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CSIRO Annual Report 2005–06

CSIRO

Letter of Transmittal

The Hon Julie Bishop MP
Minister for Education, Science and Training
Parliament House
CANBERRA ACT 2600

We have pleasure in submitting to you, for presentation to Parliament, the fifty-eighth Annual Report of the Commonwealth Scientific and Industrial Research Organisation. This report has been prepared in accordance with the requirements of the *Science and Industry Research Act 1949* and in accordance with section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act).

Under section 9 of the CAC Act, CSIRO Board members are responsible for producing an annual report in accordance with the rules laid down in Schedule 1 of this Act, including a 'Report of Operations' prepared in accordance with the Finance Minister's Orders.

This report presents fairly the information required by the Minister for Finance and Administration as set out in the *Commonwealth Authorities and Companies (Report of Operations) Orders 2005.*

The report has been approved for presentation to you, signed this 23rd day of August 2006 in accordance with a resolution of the Board members.

The report includes an appendix comprising a report from the Chief Executive of CSIRO, as trustee of the Science and Industry Endowment Fund established under the *Science and Industry Endowment Act 1926*, on the operations of the Fund together with a report by the Auditor-General on the accounts of the Fund.

We commend the Organisation's achievements to you.

Catherine B Livingstone
Chairman of the Board

Geoff G Garrett
Chief Executive

October 2006

Cover images – Top: Dragonfly (actual size – five centimetres long) and a UV-illuminated rod of crosslinked recombinant resilin (actual rod size – one millimetre in diameter). Photo: Resilin knot photograph by Dr David Merritt, Univeristy of Queensland; dragonfly image by David McClenaghan. Layout by Dr Nancy Liyou, Ted Hagemeijer. **Bottom left:** Preventative Health Flagship PhD student, Gemma Brierley, pictured at work in the Tissue Culture Facility. Photo: Michelle Zucker **Bottom Centre:** David Griffin (left) and Andreas Schiller, team members of BLUElink – Ocean Forecasting Australia, a key Wealth from Oceans National Research Flagship project, linking with the Bureau of Meteorology and the Royal Australian Navy. Photo: Bruce Miller **Bottom right:** Dr Surinder Singh, part of the CSIRO team involved in developing plants with omega-3 oils. Photo: Carl Davies

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Catherine Livingstone
Chairman of the Board

Geoff Garrett
Chief Executive

Our world-class science, National Research Flagships program, growth in partnerships, increased Government and private sector investment and enhanced governance have all contributed to CSIRO's strong performance during the past year.

This Annual Report demonstrates that CSIRO has remained committed to its 2003–07 strategic objectives. This unequivocal commitment, over four years, is producing demonstrable outcomes:

- **Delivering the right science through focused investment:** CSIRO has implemented a comprehensive, robust and consultative Science Investment Process, which informs our science planning and business development and has led to a theme-based, strongly outcome oriented structure.
- **Delivering world-class science:** the program of Science Assessment Reviews conducted by external experts during the year confirmed that CSIRO's research continues to be world-class and relevant to Australia. Recommendations made by the Review panels are subject to rigorous follow through.
- **Delivering impact in innovative ways:** the National Research Flagships program with its emphasis on large-scale, multidisciplinary, collaborative research is on track and delivering against challenging goals in the areas of water, energy and health, as well as contributing to real opportunities for Australia in the area of oceans and food and light metals.
- **Delivering operational efficiency through a One-CSIRO approach:** the full implementation of new research support arrangements and enterprise systems in the coming year will improve the cost-effectiveness of our support operations with savings redirected to research.
- **Delivering impact:** this report highlights many examples of CSIRO's research contributing to Australia's economic and social wellbeing.

The achievement of these objectives is essential to CSIRO's role in Australia's National Innovation System – a system which demands that CSIRO partner with Government in undertaking high-risk frontier scientific research, partner with industry in developing both breakthrough and incremental innovation and partner with the community by capturing the benefits for every day life made possible through science.

We would like to take this opportunity to thank the people in CSIRO for their creativity, commitment and resourcefulness. They *are* CSIRO.

We also greatly value the continuing support of the Australian Government and our many research partners, and share their commitment to the benefits which science and technology can, and does, deliver to Australia.

Catherine B Livingstone
Chairman of the Board

Geoff G Garrett
Chief Executive

About CSIRO

Our history

This year CSIRO celebrates 80 years of service to Australia.

The Council for Scientific and Industrial Research (CSIR) was established in 1926 with its primary research devoted towards agriculture. In the late 1930s this was extended to include industrial research.

In 1949, the CSIR was reconstituted as CSIRO, and gradually expanded its activities so that its research was related to almost every field of primary, secondary and tertiary industry.

Today, CSIRO is a trusted source for creative ideas and practical technologies to deliver impact for the nation. It seeks to be a valuable partner with strong international relationships.

Our purpose

By igniting the creative spirit of our people, we deliver great science and innovative solutions for industry, society and the environment.

CSIRO is a research enterprise dedicated to delivering benefit to industry and the community through world-class science.

What we do

CSIRO carries out scientific research in areas including energy, the environment, information technology, health, mining, manufacturing, agriculture, and natural resources. We seek to make a difference and generate impact by focusing on the nation's big challenges and opportunities. Our research delivers:

- innovative technologies to improve the competitiveness of existing industries
- technologies to transform or create new markets for Australian industry
- integrated solutions to meet major national challenges
- advice, information and research to meet specific community needs
- knowledge-based services to governments and businesses.

How we deliver

We strive to deliver value to our clients at all stages of research, development and commercialisation. We conduct our research through Divisions, National Research Flagships, Joint Ventures and other entities. Some facts:

- CSIRO leads six National Research Flagships that bring focus and scale to research addressing some of Australia's most important and complex challenges and opportunities
- CSIRO is the largest single participant in the Cooperative Research Centre (CRC) Program (participating in 47 of the 71 centres, as at June 2006)
- CSIRO hosts three major National Research Facilities (the Australian Animal Health Laboratory, the Australia Telescope, the Marine National Facility – Research Vessel *Southern Surveyor*) and over 30 other research facilities such as the Riverside Life Sciences Centre in Sydney, CSIRO Discovery Centre in Canberra and the Australian Resources Research Centre in Perth
- CSIRO manages 11 national reference collections including: the Australian National Fish Collection, the Australian National Insect Collection, the Australian National Herbarium, the Australian National Wildlife Collection, the National Tree Seed Collection and the Scientific Marine Data Collection
- 87 per cent of CSIRO's total expenditure is directed towards the priority goals associated with the National Research Priorities
- in collaboration with university colleagues we currently supervise, co-supervise and/or sponsor 700 postgraduate research students, approximately 26 per cent in collaboration with CRCs

The year in summary – and looking ahead

CSIRO plays a unique and significant role in the National Innovation System, particularly in conducting large-scale, multidisciplinary research focused on major national challenges and opportunities. We are an organisation of enormous and diverse capability, with a proud record of achievement over 80 years. This Annual Report reflects our continuing commitment to build and apply our capabilities in ways that deliver real benefits for Australia.

Over the past 12 months we have maintained our focus on the implementation of our 2003–07 Strategic Plan. We have made significant progress across the key areas articulated in that Plan, particularly in relation to our integrated program of change initiatives, while maintaining, and growing, the quality and impact of our core business. We provide some examples below.

- We have continued our program of independent reviews of Divisions to assess and benchmark the quality and vitality of CSIRO's science base, and of our scientific outputs. The overarching conclusion, from these reviews, and those conducted in the previous year, is that our science is in really good health, and equally important, that the outputs of our research are delivering substantial impact across the board. This Annual Report and its companion document 'CSIRO – Making a Difference' provide a good selection of illustrative examples of the scope and diversity of our science outputs.

- In 2005, our published journal articles have increased five per cent, to 1 945, and our journal publications, conference proceedings, published technical reports and books/chapters in books together have grown 13 per cent, to 4 655 ; since 2002 the number of publications per annum, per research scientist has grown by almost 40 per cent, to 2.92.

- Averaging one a month in 2005, CSIRO scientists' papers in the prestigious journal *Nature* (and its affiliates) represents a new benchmark for us. Our average citation rate (an important measure of science quality) increased from 9.87 to 10.46 over this past year (double the world average increase), and remains second only to ANU in Australia. We also delivered well over 10 000 client reports, 30 per cent more than in the previous year.

- On the basis of our published outputs we now rank in the top one per cent of the world's science institutions in 13 of 22 research fields, for example, from astronomy to materials science, and from environment/ecology to agricultural science.

