territory.

APPROPRIATION ACTS (Nos 4 and 5)

Where an amount provided in an Appropriation Act (No 1 or 2) is insufficient to meet approved obligations falling due in a financial year, additional appropriation may be provided in a further Appropriation Act. Appropriations may also be provided in these Acts for new expenditure proposals.

AUDIT ACT 1901

The principal legislation governing the collection, payment and reporting of public moneys, the audit of the Public Accounts and the protection and recovery of public property. Finance Regulations and Directions are made pursuant to the Act.

COMMONWEALTH PUBLIC ACCOUNT (CPA)

The main bank account of the Commonwealth, maintained at the Reserve Bank in which are held the moneys of the Consolidated Revenue Fund, Loan Fund and Trust Fund (other than the national Debt Sinking Fund).

CONSOLIDATED REVENUE FUND (CRF), LOAN FUND, TRUST FUND:

The three Funds comprise the Commonwealth Public Account (CPA).

CRF

The principal working fund of the Commonwealth mainly financed by taxation, fees and other current receipts. The Constitution requires an appropriation of moneys by the Parliament before any expenditure can be made from the CRF. These follow two forms:

(i) Annual Appropriations consisting of Supply Acts (Nos 1 and 2), the Supply (Parliamentary Departments) Act, the Appropriation Acts (Nos 1-5) and the Appropriation (Parliamentary Departments) Acts (Nos 1 and 2) (the Supply Acts relate to the first five months of the financial year and are subsumed by the corresponding Appropriation Acts); and
(ii) Special or Standing Appropriations.

Loan Fund

Authority for its establishment comes from the Audit Act 1901. All moneys raised by loan on the public credit of the Commonwealth are credited to the Loan Fund. Expenditures from the Loan Fund require an appropriation by Parliament and are limited to the purpose(s) for which moneys were originally raised as specified.

Trust Fund

Essentially comprises trustee funds (termed ‘Heads of Trust’) established under s.60 of the Audit Act (ie working accounts covering certain government agencies and certain other accounts in the nature of ‘suspense accounts’); and trust accounts established under other Acts to meet future expenditure.

Payments into the Trust Fund may be by way of appropriation from the CRF or Loan Fund or direct credit of private moneys. Expenditure from the Trust Fund is appropriated for (and limited to) the specific purposes of each trust account, or head of trust, by the Audit Act or the Act establishing the trust account or head of trust. Unlike the unused portion of annual appropriations, trust account balances - as with ‘special’ or ‘standing’ appropriations - do not lapse at the end of the financial year.

EXPENDITURE

The total or gross amount of money spent by the Government on any or all of its activities (ie the total outflow of moneys from the Commonwealth Public Account including both ‘above the line’ and ‘below the line’ transactions, c.f. ‘Outlays’). All expenditure must be appropriated, ie authorised by the Parliament, (see also ‘Appropriations’). Every expenditure item is classified to one of the economic concepts of outlays, revenue (ie offset within revenue) or financing transactions.

FORWARD OBLIGATIONS

A future obligation, ie an intention, as at 30 June, to incur an obligation which will give rise to a future sacrifice of service potential or economic benefits. When such an intention crystallises and becomes a present obligation, a liability arises.

LOAN FUND

See ‘Consolidated Revenue Fund’.
ORDINARY ANNUAL SERVICES

See ‘Appropriation Act (No 1)’ and ‘Appropriation Act (No 2)’.

OUTLAYS

An economic concept which shows the net extent to which resources are directed through the Budget to other sectors of the economy after offsetting recoveries and repayments against relevant expenditure items (ie outlays consist of expenditure net of associated receipt items). See also ‘Appropriations’; and ‘Receipts offset within outlays’.

RECEIPTS

The total or gross amount of moneys received by the Commonwealth (ie the total inflow of monies to the Commonwealth Public Account including both ‘above the line’ and ‘below the line’ transactions). Every receipt item is classified to one of the economic concepts of revenue, outlays (ie offset within outlays) or financing transactions. See also ‘Revenue’.

SPECIAL (STANDING) APPROPRIATION

Moneys appropriated by a specific Act of Parliament for a specific purpose (e.g. unemployment benefits, grants to states for schools). They may or may not be for a specific amount of money or particular period of time. Special Appropriations do not require annual spending authorisation by the Parliament as they do not lapse at the end of each financial year. A distinction is sometimes made between Standing and Special appropriations (although for the purposes of these financial statements both are comprehended by the term ‘Special Appropriation’). Standing appropriations refer to an open-ended appropriation of the Consolidated Revenue Fund by the enabling Act of a legislatively-based program: the amount appropriated will depend on the demand for payments by claimants satisfying program eligibility criteria specified in the legislation. Special Appropriations can be regarded as somewhere between Standing and Annual Appropriations: while a specified amount is provided, it is included in a separate Bill authorising the particular program and can be specified for any number of years.

TRUST FUND

See ‘Consolidated Revenue Fund’.

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AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL
INDEPENDENT AUDIT REPORT

Scope

In accordance with sub-section 50(1) of the Audit Act 1901, the Acting Secretary has submitted for audit the financial statement of the Australian Science and Technology Council for the year ended 30 June 1992.

The statement comprises:

- Aggregate Statement of Transactions by Fund
- Detailed Statement of Transactions by Fund
- Program Summary
- Program Statement
- Statement of Supplementary Financial Information
- Notes to the Financial Statements, and
- a Certificate by the Acting Secretary and Acting Branch Director, Assessment and Management Branch.

The Council's Acting Secretary and Acting Branch Director, Assessment and Management Branch, are responsible for the preparation and presentation of the financial statement and the information it contains. I have conducted an independent audit of the financial statement in order to express an opinion on it.

The audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statement is free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the accounts, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion whether, in all material respects, the financial statement is in agreement with the accounts and records of the Council and has been presented in accordance with the guidelines made by the Minister for Finance so as to present a view of the Council which is consistent with my understanding of its financial position and the results of its operations.

The audit opinion expressed in this report has been formed on the above basis.

Audit Opinion

In accordance with sub-section 51(1) of the Audit Act, I now report that the financial statement is, in my opinion:

- in agreement with the accounts and records kept in accordance with section 40 of the Act, and
- in accordance with the financial statements guidelines made by the Minister for Finance.

D. S. Lennie
Executive Director
Canberra
4 September 1992
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GLOSSARY OF ACRONYMS

ABS  Australian Bureau of Statistics
AFOS  Agriculture and Forestry Subgroup
ANSTO  Australian Nuclear Science and Technology Organisation
CSIRO  Commonwealth Scientific Industrial Research Organization
CZM  Coastal Zone Management
DITAC  Department of Industry, Technology and Commerce
IPCC  Intergovernmental Panel on Climate Change
OECD  Organisation for Economic Cooperation and Development
OND  Office of Northern Development
PMSC  Prime Minister's Science Council
R&D  Research and Development
RAC  Resource Assessment Commission
S&T  Science and Technology
UNCED  United Nations Conference on Environment and Development
UNEP  United Nations Environment Program
WMO  World Meteorological Organisation
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Dear Prime Minister

This is the annual report of the Australian Science and Technology Council for the financial year ending 30 June 1992 prepared in accordance with section 27 of the Australian Science and Technology Council Act 1978, subsection 25(6) of the Public Service Act 1922 and with the requirements referred to in subsection 25(7) of the Public Service Act 1922.

Subsection 34C(2) of the Acts Interpretation Act 1901 requires the report to be furnished to you as soon as practicable and in any event by 31 December 1992. Subsection 25(8) of the Public Service Act 1922 requires you to cause a copy of the report to be laid before each House of the Parliament within fifteen sitting days after the day on which you received the report.

I recommend that it be made available to members of Parliament.

Yours sincerely

(L M Birt)
Chairman

24 September 1992

For and on behalf of

D A Aitkin  A Henderson-Sellers  J G McLeod
G J Clark  M A Jackson  R L Martin (past Chairman)
A W Goldsworthy  R D Johnston  D J Nicklin
R G Gregory  P J Laver  A E-S Tay

L S Zampatti
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Any enquiries or comments about the Annual Report should be addressed to:

Branch Director  
Assessment and Management Branch  
ASTEC  
PO Box E439  
QUEEN VICTORIA TERRACE ACT 2600  
PH:  (06) 273 4966
CORPORATE OBJECTIVE

To provide information and high level advice to the Government on matters relating to science and technology, based on ASTEC's independent status, its broad, longer term perspective and its links with the science and technology community.

FUNCTIONS

The Australian Science and Technology Council was established as a statutory authority on 28 February 1979 under the Australian Science and Technology Council Act 1978. The Council, usually known by the acronym ASTEC, is the Government's principal source of independent advice on a wide range of policies and programs related to science and technology and concerning Commonwealth departments and agencies, higher education institutions and private enterprise.

The statutory functions of the Council as set out in the enabling legislation are:

- the advancement of scientific knowledge
- the development and application of science and technology in relation to the furtherance of the national well-being
- the adequacy, effectiveness and overall balance of scientific and technological activities in Australia
- the identification and support of new ideas in science and technology likely to be of national importance
- the practical development and application of scientific discoveries
- the fostering of scientific and technological innovation in industry, and
- the means of improving efficiency in the use of resources by the application of science and technology.

ASTEC is empowered to operate by conducting inquiries, gathering information, engaging consultants, appointing committees and producing reports. Reports may be initiated by the Prime Minister or the Council and are tabled in Parliament. ASTEC reports to the Prime Minister. In everyday matters ASTEC works closely with the Minister Assisting the Prime Minister.
1 CHAIRMAN’S INTRODUCTION

Innovation and improvements in technology are central to industrial growth and ultimately to the social and economic development of nations worldwide. However, they are not the only determinants of economic growth. Effective use of science and technology requires careful linking of technological capacity to other natural and human endowments and to the created capacities of a nation. Australia is a technically advanced nation, but has a small population, narrow industrial base, is geographically isolated and faces challenging economic problems. It needs to manage its scientific and technological capabilities to help overcome these disadvantages and thereby maintain the quality and standard of life of its citizens.

Science has proved itself to be a powerful tool for advancing understanding of our world by adopting a particular basis for inquiry, namely, the methods of the ‘natural sciences’. Technology works in parallel with science, in some situations stimulating scientific inquiry and in others applying scientific knowledge, and leads to improvements in commercial production, human communication, and management of our environment.

These considerations make it apparent why the Australian Government, our industrial and commercial organisations, and our university systems, have devoted much thought and effort to strengthening activities in science and technology, and to enhancing cooperation between the various groupings developing, or using, science and technology.

Since its inception, ASTEC has been concerned with promoting the development of Australian science and technology and their application in industry, commerce and society. It is able to make a unique contribution to this task because of its membership which is drawn from the Australian science and technology community, from the universities, and from industry and commerce. This membership ensures that the Council is well-placed to advise the Government on opportunities and threats posed by the impact of technological developments in the Australian community and to recommend actions to deal with these.

This is, of course, the first occasion on which I have been able to contribute to the ASTEC Annual Report, as its Chairman. I count it a privilege to serve on the Council, and to follow in the footsteps of a colleague and friend of long standing, Professor Ray Martin. He has ensured that the Council has developed an effective means of identifying the elements of its work program by a close interaction between the Council and the Office of ASTEC, and of communicating the outcomes of its work through widely-distributed reports and papers. This process of dissemination of information, analyses and proposals for action offers a powerful method of alerting our society generally to the utility and relevance of Australian science and technology. It requires careful selection of topics chosen for investigation and report.

These comments lead me to the position that the fundamental role of ASTEC is to identify specific ways in which science and technology in Australia can promote the development of our society. In consequence, it is necessary for ASTEC to identify topics of national importance which require considered analysis and which ASTEC is particularly competent
to examine. Wide consultation in identifying these topics to form its work program is essential if the Council is to maintain its authority as the Government’s principal source of independent advice on science and technology.

Once a particular topic of major importance has been identified, the most effective process for ASTEC to follow is for:

(i) the Council to form a working party to examine in detail the issues involved, and possibilities for action;

(ii) the working party to consult widely and to report regularly on progress to the Council before providing a draft report;

(iii) the Council to consider in detail the draft report of the working party (including any proposals for action) and when appropriate to publish it for public comment and discussion; and, finally

(iv) the Council to revise the draft and transmit the final report to the Prime Minister.

In addition to identifying and examining major issues in science and technology in this way, ASTEC also publishes papers in which the primary focus is on deepening or extending the information publicly available about particular fields of science and technology. Such publications are designed to improve the general understanding of current developments and issues in science and technology, and to assist in the wider dissemination of information. Many of the steps I have outlined are tried and proven practices of ASTEC, others are a strengthening of existing practices and some are new. I believe these steps will enhance ASTEC’s contribution to science and technology policy.

This account of the operation of ASTEC makes it clear, I believe, that the Council has an increasingly important and varied role to play in scientific and technological developments in Australia. It remains fully committed to maintaining that contribution in the years ahead.

Professor Birt at the Big Science Forum, May 1992. (Peter West - Australian Photographic Service).
2 ACTIVITIES OF ASTEC

This section of the report reflects on the Chairmanship of Professor Ray Martin, describes ASTEC's study program, its technology assessment role and its coordination activities.

RETIREMENT OF PROFESSOR R L MARTIN
CHAIRMAN OF COUNCIL, 1988-1992

This annual report affords the opportunity to reflect on the considerable contribution of Professor Ray Martin, and more generally of those Council members, serving and now retired, who worked together during the period of Ray's chairmanship to produce an outstanding record of performance through the production of reports and in other ways advising the Prime Minister and Government on science and technology in Australia. The S&T capabilities of the nation have continued to change and, in many areas, advance considerably. As this process of change occurred ASTEC performed a vital function in identifying issues which needed to be addressed and in setting the directions for change, often itself acting as the agent of change. For example, the report Future Directions for CSIRO of 1985, identified the key changes needed to make CSIRO's research more applicable to the priority needs of Australian industry. During Ray Martin's term, ASTEC has continued to strengthen and broaden this theme of examining the direction and balance of science and technology funding and performance. The various contributions which reflect successive steps in pursuing this theme are outlined in the following diagram.

Two landmark reports Setting Directions for Australian Research, September 1990, and Research and Technology: Althe Directions, September 1991, established a new approach to the way in which the Government, industry, academia, the Academies and the wider S&T community would work together in identifying important issues, explore options and finally set directions for S&T in Australia at regular intervals into the future. The first cycle of this exciting and more cohesive approach to the planning and management of Australia's S&T system will reach completion with the issuing of a Science and Technology White Paper by the Minister Assisting the Prime Minister and Minister for Science and Technology, Ross Free, MP, in August 1992.

As shown in the diagram, there are five categories within which ASTEC prepared reports and papers, each category addressing basic elements of the theme of assessing and directing the S&T system or infrastructure. The cohesive manner in which Ray Martin guided the Council to accord sufficient emphasis to each element ultimately created the milieu which engendered confidence and respect from Government, the science agencies, academia and the general S&T community; and ensured that the advice and guidance ASTEC offered received serious consideration, and in most instances, was substantially implemented.
HEALTH OF AUSTRALIAN SCIENCE

- Profile of Australian Science (1989)
- Government Funding of Academic and Related Research (1990)

INFRASTRUCTURE OF AUSTRALIAN SCIENCE

- The Future of Australian Astronomy (1989)
- Small Country Big Science (1990)
- An Australian International Gravitational Observatory (1991)
- Major National Research Facilities: A National Program (1992)

Planning & Priority Setting

Science, Technology and Australia's Future (1990)
Setting Directions for Australian Research (1990)
Research and Technology: Future Directions (1991)

Environmental Research in Australia

Compendium (1990)
A Review (1990)
The Issues (1990)
Case Studies (1991)

Technological Change

Casting the Net: Post-Harvest Technologies and Opportunities in the Fishing Industry (1988)
Health Politics Trade: Controlling Chemical Residues in Agricultural Products
Your Word is my Command (1990)
Australia is characterised by a narrow industrial base, with very few internationally active manufacturing firms generating a strong demand for new technological knowledge. As a result, the S&T infrastructure and the manufacturing industry have evolved separately with limited interaction. Moreover, Australia's industry is technology-based only in specialised areas and without sufficient export orientation. ASTEC has consistently recommended that the S&T infrastructure be better orientated to help industry become more innovative and technologically advanced. One by one each of the Commonwealth science agencies, often on the recommendation of ASTEC, has directed greater attention to the needs of Australian industry. However, Australian industry remains weak with respect to its ability to be innovative and aggressively competitive in global markets. This will be a major issue for the attention of industry and government as we progress to the 21st Century. Importantly, the S&T infrastructure is now better able to support Australia's manufacturing and international trading sectors. ASTEC members, and Ray Martin in particular, can take considerable credit for their contribution to re-shaping and strengthening the capabilities of the nation's S&T system. As a result, Australia is better prepared for the formidable challenges now facing the nation.

Throughout his term of office, Ray Martin worked closely with the Prime Minister, the Minister Assisting the Prime Minister for Science and, more recently, the Minister Assisting the Prime Minister. ASTEC welcomed the appointment of the Hon. Ross Free, MP, to Minister Assisting the Prime Minister on 27 December 1992. In ASTEC's view, this broadening of responsibilities reflects the Government's recognition of the importance of integrating science and technology into other areas of Government policy. During the year, the Hon. Ross Free, MP, addressed the September 1991 meeting of the Council, and opened both the Canberra Forum on Research and Technology: Future Directions in November 1991 and the Big Science Forum in May 1992. The Council has welcomed the active interest and involvement of the Minister in ASTEC's activities.

COMPLETED STUDIES

The studies program in 1991-92 saw the completion of two reports; Research and Technology: Future Directions and Major National Research Facilities: A National Program. As well, the final product of the environmental research study Environmental Research in Australia: Case Studies was published.
Research and Technology: Future Directions

ASTEC has long argued for a more cohesive, planned approach to the formulation of Government policy directions on science and technology. In its 1990 report *Setting Directions for Australian Research* ASTEC recommended to the Prime Minister that a White Paper process be established which regularly sets national directions for Australian research and development. It further recommended that:

i  The objective for national direction-setting should be to set broad and coordinated government guidelines for research and development policy in Australia, within which departments, agencies and researchers can set more specific strategic and operational priorities.

ii  The process should take place every four years, include a longer term perspective of eight to twelve years and relate to annual reviews of research priorities at the strategic and operational level within agencies as part of the triennial rolling budget process.

iii  The mechanism should be a White Paper tabled by the Prime Minister, endorsed by the Prime Minister's Science Council, drafted by the Coordination Committee on Science and Technology, and based on an issues and options paper prepared by the Australian Science and Technology Council following wide consultation with the research community, industry and other users of research.

In response to *Setting Directions for Australian Research* the Prime Minister requested that ASTEC initiate the process leading to a White Paper on science and technology.

The preparation of the issues and options paper *Research and Technology: Future Directions* proved to be a more broad-ranging and complex task than ASTEC's usual studies, involving a call for submissions and extensive consultations, as well as literature review and quantitative analysis.

In a departure from usual practice, all Council members were involved in the development of the report. A Management Group, comprising Professor Ray Martin, Professor Don Aitkin and Professor Ron Johnston directed the process, while Council members met in three Working Groups to consider specific issues, and also reviewed the report as a whole. The process of dialogue with interested parties was central. Following preliminary discussions, ASTEC undertook a comprehensive consultation program with industry, government and higher education sectors.
It sought the views of a wide range of policy advisers and funders, performers and users of research and technology in Australia and overseas, including members of state government science and technology advisory bodies and other state government departments and agencies.

Some 190 submissions were received from a wide cross-section of individuals and organisations in the private and public sectors in all states and territories; meetings with over 200 people were held in capital cities; and an intensive interview program with more than 150 top level managers sought their views on industry-specific matters. Australia’s network of Industry, Science and Technology Counsellors provided current information on overseas policy development and several Council members held consultations overseas.

Throughout the study, ASTEC maintained close contact with senior managers in the industry, government and higher education sectors which enabled ASTEC to explore a broad range of problems and opportunities facing Australia, and to identify the major issues for which policy or other actions could be developed.

A number of major issues, and several options for action for each issue, were identified in the report. The main areas dealt with were research, technology and international competitiveness; energy and the environment; quality of Australian life; managing Australia’s research resources; and Commonwealth and States issues.

To complete the consultation process, a series of fora were held in Canberra, Perth and Brisbane to launch the report, to inform the wider community about the report and its development, and to obtain feedback.

Three companion volumes to Research and Technology: Future Directions were planned: A Summary Report was published late in 1991, and an ASTEC Occasional Paper (based on the series of industry related interviews), and the proceedings of the Canberra forum on the report will be published in 1992. Through these publications and extensive consultations, the future directions process created a great deal of interest and raised issues in relation to the broad questions of setting national directions for Australian research and technology.

The White Paper, to which Research and Technology: Future Directions has made a significant contribution, is being drafted by an Interdepartmental Committee, chaired by the Chief Scientist in the Department of the Prime Minister and Cabinet, Professor Ralph Slatyer. It is to be released in August 1992 in conjunction with the Budget.
Major National Research Facilities

ASTEC’s report, The Future of Australian Astronomy (1990), highlighted the need for a more considered approach to the identification of likely funding needs for large facilities. In March 1990, the Coordination Committee on Science and Technology recommended that ASTEC develop criteria for assessing proposals for major facilities and apply the criteria to any proposals known to be under development. As a result the Prime Minister in April 1991, commissioned ASTEC to carry out a study of major national research facilities which are likely to require Government decisions on their funding over the next ten years.

ASTEC commenced the study by calling for Expressions of Interest for major national research facilities from all government-funded research performing bodies (through the Coordination Committee on Science and Technology).

Over 90 proposals were received. To provide information to the science and technology community about the facilities proposed by Australian research bodies, ASTEC published Occasional Paper No 19 Major National Research Facilities: Expressions of Interest (October 1991) which listed the facility titles, organisations, and funds required.

ASTEC developed criteria for assessing proposals for facilities in accordance with the Terms of Reference. These criteria were applied to identify the proposals which ASTEC considered would be the highest priority for possible funding by Government. The criteria were a major outcome of the study.

### TERMS OF REFERENCE - MAJOR NATIONAL RESEARCH FACILITIES

- **i** To establish criteria for assigning relative priorities to proposals for funding major national research facilities (major facilities are those costing in excess of $5 million).
- **ii** To identify any proposals likely to be developed over the next five to ten years, including proposals for the replacement or upgrading of existing facilities.
- **iii** To assess the relevance and importance of the proposals likely to be developed in the context of Australia’s needs and priorities for science and technology.

### WORKING PARTY MEMBERS - MAJOR NATIONAL RESEARCH FACILITIES

- **Professor Ray Martin** (Convenor)
  Monash University
- **Dr Gregory Clark**
  IBM (Australia) Ltd
- **Professor Ron Ekers**
  Australia Telescope
- **Professor Hans Freeman**
  University of Sydney
- **Professor David Green**
  University of Tasmania
- **Professor Jim McLeod**
  University of Sydney
- **Professor Don Nicklin**
  University of Queensland
- **Dr Jim Peacock**
  CSIRO Division of Plant Industry
- **Dr Greg Tegart**
  ASTEC
BENEFITS TO SCIENCE AND TECHNOLOGY

Scientific Objectives and their Significance

- Does the proposal develop an area of scientific or engineering research of great importance to Australia and which is at the leading edge of international research?
- What are the key scientific questions that can be answered by having access to the proposed national facility?
- Why are the answers to the questions significant for Australian science and technology?
- Will the proposed national facility be made available to outside researchers subject to independent peer review?

Established Need

- Is the case for the proposed national facility appropriate in terms of Australia’s current national priorities?
- Does the proposal involve a major source of expenditure on a piece or pieces of physical equipment of a scale such that it could not be developed incrementally or funded by an institution or consortia of institutions without serious disruption to other commitments of equal or higher priority?
- Is there a community of outstanding Australian scientists and technologists committed to the success of the proposed national facility?

Unique Characteristics

- Are there characteristics of the proposed national facility that are uniquely appropriate for Australia?

Degree of Impact

- What impact will the proposed national facility have on fostering interdisciplinary research?
- Will the proposed national facility provide new opportunities for doctoral and post-doctoral training in research?
- Will the proposed facility contribute to public pride and national prestige of Australia’s science and technology?

International Characteristics

- Will the proposed national facility encourage international scientific collaboration by attracting researchers from overseas to spend time in Australia?
- Could the proposed national facility be located with advantage overseas in partnership with one or more other countries?
- Would the proposed national facility, if located in Australia, attract international partners?

Criteria for assigning relative priority to a major national research facility
BENEFITS TO THE NATION

Industry Objectives and their Significance

- Will the construction of the proposed national facility provide a technological stimulus to Australian industry?
- Will the proposed national facility provide unique services of benefit to Australian industry?
- Could the proposed national facility lead to better linkages between academic and research institutions, and industry?
- Will the research outputs from the proposed national facility foster the development of new Australian enterprises?
- What contribution will the proposed national facility make to enhancing the skills base and training level of Australian technologists?

Social Objectives and their Significance

- Is the proposed national facility of high national priority for the advancement of knowledge, economic growth, health, welfare or national security?
- Does the proposed national facility contribute to a better understanding and management of our environment?
- Will the proposed national facility lead to an improved understanding and appreciation by the Australian community of the accomplishments of science and technology?

International Standing

- Will the proposed national facility project and enhance Australia’s image as a technologically advanced nation?
- Will Australia’s position in international negotiations be strengthened as a result of the proposed national facility?

Criteria for assigning relative priority to a major national research facility (continued)
The study identified seven proposals for likely development over the next decade:

- Australia Telescope
- High Flux Research Reactor
- Marine Geoscience Research Vessel
- Mining Materials Research Facility
- Synchrotron Research Facility
- Tropical Marine Research Network
- Very High Speed Research Data Network.

Several of these proposals involve the upgrading or replacement of existing facilities. Another eight proposals were identified in the report as of high merit.

**RECOMMENDATIONS - MAJOR NATIONAL RESEARCH FACILITIES**

ASTEC recommends

that the development of major national research facilities in Australia, including the operation of existing facilities, be recognised as a national program subject to periodic review;

that the review process be undertaken every four years in conjunction with the proposed White Paper process; and

that the review process give consideration to new proposals for inclusion in the program, access to major international research facilities and the phasing out of facilities that no longer have high national priority.

**Recommendation 1**

ASTEC recommends that the criteria developed for this report be used to assign relative priorities to proposals for the establishment, upgrading or replacement of major national research facilities.

**Recommendation 2**

ASTEC recommends that a budgetary allocation of $40 million per annum be provided by the Government for funding a national program for major national research facilities over the next ten years.

**Recommendation 3**

The report's major recommendation is that a National Program be established for the assessment and funding of major national research facilities to replace the current 'ad hoc' approach to identifying major facilities.

The report, *Major National Research Facilities: A National Program*, was tabled in Parliament by the Minister Assisting the Prime Minister and Minister for Science and Technology, the Hon Ross Free MP, on 30 April 1992. The Minister said that it was
recognised internationally that major national research facilities are too important for decisions to be made on an ad hoc basis. He also said that: ASTEC has produced a valuable report which will enable us to establish procedures for assessing the relative benefits to Australia of proposals for major national research facilities, and that: The value of this report is its recognition of the need for a national program, and identification of criteria by which various proposals can be judged.

**Big Science Forum**

As a follow-up to the Major National Research Facilities study, the OECD meeting on Big Science (Paris, March 1992) and the International Workshop on Equipping Science for the 21st Century (Amsterdam, April 1992), ASTEC held a Forum on National and International Developments in Big Science to promote awareness of the current issues. The Forum, held on 29 May 1992 in Canberra, was restricted to key policy makers; forty five people attended.

The Minister Assisting the Prime Minister and the Minister for Science and Technology, the Hon Ross Free MP, opened the Forum. There were two presentations on the recent international meetings, a presentation on the *Major National Research Facilities* Report, and three case studies highlighted in the major national research facilities study: Research Reactors and Recent Australian Nuclear Science and Technology Organisation Developments; the Marine Geoscience Research Facility; and the Australian Academic Research Network.

Abstracts of presentations given at the Forum will be included in an ASTEC Occasional Paper on big science related matters to be published later in 1992.

*Participants at the Big Science Forum (L-R) Professor Ralph Slatyer, Former Chairman ASTEC; Professor Ray Martin, former Chairman ASTEC; the Hon. Ross Free MP, Minister Assisting the Prime Minister; Professor Michael Birt, Chairman ASTEC. (Peter West - Australian Photographic Service).*
Review of Environmental Research in Australia

The final publication in the environmental research study was published in November 1991. *Environmental Research in Australia: Case Studies* consists of seven different Australian environmental resource-use case studies which are historically significant in outlining Australia’s application of environmental research to natural resource-use decision making. The individual case studies are:

- Wesley-Vale Bleached Eucalypt Kraft Pulp Mill;
- Latrobe Valley Air-Shed Study;
- Wet Tropics of North-East Queensland;
- Salinity and Waterlogging in the Murray-Darling Basin;
- Bauxite Mining in the Darling Ranges;
- The Crown-of-Thorns Starfish in the Great Barrier Reef; and
- Southern Bluefin Tuna.

CURRENT STUDIES

During the extensive consultation program undertaken in preparing *Research and Technology: Future Directions*, a number of high priority issues were identified, especially by industry, from which ASTEC has developed its current work program. Issues which have been identified for detailed study are tropical research and technology; energy research and technology; and the social sciences, humanities, science and technology in economic development.

Research and Technology in Tropical Australia and their Application to the Development of the Region

The importance of tropical zone research and technology as a critical area of economic and social benefit to Australia was especially highlighted during consultations for ASTEC’s study on *Research and Technology: Future Directions*. In that report, the Council concluded that ‘the unique opportunity for Australia to exploit its natural competitive advantage in tropical agriculture, medicine and technology is being neglected’.

The Council responded to this community concern by identifying tropical R&D as a topic of high priority for the new work program. As a result, in April 1992, the Prime Minister requested ASTEC to undertake a study of research and technology in tropical Australia and their application to the development of the region.

In announcing the study the Ministers, Assisting the Prime Minister for Northern Australia and Assisting the Prime Minister commented:

*The Australian tropics are characterised by a huge diversity of physical environments and a unique biota and culture. These factors, together with the remoteness of the region, provide both immense opportunities and significant problems. Were these opportunities to be realised, and the problems overcome, Australia could become a world leader in dry and wet/dry tropical zone products and services. It could realise significant economic, social and environmental benefits for Northern Australia, and for tropical regions in other countries.*
TERMS OF REFERENCE - RESEARCH AND TECHNOLOGY IN TROPICAL AUSTRALIA

i Review the distribution, organisation and funding of research and development (R&D) activities relevant to tropical Australia.

Assess these activities in terms of:

their effectiveness in relation to the realisation of opportunities in the region, to the resolution of problems in the region and to national well-being; and

their potential contribution to furthering international collaboration.

ii Identify opportunities for tropical zone R&D and associated technologies for the next decade.

iii Recommend appropriate action to capitalise on identified opportunities and to rectify any deficiencies.

In developing the terms of reference for the study, ASTEC consulted with the governments of Queensland, Western Australia and the Northern Territory as well as with industry, research organisations and other interested parties. The Prime Minister has drawn attention to the fact that a significant area of northern Australia is under Aboriginal ownership or control, raising issues which merit particular attention.

The focus of the study is on research and technology relevant to tropical Australia (ie, north of the Tropic of Capricorn, 23°26.5'S, and comprising the wet, wet/dry and dry tropics and the maritime area), but recognising that many research and other activities outside this geographical region are relevant to the tropical zone and must be taken into consideration.

An extensive program of consultations is an integral part of the study. ASTEC has already undertaken consultations in Darwin, Brisbane and Perth, and the response from the State and Territory governments, industry and research sectors has been positive. Further consultations across northern Australia are planned, including two symposia to be held in Townsville and Darwin in late 1992. The symposia will provide a forum for discussions on the contribution that research and technology have made to the social and economic development of tropical Australia and to assess the way forward.
ASTEC is working closely with the newly established federal Office of Northern Development (OND) on aspects of the study. ASTEC and OND have jointly commissioned a compendium of northern Australian research. Consultants have been asked to identify those organisations performing relevant R&D and to provide information on research projects, objectives and funding. The Council has identified the research compendium as an important outcome of the study and the information will be made publicly available.