- National Research Flagships are now a working reality. With over 250 industry partners and research institution collaborators across Australia already involved in the Flagship Programs, with funding of around $170 million in 2005–06 (up from $80 million in 2003–04), the Flagships are delivering strongly on their challenging long-term goals. These goals are closely aligned with the Government's National Research Priorities and draw heavily on CSIRO's unique capability to assemble large, multidisciplinary research teams to tackle major issues, and opportunities, in health, water, energy, and the creation of new industries and jobs. An external review, chaired by Dr Robin Batterham, Australia's former Chief Scientist, of Flagships' progress to-date was undertaken during June 2006 and will be a major component of CSIRO's 2007 Triennium funding submission. The Review Panel have strongly endorsed the Flagship model and have concluded that the Flagships are delivering powerful scientific solutions to national problems.

- Over the past year we conducted the first round of our new Science Investment Process (SIP) in which we undertook a detailed, whole-of-CSIRO analysis of our entire science portfolio against a robust set of criteria, and made investment decisions in seeking to maximise the relevance and impact of our science.

- Five new spin-off companies were formed during the year taking the market value of our spin-off portfolio to record levels. We also generated record revenues from our Intellectual Property assets of $37.1 million – that is 69 per cent year-on-year growth, and up from $9.3 million in 2000–01, invested back into our science.

- Considerable progress has been made in our efforts to improve our efficiency and effectiveness in the delivery of Research Support Services (RSS) across the Organisation. Planning and development for the implementation of 'One-CSIRO' enterprise-wide support in the areas of finance, human resources, information services, legal, and commercialisation, are nearing completion.

- Good progress has also been achieved in building the foundations and underlying business processes to be implemented as part of the Business Enabling Technologies Review (BETR) which will see the implementation in 2006–07 of standard information systems in CSIRO.

- We have increased our level of engagement and consultation with senior leaders, enterprise -wide, through 'Strategy in Action' workshops aimed at improving understanding of, and commitment to, our strategy across the Organisation.

- Our Program Performance Framework – utilising the dual 'lenses' of science quality and path to market/impact – is now well embedded across the Organisation and, in this regard, almost 90 per cent of our Research Themes met their Annual Performance Goals, an increase of ten per cent from 2004–05.

- Our total external revenue grew by 11.6 per cent, to $352.9 million, in 2005–06. This represents 37.3 per cent of our total revenue for the year, now $946.8 million. (Note these revenue figures do not include gains made through sales of property, plant and equipment.)

- Due to improved financial discipline and the good external earnings growth, we returned an underlying 'bottom line' $303 000 surplus – a considerable $15 million improvement on the approved budget deficit of $14.7 million for the year and our $9.2 million deficit last year (2004–05).

- In the domain of Occupational Health and Safety (OHS) we have also continued to make good progress. We are now a leader in government agencies and on a par with many top industrial organisations, for example: our premium rate for Comcare, as a percentage of payroll, is now 0.77 per cent which compares with 1.77 per cent for all Commonwealth agencies; similarly our Lost Time Injury Frequency Rate (which is the number of injuries involving lost time from work greater than or equal to one full day or shift per million hours worked) is 3.3 which compares very favourably to the Commonwealth agencies average of 11.

All in all, therefore, we have continued to make solid progress across the range of dimensions against which our performance can be tracked. There are, however, still some areas where we face challenges and need to improve our performance, namely in business development and customer service, communication, and in our ability to operate in a matrix environment, effectively harnessing the enormous power of our diverse capability and experience base. We have put in place mechanisms by which we intend to continue to make progress across these domains in 2006–07.

Looking ahead

The coming year will see the culmination of our 2003–07 Strategic Plan. Many of the foundation elements we have developed over the past three years will be in place, providing a strong base for the development of our next Strategic Plan, for the period 2007–11.

For the year ahead particular attention at the enterprise level will be paid to:

- continuing to deliver high-quality scientific outputs in the core of our business, and ensuring their effective take up
- developing and finalising our 2007–11 CSIRO Strategic Plan and the related Triennium Funding Agreement submission (including a comprehensive review of achievements over the last triennium)
- implementing a series of coordinated, science-related activities to increase the profile of our science, both internally and externally, with a particular focus on further building competence and capability in early career researchers, especially at the postgraduate and postdoctoral levels
- completing the first full cycle of Divisional science reviews, and the effective implementation of approved actions arising from these reviews
- implementing the theme-level investment decisions resulting from the first round of the Science Investment Process, as well as some process improvements; and undertaking the second round of SIP, incorporating Flagship themes, to deliver a single CSIRO science priority-setting process
- focusing on rejuvenating our approach to, and results from, our Business Development initiatives
- fully implementing enterprise-wide Research Support Services (RSS) in the areas of finance, human resources, information services, legal, commercialisation, and property and facilities
- implementing the first phase of the BETR project, which will provide a common, enterprise-wide platform to deliver standard and streamlined information systems across the Organisation
- implementing our Project Leadership Initiative (PLI), building on a solid current base, aimed at developing best practice project leadership skills throughout the Organisation.

I look forward to working with members of the CSIRO Board, our customers, staff and other key stakeholders as together we continue to work on our core purpose, to *"…deliver great science and innovative solutions for industry, society and the environment"*.

Geoff Garrett
Chief Executive

CSIRO's roles in the National Innovation System

With the increasing pace and competitiveness of innovation across the globe, CSIRO's place in Australia's national innovation system (NIS) has become more important than ever. A healthy, unified and differentiated CSIRO is delivering significant benefits for Australia.

In line with our enterprise strategy, CSIRO has developed a new articulation of the roles it performs, and will continue to perform, for the Australian community. This refreshed perspective will hopefully help improve stakeholder and collaborator understanding of the full spread of research activities being conducted by CSIRO.

CSIRO has multiple roles to play within the context of Australia's NIS. These can be classified into three types: Core, Satellite and Enabling. CSIRO's core roles revolve around fulfilling the science needs of industry and the community. Related satellite roles are important in the NIS and complement or support CSIRO's execution of our core roles. Our enabling functions provide the strong foundation necessary for effective and efficient delivery towards CSIRO's goals.

Core roles

CSIRO's core roles are as follows:

- addressing major national challenges and opportunities, through harnessing the breadth and depth of our expertise
- similarly, creating new, or significantly transforming, industries to increase the competitiveness and sustainability of Australian industry
- delivering incremental innovation to improve the efficiency and competitiveness of existing industries
- providing fact-based solutions which meet community needs and knowledge that informs Government policy
- advancing the frontiers of science, an essential component of maintaining long-term capability.

Satellite roles

CSIRO also performs a number of key satellite roles that deliver value to Australia; these roles currently include:

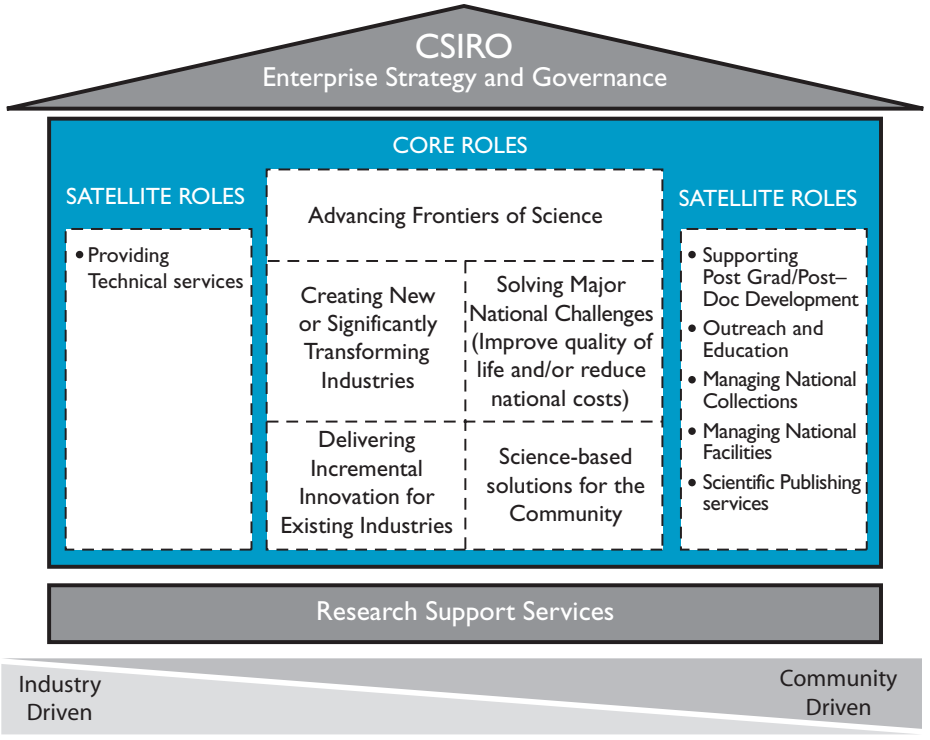
- supporting the development of postgraduate students and postdoctoral fellows
- Outreach and Education programs (eg through our Science Education Centres, and magazines such as 'Double Helix')
- managing national facilities and collections (such as the Australia Telescope National Facility, the Australian Animal Health Laboratory, the Australian National Insect Collection, the National Herbarium and the National Fish Collection).
- scientific publishing services (eg scientific journals, technical books and CDs)
- providing consulting and technical services (eg fire testing, air pollution analyses, and quarantine testing).