A call for public submissions to the study will be made in July 1992. The Prime Minister has asked ASTEC to complete the study by mid 1993.

**Future Directions in Energy Research and Technology**

The Council is undertaking a study of energy research and technology in order to identify ways to make these activities in Australia more effective. A Working Party has been appointed and will consult widely among those involved in carrying out, funding or using research and technology relevant to energy production and use.

**TERMS OF REFERENCE - ENERGY RESEARCH AND TECHNOLOGY**

1. Define the appropriate role for research, development and demonstration (RD&D) in supporting Australia’s competitive position in the changing world environment and energy market.

2. Review the distribution, organisation and funding of Australian RD&D activities relevant to energy production and use.

3. Recommend appropriate action to increase the effectiveness of Australia’s energy RD&D activities.

ASTEC first reported on energy research in *Energy Research and Development in Australia*, tabled in 1978, which recommended initiatives that included the establishment of the National Energy Research, Development and Demonstration Council. In 1991, ASTEC revisited energy issues in *Research and Technology: Future Directions*. In the context of sustainable development, this report highlighted conservation and efficient management of energy, strategic research on reducing greenhouse gas emissions, and a long-term strategy for renewable energy.

ASTEC’s study will pay particular attention to energy efficiency and the principal industry sectors, including coal, electricity, gas, oil, nuclear and renewables.
The study will attempt to identify Australia's appropriate role in the global energy economy. It will ask how energy RD&D can improve the competitiveness and flexibility of Australian energy-related industries, and seek to identify appropriate niches for Australian RD&D.

The study will also ask how energy RD&D can help us respond to:

- environmental concerns, including ecologically sustainable development and greenhouse gases;
- economic and social needs and strategies;
- national and international interests;
- short-term and long-term interests.

The Social Sciences, Humanities, Science and Technology in Economic Development

The broad issue of the social sciences and the humanities in economic development has come up in various contexts but was consistently raised during the consultation process (including industry interviews) for Research and Technology: Future Directions.

TERMS OF REFERENCE - THE SOCIAL SCIENCES, HUMANITIES, SCIENCE AND TECHNOLOGY IN ECONOMIC DEVELOPMENT

Recognising the wide-ranging benefits of the social sciences and the humanities to Australia's economic, social and cultural well-being:

i Identify and evaluate the role of the social sciences and the humanities in the contribution of science and technology to economic development.

ii Identify and assess the infrastructure, organisation and funding of research and education in the social sciences and the humanities which are or could be relevant to economic activity.

iii Make recommendations to improve the effectiveness of the role of the social sciences and the humanities in enhancing the contribution of science and technology to economic development.

A frequently expressed perception was that research in the social sciences and humanities seems unrelated to contemporary national concerns, and needs to be aligned more closely with economic and social imperatives. In addition, there is a growing recognition that a balanced science and technology system needs to recognise the importance of research in
the social sciences and humanities, not just as cultural activities but as being necessary to improve Australia’s economic performance and social environment.

ASTEC has begun a study which will examine specific aspects of this topic. The Working Party has invited a number of people to join a reference group which will be asked to comment on drafts and offer specialist advice on a range of issues. The Group will be drawn from the industry, government and higher education sectors, and include practitioners and users of the social sciences and the humanities.

Consultation will be an important part of the study. Early in 1992, the Working Party met with the Australian Academy of the Humanities and the Academy of the Social Sciences in Australia and undertook some preliminary consultations in Canberra. A discussion paper will elicit submissions from a targeted group of people with an interest in the social sciences and the humanities, and science and technology. Further meetings are planned. In addition, literature review and statistical analysis will augment the detailed development of the report. The report is planned for completion in December.

TECHNOLOGY ASSESSMENT

Consistent with its responsibility to perform a technology assessment role for Government, ASTEC is undertaking studies of nanotechnology and of gene technology. Both topics were put forward, in May 1992, as possible presentations to the Prime Minister’s Science Council (PMSC).

Nanotechnology Study

The drive for miniaturisation and higher precision across a widening range of manufacturing activities is continuing globally. This puts demands on industry for new capabilities for machining, positioning and control and measurement to nanometre tolerances; it also calls for improved understanding of materials and processes at the molecular or atomic level. This gives rise to the development of the technological activities of nanotechnology.

Nanotechnology is the technology of manufacture where dimensions or tolerances of 0.1 nanometre to 100 nanometres play a critical role (1 nanometre being 10⁻⁹ metre). It is both an enabling technology which will provide the basis for other technological developments and also cross-sectoral as it has applications in areas such as optics, electronics and sensors.
In April 1992, Council agreed to prepare a discussion paper on nanotechnology which would serve as an input to the PMSC meeting to be held in late 1992. ASTEC is also undertaking a full study on the topic. A Working Party comprising experts drawn from industry, academia and research organisations has been appointed.

ASTEC will review Australia's capabilities, while other countries' activities (especially Japan and the US) will provide the basis for discussion of Australia's policy for possible development in these areas. Currently, the technologies are at the pre-competitive stage worldwide; for example, there is a ten year MITI research project in nanotechnology worth hundreds of millions of dollars. Australia has considerable expertise mainly in CSIRO and the universities but is constrained by a lack of modern equipment and capital investment.

**WORKING PARTY MEMBERS - NANOTECHNOLOGY**

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<tr>
<th>Name</th>
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<tr>
<td>Professor Don Nicklin</td>
<td>University of Queensland</td>
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<td>Dr Gregory Clark</td>
<td>IBM (Australia) Limited</td>
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<td>Professor Robert Clark</td>
<td>University of New South Wales</td>
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<td>Dr Bruce Cornell</td>
<td>CSIRO Division of Food Processing</td>
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<tr>
<td>Mr Owen Hill</td>
<td>AWA MicroElectronics Pty Ltd</td>
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<td>Dr Ian Pollock</td>
<td>CSIRO Division of Applied Physics</td>
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**TERMS OF REFERENCE - NANOTECHNOLOGY**

1. Define nanotechnology, examine its scientific promise and its role in contributing to economic development.

2. Recommend appropriate action to capitalise on this emerging technology.

Since nanotechnology has a core of general techniques relating to manufacture, measurement and materials it is potentially of great significance to many aspects of industry including communications, aerospace, health, environment, mining and agriculture.

The Working Party will consider how Australia can best make use of these technologies to increase our international competitiveness.
Gene Technology - Opportunities for Australia

The study is intended to complement the recent publication of a report Genetic Manipulation: the Threat or the Glory by the House of Representatives Standing Committee on Industry, Science and Technology.

**TERMS OF REFERENCE - GENE TECHNOLOGY**

i Examine the existing and likely impacts of gene technology on Australian society.

ii Review research into gene technology and the opportunities for its application in developing pharmaceuticals and in medical, food, agricultural and environmental sciences.

The study is being conducted in collaboration with the Department of Industry, Technology and Commerce and will renew ASTEC’s contribution to the topic following its 1982 report Biotechnology in Australia. In the same period, the then Department of Science published two reports on biotechnology, relating to the prospects for its application to industry in Australia.

The study will have two products: first the material for a possible presentation to the PMSC and second the preparation of an ASTEC Occasional Paper which will be more comprehensive in scope. The draft of this paper will be circulated widely and used as the basis for a specialist symposium on the topic.

The chief intent in proposing the topic for presentation to the PMSC is to better inform key Ministers with responsibility for different aspects of genetic manipulation on the current status of research on gene technology and of opportunities for its application in medical science, agriculture and industry in the immediate future.

**WORKING PARTY MEMBERS - GENE TECHNOLOGY**

Dr Jim Peacock (Convenor)  
CSIRO Division of Plant Industry  
Professor Jim McLeod  
University of Sydney  
Professor John Shine  
Garvan Institute of Medical Research  
Dr Elizabeth Dennis  
CSIRO Division of Plant Industry

As well as the Working Party, an extended external reference group has been established to ensure the top specialists in research and industry provide substantial input to the preparation of the Occasional Paper and participate in the presentation to the PMSC.
CONSULTATION AND COORDINATION

As part of its consultative and monitoring role inside and outside of government, ASTEC’s work program during the year included diverse coordination activities.

Interaction with State Science and Technology Bodies

ASTEC has continued to foster close contact between state and territory agencies responsible for science and technology, and New Zealand counterparts, through its twice yearly meetings. These meetings are an important focus for identifying and discussing areas of joint interest. They are also an opportunity to provide briefings on recent Commonwealth initiatives and programs.

A workshop was held in conjunction with each of the two meetings in 1991-92. At the November 1991 meeting in Canberra, a workshop was held on research data and, at the June 1992 meeting in Hobart, a workshop was held on technology parks.

Impetus for the Research Data Workshop came from the Department of State Development, New South Wales, and from the Centre for Research Policy, University of Wollongong, which joined ASTEC in organising and sponsoring the event.

The workshop was held to exchange information on, and to discuss problems with, the collection, coordination and use of data (particularly quantitative data) on research and development activities in Australia. Actions that might be pursued were identified:

- the production of a directory of R&D data resources;
- the establishment of a ‘one-stop shop’ for research data;
- the formation of a steering committee of collectors, custodians and users of R&D data;
- further support for development of the Australian Standard Research Classification (ASRC);
- changing accounting standards to encourage the reporting of business R&D expenditure; and
- the inclusion of a science and technology representative on the Australian Statistics Advisory Committee.

The workshop noted that several of these options would require a significant commitment of resources. However, they could lead to better data, better decision making and thus cost savings. The proceedings of the November workshop have been published as Occasional Paper No 20.

Following interest at the November 1991 meeting, a workshop on technology parks was held at the June 1992 meeting in Hobart. Presentations were made by Mr Barry Orr, Chief Executive Officer, Technology Development Corporation; Dr Richard Joseph, University of Wollongong; Hon Mal Bryce, Chairperson, Western Australian Technology and Industry Advisory Council; and Dr Greg Tegart, Secretary ASTEC. The workshop looked at the benefits of linkages between parks, making parks more relevant and the future directions for technology parks. The roundtable discussions following the
presentations focused on the activities in the States and future directions. The proceedings of the workshop will be published as a working paper.

Participants at the Joint Meeting of S&T Advisory Bodies of Australia and New Zealand (L to R) Hon. Mal Bryce, WA; Dr Colin Adrian, ACT; Professor Don Nicklin, Member, ASTEC; Mr Ron Arbuckle, New Zealand; Dr Greg Tegart, Secretary, ASTEC (Photographer - Jonathan Jones).

International Developments in Measuring Research, Science and Technology

In March 1992, ASTEC hosted a seminar on ‘International developments in measuring research, science and technology’. Mr Bill Pattinson (ABS), spoke on the OECD’s expert conference in Rome to prepare a revision of the ‘Frascati Manual’ for R&D statistics. Dr Kevin Bryant, director of DITAC’s S&T Resource Analysis Section, looked at issues to be discussed at a meeting of the OECD’s Group of National Experts on S&T Indicators (NESTI) in April. The seminar attracted about twenty people from Canberra and further afield. Similar seminars may be held in relation to future international meetings on R&D statistics.

Federalism Workshop

As reported in the 1990-91 Annual Report, ASTEC and the Federalism Research Centre (Australian National University) jointly sponsored the workshop Australian Federalism: Getting the Best from the System, at the Australian National University in April 1991. The proceedings of the workshop were published in September 1991 as ASTEC Occasional Paper No 18.
Global Climate Change Program

In 1991-92, the Secretary of ASTEC has continued his commitment to the topic of global climate change through his role as Principal Australian Delegate to the Intergovernmental Panel on Climate Change (IPCC) and as Co-Vice-Chair of Working Group II on Impacts. The financial and staff support to carry out this function are provided through the Climate Change Section in the Department of the Arts, Sport, the Environment and Territories. Involvement of the Secretary in this activity provides a unique opportunity for ASTEC to be up-to-date in environmental issues in the international scene as a background to ASTEC’s own studies in the area. The opportunities for overseas travel provided by the involvement in IPCC are well beyond the limited budget of ASTEC.

1. The International Scene

The IPCC was set up in late 1988 under the auspices of the World Meteorological Organisation (WMO) and the United Nations Environment Program (UNEP) to provide a critical assessment of the information on the science of, impacts of, and responses to global climate change for the Second World Climate Conference in late 1990. The assignment was completed and detailed reports of the three IPCC Working Groups were published by early 1991.

The reports highlighted a number of uncertainties in both the science of global climate change and of its potential impacts. WMO and UNEP decided to continue IPCC and a new work program was drawn up at the Fifth Plenary Session in Geneva in early 1991. The six following tasks were addressed:

Task 1: Assessment of net greenhouse gas emissions

Task 2: Predictions of the regional distribution of climate change and associated impact studies

Task 3: Energy and industry-related issues

Task 4: Agriculture and forestry related issues

Task 5: Vulnerability to sea level rise

Task 6: Emissions scenarios.

The bulk of the work was carried out within the previous Working Group structure, but a conscious attempt was made to link specialists working on cross-cutting issues such as impacts of sea level rise and coastal zone management, forestry and agriculture as sources and sinks of greenhouse gases, etc, by running end-on sessions of the Working Groups and broadly based workshops.
Against a tight schedule, the 1992 IPCC Supplement was produced for final approval at the Seventh Plenary Session in Geneva in February 1992. The Supplement was then circulated widely to provide a strong input to the UNCED meeting on Sustainable Development held in Rio de Janeiro in June 1992.

2. The National Scene

The strong involvement of Australian experts in all three Working Groups has continued during the past year. A major contribution was again made to the activities of Working Group I through a meeting of experts on 18 December 1991 at the Bureau of Meteorology. As well as familiarising Australians with the content of the Supplement, valuable feedback was provided to the UK Drafting Committee.

A major activity organised by officers of the Departments of Primary Industries and Energy and of the Arts, Sport, the Environment and Territories was the international workshop on ‘Assessing Technology and Management Systems for Agriculture and Forestry in Relation to Global Climate Change’ held in Canberra on 20-23 January 1992. This provided an opportunity to bring together some of the activities of Working Groups II and III under the auspices of the Agriculture and Forestry Subgroup (AFOS) of WG III. A number of Australian experts made contributions.

Another major international workshop on ‘The Rising Challenge of the Sea’ was held in Venezuela on 9-13 March and again it brought together some of the activities of Working Groups II and III under the auspices of the Coastal Zone Management (CZM) Sub-Group of WG III. Several Australian experts presented case studies.

A major forum on ‘Climate Change Science - Where Now? What Next?’ sponsored by the Ministers for the Arts, Sport, the Environment and Territories and for Science and Technology was held in Canberra on 14 May 1992. This drew heavily on the 1992 IPCC Supplement and highlighted Australian expertise in science and impacts.

3. Secretary’s Involvement

In his role as Co-Vice Chair of WG II, the Secretary was involved with several of the cross-cutting issues referred to earlier and thus participated in some of the WG III activities as well as those of WG II. In 1991 he travelled to Geneva on three occasions for meetings of WG II, III and IPCC Bureau (5-13 August), for the Sixth Plenary of IPCC (28 October-1 November) and for the WG II Lead Authors and Editorial Board meeting (9-13 December). In 1992, he travelled to Geneva for meetings of WG II and III and the Seventh Plenary of IPCC (5-13 February).

He presented a paper at the AFOS workshop in Canberra in January and at the CZM workshop in Venezuela in March, where he also presented a case study on behalf of the Government of Kiribati.

Currently, he is involved in editing the WG II Supporting Material for the 1992 IPCC Supplement.
3 PUBLICATIONS DURING 1991-92

REPORTS

*Research and Technology: Future Directions* (September 1991)

*Annual Report 1990-91* (October 1991)

*Major National Research Facilities: A National Program* (March 1992)

ADDITIONAL PUBLICATIONS

*Research and Technology: Future Directions Summary Report* (October 1991)

*Environmental Research in Australia: Case Studies* (November 1991)

OCCASIONAL PAPERS

No 17 *Seminar Proceedings: Setting Directions for Australian Research, October 1990* (July 1991)

No 18 *Science and Technology and Australian Federalism: Getting the Best from the System* (September 1991)

No 19 *Major National Research Facilities: Expressions of Interest* (October 1991)

4 CHANGES IN CHAIRMANSHIP AND COUNCIL MEMBERSHIP

Professor R L Martin retired as Chairman of Council at the completion of his term of appointment on 14 April 1992. Under his leadership, the Council continued its work against the background of the Chairman’s concerns for the consequences of the run-down in funding for S&T infrastructure in Australia, particularly in the higher education sector.

During Professor Martin’s period of four and a half years as Chairman, a major report was prepared on the profile of Australian S&T which, for the first time in Australia, used citation indices coupled with peer review to produce a comprehensive view of Australia’s strengths and weaknesses in various disciplines and its position in world S&T ratings.

Professor Martin convened the Working Party for the 1990 study Setting Directions for Australian Research, which has the potential to be the most significant report by ASTEC for several years. The report recommended that the Government periodically set policy directions or guidelines for Australian research, in the form of a White Paper prepared every four years.

The first White Paper, to be released in August 1992, was preceded by an issues paper prepared by ASTEC after its most extensive consultation ever with government, industry and researchers. The wide-ranging nature of the consultations and the breadth of the issues tackled made this report one of the most thought-provoking documents produced by ASTEC and the follow-up fora in different cities have shown that it has stimulated a new intensity of debate in Australia, particularly in relation to the role of the social sciences and the humanities. The report clearly picked up the responsibilities given to ASTEC with the demise of the Technological Change Committee.

As a further contribution to the White Paper, ASTEC was requested by the Prime Minister to carry out a study of the needs for major national research facilities in Australia for the next decade. This study developed criteria to enable proposals to be assessed on their contributions to the scientific and economic development of Australia, and recommended a national program with stable long-term funding.

It is fitting that Professor Martin’s term as Chairman should end with tabling Major National Research Facilities: A National Program, which so clearly reflects ASTEC’s concerns about inadequate infrastructure for S&T expressed so strongly throughout his Chairmanship.

Professor L M Birt was appointed as Chairman on 15 April 1992 for five years.

In announcing Professor Birt’s appointment the Minister Assisting the Prime Minister, the Hon. Ross Free, MP said

Professor Martin has been instrumental in enhancing the profile of science and technology in Australian society, industry and government. Professor Birt is eminently qualified to foster this important role for ASTEC and to advise the
Government of key research, science and technology matters. He was Chair of the NSW Science and Technology Advisory Council from 1980 to 1985 and was Foundation Vice Chancellor of the University of Wollongong and later Vice Chancellor at the University of NSW. Professor Birt held all these positions with distinction.

Professor Birt comes to ASTEC at a time when science, technology and innovation are increasingly seen as vital to the future of the Australian economy, the environment and the nation’s quality of life.

Mr L S Zampatti retired as Deputy Chairman at the completion of his term of appointment on 17 September 1991. Other Council members to retire at the completion of their terms were Professor D A Aitkin and Professor R G Gregory on 27 February 1992, and Professor A Goldsworthy and Professor A E-S Tay on 30 June 1992.

Professor L M Birt was appointed as Chairman on 15 April 1992 for five years. Dr W J Peacock and Mr J D Vines were appointed to Council on 24 July 1991 for three years.

Professor D J Nicklin and Professor R D Johnston, whose initial terms of appointment expired on 30 June 1992, were reappointed for three years on 1 July 1992.

Council membership was 14 for most of the period 1 July 1991 to 30 June 1992.
MEMBERS OF ASTEC

Professor R L Martin, AO FAA FTS *
(Chairman from 18 January 1988 to 14 April 1992)

Professor Ray Martin, AO FAA FTS, retired as Chairman of ASTEC on 14 April 1992. He has had a distinguished career and, before his retirement in 1992, he was Professor of Chemistry at Monash University. He was Vice-Chancellor of Monash University for ten years until 1987. Professor Martin’s career as a teacher and researcher in inorganic chemistry spans three decades, and includes periods of work in higher education and industry in Australia, the United Kingdom, the United States of America and Germany. Professor Martin has published widely during his career, and has received numerous awards for his work, in Australia and overseas.

Professor L M Birt, AO, CBE
(Chairman from 15 April 1992 to 14 April 1997)

Professor Michael Birt was appointed to the position of Chairman of ASTEC on 15 April 1992 for a five year term.

He is Vice-Chancellor and Principal of the University of New South Wales and in that capacity is Deputy Chairman of Unisearch Ltd, Deputy Chairman of the Garvan Institute of Medical Research, and a member of the Board of Management of the Australian Graduate School of Management, the Eastern Sydney Area Health Service, and the Board of Governors of the Charles Sturt University.

Besides his University commitments, Professor Birt is a member of the Board of the International Association of Universities, the Council of the Hong Kong University of Science and Technology, and the Police Board of New South Wales.

His career covers appointments as Senior Lecturer in Biochemistry at the Universities of Melbourne and Sheffield from 1960-1967; Foundation Professor and Head of Department of Biochemistry at the Australian National University from 1967-1973; Vice-Chancellor designate, Wollongong University College of the University of New South Wales from 1973-1975; Vice-Chancellor, University of Wollongong from 1975-1981 when he was appointed Vice-Chancellor of the University of New South Wales.
Mr L S Zampatti
(Member from 9 June 1983 to 17 September 1986 and Deputy Chairman from 18 September 1986 to 17 September 1991)

Lloyd Zampatti is managing director of Bretts Limited and Bretts Wharves & Stevedoring Co (Pty) Limited, Queensland based companies with activities in timber plantations, steel distribution, hardware retailing and wharf operations. Prior to joining Bretts he was Chief Executive of Castlemaine Tooheys Limited from 1981-1985 and Chief Executive of The Swan Brewery Company Limited from 1971-1981. From 1957-1967, he was resident in Singapore as Managing Director of the Kiwi Polish Co. (Malaya) Limited, involved in marketing and manufacturing activities from Pakistan to Japan. He has been Chairman of the Economics Committee of the Business Council of Australia, Chairman of the Associated Brewers of Australia, and twice Chairman of the Singapore Manufacturers’ Association.

Professor D A Aitkin, FASSA *
(from 13 March 1986 to 27 February 1992)

Don Aitkin is Vice Chancellor of the University of Canberra. From 1988-1990, he was the first Chairman of the Australian Research Council and a full-time executive member of the National Board of Employment, Education and Training. His academic career was in Political Science, and included periods as Professor at Macquarie University (1971-1979) and the Australian National University (1980-1988). He was born in Sydney in 1937, attended schools in Canberra and Armidale, and was further educated at the University of New England (MA, 1961) and The Australian National University (PhD, 1964). He was elected a Fellow of the Academy of the Social Sciences in Australia in 1975.

Dr G J Clark FTS
(from 28 February 1990 to 27 February 1993)

Greg Clark is Director, Science and Technology IBM. He has spent much of his career in research in the USA. He joined IBM (USA) in 1979 as a research scientist in the T J Watson Research Laboratories, Yorktown Heights, New York. He had previously held positions in the UK Atomic Energy Authority (Harwell Fellow) and the CSIRO. He is a Fellow of the American Physical Society, the Australian Academy of Technological Sciences and Engineering, and the Bohmische Physikalische Gesellschaft in Germany.

He has received several significant scientific awards, including the 1976 Pawsey Medal from the Australian Academy of Science. In addition, he has received various IBM Corporate and Divisional Awards. He holds five patents for IBM. His special fields of
competence are solid state physics, microelectronics and information technology. He is an Adjunct Professor at the Australian National University, Director of the Collaborative Information Technology Research Institute (CITRI), and Director of the Australian Computing and Communications Institute (ACCI).

Professor A W Goldsworthy, OBE *
(from 31 July 1989 to 30 June 1992)

Ashley Goldsworthy is Dean of the School of Business, Bond University. He is on the Board of Strarch International Ltd (Deputy Chairman); CIRCIT Ltd (Chairman); Australian Centre for Strategic Alliances (ACSA) (Chairman); Australian Computer Society; Executive Director and CEO, Centre of Excellence on Information Technology (Chairman); and a consultant to several public and private companies. He is also Federal President, Liberal Party of Australia (1990-). He has been Dean of the School of Business, Bond University since 1991. Until 1990, he was Managing Director and CEO of Jennings Group Ltd: from 1979-87, he was CEO of Suncorp Building Society; from 1970-79, a deputy to the CEO of the State Government Insurance Office Qld; and prior to that, Director of Economic Statistics in the Bureau of Statistics.

Professor R G Gregory, FASSA *
(from 13 March 1986 to 27 February 1992)

Bob Gregory is Professor of Economics and Director of the Centre for Economic Policy Research, Research School of Social Sciences at the Australian National University. He is a graduate of the University of Melbourne and the London School of Economics. He was First Assistant Commissioner for the Industries Assistance Commission from 1973-75 and Professor of Australian Studies at Harvard University from 1983-84. He is currently a Member of the Board of the Reserve Bank of Australia and a Member of the Commonwealth Committee on Higher Education Funding.

Professor A Henderson-Sellers
(from 28 February 1990 to 27 February 1993)

Ann Henderson-Sellers is the Director of the Climatic Impacts Centre and Professor of Physical Geography in the School of Earth Sciences at Macquarie University. Currently, she chairs the Australian Academy of Sciences National Committee on Climate and Atmospheric Sciences and is a member of the Federal National Greenhouse Advisory Committee.

She chairs the joint Global Energy and Water Cycle Experiment and Working Group on Numerical Experimentations International Project for the Intercomparison of Land-Surface Parameterization Schemes. She is also a Principal
Investigator on NASA’s Earth Observing System program and a member of the International Geosphere-Biosphere’s Global Analysis, Interpretation and Modelling Committee. Professor Henderson-Sellers has recently been invited to lead the International Model Evaluation Consortium for the Climate Change Analysis team. She previously held a personal chair at Liverpool University, UK.

Ms M A Jackson
(from 30 August 1990 to 27 February 1993)

Margaret Jackson was admitted as a partner of KPMG Peat Marwick in 1990 and is currently a Partner of the Management Consulting Division. She completed the final year of her MBA with distinction at Melbourne University in 1982 and is an Accounting-Management Services specialist. She is Director of the Australian Telecommunications Corporation (Telecom), Chairman of the Victorian State Council of the Institute of Chartered Accountants (ICA), a Member of National Council of the ICA, and a former Director of the Australian Wool Corporation and former Member of the Pharmaceutical Remuneration Benefits Tribunal.

Professor R D Johnston, FTS
(from 28 February 1989 to 27 February 1995)

Ron Johnston is Executive Director of the Australian Centre for Innovation and International Competitiveness at the University of Sydney. From 1983-92 he was Director of the Centre for Technology and Social Change and from 1991-92 Director of the Australian Research Council Special Research Centre for Research Policy, both at the University of Wollongong.

He obtained a Bachelor of Science (1964) from the University of New South Wales and a PhD (1968) from the University of Manchester. Other professional appointments have included membership of the ASTEC Technological Change Committee (1984-88), the Australian Manufacturing Council (1984-86) and the Commonwealth Recombinant DNA Monitoring Committee (1981-85).
Mr P J Laver  
(from 30 June 1989 to 27 February 1994)

Peter Laver is Corporate General Manager External Affairs, Broken Hill Proprietary Company Ltd.

He is a Director also of a number of BHP subsidiary and associated companies, of the Wool Research and Development Corporation and the Australian Centre for Innovation and International Competitiveness. Since 1991, he has been Chair of the National Board of Employment, Education and Training.

Prior to his present appointment, he held a number of other positions within BHP, including Corporate General Manager Technology and Development (1990-92), General Manager Transport (1988-90), General Manager BHP Steel International (1982-88), Mine Manager and General Manager Mt Newman Mining (1972-82). Earlier experience was principally in metallurgical and operations management roles in various BHP steel plants.

Professor J G McLeod, AO FAA FTS  
(from 28 February 1987 to 27 February 1993)

Jim McLeod is Bosch Professor of Medicine, Bushell Professor of Neurology and Pro-Dean of the Faculty of Medicine at the University of Sydney and is Head of the Department of Neurology and the Institute of Clinical Neurosciences at Royal Prince Alfred Hospital. He is a member of the Medical Research Committee of the National Health and Medical Research Council.

He is a past Council Member and Vice-President of the Australian Academy of Science and is a member of its National Committee for Medicine.

Professor D J Nicklin, FTS  
(from 28 February 1989 to 27 February 1995)

Don Nicklin is Pro-Vice-Chancellor (Physical Sciences and Engineering) at the University of Queensland having previously served as Head of the Department of Chemical Engineering, and Dean of the Faculty of Engineering.

After completing his PhD in Cambridge in 1961, he worked for du Pont of Canada and for EI Du Pont de Nemours. He has had brief periods of secondment to Mount Isa Mines, Southern Pacific Petroleum, the Babinda Cooperative Sugar Mill, and the Queensland Government (as Chairman of the Multi-Function Polis Task Force). He was Chairman of the Board of Trustees of Brisbane Grammar School for seven years, and is Deputy Chairman of the Board of Trustees of the Queensland Museum.
Dr W J Peacock FAIAS FTS FAA FRS
(from 25 July 1991 to 24 July 1994)

Jim Peacock is Chief of the Division of Plant Industry, CSIRO, in Canberra. His research laboratory has world prominence in the field of plant molecular biology. During his research career in CSIRO, he has held a number of visiting professorships of biology, biochemistry and molecular biology in universities in the United States; these include Stanford University, University of California San Diego, University of California, Los Angeles and the University of Oregon.

He is a Fellow of the Australian Academy of Science, The Royal Society of London, and of the Australian Academy of Technological Sciences and Engineering. In 1990, he was elected as a Foreign Associate of the US Academy of Sciences and a Foreign Fellow of the Indian National Science Academy. In February 1988, he was awarded the BHP Bicentennial Prize for the Pursuit of Excellence in Science and Technology. In December 1989, he was awarded a CSIRO Medal for his leadership of the Division of Plant Industry. He is Co-Director of the Plant Science Centre, one of the Cooperative Research Centres recently set up in Australia.

He is immediate past Chairman of the International Board for Plant Genetic Resources, Rome, and is on the Scientific Council for the Gene Expression Centre of the USDA, in Albany, California.

Professor A E-S Tay, AM FASSA *
(from 28 February 1989 to 30 June 1992)

Alice Tay is Challis Professor of Jurisprudence in the University of Sydney.

She was President of the International Association for Philosophy of Law and Social Philosophy from 1987-91, Vice President and Executive Committee Member of the same from 1975-87, and was Chairperson and member of the Committee for International Humanitarian Law of the NSW Division of the Australian Red Cross Society from 1984 and Fellow and Executive Council Member of the Research Institute for Asia and the Pacific in the University of Sydney from 1987. She was part-time Commissioner of the Australian Law Reform Commission from 1982-87.

Professor Tay was member of the Technological Change Committee of ASTEC from 1984-89. She has been Visiting fellow, Visiting Professor and Distinguished Visiting Professor in universities in Australia, Canada, China, the former USSR, Italy, and the USA, and is Permanent Honorary Visiting Professor Jurisprudence in the South Central Institute of Politics and Law, Wuhan, China. In addition she is Titulaire Academicien of the International Academy of Comparative Law, Paris.
Mr J D Vines
(from 25 July 1991 to 24 July 1994)

John Vines is the Executive Director of the Association of Professional Engineers and Scientists, Australia (APESA). He is also a member of the Federal Government’s Industry Task Force on Leadership and Management Skills. He holds tertiary qualifications in Civil Engineering and Economics and is a Fellow of the Institution of Engineers, Australia. John Vines has been Executive Director of APESA since September 1984. Prior to that he was the Association’s Senior Industrial Officer from December 1980 to September 1984 and had previously held Industrial Relations positions with the Victorian Teachers’ Union and the Federation of College Academics.

* Retired from Council at end of term during 1991-92
MEETINGS OF ASTEC

During 1991-92 ASTEC met on seven occasions.

The Hon. Ross Free MP, the then Minister for Science and Technology and Minister Assisting the Prime Minister for Science, addressed the September 1991 meeting and had informal discussions with Council and office staff over lunch. The Minister was accompanied by his Senior Private Secretary, Mr Phillip Tardif.

At the November 1991 meeting Mr Gordon Neil, Industry, Science and Technology Counsellor Designate to OECD and France, Department of Industry, Technology and Commerce (DITAC), gave a short presentation to Council on the DITAC Counsellor network and OECD activities.