Enabling functions

Specific enabling functions are necessary to support the Organisation to deliver on its core and satellite roles; in CSIRO the two most important enabling functions are:

- Enterprise Strategy and Governance (through Executive management and the CSIRO Board)
- providing Research Support Services (eg human resources, communications, legal, commercial, finance, information technology/ services, property and site services).

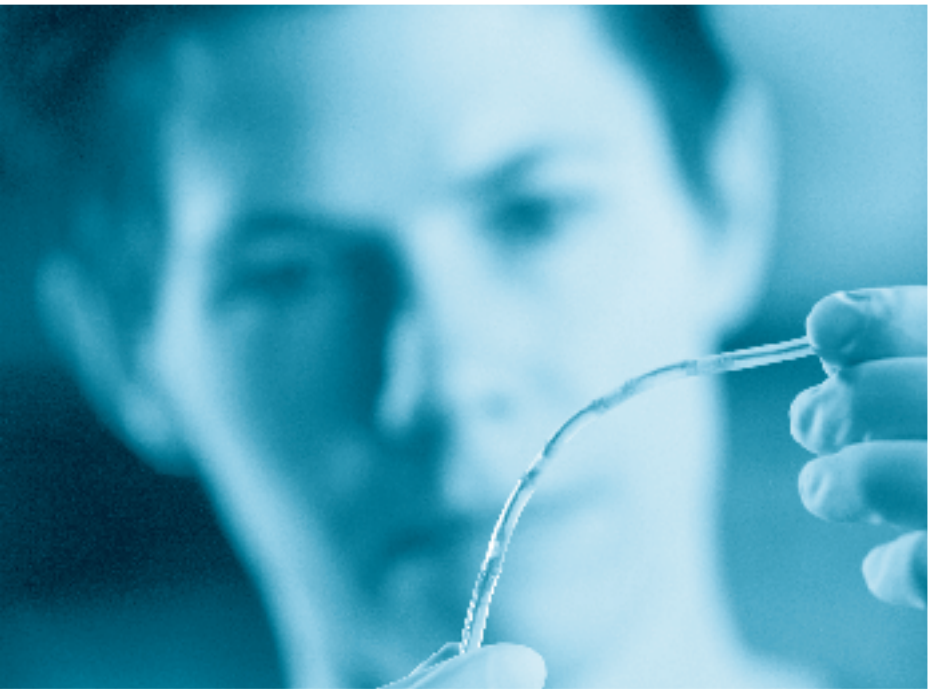
To this end, CSIRO's roles are captured in our 'Role House' diagram:



The 'Role House' illustrates CSIRO's core roles at the centre of the diagram, surrounded by satellite roles. The enabling functions are represented as the 'roof' and 'floor' of the house, highlighting the support and guidance they provide to the other roles. The house also illustrates the continuum between industry driven activities (left side of the house) and community driven activities (right side of the house) across CSIRO's various roles. The industry driven/community driven continuum illustrates that, while all of CSIRO's activities ultimately deliver public good benefits for Australia, some activities are more driven by industry needs and others are more driven by community needs.

The dashed lines within the house signify the integration and interdependence between the roles. None of the roles can exist in isolation – there are linkages between each of them. No sharp boundaries exist between roles, and no core role is separable. Within the core roles, time horizons correlate with vertical positions within the house. In other words, 'Advancing Frontiers of Science' has a long-term time horizon while 'Delivering Incremental Innovation for Existing Industries' has a much nearer time horizon.

This Annual Report has been organised in line with the role house framework; it begins by reporting on outputs and outcomes in the core and satellite roles, followed by performance against our strategy and governance information, concluding with the research support section and, thereafter, the financial statements for the year 2005–06.

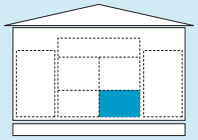


Section 1 – Performance
Delivering impact from our science

Performance in our roles in the National Innovation System

The following section provides some examples highlighting our recent achievements across each of CSIRO's core and satellite roles. These and many other examples of our recent achievements can be found on our website at www.csiro.au and in the publication, 'CSIRO – Making a Difference', to this Annual Report.

Science-based solutions for the community



Role description:

- the provision of timely advice and information, research, and specific community solutions which inform and protect society and the environment
- knowledge intensive research and development (R&D) strongly leveraging existing CSIRO technology, research and expertise
- technology transfer and knowledge diffusion typically occurs through publication and service provision and informing policy

Analysing Perth's water options

Perth's demand for water is growing at the same time that the climate appears to be getting hotter and drier, resulting in an urgent need to develop new water sources, increase recycling and better manage consumption.

It is a significant scientific challenge – and one that has been taken up by the Water for a Healthy Country Flagship which is supporting the Western Australian State Water Strategy through research into creating a sustainable supply of water for south-west Western Australia (WA).

In collaboration with the West Australian Government, CSIRO has undertaken a 'whole-of-system' review of existing and potential water resources for the region and also detailed future demand for both drinking water and non-potable water.

The research found that the diversity of water sources provides the region with a resilience that will help it adapt to climate change. In addition, the study has found that the groundwater reserves in the Perth Basin represent a substantial water resource which could help meet future water needs.

One of the key elements of the research is investigating the potential for increasing water reuse and recycling. In collaboration with WA Water Corporation, Curtin University, the University of Western Australia and the WA Chemistry Centre, and the Flagship, we have trialled a system known as Managed Aquifer Recharge, in which treated wastewater is returned to the aquifer where it is biologically cleaned by natural processes (essentially the absence of oxygen in an aquifer environment). This water can subsequently be reused for irrigating parks and gardens and for horticulture. The research has shown that up to 100 gigalitres of water could be returned to Perth's water supply in this way.

Water for a Healthy Country team member, Simon Higginson, collects a sample of recycled water from the trial site before analysing in the laboratory. Photo: David McClenaghan

Pesticide-eating enzymes clean-up the environment

A powerful bioremediation technology is helping Australian primary industries to protect the environment and to meet market demands for uncontaminated agricultural products. Developed by CSIRO and commercial partner Orica Australia Ltd, Landguard™ removes pesticide and herbicide residues from soil, water and crops, giving farmers a rapid, cost-effective and environmentally sustainable tool.

The enzyme technology is essentially a reverse form of genetic engineering. It uses the natural genetic resistance developed by an insect against chemical toxins, and transforms this into environmental clean-up tools.

Modern biotechnology has made it possible to isolate hydrolytic enzymes from pesticide-resistant insects and bacteria and use these enzymes to break down toxins in contaminated agricultural substances.

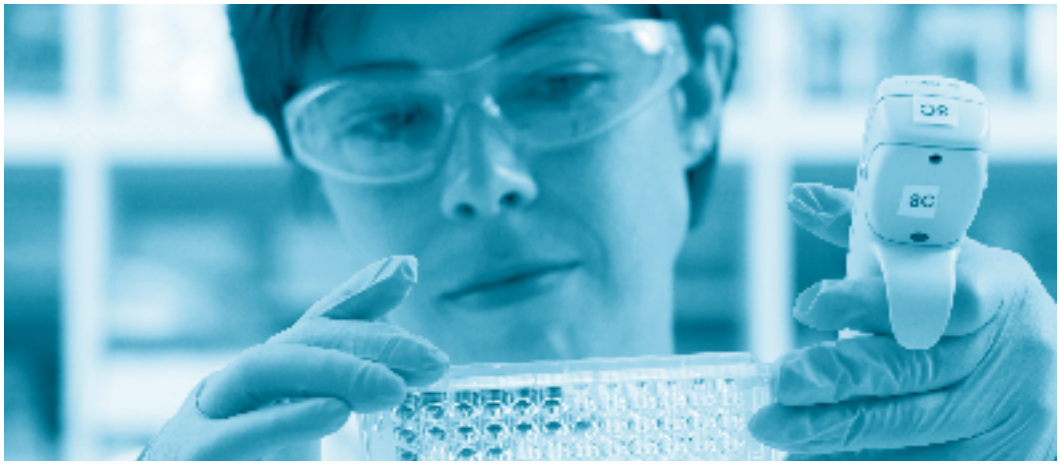
Landguard™ enzymes have the capacity to degrade pesticide concentrations in soil and water run-off to very low-levels in minutes – a process that ordinarily takes months.

Australian field trials conducted by Orica Watercare confirmed that bioremediation lowers organophosphate levels in cotton irrigation wastewater by 90 per cent within ten minutes, eliminates 99 per cent of the toxins from sheep dip within 30 minutes, and reduces pesticide levels in orchard rinse water by 99 per cent in half an hour.

Although Landguard™ products have been sold to end-users in Australia since 2004, Orica has now turned its attention to heavily regulated niche markets overseas and will soon launch them in the UK. The next target is the US, where authorities have identified organophosphate residues from almond orchards in rivers feeding into the San Francisco Delta. The results of efficacy trials showed that Landguard™ reduced the concentration of diazinon in collected run-off water by 75 per cent and field trials are being conducted in other problematic areas including the prune, peach, walnut and alfalfa markets.

Tests are also being undertaken to measure residue removal from fruit produce in pack-houses in the Philippines, Taiwan and Turkey.

During 2005–06, CSIRO has transferred further enzymes to Orica for the degradation of synthetic pyrethroid insecticides and benzimidazole fungicides. Orica is currently trialling these enzymes in the field.



CSIRO's Fiona Spier checks a microtitre plate for protein concentration as part of the bioremediation project. Photo: David McClenaghan

Easing the hard swallow

A serious and potentially fatal swallowing condition is being eased by the development of a technology that combines a clever application of physics and modern telecommunications.

Using fibre optics and microjointing, CSIRO researchers are working with doctors at the Adelaide Women's and Children's Hospital to help better understand and treat the condition known as dysphagia.

Dysphagia affects around five per cent of the population, and although it is most common among small children and recovering stroke victims, it can affect anyone with impaired muscular function. It can lead to malnutrition, lung inflammation from inhaling foreign material, choking, or death.

Researchers have developed a diagnostic tool that can detect differences in pressure along a patient's oesophagus when swallowing. This information is used to construct a profile of the swallowing action, allowing doctors to more accurately identify what is causing the problem.

The diagnostic tool uses a unique application of optical fibre to produce a catheter barely three millimetres in diameter. The catheter contains a series of optical-fibre pressure sensors, which use some smart physics and modern telecommunications technology to measure the waves of pressure when the patient swallows. This creates a detailed representation of the pressure wave travelling down the oesophagus as the patient swallows.

Although the technology used is no stranger to the telecommunications world – it forms the basis for nearly every modern telecommunications system in use today – its use in the medical world is novel.

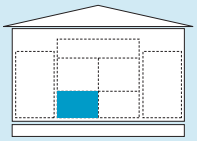
The low manufacturing costs of the fibre-optic catheter will allow it to be a disposable item, which reduces the risk of cross-contamination and makes the diagnostic process more widely available.

Up to 50 pressure sensors can be incorporated to improve the tool's diagnostic capability without increasing the diameter.

The diagnostic tool's simplicity is a key advantage. The device will revolutionise the way we approach functional disorders of the gastrointestinal system.

CSIRO's catheter is barely three millimetres in diameter and contains a series of optical-fibre pressure sensors, which measure the waves of pressure when the patient swallows. Photo: David McClenaghan

Delivering incremental innovation for existing industries



Role description:

- science-based solutions that help provide lower/more competitive production costs and improved quality of goods/services for industry
- knowledge intensive R&D which requires deep understanding of industry and domain expertise
- often leverages existing CSIRO technology, research and expertise to deliver improvements to industry
- traditionally focused on areas of high adoption and take up

New technique protects mills from the daily grind

A new technique to help reduce costly damage caused by the tumbling motion of rocks and balls inside large grinding mills, has been developed by CSIRO.

As part of an industry-sponsored AMIRA-project, CSIRO has developed an on-line vibration monitoring system that measures and optimises plant performance. In particular, the system uses acoustic emission sensor technology and interpretation software that uses vibrations to monitor the motion of material inside a rotating mill.

The vibration monitor's ability to provide reliable information about the motion of material inside a rotating mill has the potential to save mining companies millions of dollars in costs associated with internal wear and tear.

The monitor is able to identify exactly where tumbling material has the most impact on a mill's lifters and liners.

Stopping a mill and installing new liners is very expensive. This technology provides the opportunity for several potential gains. One of them is being able to use the information from monitoring system to 'tune' the mill to minimise liner impacts and subsequently extend the life of the liners and lifters. This decreases the number of stoppages needed to fit replacements.

CSIRO has installed and trialled the technology at a full-scale Australian copper mine and several project sponsors have now asked CSIRO to supply additional systems for their mills.

The CSIRO led AMIRA project is sponsored by Anglo Platinum, Phelps Dodge, Rio Tinto, BHP Billiton and Xstrata.

Listening in: Kevin Davey installing accelerometer modules on a production-scale SAG mill.
Photo: David Barker

Quick dry merino

Hopes are high that a new quick-drying wool fabric, developed and commercialised in under six months by CSIRO researchers, will lift wool use by allowing wool to compete with synthetics and cotton in the lucrative sportswear markets.

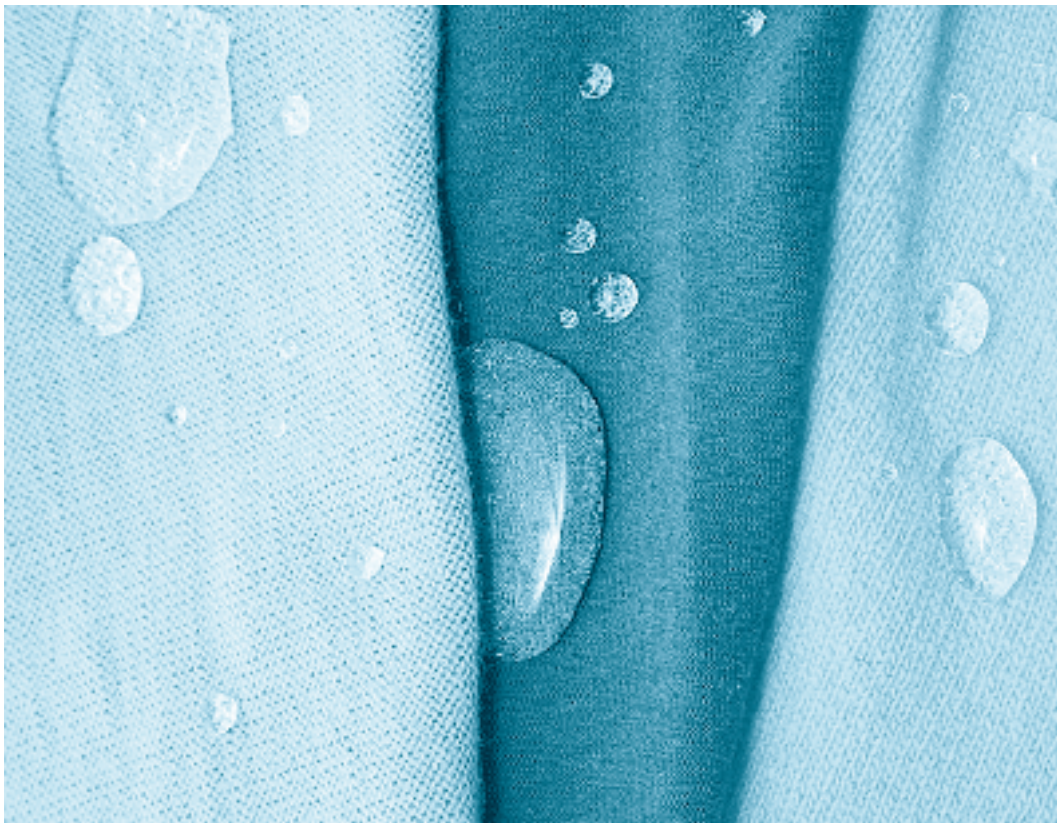
Quick dry merino (QDM) repels water and dries at the same rate or faster than polyester and acrylic knitwear. Compared to untreated wool garments, QDM garments hold only one quarter of the amount of water after washing, and drip-dry in one quarter of the time. After spinning in a washing machine, treated garments air-dry in two hours instead of the usual three – a performance similar to that of polyester.

Quick-dry garments will also cost less to maintain when tumble-dried because tumble-drying costs are directly related to the mass of water retained after spin-drying.