Mr Neil Edwards, First Assistant Secretary, Office of Multicultural Affairs, Department of the Prime Minister and Cabinet addressed the February 1992 Council meeting on recent developments in the Office of Multicultural Affairs.

Dr Martin Wardrop attended the February 1992 meeting as an observer before formally taking up his appointment to ASTEC as Director, Studies and Research Branch.

At the April 1992 meeting, Professor Ray Martin was farewelled as Chairman of ASTEC.

Professor Michael Birt was welcomed as Chairman of ASTEC at the May 1992 meeting. Also at the May meeting Dr John Bell, Deputy Secretary, Department of Industry, Technology and Commerce gave a short presentation to Council about the OECD Big Science Forum in July 1992.
CHAIRMAN'S ACTIVITIES

Overseas trips

Professor Martin's visit, in June and July 1991, to the United Kingdom, Germany and Italy was described in the 1990/91 Annual Report.

In March 1992, Professor Martin visited New Zealand to discuss the impact of the radical reform of research and development policy in New Zealand. He met with the Vice-Chancellor of the University of Auckland; the Chief Executive of the Ministry of Research, Science and Technology; the Chairman and General Manager of the Foundation for Research, Science and Technology; the Convenor of the Crown Research Institute Implementation Steering Committee; and the Director General of the Department of Scientific and Industrial Research.

Meetings

In fulfilling ASTEC's role of providing independent advice to the Government on a wide range of policies and programs related to science and technology, the Chairman met with the Prime Minister several times throughout the year, and with the Minister for Science and Technology. He also met regularly with Professor Slatyer, Chief Scientist and Mr Mike Codd, Secretary, Department of the Prime Minister and Cabinet and other senior government officials. The Chairman is a member of the Prime Minister's Science Council; Professor Martin attended the December 1991 meeting and Professor Birt attended the May 1992 meeting. The Chairman also attended meetings of the Coordination Committee for Science and Technology.

Professor Martin met with the Chairman and members of the Board of ANSTO on 12 June 1991. In August, he held discussions with members of the Australian Space Office in August, following his visit to Italy; met with the Chairman of the UK Science and Engineering Research Council; held discussions with the Science and Technology Committee of the Australian Mining Industry Council; and met the Shadow Minister for Education. He also met the Secretary of the Spanish Interministerial Commission of Science and Technology and the Vice-President of the Council for Scientific Research (CSIC) who visited ASTEC.

In October, Professor Martin met with senior Cabinet Ministers to brief them on Research and Technology: Future Directions, including the Minister for Primary Industries and Energy, the Minister for Industry, Technology and Commerce and the Ministers for the Employment, Education and Training, and Higher Education and Employment Services. Professor Martin represented ASTEC at the 1991 Invitation Symposium held by the Australian Academy of Technological Sciences and Engineering, and the Annual Metal Trades Industries Association Dinner.

In November, Professor Martin convened the ASTEC Forum on Research and
Technology: Future Directions, and a two-day meeting of the science and technology representatives of the States and Territories. He also attended the inaugural Science and Technology Awards given by the Ian Clunies Ross Foundation.

Professor Martin held discussions in February with the new Scientific Attaché, Italian Embassy.

Lectures and Addresses

Professor Martin gave the introductory paper at ASTEC’s Environmental Research Seminar at the Australian National University, 12 June 1991.

He took part in the 1991 Melbourne National Science and Technology Advisory Group (NSTAG) meeting ‘Investment in New Technology’ 31 October, and the November NSTAG meeting held in Canberra.

In December, Professor Martin addressed a Conference on ‘The Role of Management in Commercialising Research and Technology’; his topic was ‘Research, Technology and International Competitiveness’. He also delivered the Occasional Address at the Science and Engineering Graduation Ceremony at the Australian Defence Force Academy.

In February, Professor Martin chaired a meeting of the Australian Academy of Technological Sciences and Engineering Symposium Committee; the 1992 topic is to be ‘Globalisation of Technology - Threats and Opportunities’, and attended, by invitation, the Business Council of Australia’s 3rd National Business Summit - ‘Understanding our Future in Asia and the Pacific’.

In April, Professor Martin participated in a seminar on ‘Science and Technology Issues in Management Education’ organised by the National Board of Employment, Education and Training (NBEET).
ACTIVITIES OF THE OFFICE OF ASTEC

International S&T Activities

The Secretary travelled overseas on four occasions in his capacity as Principal Australian Delegate to the Intergovernmental Panel on Climate Change. These visits are discussed under the Global Climate Change Program (Section 4).

In March 1992, following an International Workshop on 'The Rising Challenge of the Sea' in Venezuela, the Secretary visited a number of S&T policy bodies in Washington and in Paris. He then participated, together with Dr Burch, in the International Workshop on 'Equipping Science for the 21st Century' in Amsterdam in early April.

During the year, the Secretary continued his activities as Chairman of the International Relations Committee of the Australian Academy of Technological Sciences and Engineering. In that role, he visited Stockholm in late October 1991 to represent the Academy at the Annual General Meeting of the Royal Swedish Academy of Engineering Sciences (IVA) and to receive his Diploma as Foreign Member of IVA from the King of Sweden. In mid-May 1992, he represented the Academy at the Convocation and Governing Board Meeting of the Council of the Academies of Engineering and Technological Sciences in Copenhagen.

Visitors to ASTEC

As in previous years the Office of ASTEC received numerous overseas and local visitors. Meetings with visitors to the Office provided opportunities for the exchange of ideas and to find out about developments nationally and internationally.

Science and technology policy issues were discussed with a number of visitors including:

- In July 1991, Dr George F Stuart of New Zealand visited the Office to gather information for his paper on Australia-New Zealand relations.
- In August 1991, Mr Qin Zhang, new Counsellor (Science and Technology) of the Embassy of the People’s Republic of China met with the Secretary.
- In August 1991, Mr I Graham Lochhead, Counsellor (Commercial/Economic) of the Canadian High Commission.
- In September 1991, Professor Luis Oro, Secretary of the Spanish Interministerial Commission of Science and Technology, and Mr Salvador de Aza, Vice-President of the Council for Scientific Research (CSIC) met with the Chairman and Secretary. Spain’s Ambassador to Australia, HE José Luis Pardos and DITAC’s Mr Guy Howe also attended.
In November 1991, Dr Cho Wan Kyoo, Chairman of the Korea Science and Engineering Foundation and Korea Academy of Industrial Technology visited the Office as part of the Department of Foreign Affairs and Trade Special Visit Program.

In February 1991, Dr Sylvio Toltorini, new Scientific Attaché to the Embassy of Italy visited the Secretary.

In April 1992, Dr Dieter Kimble of OECD visited for discussions on a proposal to hold an international conference in 1993 on the effect of information technology.

In June 1992, Dr George F Stuart, Manager of Policy in the Ministry of Research Science and Technology, New Zealand visited the Office to discuss developments in S&T policy in New Zealand.

The Centre for Research Policy Advisory Board, University of Wollongong, met at ASTEC in August 1991 and in March 1992. Dr Tegart is a Member of the Board.

The Industry, Science and Technology Counsellors to the United Kingdom, Federal Republic of Germany and Japan, Mr John McLucas, Dr Alan Jones and Mr Don Corcoran respectively, visited the Office during the year. Mr McLucas visiting in July 1991, Dr Jones in November 1991 with Dr Dieter Kolb, Industry, Science and Technology Counsellor, Federal Republic of Germany, and Mr Corcoran visiting in March 1992.

Lectures and Addresses

In January 1992, Dr Tegart presented a paper on ‘The Relationship Between Impacts of Climate Change and Response Strategies (With Reference to Forestry and Agriculture)’ to the IPCC AFOS Workshop on ‘Assessing Technologies and Management Systems for Agriculture and Forestry in relation to Global Climate Change’ in Canberra.

In February 1992, the Secretary gave an address on the operation of ASTEC to a group of Indonesian S&T policy makers at the Centre for Research Policy, University of Wollongong.

In early March 1992, he addressed the MTIA National Business Strategy Group in Canberra on the topic of ‘Engineering Technology and Competitiveness - Strategies for the 90s’.

In mid-March 1992, Dr Tegart presented a paper on ‘The Relationship between Impacts of Climate Change and Response Strategies (With Reference to Sea Level Rise)’ to the IPCC CZM International Workshop on ‘The Rising Challenge of the Sea’ in Venezuela.

In early April 1992, the Secretary chaired a session at the International Workshop on ‘Equipping Science for the 21st Century’ in Amsterdam. At the Workshop, Dr Burch delivered a paper ‘Big Science for Small Nations: Evaluating Options to Invest in Research Facilities’ jointly authored with the Secretary.
In April 1992, Dr Burch, as National President of the Australian Institute of Agricultural Science (AIAS), gave the opening address to the AIAS National Conference, ‘Agricultural Research - Your Country, Your Future’ in Orange, NSW.

In early May 1992, Dr Tegart chaired a session at the Climate Science Forum in Canberra, convened by Ministers Free and Kelly.

In May 1992, Dr Wardrop addressed Master of Technology students, University of Wollongong on ‘The Development of Australian Telecommunications Industry Policy’.

In May 1992, Dr Burch gave an address on the roles and responsibilities of ASTEC at the CSIRO Centre for Environmental Mechanics in Canberra.

In late May 1992, Dr Tegart and Dr Burch jointly presented a paper on the ASTEC approach to advising on major national research facilities to the ASTEC Forum on ‘Big Science’ in Canberra.

In early June 1992, Dr Tegart gave an address on ‘Sophia Antipolis - A Flourishing Technology Park’ to the ASTEC/States Meeting in Hobart.

In June 1992, Dr Wardrop presented a paper ‘Research and Development: Future Directions for Telecommunications’ at the IIR Conference on Developing Australia’s Telecommunications Industry.

In late June 1992, Dr Burch gave an address to the CSIRO Officers Association Amalgamation Dinner in Canberra on the topic ‘A New Vision for the S&T Community in Australia’.
APPENDIX 5

PUBLICATIONS OF ASTEC 1977 - 1992

REPORTS

1977

Future Arrangements for the Australian Science and Technology Council
Energy Research and Development in Australia
Report of the Interim ASTEC for the period 29 April 1976 to 29 March 1977

1978

Science and Technology in Australia 1977-78, Volume 1A
The Bureau of Mineral Resources, Geology and Geophysics
Supplement to the Report on the Bureau of Mineral Resources
Science and Technology in Australian 1977-78, Volume 2
The Direct Funding of Basic Research
Report of ASTEC for the period 30 March 1977 to 30 June 1978

1979

Science and Technology in Australia 1977-78, Volume 1B
Science and Technology in Australia - Summary and Recommendations
The Next Generation of Australian Telescopes
Marine Sciences and Technologies in Australia - Immediate Issues
Report for the Period 1 July 1978 to 30 June 1979

1980

Marine Sciences and Technologies in Australia - Priorities for Additional Research and Development 1980-81
Interaction Between Industry, High Education and Government Laboratories
Annual Report 1979-80
Industrial Research and Development: Proposals for Additional Incentives

1981

Basic Research and National Objectives
Towards a Marine Sciences and Technologies Program for the 1980s
Australia: Characteristics Relevant to Science and Technology
Annual Report 1980-81
Microelectronics
Medical Research in Australia, Parts 1 and 2
1982

Office of the Supervising Scientist
Earth Resources Satellites: Australian Facilities
New Telescopes for Australian Astronomy in the 1980s
Australian Science and Technology in International Co-operation and Development Assistance
Robots
Annual Report 1981-82
Biotechnology in Australia
Biotechnology in Australia - Supplementary Report
The Australian National Animal Health Laboratory - The Use of Live Exotic Animal Pathogens

1983

Technological Change and Employment
Incentives for Innovation in Australian Industry
Videotext in Australia - Interactive Information Services
Annual Report 1982-83
Operation of National Research Granting Schemes

1984

Guidelines for the Operation of National Research Facilities
Technology and Handicapped People
Australia's Role in the Nuclear Fuel Cycle
Australia's Broad-Spectrum Bilateral Science and Technology Agreements
Government Purchasing and Offsets Policies in Industrial Innovation
Annual Report 1983-84

1985

Computer-Related Technologies in the Metal Trades Industry
Annual Report 1984-85
Nuclear Science and Technology in Australia
Public Investment in Research and Development in Australia
Future Directions for CSIRO
Telecommunications Research and Development

1986

New Office Technology: Review and Discussion
Mechanisms for Technology Transfer into Australia
Towards a Cashless Society?
New Office Technology, The Report
Annual Report 1985-86
The Defence Science and Technology Organisation and National Objectives
1987

Improving the Research Performance of Australia’s Universities and Other Higher Education Institutions
After the Harvest: Opportunities and Technologies in Horticulture
Computerised Assistants: New Tools for Society
Annual Report 1986-87
Improving Australia’s Competitiveness through Industrial Research and Development
Education and National Needs
Wealth from Skills: Measures to Raise the Skills of the Workforce
Wealth from Skills: Measures to Raise the Skills of the Workforce - Appendix

1988

Casting the Net: Post-Harvest Technologies and Opportunities in the Fishing Industry
Annual Report 1987/88

1989

Health Politics Trade: Controlling Chemical Residues in Agricultural Products
The Core Capacity of Australian Science
Profile of Australian Science
The Future of Australian Astronomy, September
Annual Report 1988-89

1990

Science, Technology and Australia’s Future
Small Country - Big Science
Environmental Research in Australia: A Review
Setting Directions for Australian Research
Government Funding of Academic and Related Research
Annual Report 1989-90
Environmental Research in Australia: The Issues

1991

An Australian International Gravitational Observatory
Research and Technology: Future Directions
Annual Report 1990-91

1992 (to 30 June)

Major National Research Facilities: A National Program
ADDITIONAL PUBLICATIONS

1979

Industrial Innovation - A Discussion Paper

1987

The Advanced Facility at the National Acoustic Laboratories

1989

Controlling the Genie, The Human-Computer Interface: Issues and Opportunities, A Discussion Paper

1990

Profile of Australian Science Forum Proceedings
Your Word Is My Command
Policy Choices in Industry and Technology - Joint Symposium with PCEK and AMC
Environmental Research in Australia: Compendium
Corporate Plan 1990-1992
National Purposes, Federal Government

1991

Environmental Research in Australia: Case Studies
Research and Technology: Future Directions, Summary Report

OCCASIONAL PAPERS

1988

1 Key Technologies and their Role in Economic Development of Small Countries
2 Superconductivity
3 After the Myers Report: Improving the Management of Technological Change
4 Government Purchasing Policy and Industrial Innovation

1989

5 The Contribution of Science and Technology to Australia’s Balance of Payments to the Year 2000 - Service Sector
6 Comments on the ASTEC Review of CSIRO
7 The Contribution of Science and Technology to Australia’s Balance of Payments to the Year 2000 - Manufacturing Sector
8 The Contribution of Science and Technology to Australia’s Balance of Payments to the Year 2000 - Private Sector
Public Policies for the 'Exploitable Areas of Science': A comparison of the United Kingdom, Japan, the Netherlands, and Sweden

1990

10 Report on Overseas Study Tour of Science and Technology, Policies in Selected Small Countries (Netherlands, Norway, Sweden and Finland)
11 Decision Making and Evaluation in Publicly-Funded Science and Technology
12 The Interaction Between National and International Programs in Science and Technology, With Particular Reference to Europe
13 Education For Change: The Role of Engineering in Australia in a Changing World Economy

1991

14 Funding the Fabric: Should Commonwealth Government Competitive Research Granting Schemes Contribute more to Research Infrastructure Costs?
15 The Assessment of Impacts of Climate Change by Working Group 2 of the Intergovernmental Panel on Climate Change
16 The Demand and Supply of Scientists and Engineers in Australia
17 Seminar Proceedings: Setting Directions For Australian Research October 1990
18 Science, Technology and Australian Federalism: Getting the Best from the System
19 Major National Research Facilities: Expressions of Interest

1992

20 Research Data in Australia. Proceedings of a Workshop held on 14 November 1991
21 Research and Technology: Perspectives on Industry

WORKING PAPERS

1990

2/90 Notes on Visit to Hungary - 4-7 September 1990, by W J McG Tegart
4/90 Setting Course for the 1990s - Science and Technology Since May 1989, by W J McG Tegart, NSTAG Forum, Canberra
1991

1/91 Notes on Visit to the Republic of Korea - 30 October-9 November 1990, R L Martin

2/91 Notes on Trip to France, March 1991, W J McG Tegart

3/91 Notes on Visit to Austria and Hungary, 31 May - 7 June 1991, W J McG Tegart
THE OFFICE OF ASTEC

Staffing

Promoting a workplace with opportunities for its staff was a continuing priority for ASTEC in 1991-92.