The product was developed by CSIRO at Geelong with funding from the Australian Wool Innovation Limited.

The fabric gets its hydrophobic or water-shedding properties from a polymer application originally used as a stain blocker. The stain blocker gives the fabric its water-resistant properties.

Previously stain blockers needed heat – via ironing after washing – to reactivate anti-stain and hydrophobic properties. The fabric, which is aimed at the machine-washable knitwear market, has undergone commercial trials in Australia and overseas on 19-micron wool.



Quick dry merino treated wool fabrics repel rather than absorb water. Photo: David McClenaghan

Boosting Australia's black tiger prawn and Atlantic salmon production through genetic improvement

From Queensland's sunny Gold Coast to the cooler waters off Tasmania, collaboration between researchers and industry is helping to boost Australia's 'farmed' prawn and Atlantic salmon production.

Research by the Food Futures Flagship into black tiger prawn domestication and Atlantic salmon selective breeding research is allowing these industries to improve the growth, health and harvest-quality of their livestock by up to ten per cent per generation.

In May 2006, Gold Coast Marine Aquaculture harvested the world's first commercial crop of black tiger prawns grown from parent stocks bred and matured in captivity.

The 50-tonne harvest is a significant step towards achieving a long-standing goal – to reduce industry reliance on unpredictable wild broodstock. It has given the industry confidence to invest in further research to genetically improve Australian prawn stocks.

The black tiger prawn domestication project has involved Gold Coast Marine Aquaculture and Seafarm, the Food Futures Flagship, the Australian Institute of Marine Science and the Queensland Department of Primary Industries and Fisheries. It is funded by the Fisheries Research and Development Corporation.

The Atlantic salmon selective breeding program is also a collaborative project. In a five-year research partnership between CSIRO and Salmon Enterprises of Tasmania, the program aims to improve production efficiency and product quality to help meet changing market and production needs.

Scientists are working with industry partners to improve the growth, health and harvest-quality of Australian-farmed black tiger prawns and Atlantic salmon. Photo: David McClenaghan

Progeny from the breeding program will be provided to Tasmanian salmon growers as smolts (young salmon) for commercial production, and to hatcheries as eggs and young fish for growing into broodstock. Some $20 million in benefits are expected for Tasmania's Atlantic salmon industry when the first progeny are harvested in 2009–10.

New material for lighter buildings

A new lightweight concrete panel technology with superior engineering and environmental performance has seen CSIRO help our partners enter the global construction industry and target the wall market, whose total value is estimated at US$125 billion a year.

At half the weight of concrete panels of the same strength, HySSIL technology can greatly reduce building weight and foundation sizes. It has a unique cellular structure which provides up to five times the thermal insulation of conventional concrete.

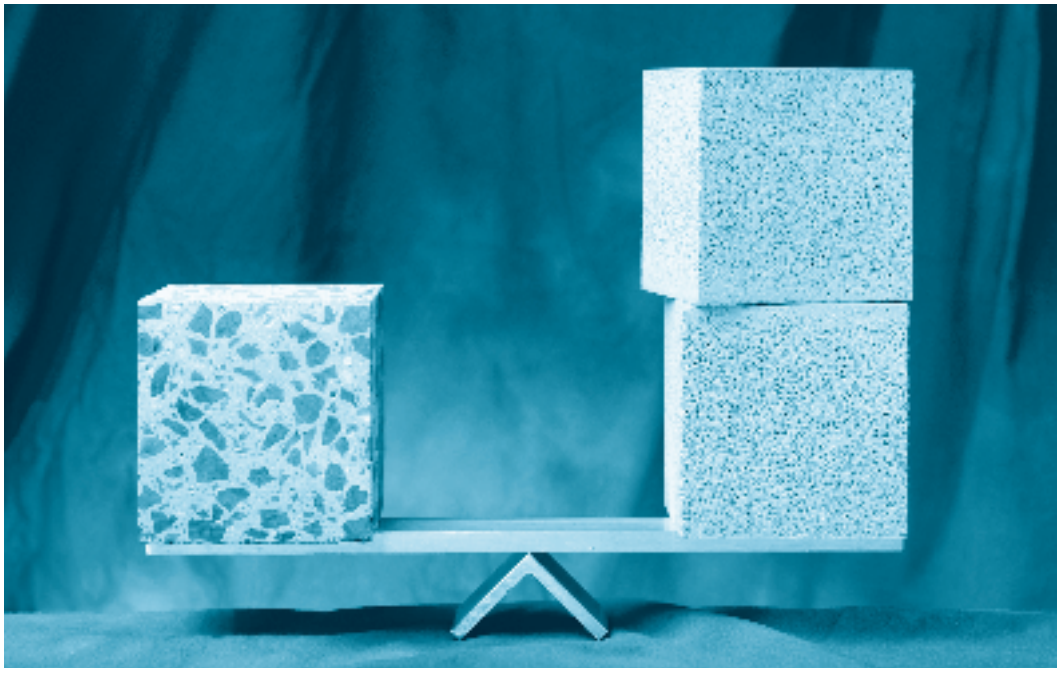
Construction time and cost can also be significantly cut because of easier transporting and lifting of the pre-fabricated HySSIL panels. The panels are impact and fire resistant, and can be nailed and painted directly without rendering.

Researchers worldwide have always chased this holy grail of trying to make concrete lighter and yet not lose any strength. The basis of the technology is the idea of wrapping a very strong material around a bubble in order to get a very strong material that is light.

HySSIL wall panels are manufactured using an energy-efficient process that does not require expensive and energy-intensive curing equipment. Coupled with the added benefits of recyclability and improved building thermal efficiencies, this technology can potentially reduce greenhouse impacts.

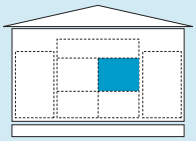
The technology provides a very flexible manufacturing technique and is amenable to a whole range of products.

HySSIL Pty Ltd was created on 9 June 2006.



HySSIL is a revolutionary aerated cement-based product that is as strong as normal concrete but is only half as heavy. It provides up to five times the thermal insulation of concrete and is also impact and fire resistant. Photo: Mark Fergus

Solving major national challenges



Role description:

- strongly outcome focused, R&D intensive, mission-directed strategic research. Often large-scale, complex and multi-disciplinary
- generally higher-risk, long-time horizon research, requires major investment
- national teamwork, collaboration and partnership are vital

Assessing the impacts of climate change in Australia

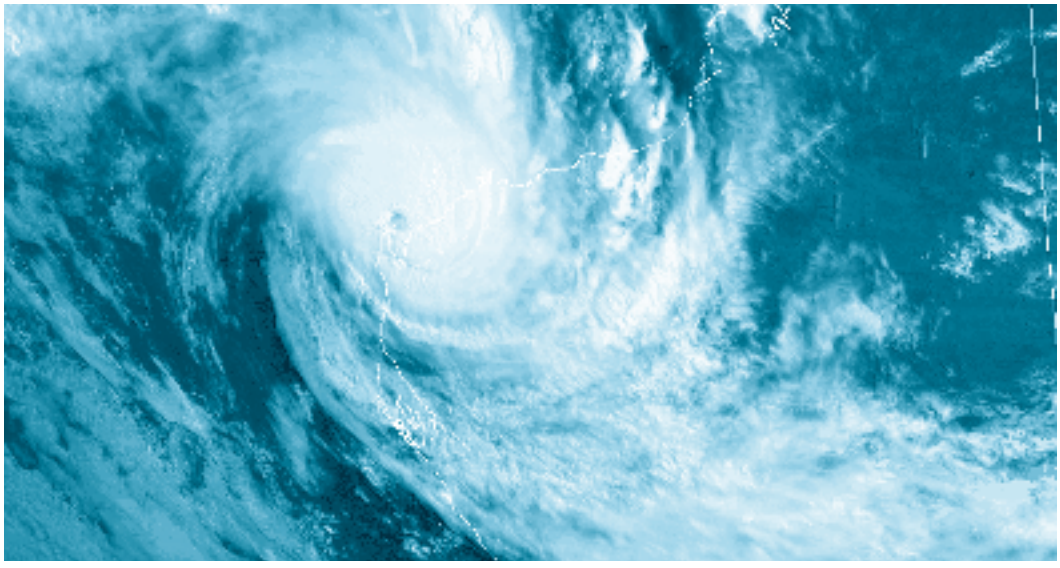
Information on the sensitivities to climate change in different regions, sectors and ecosystems around Australia is being provided to governments by CSIRO's Climate Impact group.