As a small agency, temporary transfers and secondments were essential during the year and added positively to ASTEC's profile by complementing and enhancing the expertise and experience available. Staff movements included secondments to ASTEC from the ANSTO and CSIRO, and transfers from DITAC and the RAC. These staff undertook specific tasks and on completion either returned to their home agency or transferred to another. One officer, on secondment from the Bureau of Rural Resources, will not depart ASTEC until early in 1993.

Two members of staff on extended leave in 1990-91, one on long service leave and the other, on leave without pay in the public interest, returned to duty at ASTEC in 1991-92. Another employee on extended leave in 1990-91 resigned. As at 30 June 1992, ASTEC had two officers on leave under the mobility provisions of Part IV of the Public Service Act 1922. Several temporary employees were engaged on short term contracts.

The Average Staffing Level for ASTEC for 1991-92 was 19.9 with an outcome of 16.7. An establishment chart for the Office of ASTEC at 30 June 1992 is shown at the end of this Appendix.

Staff Development

Staff development and training continued to be a priority for ASTEC. ASTEC staff participated in Middle Management Development Programs conducted by the Department of the Prime Minister and Cabinet, and Middle Management Modules conducted by the Public Service Commission. During 1991-92 over $23,000 was spent on training and conferences.

Management Issues

On 28 April 1992, Minister Ross Free announced that an independent review of ASTEC would be undertaken. Progress by the end of June included the establishment of a Review Committee, finalisation of the terms of reference and the contracting of two consultants to provide an independent assessment and analysis of ASTEC's outputs, influence and performance.
The Review Committee comprises six members and is chaired by Sir Rupert Myers, President, Australian Academy of Technological Sciences and Engineering. It is anticipated that the Review Committee will report by 30 September 1992.

ASTEC’s Management Committee met regularly throughout the year and all staff were kept informed and involved in decisions and issues through Branch meetings and weekly staff meetings.

The Management Committee comprises the Secretary of ASTEC (Chair), the Chairman and Deputy Chairman of ASTEC, Branch Director - Studies and Research, Branch Director - Assessment and Management and the Executive Officer (Secretary of the Management Committee).

The Management Committee aims to:

- promote effective Council-Office working relationships;
- coordinate the program structure within the Office of ASTEC;
- set policies for Human Resource Management within the Office of ASTEC; and
- consider and endorse recommendations on issues such as Occupational Health and Safety, Industrial Relations, Information Technology.

In line with initiatives to introduce performance appraisal throughout the Public Service, ASTEC examined the possibility of adopting the Department of the Prime Minister and Cabinet’s endorsed guidelines for Senior Officers.

Financial Management

ASTEC’s total Running Costs appropriation in 1991-92 was $1,782,882: $1,719,000 in Appropriation Act No 1, $51,000 in Appropriation Act No. 3 and $12,822 through ASTEC’s Section 35 Account. Total expenditure in 1991-92 was $1,736,728.

1. Accounts Received and Processed

During 1991-92, 675 accounts were received for payment of which seven were received prior to the end of the financial year and not processed for payment.

ASTEC endeavours to ensure that the Government’s policy to pay its accounts on the due date is adhered to. The Financial Management Information System (FMIS), which ASTEC currently operates, does not provide detailed information on the number of accounts processed prior to the due date, on the due date, within 30 days of the due date or 30 days after the due date. The current FMIS is to be replaced in 1992-93.

Financial Statements (Appendix 9) also refer.
2. Consultancies

The total cost associated with the engagement of consultants in 1991-92 was $70,863. No consultancies were publicly advertised in 1991-92 and the engagement of all the consultants was based on relevant expertise.

Details of consultancies during 1991-92 are provided below:

<table>
<thead>
<tr>
<th>Consultant</th>
<th>Service</th>
<th>Cost $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illawarra Technology Corporation</td>
<td>Conduct survey of Industry Leaders of Research and Technology in Australia.</td>
<td>24,000</td>
</tr>
<tr>
<td>Dr J Stewart</td>
<td>Research and drafting of two items for Research and Technology: Future Directions.</td>
<td>2,040</td>
</tr>
<tr>
<td>Australian Writers Service</td>
<td>Editorial work for Research and Technology: Future Directions.</td>
<td>2,988</td>
</tr>
<tr>
<td>Mr D Harman</td>
<td>Seminar and Report - A Preliminary Overview of Australian Energy R&amp;D.</td>
<td>3,075</td>
</tr>
<tr>
<td>Department of Finance</td>
<td>Financial Management Systems Consultancy</td>
<td>13,000</td>
</tr>
<tr>
<td>Northern Territory University</td>
<td>Compendium of Northern Australia Research</td>
<td>15,000</td>
</tr>
<tr>
<td>Don Scott-Kemmis</td>
<td>Evaluation of ASTEC reports in relation to the ASTEC Review</td>
<td>10,750</td>
</tr>
<tr>
<td>Centre for Research Policy</td>
<td>Design and conduct survey in relation to ASTEC Review</td>
<td>4,200</td>
</tr>
</tbody>
</table>
3. Property Usage

The Office of ASTEC occupies leased office accommodation in the AMA Building, 42 Macquarie Street, Barton. The total office area occupied by ASTEC is 546.8m² at a cost of $315 per m² per annum. ASTEC’s office fitout was carried out by the Australian Property Group in accordance with Government guidelines.

4. Fraud Control

During 1991-92, ASTEC continued to participate in the Department of the Prime Minister and Cabinet’s Fraud Control Plan. In accordance with government requirements, the risk to ASTEC is assessed every two years.

No cases of fraud were referred by ASTEC to the Australian Federal Police during 1991-92, nor were there any internal investigations conducted.

5. Claims and Losses

ASTEC had no claims or losses which individually resulted in net costs to the Commonwealth.

6. Purchasing

During the 1991-92 financial year, twelve items with a value above $2,000 were notified in the Commonwealth (Purchase and Disposal) Gazette. Nine items were gazetted within three months, one within four months, one within eight months and one has yet to be gazetted. The failure to gazette items within three months was due to an administrative oversight.

Information Technology Purchasing Arrangements

ASTEC’s Information Technology (IT) Committee is responsible for reviewing and assessing IT requirements and purchases. IT acquisitions for 1991-92 were all made under various common use contracts and in accordance with Government IT purchasing policies.

Advertising and Market Surveys

Total expenditure for non-campaign advertising in 1991-92 was $3,109.55.

Reports by the Auditor-General

During the year, the Auditor-General tabled Audit Report No. 23 1991-92 - Aggregate and Departmental Financial Statements 1990-91 in Parliament which referred to the operation
of ASTEC. ASTEC’s financial statements were unqualified for 1990-91 and the audit of
the accounts and records was concluded with satisfactory results except for the following:

- recovery of amounts owed to ASTEC not recovered in a timely manner;
- a stocktake of assets had not been undertaken during 1990-91; and
- ASTEC’s computerised accounting system had some limitations which would need
to be addressed when a new system is evaluated.

Freedom of Information

There were no requests received under the Freedom of Information Act 1982. Inquiries
may be directed to:

Executive Officer
Australian Science and Technology Council
PO Box E439
Queen Victoria Terrace ACT 2600
(Telephone: (06) 273 4966)

Privacy

Although the Department of the Prime Minister and Cabinet is responsible for maintaining
ASTEC’s personnel records and salary details, ASTEC does retain copies of some
documentation regarding the employment of its staff. No reports or determinations under
the Privacy Act 1988 were served on ASTEC by the Privacy Commissioner.

Environmental Matters

On moving to 42 Macquarie Street, Barton, ASTEC arranged for the recycling of all
unclassified paper waste. In addition, recycled stationery products have also been
introduced.

ASTEC promotes, as far as practicable, a sensible approach to conserving energy,
including fuel and electricity consumption.

Equal Employment Opportunity

ASTEC’s EEO plan has continued to be implemented throughout the year. An extension
to the existing plan, which is due for revision, was sought from the Public Service
Commission until 31 October 1992. Elements of the EEO plan have been incorporated
into ASTEC’s day-to-day activities and include:

- participation by staff on training courses to address specific career and
development needs of target groups,
- development and secondment opportunities offered to develop the skills base of
target groups and, in turn, the organisation, advertisements for vacant positions state that ASTEC is an equal opportunity employer.

Representation of EEO Groups within Salary Levels as at 30 June 1992

<table>
<thead>
<tr>
<th>Salary Level</th>
<th>Total</th>
<th>Women</th>
<th>NESB1</th>
<th>NESB2</th>
<th>ATSI</th>
<th>PWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below $22622 (includes ASO1)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$22623 to $25687 (includes ASO2)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$25688 to $28475 (includes ASO3)</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$28476 to $31929 (includes ASO4)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$31930 to $34778 (includes ASO5)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$34779 to $40693 (includes ASO6)</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$40694 to $45546 (includes SOGC)</td>
<td>4</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$45547 to $59120 (includes SOGB)</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above $59121 (includes SEB1A and Secretary)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>17</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NESB1: Non-English Speaking Background, First Generation  
NESB2: Non-English Speaking Background, Second Generation  
ATSI: Aboriginal or Torres Strait Islander  
PWD: People with a Disability  

* Includes Temporary Staff  
Excludes Unattached and Seconded Staff
Social Justice

ASTEC continued to reflect the social justice objectives of the Government by the way its studies, advising and reporting activities were conducted. Many of the studies conducted by ASTEC relate to the understanding and adoption of science and technology by industry, government and the wider community. This involves important considerations relating to the skills, training and employment of all Australians. In conducting its studies, ASTEC consults widely and consciously takes into account all aspects relating to social justice when reporting to government on these issues.

Access and Equity

ASTEC continued to participate in the Department of the Prime Minister and Cabinet’s Access and Equity Plan by:

- consulting widely with interested parties during the preparation of studies, and
- monitoring trends relating to science and technology, and contributing to the community’s awareness of complex social and technical issues, which are directly relevant to people of non-English speaking backgrounds as well as those who are Australian-born.

Occupational Health and Safety

No incidences of occupational accidents, occupational overuse syndrome or occupational stress were reported during 1991-92. Eyesight testing is regularly reviewed and all new staff are tested.

ASTEC currently uses the Department of Prime Minister and Cabinet’s Occupational Health and Safety Policy. Although a policy for ASTEC had been identified as a priority issue for 1991-92, no separate policy was endorsed.

Industrial Democracy

In line with ASTEC’s Industrial Democracy Plan, ASTEC continues to:

- have consultative meetings to discuss matters affecting staff, which aim to resolve differences, reach agreement and allow implementation of decisions made by those meetings,
- ensure that plans and strategies, arising from these meetings, have the support of staff and that staff are able to influence more directly the process by which decisions are made on a range of issues,
- improve mutual understanding of management and staff issues through effective communication, and,
- promote industrial democracy and participative work practices in decision making.

The existing industrial democracy plan reflects the organisation’s commitment to these principles and encourages staff participation within ASTEC.
Information and Library Services

ASTEC is a very active user of information and library services which are provided under a formal agreement with the Department of Prime Minister and Cabinet. These services are managed by the Department’s library under the guidance of a small committee which monitors information needs and expenditure.

The committee organises surveys to ensure that staff needs are met effectively and economically, advises on budgeting and supervises arrangements for display and storage of material.
Organisation Chart as at 30 June 1992

MANAGEMENT & ASSESSMENT BRANCH

Dr G Burch
Branch Director

Ms K Curtis
SOGB

Ms E Sanderson
SOGC

Ms L Thomson
SOGC

Ms B Anderson
AS03

Ms R Cruikshank
AS03

Ms A Harkness
AS03

Ms Y Genier
AS02

STUDIES & RESEARCH BRANCH

Dr M Wardrop
Branch Director

Mr J Madden
SOGB

Ms E Smith
SOGB

Dr G Thompson
SOGB

Ms P Berman
SOGC

Dr S Garrett-Jones
SOGC

Ms L Quilter
AS03

SECONDEES

Mr A Saptari
Dr R Williams
APPENDIX 7

STAFF PROFILES - 30 JUNE 1992

Dr W J McG Tegart, AM, FTS, FAIE, FIEAust

Greg Tegart was appointed the Secretary of the Australian Science and Technology Council in 1987.

He is a Council Member of the Australian Academy of Technological Sciences and Engineering, and Chairman of its International Relations Committee. He is a Foreign Member of the Royal Swedish Academy of Engineering Sciences. Currently, he is Australia’s Principal Delegate to the Intergovernmental Panel on Climate Change and Co-Vice-Chair for Working Group II. He was Secretary of the Department of Science from 1984-87 and Secretary of the Department of Science and Technology from 1981-84. From 1979-81, he was a Member of the Executive of the Commonwealth Scientific and Industrial Research Organisation. From 1968-78, he worked for BHP as Manager, BHP Melbourne Research Laboratories and, from 1978-79, he was Executive Assistant to the Chief General Manager, BHP Co Ltd. From 1966-68, he was Professor of Materials, College of Aeronautics, Cranfield, UK and, from 1955-66, he was a staff member in the Department of Metallurgy at the University of Sheffield.

STUDIES AND RESEARCH BRANCH

Dr Martin Wardrop

Martin Wardrop is responsible for the operations of ASTEC’s Studies and Research Branch. Prior to joining ASTEC in February 1992, he worked with the Department of Industry, Technology and Commerce on industry development policy for the telecommunications and computer industries. He has had 12 years experience in the Commonwealth and State Governments in developing industry and technology policy and managing programs, including a period working with ASTEC from 1981 to 1984. From 1988 to 1990, Dr Wardrop took part in an exchange with the UK Department of Trade and Industry where he was the manager of a large technology transfer program in materials and processes. Before 1981, he worked as a physicist in Sweden, the United Kingdom and Australia after graduating in physics and mathematics. He holds BSc (hon) and MSc degrees in mathematics and DPhil in physics.

Ms Elizabeth Smith

Elizabeth Smith is a Principal Adviser in the Studies and Research Branch. Elizabeth worked on the ASTEC study Setting Directions for Australian Research, and was closely involved, as part of a team, in the development and drafting of the Research and Technology: Future Directions report. She is now secretary to the ASTEC Working Group which is examining aspects of the contribution of the social sciences and the humanities to issues such as
innovation and wealth creation in Australia. Before joining ASTEC, Elizabeth worked in the Department of Industry, Technology and Commerce and Department of Science.

Her previous experience was in the academic sector until she completed a Master of Public Administration in 1980.

**Dr Geoff Thompson**

Geoff Thompson is a Principal Adviser with the Studies and Research Branch. He was part of the team that developed and drafted the *Research and Technology: Future Directions* report, and is now secretary to the ASTEC Working Group on energy research.

Before joining ASTEC in 1990, Geoff was Director of the Centre for Environmental Toxicology, a joint venture of the NSW State Pollution Control Commission and the University of Technology, Sydney. He was responsible for teaching and research in ecotoxicology, management of chemicals in the environment, and assessment of the impact of chemicals on ecosystems. From 1974 to 1983, Geoff was in charge of marine pollution research in the Agriculture and Fisheries Department, Government of Hong Kong. Geoff’s qualifications are in zoology and marine biology.

**Ms Patricia Berman**

Patricia Berman is a Senior Adviser in the Studies and Research Branch. Since joining ASTEC in 1990, she has contributed to ASTEC’s environmental research study, the report *Research and Technology: Future Directions* and the major national research facilities study. She is currently joint manager of ASTEC’s study on research and technology in tropical Australia.

Patricia has a broad background of consultancy work for industry, higher education and government in information technology, education and human resource development, and the environment. Before joining ASTEC, she established and managed the National Software Coordination Unit (DEET) being responsible for national policy in this area. As a CRA Science Fellow, Patricia reviewed Science and Technology education policy and practice in USA and Japan. Her qualifications include a Bachelor of Science degree, a Diploma of Education and a Graduate Diploma in Curriculum (Computing).