CSIRO has recently provided the most authoritative assessments of the expected impact of global climate change, in particular on bushfire risk across south-east Australia and the benefits of early action to reduce global greenhouse gas emissions. The information is designed to underpin strategies that reduce the vulnerability of areas that are potentially most sensitive to the negative impacts of climate.

The results of CSIRO's assessments have been used in formulating climate change policy responses by Commonwealth, State and Territory Governments, in addition to decisions by local councils and industry associations.

The identification of environmentally critical thresholds, adaptability measures, and cost-benefit analyses have been developed after consulting with stakeholders.

The climate change research conducted at CSIRO supports the Australian Climate Change Science Program, which aims to maintain and develop Australia's expertise in climate change science. It is funded by the Australian Greenhouse Office, and is in collaboration with the Bureau of Meteorology Research Centre.



Severe Tropical Cyclone Vance crossing the West Australian coast in March 1999. CSIRO provides authoritative assessments on the likely impact of global climate change for Australia, such as an increase in tropical cyclone intensity. Photo: Japan Meteorological Agency

BLUElink

A powerful new suite of ocean models that can predict the influence of ocean currents on marine activity – from sonar operations to weather forecasting – has been developed in a milestone collaboration between the Royal Australian Navy, the Bureau of Meteorology and the Wealth from Oceans Flagship.

The $15 million 'BLUElink – Ocean Forecasting Australia' project builds on three years of intensive research and development and this research puts Australia at the forefront of ocean forecasting. It adds important new capabilities for naval and other marine operations, as well as for weather and climate research.

The BLUElink model can predict ocean 'weather' – temperature, salinity and currents in a three-dimensional presentation up to seven days in advance. The sophisticated modelling uses data gathered from satellites and a global network of 'Argo' floats that provide detailed information about what is happening deep within the ocean.

The project brings enormous benefits to all marine operations, such as fishing, tourism, offshore engineering and mining, coastal management and research into big issues such as climate change.

BLUElink has also been used in a Fisheries Research and Development Corporation-funded project on the ocean dispersal of Southern Rock Lobster larva. It is also being used by the Australian Fisheries Management Authority to help conserve Southern Bluefish Tuna stocks off Australia's east coast.

David Griffin (left) and Andreas Schiller, team members of BLUElink – Ocean Forecasting Australia, a key Wealth from Oceans National Research Flagship project, linking with the Bureau of Meteorology and the Royal Australian Navy. Photo: Bruce Miller

New National Solar Energy Centre

The first stage in developing a new energy source for Australian industry is being trialled in Newcastle at the National Solar Energy Centre (NSEC).

Opened in March 2006, the $5.3 million centre showcases solar thermal technologies – such as the innovative SolarGas™ system – and plays a key role in CSIRO's ongoing research into efficient, low-emission energy generation.

SolarGas™ is a new energy source which contains about 26 per cent more energy than the coal-seam methane or natural gas used to feed the process that creates it. It also produces 26 per cent less carbon dioxide during production.

The significance of the hybrid solar/fossil process that produces SolarGas™ is that it uses a renewable energy source, the sun, to extract from existing fossil fuels a new, clean, energy source. The development provides all the benefits of solar energy with the delivery and handling convenience of gas.

The NSEC is the only multi-collector facility of its type in Australia and is home to the largest high-concentration solar array in the Southern Hemisphere. This comprises three main elements: a high-concentration tower solar array, a linear concentrator solar array, and a control room.

The high-concentration tower solar array uses 200 mirrors to concentrate more than 500 kilowatt of energy. This can create peak temperatures of more than 1 000°C. The linear concentrator solar array generates hot fluid at temperatures of around 250°C – enough to power a small turbine generator. The control room houses the centre's communications and control systems.

The project is a major collaboration facilitated by the Energy Transformed Flagship including the Department of Education, Science and Training, New South Wales' Department of Energy, Utilities and Sustainability, with contributions from Solar Heat and Power, DLR Germany and the Australian National University.

John Wright and David Brockway stand among the 200 mirrors that comprise the National Solar Energy Centre's high concentration array, Newcastle, NSW. Photo: Stefan Moore

Fishery assessment in south-east Australia

A new approach developed by CSIRO to tighten the link between scientific advice on fish stocks and the management responses is transforming the stewardship of Australia's fisheries resources.

Declining fish stocks and a struggling fishing industry prompted the CSIRO initiative that has developed formal harvest strategies for setting quotas in the Southern and Eastern Scalefish and Shark Fishery (SESSF).

Under the new system, stock assessments undertaken by CSIRO are translated directly into advice about quotas for 34 commercial stocks and species administered by the Australian Fisheries Management Authority (AFMA).

The new system was developed by CSIRO with uptake through AFMA's Resource Assessment Groups and Management Advisory Committees, involving participation by the fishing industry, managers, environmental groups and scientists.

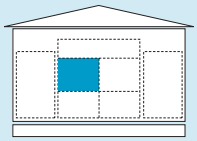
The success of the harvest strategy framework adopted in the SESSF was a major influence on the Australian Government's announcement in December 2005 to implement harvest strategies for all Commonwealth managed fisheries by 2007. This approach is now incorporated in the Government's policy to end over fishing – the $220 million *Securing our Fishing Future* package.

Developed and implemented using a broad spectrum of research, including the development of new tools for monitoring and modelling marine resources, the harvest strategy approach will be the subject of ongoing R&D effort.

The longer-term goal is to expand the existing framework and develop an ecosystem-based fishery management approach. This broader approach deals with concerns about the broader impacts of fishing on non-target species and habitats, and is supported by the development of new tools such as ecological risk assessment and ecosystem modelling of marine systems.

Formal harvest strategies have been developed to streamline management responses to scientific stock assessments in Australia's Southern and Eastern Scalefish and Shark Fishery. Photo: Mark Lewis

Creating new or significantly transforming industries



Role description:

- partnering to transform/create new industries through the use of technological innovation and risk sharing
- strongly outcome focused, R&D intensive, mission-directed strategic research with scalable trans-disciplinary teams
- generally higher-risk, longer-term projects
- partners include large corporates, consortia and industry associations

Integrated titanium metal industry for Australia

Through its Light Metals Flagship, CSIRO is making good progress developing new mineral processing technology to help convert Australia's large and rich ilmenite and rutile ore deposits into a world-leading titanium industry. Currently, the cost and complexity of refining and processing the metal prevent the establishment of a local industry.

CSIRO is spearheading a drive for new technology that will reduce the complexity and halve the cost of making titanium. It is developing an innovative process for producing pure titanium powder (TiRO™) and alloy powder (via direct alloying) at greatly reduced cost. Its vision for a fully integrated Australian industry is to convert powder directly to product, more efficiently and cost-effectively than current methods.

Titanium has unique properties. It is as strong as steel but 40 per cent lighter. It is also resistant to corrosion and bio-inert so can be used in artificial joints and other human implants.

Although commonly used for demanding aerospace and process industry applications, the metal's high cost prevents its wider use.

The cost of semi-finished titanium product – such as sheet, pipe and bar – is twice the cost of the parent ingot. Researchers are developing new technologies to halve the cost of fabrication.

The initial focus has been on direct continuous production of thin sheet – an end-product with huge market potential – from powder. This eliminates the many processing steps and waste inherent in the current wrought-metal route, greatly reducing costs. Having proved the sheet-technology concept for pure titanium, the focus now is on demonstrating the technology at pilot-scale and enhancing it for titanium alloys, which comprise 50 per cent of the market.

The Light Metals Flagship is also using 'cold spray' fabrication technology to produce complex titanium shapes from powder, and has had good early results from another new process for fabricating bar and possibly pipe.

Nigel Stone with early samples from trials of a new process to continuously manufacture titanium sheet from powder. Photo: Mark Fergus

Fluid history analysis – assisting exploration companies reduce risk

Techniques developed by CSIRO are revealing in detail the migration of oil into reservoirs, helping exploration companies to better manage risk when drilling exploration wells for gas and oil.

Called FHA (fluid history analysis), the techniques are finding global acceptance, as seen by their widespread use already in south-east Asia, licenses sold to major international petroleum companies and the adoption of FHA techniques by the major petroleum companies in Australia.

The work has enormous significance to the oil and gas industry. The techniques reveal – in previously unseen detail – the geochemical development and movement history of hydrocarbons in sedimentary basins, from the early generation of hydrocarbons in deeply buried organic matter through to present day petroleum accumulations.

The FHA techniques were devised in response to discussions and suggestions from geoscientists and executives in oil exploration companies. The techniques analyse samples of oil preserved within mineral grains that are retained when the reservoir fluid changes to gas or water.

These microscopic samples are not visible at the well site and are investigated in the laboratory using microscopy, spectroscopy and geochemistry.

Evidence that a reservoir once contained an oil accumulation indicates that nearby reservoirs are likely to also have had oil accumulation. When the information from FHA is correlated to the large amount of technical data acquired about prospective drill targets, factors that are unfavourable for preservation of oil are identified. These are used to exclude prospects with those factors, reducing the risk of drilling unproductive wells.

With oil exploration increasingly focusing more on difficult targets – subtle traps, small oilfields and rocks under 1 000 metres or more of water – managing exploration risk requires not just acquiring large amounts of technical information on drill sites, but also making the most of that information using advances like FHA.

CSIRO is also researching ways to increase the level of details that can be revealed using FHA methods, in particular to investigate features such as reservoir fluid properties and fluid compartments in reservoirs.

CSIRO's Peter Eadington preparing laboratory equipment to make low temperature measurements on fluid inclusions. Photo: Murray Armenti, Visions Photography

New biodegradable polymer for medical applications

CSIRO spin-off company, PolyNovo Biomaterials, has signed a partnering and licensing agreement with one of the world's largest medical device companies, Medtronic, to co-develop the next generation of stents using PolyNovo's biodegradable polymer, NovoSorb. (Stents are tiny mesh cylinders inserted after a narrowed artery is dilated with a balloon, to prevent a recurrence of the narrowing. Currently, these stents remain permanently inside the artery.)

It is expected that the (biodegradable) stents will be implanted to open a blocked artery, allowing the artery to repair itself, and then the stent harmlessly degrades. This would allow re-treatment of patients and remove long-term complications currently experienced with metal stents.

Although clinical introduction is still some years away, PolyNovo believes this partnership gives the best chance for the development and market introduction of a NovoSorb based stent.

The global stent market is estimated at $4 billion a year and is expected to reach $9.3 billion by 2009.

As a result of the deal with Medtronic, PolyNovo believes that exploring the use of polymer technology for other medical device applications could help the company expand its portfolio, as well as result in the construction of a manufacturing facility.

The Medtronic partnership is one of PolyNovo's key co-development relationships. PolyNovo has also established partnerships to explore NovoSorb in wound management and nerve repair applications.

PolyNovo Biomaterials is a subsidiary of Xceed Biotechnology and has its facilities within CSIRO which remains a significant shareholder in the company.

NovoSorb biodegradable polymer has other potential medical applications such as bone and cartilage repair. Photo: Mark Fergus

Helping form new companies

A new generation of drugs considered to represent a step-change in the treatment of infections and disease has become the catalyst for a business partnership model that allows CSIRO to help start-up biotech companies reach their goals sooner.

The technology to create a class of therapeutic agents called 'Avibodies' – proteins derived from antibodies, the natural molecules the body uses to fight infections and even cancers – has been acquired by start-up company Avipep.

Avipep was founded on the therapeutic antibody research initiated by CSIRO and financially backed by the Pre-Seed Fund manager Sciventures Investments to develop an attractive alternative to the lucrative monoclonal antibody therapies on the market.

Its formation complements CSIRO's Australian Biotech Growth Partnerships program, which was established to work with biotechnology and nanotechnology companies doing advanced research in medical science.

Biotechnology companies are typically cash-poor and ideas-rich. Strategic, collaborative R&D that links small to medium-sized enterprises with CSIRO and other research organisations will help Australia create its next generation of world-competitive companies.

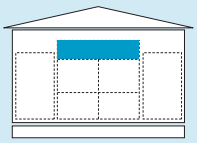
CSIRO is also working outside the medical field to develop spin-off companies and joint ventures. Its joint venture with the Sydney-based company DataDot Technology Ltd (DDT) is making sure buyers get what they pay for.

The joint venture – DataTraceDNA Pty Ltd – is promoting a 'chemical barcode' developed under a research agreement between the two groups.

The product, which is also called DataTraceDNA®, developed by CSIRO, is a unique chemical substance that can be incorporated into the molecular structure of a product to identify and authenticate it in a manner similar to a barcode. That is, an individual pattern invisible to the naked eye can be allocated to a product to identify it as authentic. Every year manufacturers lose millions of dollars from their designs and products being illegally replicated and sold fraudulently.

DataTraceDNA®, with its own unique chemical 'fingerprint', can be incorporated into the molecular structure of a product to identify and authenticate it. Photo: Mark Fergus

Advancing frontiers of science



Role description:

- insight based research leading to a paradigm shift that has potential implications across multiple domains
- potentially generates new science/technical platforms, capabilities and intellectual property
- often led by eminent scientists with global connections
- world leading frontier research, cutting-edge/ hot topic research or high potential (personal passion) research
- collaboration and connectivity to the global research community is key
- often performed without a particular client/ partner in mind

Resilin – stretching the limits of material science

Resilin, the natural substance that gives many insects their flying and leaping abilities, is the source of a new synthetic material which researchers believe will lead to a whole new class of advanced rubber-like materials.

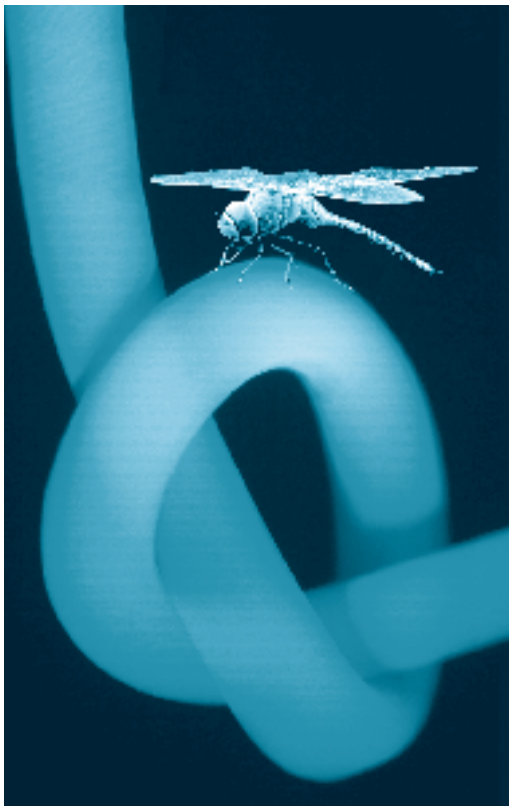
The expected commercial applications span numerous industries including medicine, sport, leisure goods, and defence.

CSIRO grasped its importance to materials science when the genetic instructions for making resilin, a protein, were identified in the fruit fly genome in 2001.

CSIRO and research collaborators discovered and then patented a way to artificially mesh resilin molecules so the material sets into an easily moulded and rubbery solid.

Resilin has two particularly useful properties – long fatigue life and resilience to wear. It can be stressed for hundreds of millions of cycles, and continue to give perfect performance.

CSIRO has the worldwide patents for resilin's advanced performance traits, giving researchers the task of articulating and developing resilin's commercial possibilities. There are endless applications. Products made from resilin could be helpful as implants for the human body, as sensors, in engineering applications, and, of course, in consumer products like high performance athletic shoes.



Dragonfly (actual size – five centimetres long) and a UV-illuminated rod of crosslinked recombinant resilin (actual rod size – one millimetre in diameter). Photo: Resilin knot photograph by Dr David Merritt, Univeristy of Queensland; dragonfly image by David McClenaghan. Layout by Dr Nancy Liyou, Ted Hagemeijer.

New receiver for the Parkes radio telescope

CSIRO's 'iconic' Parkes radio telescope, which has been pushing out the frontiers of humankind's knowledge of the universe for 45 years, has been further modernised to ensure it remains at the forefront of international radio astronomy.

The telescope has been equipped with a new seven-beam receiver that detects radio signals at five centimetre wavelength. The receiver (referred to as the Methanol MultiBeam, MMB) is specifically designed to detect emission from the methanol molecules that are frequently identified with sites of star formation in the Milky Way galaxy.

The MMB receiver is the latest in a series of upgrades over the years that have maintained the facility's scientific edge as international radio astronomy has pushed further and further into the origins of not only our own Milky Way galaxy, but the universe itself.

The new MMB receiver was jointly constructed by the Australia Telescope National Facility (ATNF) and Jodrell Bank Observatory in the UK and was commissioned in January 2006.

One of the features of this new receiver is its versatility. It can be used for other radioastronomical observations such as those for detecting and studying pulsars near the centre of the Milky Way.

The MMB receiver went into use the moment it was commissioned and is already providing a new window into the cosmos. A survey of the Milky Way for methanol masers – intense localised sources of emission associated with the formation of new stars – is well underway.

Work is proceeding 20 times faster than was possible with the best systems previously available anywhere in the world. The first of many discoveries from the survey of methanol masers is a star-forming region that lies in the inner galaxy some 22 000 light years from earth.