**Dr Sam Garrett-Jones**

Sam Garrett-Jones is a Senior Adviser with the Studies and Research Branch. He is currently engaged on ASTEC’s study of research and technology in tropical Australia and their contribution to the development of the region. Sam has also been responsible for ASTEC’s studies into academic and related research expenditure and research infrastructure funding and has contributed to the report *Research and Technology: Future Directions* and the major national research facilities study.

Sam has been closely involved in science and technology policy development since 1984. Before joining ASTEC in 1989 he was Assistant Director, Information and Communications
Technologies, DITAC. He holds postgraduate qualifications in science and technology policy (MSc, Manchester) and in tropical ecology (PhD, ANU) and has worked as a research scientist at the ANU and in universities in the United Kingdom and United States.

Ms Liz Quilter

Liz Quilter is Studies Coordinator in the Studies and Research Branch. She provides support to the Branch and liaises between ASTEC and higher education, industry and government bodies. Liz joined ASTEC in May 1991 after completing studies in Rural Business Administration at the University of New England - Orange Agricultural College.

ASSESSMENT AND MANAGEMENT BRANCH

Dr Gordon Burch

Gordon Burch is the Branch Director of the Assessment and Management Branch, and joined ASTEC in April 1991. He was formerly an Assistant Director of the Bureau of Rural Resources (BRR) where he headed up the Plant and Land Resources Branch.

Gordon has a Master of Rural Science degree and PhD from the University of New England. He was a Principal Research Scientist with the CSIRO Division of Water Resources before joining BRR. He is active in numerous professional organisations, including current National President of the Australian Institute of Agricultural Science (AIAS), past President and member of the Australian Geoscience Council (AGC), board member (for AGC) of the Federation of Australian Scientific and Technological Societies (FASTS) and has held executive office in the Australian Society of Soil Science (ASSS).

Ms Karen Curtis

Karen Curtis is a Principal Adviser in the Assessment and Management Branch. Since joining ASTEC in 1989, she has had responsibility for management of Council meetings, general briefing, coordination and liaison. Karen is presently managing the nanotechnology study.

Karen has 12 years experience in the Public Service mostly in policy areas dealing with science and technology issues. She has worked on industry policy and international cooperation matters both in the former Department of Science and the Department of Industry, Technology and Commerce. Karen is a university graduate in Arts and Law.

Mr John Madden

John Madden is a Principal Adviser in the Assessment and Management Branch and secretary to the Review of ASTEC. He returned to ASTEC in February 1992 after spending two years with the Centre for Technology and Social Change. He managed the Canberra Office of TASC and its Research Policy program. He is currently working part time on a Ph.D. with the Centre for Research Policy.
John started with ASTEC in 1985 participating in studies of the National Acoustic Laboratories, the Bureau of Meteorology, the Profile of Australian Science and the Core Capacity of Australian Science and Technology.

Before joining ASTEC John, worked in the Office of the Executive of CSIRO and as a consultant in the Science and Technology Policy Division of the OECD.

Ms Lynne Thomson

Lynne Thomson is a Senior Adviser in the Assessment and Management Branch of ASTEC working on both science and technology policy issues and corporate policy issues. Lynne is also working on aspects of the nanotechnology study.

Prior to joining ASTEC, Lynne worked in other areas of the Commonwealth Government and has broad experience in science and technology policy. In particular, her experience has covered policies for particular sectors of research activity, bilateral relations in science and technology in North Asia, and the use of indicators for policy development. Lynne is a graduate with qualifications in the visual arts and education.

Ms Eva Sanderson

Eva Sanderson joined ASTEC in November 1991 as the Executive Officer responsible for managing and coordinating the activities of the Administration Unit. The range of services provided by the Administration Unit to Council and to the Office include personnel, finance, budgeting, office services and information technology.

Prior to her commencement at ASTEC, Eva was with the Governor-General’s Office for three and a half years as the Administrative and Finance Officer. Eva has twelve years experience in the Australian Public Service largely in corporate service areas and has a BA in Social Sciences.

Ms Bridget Anderson

Bridget Anderson is the Systems Administrator. Bridget provides administrative services including personnel, purchasing, asset management and computer help. Before joining ASTEC in March 1991, Bridget worked for five years in executive assistant positions.

Ms Beth Mason

Beth Mason is Executive Assistant to Dr Tegart and to the Chairman. She is also ASTEC’s Cabinet Liaison Officer. Beth has extensive experience in both private and public sectors providing assistance to senior managers. Part-time, she is undertaking further study towards a Bachelor of Arts at the Australian National University.
Ms Rhonda Cruikshank

Rhonda Cruikshank is responsible for accounts and overseeing travel for Council members and staff of the Office of ASTEC. As well, Rhonda undertakes arrangements and support for Council and Working Party meetings. Rhonda has a varied background in administrative and secretarial work in the public and private sectors.

Ms Vicki Genter

Vicki Genter is responsible for the information flow of the office and is the first point of contact for visitors to ASTEC. Vicki has a varied background in administrative and secretarial work. Her experience covers both private and public sectors. Vicki joined the ASTEC team in April 1992 after spending 12 months with the Attorney-General’s Department.

Ms Ann Harkness

Ann Harkness is Personal Assistant to the Director of Assessment and Management Branch. She joined ASTEC in August 1991 after moving to Canberra from Queensland where she worked for James Cook University. Ann also provides administrative support to members of the Assessment and Management Branch and to the Executive Officer of ASTEC.

Ms Lidia Hrvatin

Lidia is the Librarian Grade 2 responsible for the provision of and coordination of library services to ASTEC through a formal agreement with the Department of Prime Minister and Cabinet. Before starting to work for ASTEC in 1990, Lidia worked as a Librarian for the Universities of Melbourne and Canberra. Lidia’s particular area of expertise is in online searches and more detailed reference work. Lidia is a graduate in Arts and History and has a postgraduate degree in Librarianship.
### APPENDIX 8

#### OFFICE OF ASTEC - STAFF AS AT 30 JUNE 1992

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms B Anderson</td>
<td>Administrative Service Officer 5 Systems Administrator</td>
</tr>
<tr>
<td>Ms P Berman</td>
<td>Senior Officer Grade C Senior Adviser</td>
</tr>
<tr>
<td>Dr G Burch</td>
<td>SES Band 1 Branch Director</td>
</tr>
<tr>
<td>Mrs R Cruikshank</td>
<td>Administrative Service Officer 3 Finance Officer</td>
</tr>
<tr>
<td>Ms K Curtis</td>
<td>Senior Officer Grade B Principal Adviser</td>
</tr>
<tr>
<td>Dr S Garrett-Jones</td>
<td>Senior Officer Grade C Senior Adviser</td>
</tr>
<tr>
<td>Ms V Genter</td>
<td>Administrative Service Officer 2 Receptionist</td>
</tr>
<tr>
<td>Ms A Harkness</td>
<td>Administrative Service Officer 3 Personal Assistant</td>
</tr>
<tr>
<td>Mr J Madden</td>
<td>Senior Officer Grade B Principal Adviser</td>
</tr>
<tr>
<td>Ms E Mason</td>
<td>Administrative Service Officer 4 Executive Assistant</td>
</tr>
<tr>
<td>Ms E Quilter</td>
<td>Administrative Service Officer 3 Temporary</td>
</tr>
<tr>
<td>Ms E Sanderson</td>
<td>Senior Officer Grade C Executive Officer</td>
</tr>
<tr>
<td>Ms E Smith</td>
<td>Senior Officer Grade B Principal Adviser</td>
</tr>
<tr>
<td>Dr W J McG Tegart</td>
<td>Secretary</td>
</tr>
<tr>
<td>Name</td>
<td>Position</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Dr G Thompson</td>
<td>Senior Officer Grade B</td>
</tr>
<tr>
<td></td>
<td>Principal Adviser</td>
</tr>
<tr>
<td>Ms L Thomson</td>
<td>Senior Officer Grade C</td>
</tr>
<tr>
<td></td>
<td>Senior Adviser</td>
</tr>
<tr>
<td></td>
<td>Permanent Part-Time</td>
</tr>
<tr>
<td>Dr M Wardrop</td>
<td>SES Band 1</td>
</tr>
<tr>
<td></td>
<td>Branch Director</td>
</tr>
<tr>
<td><strong>Unattached Staff as at 30 June 1992</strong></td>
<td></td>
</tr>
<tr>
<td>Dr J Stewart</td>
<td>Senior Officer Grade B</td>
</tr>
<tr>
<td></td>
<td>Mobility Provisions - 1st Tier</td>
</tr>
<tr>
<td>Mrs M Borucinski</td>
<td>Administrative Service Officer 1</td>
</tr>
<tr>
<td></td>
<td>Mobility Provisions - 1st Tier</td>
</tr>
</tbody>
</table>
FINANCIAL STATEMENTS

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Financial Statements

. Certification of the Financial Statements
. Aggregate Statement of Transactions by Fund
. Detailed Statement of Transactions by Fund
. Program Statement
. Statement of Supplementary Financial Information
. Notes to the Financial Statements
. Glossary of Terms

Audit Report

. Audit Report
STATEMENT BY THE DEPARTMENTAL SECRETARY

AND

PRINCIPAL ACCOUNTING OFFICER

CERTIFICATION

We certify that, in our opinion, the attached financial statements for the year ended 30 June 1992 are in agreement with the Australian Science and Technology Council’s (ASTEC) accounts and records, and the financial statements have been prepared in accordance with the disclosure requirements of the Financial Statements Guidelines for Departmental Secretaries issued in February 1992 and amended in July 1992.

Signed

G. Burch
Acting Departmental Secretary

Dated: 4 September 1992

Signed

K. Curtis
Acting Branch Director
Assessment and Management Branch

Dated: 24 September 1992
This Statement shows aggregate cash transactions, for which the Australian Science and Technology Council is responsible, for the Consolidated Revenue Fund, a component of the Commonwealth Public Account (CPA).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSOLIDATED REVENUE FUND (CRF)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Receipts</td>
<td>10 381</td>
<td>Nil</td>
<td>13 723</td>
</tr>
<tr>
<td>Expenditure from Special Appropriations</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Expenditure from Annual Appropriations</td>
<td>1 552 547</td>
<td>1 719 000</td>
<td>1 736 728</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>1 552 547</td>
<td>1 719 000</td>
<td>1 736 728</td>
</tr>
</tbody>
</table>

*The Australian Science and Technology Council is not responsible for Special Appropriations, or transactions on the Loan Fund or the Trust Fund.*
This Statement shows details of cash transactions, for which the Australian Science and Technology Council is responsible, for the Consolidated Revenue Fund. ASTEC is not responsible for any transactions of the Loan Fund or the Trust Fund.

## CONSOLIDATED REVENUE FUND (CRF)

### RECEIPTS TO THE CRF

The CRF is the main working fund of the Commonwealth and consists of all current moneys received by the Commonwealth (excluding loan raisings and moneys received by the Trust Fund). The department is responsible for the following receipt items:

<table>
<thead>
<tr>
<th>1990-91 ACTUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

| 5 760 | Section 35 of the Audit Act 1901, to be credited to Running Costs | 6.1 | Nil | 12 882 |
| 4 621 | Miscellaneous Receipts | Nil | 841 |

**TOTAL RECEIPTS TO CRF**

<table>
<thead>
<tr>
<th>10 381</th>
</tr>
</thead>
</table>

| Nil | 13 723 |
EXPENDITURE FROM CRF

The Constitution requires that an appropriation of moneys by the Parliament is required before any expenditure can be made from the CRF. Appropriations follow two forms:

- special (or standing) appropriations; and
- annual appropriations.

ASTEC is responsible for the following expenditure items:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Nil</td>
<td>Special Appropriations</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Annual Appropriations</td>
<td></td>
</tr>
<tr>
<td>1 552 547*</td>
<td>(Appropriation Act No 1</td>
<td>1 719 000</td>
</tr>
<tr>
<td></td>
<td>(Appropriation Act No 3</td>
<td>51 000</td>
</tr>
<tr>
<td></td>
<td>(Annotated Appropriations</td>
<td>12 882</td>
</tr>
<tr>
<td></td>
<td>(pursuant to Section 35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(of the Audit Act 1901</td>
<td></td>
</tr>
<tr>
<td>1 552 547</td>
<td>Total Expenditure from</td>
<td>1 782 882</td>
</tr>
<tr>
<td></td>
<td>Annual Appropriations</td>
<td></td>
</tr>
<tr>
<td><strong>1 552 547</strong></td>
<td><strong>TOTAL EXPENDITURE</strong></td>
<td><strong>1 782 882</strong></td>
</tr>
<tr>
<td></td>
<td><strong>FROM CRF</strong></td>
<td></td>
</tr>
</tbody>
</table>

* Expenditure from Appropriation Acts No 1 and 4.
DETAILS OF EXPENDITURE FROM ANNUAL APPROPRIATIONS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

APPROPRIATION ACTS NOS 1 AND 3

Division 501. - Australian Science and Technology Council

1 552 547 1. - Running Costs 6.1 1 782 882 1 736 728
(Annotated Appropriation see Note 2)

1 552 547 Total Expenditure from Annual Appropriations 1 782 882 1 736 728

68
AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL
PROGRAM STATEMENT
FOR THE YEAR ENDED 30 JUNE 1992

This Statement shows details of expenditure from annual appropriations for the sub-program administered by the Council. Each ‘annual’ appropriation item contributing to the sub-program is identified by its description followed by its appropriation code in brackets. This statement also shows details of revenue for the sub-program. Appropriations are through the Prime Minister and Cabinet portfolio, Program 6: Portfolio Policy Advising Agencies, Sub-program 1 - Australian Science and Technology Council.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Portfolio Policy Advising Agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian Science and Technology Council</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>993</td>
<td>Running Costs (501.1)</td>
<td>1 133</td>
<td>1 101</td>
</tr>
<tr>
<td>560</td>
<td>Salaries</td>
<td>586</td>
<td>636</td>
</tr>
<tr>
<td></td>
<td>Administrative Expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 553</td>
<td>Expenditure from Appropriations</td>
<td>1 719</td>
<td>1 737</td>
</tr>
</tbody>
</table>

Less: Receipts offset within Outlays

| 6         | Section 35 of the Audit Act 1901 to be credited to Running costs | Nil | 13 |
| 5         | Miscellaneous Receipts | Nil | 1 |
| 1 542     | Outlays | 1 719 | 1 723 |
## Statement of Supplementary Financial Information

**As at 30 June 1992**

<table>
<thead>
<tr>
<th>1990-91 $'000</th>
<th>NOTES</th>
<th>1991-92 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CURRENT ASSETS</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Receivables</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Prepayment*</td>
<td>4</td>
</tr>
<tr>
<td>269</td>
<td>Property, Plant and Equipment</td>
<td>5</td>
</tr>
<tr>
<td><strong>CURRENT LIABILITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Trade Creditors</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Other Liabilities*</td>
<td>7</td>
</tr>
<tr>
<td><strong>NON-CURRENT LIABILITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other Liabilities*</td>
<td>7</td>
</tr>
</tbody>
</table>

* This item has not been reported in previous financial years.
NOTE 1  STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

(a) The financial statements have been prepared in accordance with the Financial Statements Guidelines for Departmental Secretaries issued in February 1992 and amended in July 1992 by the Minister for Finance.

(b) The financial statements have been prepared on a cash basis with the exception of the Statement of Supplementary Financial Information which includes certain accrual-type information.

(c) Amounts shown in the Aggregate Statement of Transactions by Fund and the Detailed Statement of Transactions by Fund have been rounded to the nearest $1; other amounts have been rounded up if the three end digits are greater than 500, or down if the three end digits are less than 500. If the three end digits equal 500 then the amount is rounded up or down to an even figure. All totals are rounded additions of unrounded figures.

(d) Assets costings are based on historical cost conventions. Assets include all items that have a value equal to or greater than $2,000.

(e) Salaries, wages and related benefits payable to officers and employees of the Australian Science and Technology Council have not been accounted for in the balance of creditors in the Statement of Supplementary Financial Information.

(f) Foreign currency transactions which have occurred during the year have been converted at the rate of exchange prevailing at the date of each transaction.

NOTE 2  RUNNING COSTS (Annotated Appropriations)

The following 1991-92 Appropriations were annotated pursuant to section 35 of the Audit Act 1901 to allow the crediting of certain receipts:

The arrangements relating to the annotation of the appropriation(s) include the crediting of receipts received from the following:

... contributions from officers towards the provision of motor vehicles;
reimbursement of officer liability for semi official telephones;

sale of surplus or underperforming assets;

contributions form participants towards the cost of conducting conferences; and

FOI charges.

<table>
<thead>
<tr>
<th>Net Appropriations</th>
<th>Receipts</th>
<th>Appropriation</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,770,000</td>
<td>$12,882</td>
<td>$1,782,882</td>
<td>$1,736,728</td>
</tr>
</tbody>
</table>

NOTE 3 CURRENT ASSETS

A petty cash advance of $500 as at 30 June 1992 is not shown in the Statement of Supplementary Financial Information in accordance with accounting policies described in Note 1 (c). No investments or Trust Fund balances are applicable.

NOTE 4 PREPAYMENTS

Administrative Expenses $13,000

NOTE 5 PROPERTY PLANT AND EQUIPMENT

The value of property plant and equipment for 1990-91 included categories for furniture and fittings, computer equipment and electronic equipment valued at less than $2,000. The 1991-92 closing balance of $229,000 reflects actual asset costs for all items equal to or greater than $2,000.

NOTE 6 TRADE CREDITORS

As at 30 June 1992 an amount of $15,000 outstanding. There were no amounts overdue.

NOTE 7 OTHER LIABILITIES

Property expenses relating to the provision of office space occupied by the Australian Science and Technology Council in Canberra, including cleaning, was budgeted for and met from appropriations administered by the Department of the Prime Minister and Cabinet.
Current Liabilities

This category comprises consultants engaged for services for which ASTEC is liable and liabilities associated with ASTEC’s current lease for office accommodation (rent, APG fees and other outgoings).

Non-Current Liabilities

This category comprises components associated with ASTEC’s current lease for office accommodation only (rent, APG fees and other outgoings).

NOTE 8 UNACQUITTED ADVANCES

There were no unacquitted advances as at 30 June 1992.

NOTE 9 FORWARD OBLIGATIONS

The following forward obligations were entered into by the Australian Science and Technology Council as at 30 June 1992 and are due for payment:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Operating Expenses*</td>
<td>$20,840</td>
<td>$17,854</td>
<td>$9,466</td>
</tr>
</tbody>
</table>

* Appropriated to the Department of the Prime Minister and Cabinet in 1991-92 and not reported in previous years.

NOTE 10 ACT OF GRACE PAYMENTS

No payments were made during the 1991-92 financial year pursuant to authorisations given under section 34A of the Audit Act 1901.

NOTE 11 WAIVER OF RIGHTS TO PAYMENTS OF MONEYS

No payments were waived during the 1991-92 financial year under subsection 70C(2) of the Audit Act 1901.
NOTE 12  AMOUNTS WRITTEN OFF

No amounts were written off during the 1991-92 financial year under subsection 70C(1) of the Audit Act 1901.

NOTE 13  LOSSES AND DEFICIENCIES ETC IN PUBLIC MONEY AND OTHER PROPERTY

No action was taken during the 1991-92 financial year under Part XIIA of the Audit Act 1901.

NOTE 14  CONTINGENT LIABILITIES

The Australian Science and Technology Council had no contingent liabilities at 30 June 1992.

NOTE 15  GUARANTEES AND UNDERTAKINGS

The Australian Science and Technology Council had no guarantees or undertakings as at 30 June 1992.

NOTE 16  RESOURCES RECEIVED FREE OF CHARGE

During the 1991-92 financial year, a number of services were provided to the Australian Science and Technology Council without charge. The major services received include the following:

Department of the Prime Minister and Cabinet

Salary and personnel services.*

Registry and some office services.*

Department of Finance

The provision of accounting and budgetary services in the form of computerised Finance Ledger and payroll services.*

NOTE 17  AUDIT FEES

The Australian National Audit Office estimates that the cost for auditing ASTEC's 1991-92 Financial Statements is $14,000.

* Unable to quantify.
GLOSSARY OF TERMS

ACT OF GRACE PAYMENTS

Section 34A of the Audit Act 1901 provides that, in special circumstances, the Commonwealth may pay an amount to a person notwithstanding that the Commonwealth is not under any legal liability to do so.

ADMINISTRATIVE EXPENSES

Includes not just expenditure on office-based activities but all operational expenditure (excepting salaries). The item includes both direct costs and overhead expenditure: it includes inter alia, minor capital expenditure (ie items less than $250,000) which is considered part of ordinary annual services; it does not include, inter alia, major capital expenditure, grants, loans or subsidies.

ADVANCE TO THE MINISTER FOR FINANCE (AMF)

The contingency provisions appropriated in the two Supply Acts and the two annual Appropriation Acts to enable funding of urgent expenditures not foreseen at the time of preparation of the relevant Bills. These funds may also be used in the case of changes in expenditure priorities to enable ‘transfers’ of moneys from the purpose for which they were originally appropriated to another purpose pending specific appropriation.

ANNUAL APPROPRIATIONS

Acts which appropriate moneys for expenditure in relation to the Government’s activities during the financial year. Such appropriations lapse on 30 June. They are Appropriation Acts.

APPROPRIATION

Authorisation by Parliament to expend public moneys from the Consolidated Revenue Fund or Loan Fund for a particular purpose, or the amounts so authorised. All expenditure (ie outflows of moneys) from the Commonwealth Public Account must be appropriated (ie authorised by Parliament). The authority for expenditure from individual trust accounts is provided under the Audit Act 1901 or ‘Annual Appropriations’ and ‘Special Appropriations’.

APPROPRIATION ACT (No 1)

An Act to appropriate moneys from the Consolidated Revenue Fund for the ordinary annual services of Government.
APPRIATION ACT (No 2)

An Act to appropriate moneys from the Consolidated Revenue Fund for other than ordinary annual services. Under existing arrangements between the two Houses of Parliament, the Act includes appropriations in respect of new policies (apart from those funded under Special Appropriations), capital works and services, plant and equipment and payments to the States and the Northern Territory.

APPRIATION ACTS (Nos 4 and 5)

Where an amount provided in an Appropriation Act (No 1 or 2) is insufficient to meet approved obligations falling due in a financial year, additional appropriation may be provided in a further Appropriation Act. Appropriations may also be provided in these Acts for new expenditure proposals.

AUDIT ACT 1901

The principal legislation governing the collection, payment and reporting of public moneys, the audit of the Public Accounts and the protection and recovery of public property. Finance Regulations and Directions are made pursuant to the Act.

COMMONWEALTH PUBLIC ACCOUNT (CPA)

The main bank account of the Commonwealth, maintained at the Reserve Bank in which are held the moneys of the Consolidated Revenue Fund, Loan Fund and Trust Fund (other than the national Debt Sinking Fund).

CONSOLIDATED REVENUE FUND (CRF), LOAN FUND, TRUST FUND:

The three Funds comprise the Commonwealth Public Account (CPA).

CRF

The principal working fund of the Commonwealth mainly financed by taxation, fees and other current receipts. The Constitution requires an appropriation of moneys by the Parliament before any expenditure can be made from the CRF. These follow two forms:

(i) Annual Appropriations consisting of Supply Acts (Nos 1 and 2), the Supply (Parliamentary Departments) Act, the Appropriation Acts (Nos 1-5) and the Appropriation (Parliamentary Departments) Acts (Nos 1 and 2) (the Supply Acts relate to the first five months of the financial year and are subsumed by the corresponding Appropriation Acts); and
(ii) Special or Standing Appropriations.

Loan Fund

Authority for its establishment comes from the Audit Act 1901. All moneys raised by loan on the public credit of the Commonwealth are credited to the Loan Fund. Expenditures from the Loan Fund require an appropriation by Parliament and are limited to the purpose(s) for which moneys were originally raised as specified.

Trust Fund

Essentially comprises trustee funds (termed ‘Heads of Trust’) established under s.60 of the Audit Act (ie working accounts covering certain government agencies and certain other accounts in the nature of ‘suspense accounts’); and trust accounts established under other Acts to meet future expenditure.

Payments into the Trust Fund may be by way of appropriation from the CRF or Loan Fund or direct credit of private moneys. Expenditure from the Trust Fund is appropriated for (and limited to) the specific purposes of each trust account, or head of trust, by the Audit Act or the Act establishing the trust account or head of trust. Unlike the unused portion of annual appropriations, trust account balances - as with ‘special’ or ‘standing’ appropriations - do not lapse at the end of the financial year.

EXPENDITURE

The total or gross amount of money spent by the Government on any or all of its activities (ie the total outflow of moneys from the Commonwealth Public Account including both ‘above the line’ and ‘below the line’ transactions, c.f. ‘Outlays’). All expenditure must be appropriated, ie authorised by the Parliament, (see also ‘Appropriations’). Every expenditure item is classified to one of the economic concepts of outlays, revenue (ie offset within revenue) or financing transactions.

FORWARD OBLIGATIONS

A future obligation, ie an intention, as at 30 June, to incur an obligation which will give rise to a future sacrifice of service potential or economic benefits. When such an intention crystallises and becomes a present obligation, a liability arises.

LOAN FUND

See ‘Consolidated Revenue Fund’.
ORDINARY ANNUAL SERVICES

See ‘Appropriation Act (No 1)’ and ‘Appropriation Act (No 2)’.

OUTLAYS

An economic concept which shows the net extent to which resources are directed through the Budget to other sectors of the economy after offsetting recoveries and repayments against relevant expenditure items (ie outlays consist of expenditure net of associated receipt items). See also ‘Appropriations’; and ‘Receipts offset within outlays’.

RECEIPTS

The total or gross amount of moneys received by the Commonwealth (ie the total inflow of monies to the Commonwealth Public Account including both ‘above the line’ and ‘below the line’ transactions). Every receipt item is classified to one of the economic concepts of revenue, outlays (ie offset within outlays) or financing transactions. See also ‘Revenue’.

SPECIAL (STANDING) APPROPRIATION

Moneys appropriated by a specific Act of Parliament for a specific purpose (e.g. unemployment benefits, grants to states for schools). They may or may not be for a specific amount of money or particular period of time. Special Appropriations do not require annual spending authorisation by the Parliament as they do not lapse at the end of each financial year. A distinction is sometimes made between Standing and Special appropriations (although for the purposes of these financial statements both are comprehended by the term ‘Special Appropriation’). Standing appropriations refer to an open-ended appropriation of the Consolidated Revenue Fund by the enabling Act of a legislatively-based program: the amount appropriated will depend on the demand for payments by claimants satisfying program eligibility criteria specified in the legislation. Special Appropriations can be regarded as somewhere between Standing and Annual Appropriations: while a specified amount is provided, it is included in a separate Bill authorising the particular program and can be specified for any number of years.

TRUST FUND

See ‘Consolidated Revenue Fund’.
AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL
INDEPENDENT AUDIT REPORT

Scope

In accordance with sub-section 50(1) of the Audit Act 1901, the Acting Secretary has submitted for audit the financial statement of the Australian Science and Technology Council for the year ended 30 June 1992.

The statement comprises:

- Aggregate Statement of Transactions by Fund
- Detailed Statement of Transactions by Fund
- Program Summary
- Program Statement
- Statement of Supplementary Financial Information
- Notes to the Financial Statements, and
- a Certificate by the Acting Secretary and Acting Branch Director, Assessment and Management Branch.

The Council's Acting Secretary and Acting Branch Director, Assessment and Management Branch, are responsible for the preparation and presentation of the financial statement and the information it contains. I have conducted an independent audit of the financial statement in order to express an opinion on it.

The audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statement is free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the accounts, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion whether, in all material respects, the financial statement is in agreement with the accounts and records of the Council and has been presented in accordance with the guidelines made by the Minister for Finance so as to present a view of the Council which is consistent with my understanding of its financial position and the results of its operations.

The audit opinion expressed in this report has been formed on the above basis.

Audit Opinion

In accordance with sub-section 51(1) of the Audit Act, I now report that the financial statement is, in my opinion:

- in agreement with the accounts and records kept in accordance with section 40 of the Act, and
- in accordance with the financial statements guidelines made by the Minister for Finance.

D. S. Lennie
Executive Director
Canberra
4 September 1992
APPENDIX 10

COMPLIANCE INDEX

This index indicates compliance with the requirements for the preparation of annual reports.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Subject Matter</th>
<th>Page/Appendix No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>Chairman’s Statement</td>
<td>(iii)</td>
</tr>
<tr>
<td>5</td>
<td>Table of Contents</td>
<td>(v)</td>
</tr>
<tr>
<td>6</td>
<td>Index</td>
<td>84</td>
</tr>
<tr>
<td>7</td>
<td>Contact Details</td>
<td>(vi)</td>
</tr>
</tbody>
</table>

**Aids to Access**

| 8            | Objectives                                          | 1                 |
| 9            | Social Justice Overview                             | Appendix 6        |
| 10           | Corporate Structure                                 | Appendix 6        |
| 11           | Summary of significant changes in the Department’s structure | N/A               |
| 12-17        | Portfolio Legislation and Statutory Authorities     | N/A               |
| 18-21        | Non-Statutory Bodies                                | N/A               |
| 22-24        | Government Companies                                | N/A               |
| 25           | EEO in Appointments                                 | N/A               |
| 26           | Major Documents                                     | Appendix 5        |

**Program Report**

| 27-28        | Activities                                          | 4-24              |
| 29-30        | Social Justice (including Access and Equity)        | Appendix 6        |

**Human Resources**

<p>| 31-33        | Staffing Overview                                   | Appendix 6        |
| 34-35        | Performance Pay                                     | N/A               |</p>
<table>
<thead>
<tr>
<th>36-39</th>
<th>Training</th>
<th>Appendix 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Interchange Scheme</td>
<td>N/A</td>
</tr>
<tr>
<td>41</td>
<td>Equal Employment Opportunity (EEO)</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>42</td>
<td>Industrial Democracy</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>43-44</td>
<td>Occupational Health and Safety</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>45</td>
<td>Post-Separation Employment</td>
<td>Nil</td>
</tr>
</tbody>
</table>

**Other Resources**

<table>
<thead>
<tr>
<th>46</th>
<th>Financial Statements</th>
<th>Appendix 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-49</td>
<td>Fraud Control</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>50-51</td>
<td>Claims and Losses</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>52</td>
<td>Purchasing</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>53</td>
<td>Information Technology Purchasing Arrangements</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>54</td>
<td>Payment of Accounts</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>55-60</td>
<td>Consultancy Services</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>61</td>
<td>Capital Works Management</td>
<td>Nil</td>
</tr>
<tr>
<td>62</td>
<td>Property Usage</td>
<td>Appendix 6</td>
</tr>
<tr>
<td>63</td>
<td>Market Surveys</td>
<td>Appendix 6</td>
</tr>
</tbody>
</table>

**External Security**

<table>
<thead>
<tr>
<th>64-67</th>
<th>Reports by Auditor-General</th>
<th>Appendix 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>68-70</td>
<td>Inquiries by Parliamentary Committees</td>
<td>Nil</td>
</tr>
<tr>
<td>71-73</td>
<td>Comments by Ombudsman</td>
<td>Nil</td>
</tr>
<tr>
<td>74-76</td>
<td>Decisions of Courts and Administrative Tribunals</td>
<td>Nil</td>
</tr>
<tr>
<td>77</td>
<td>Freedom of Information (FOI)</td>
<td>Appendix 6</td>
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GLOSSARY OF ACRONYMS

ABS  Australian Bureau of Statistics
AFOS  Agriculture and Forestry Subgroup
ANSTO  Australian Nuclear Science and Technology Organisation
CSIRO  Commonwealth Scientific Industrial Research Organization
CZM  Coastal Zone Management
DITAC  Department of Industry, Technology and Commerce
IPCC  Intergovernmental Panel on Climate Change
OECD  Organisation for Economic Cooperation and Development
OND  Office of Northern Development
PMSC  Prime Minister's Science Council
R&D  Research and Development
RAC  Resource Assessment Commission
S&T  Science and Technology
UNCED  United Nations Conference on Environment and Development
UNEP  United Nations Environment Program
WMO  World Meteorological Organisation
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