A new pulsar survey is also underway and scientists are confident it will reveal a number of previously unknown examples of these exotic systems of compact stars that are about ten kilometres across and rotate from rates of once every few seconds to 100 times a second.

Pulsars are created when the original star explodes at the end of its life and are considered central to understanding the evolution of the universe.

CSIRO Parkes radio telescope which has been fitted with a new Methanol MultiBeam receiver. Photo: David McClenaghan

New computer model set to transform the electricity market

New computer modelling approaches are revealing the common features of systems as diverse as the weather, economies and ecosystems. This is reshaping our understanding of the unexpected emergent behaviour that these complex systems exhibit. The development of a market simulation tool is one example of the application of this understanding in the social domain.

A powerful computer modelling system developed by CSIRO's Energy Transformed Flagship could become a fundamental management tool in the high-pressure, highly competitive, $7 billion-a-year National Electricity Market.

NEMSIM – the National Electricity Market Simulator – is a highly innovative modelling system that allows major electricity players to make better strategic, financial and operational decisions, and also evaluate their impact on greenhouse gas emissions.

Companies will be able to explore energy supply and demand scenarios for time frames as short as a few days and as long as thirty years.

The novel feature of NEMSIM is its use of computer-simulated 'agents' to represent power-generating companies, network service providers, retail companies and a market operator. Investment and bidding 'look-ahead' functions allow a user to identify the best strategy from a set of alternative options.

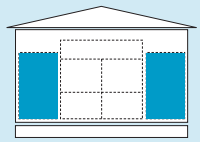
Investment decisions about new generation capacity, transmission network upgrades and the introduction of new technologies such as interval metering and distributed generation, create major challenges for corporate players and governments.

NEMSIM provides a set of energy demand models and uses some of the latest results from CSIRO in climate scenario development. Regional demand profiles were created specifically for NEMSIM based on climate data from CSIRO's Mk3 Global Climate Model.

CSIRO has signed an agreement with Core Collaborative Pty Ltd to commercialise NEMSIM. This collaborative project aims to create a new generation of simulation software to help energy industry participants address complex strategic, financial and operational decisions. The simulation tool named GENERSYS is being developed to help a broad range of energy industry organisations including electricity generators, gas producers, pipeline companies, regulators and investors.

Shanon McQuay (CSIRO) and Tennyson Wickham (Core Collaborative Pty Ltd) test the latest scalable vector graphics user interface developed by them for the commercial version of NEMSIM to be known as GENERSYS. Photo: Nik Burns – Core Collaborative Pty Ltd

Satellite roles



Managing national facilities

Role description:

- harnessing CSIRO's science and technology management skills to the management of selected National Facilities adds value to Australia's NIS and helps lift CSIRO's profile in the NIS and globally
- CSIRO currently manages three major National Research Facilities: the Australian Animal Health Laboratory; the Australia Telescope National Facility; and the Oceanographic Research Vessel, *Southern Surveyor.*

Stopping the spread of avian influenza

Diagnostic technology to identify H5N1 avian influenza is leading the global efforts to track and contain the dangerous bird 'flu virus. Breaches in that worldwide defence, however, occur where ever nations lack the capability to undertake the necessary tests.

CSIRO's Australian Animal Health Laboratory (AAHL) in Geelong has been at the forefront of addressing this emergency situation since the beginning of the outbreak.

In keeping with its responsibilities as a World Organisation for Animal Health and United Nations Food and Agriculture Organisation (FAO) reference laboratory for avian influenza, it has provided emergency training and reagents to countries throughout the region.

This year the FAO commissioned CSIRO scientists from AAHL to conduct coordinated training workshops across Asia. The purpose was to coordinate test methods and develop quality assurance systems so there can be confidence in laboratory findings.

An important outcome of the FAO-sponsored program is the development of a strong network of veterinary laboratories throughout Asia.

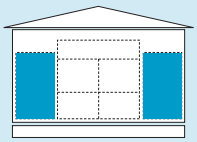
For some of the countries involved, the workshops were the first experience of testing for avian influenza. Training covered collecting and processing specimens, diagnosing highly pathogenic avian influenza, maintaining safety while handling H5N1, and how to ensure quality control of diagnostic tests. The workshops provided some of the countries with their first experience of testing for avian influenza.

CSIRO was chosen by FAO to deliver this vital training because it has a strong track record of working with animal diseases in Asia. AAHL is one of just six animal health organisation reference laboratories for avian influenza globally.

Laboratories in affected countries are forwarding specimens to AAHL for further characterisation of the avian influenza virus. This allows monitoring of any changes in the H5N1 strain through antigenic drift or mutation.

Paul Selleck is inoculating eggs with H5N1 virus. Photo: David McClenaghan

Satellite roles



Supporting postgraduate/ postdoctoral development

Role description:

- developing and training graduates for the future benefit of CSIRO and more broadly the Australian NIS

For more information on number of students supervised and sponsored, and number of postdoctoral fellows employed by CSIRO see page 55.

Student researches new ways of treating cancer

Australia's research into techniques used to turn-down or switch-off the activity of genes that might be responsible for triggering diseases like cancer is being enhanced by strong working relationships with the recognised world leader in this technology, Oxford University.

As part of a shared interest in this research, which could lead to new ways of diagnosing and treating cancer, a CSIRO and Adelaide University PhD student, Gemma Brierley, has been working at Oxford University with Dr Val Macaulay. Dr Macaulay is a senior clinical research fellow based at the Wetherall Institute of Molecular Medicine.

Gemma's objective – during visits in 2005 and 2006 – was to learn more about gene-silencing technology which holds tremendous promise as a therapeutic agent. Australian scientists feel the technology could help them unravel the roles that certain proteins play in cancer cell function. This could lead, in particular, to new ways of diagnosing and treating colorectal (bowel) cancer.

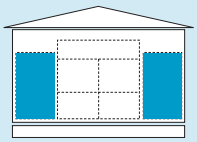
In late 2005, Gemma spent five weeks working with Dr Macaulay, who is an acknowledged leader in the use of small interfering RNAs (siRNA) to knock out expression of specifically targeted genes.

Gemma learnt how best to design and validate siRNAs, allowing her to unravel the role of this protein in cancer cell function. In her follow-up visit, Gemma completed the design and validation phase of her work, and has bought the technology back to Adelaide where she will complete the mechanistic aspects of her studies.

Gemma says collaborating with Dr Macaulay and her group has provided her with a fount of ideas: 'Furthering my knowledge on siRNA has been really important to this research. I'm also able to share this information with colleagues in Australia.'

Preventative Health Flagship PhD student, Gemma Brierley, pictured at work in the Tissue Culture Facility. Photo: Michelle Zucker

Satellite roles



Outreach and education

Role description:

- communicating meaningful and accessible aspects of scientific research helps raise the profile of science and of CSIRO within the community and with other players in the NIS

'Dr Rob' talks up science

As an education officer with the CSIRO Science Education Centre in Brisbane, Dr Robert Bell might not be your run of the mill celebrity.

But as 'Dr Rob' – the host of Network Ten and CSIRO's joint television show 'SCOPE' – he is fast becoming a science celebrity to thousands of young people.

SCOPE is a national weekly half-hour TV science program and was first screened in September 2005.

It is produced in partnership with Network Ten and uses humour to explore scientific topics, to excite and inform young people about science and in turn encourage them to question how the world works.

SCOPE explores a different science topic each week and includes scientists presenting stories on their research, presentations by Double Helix Science Club members and experiment demonstrations.

CSIRO and Network Ten have also worked successfully together for five years to produce one science-focused edition of 'Totally Wild' each week. This included Dr Rob presenting an experiment segment.

As part of its educational work, CSIRO has also developed an extensive website that provides video-streamed segments from each program, information about each scientist featured, activities to try at home or school, web links to additional resources and the opportunity to ask Dr Rob science questions.

SCOPE is also featured in each issue of *The Helix* and *Scientriffic* magazines and is promoted through other avenues such as 'Science by Email' each week. Teacher workshops have been offered to raise awareness of the value of this program for classroom use.

With a viewing audience of more than 400 000, SCOPE is one of the most watched programs for this audience, making Dr Rob a popular presenter. He is also popular with teachers and often gives presentations at Science Teacher Conferences.

The host of the popular Network Ten SCOPE science TV program is 'Dr Rob', an Education Officer with CSIRO. Photo: Justine Walpole

CSIRO's outcomes and outputs

This section lists a wide and representative selection of achievements arranged in accordance with the outcome-output framework agreed with the Australian Government (Figure 1). The charts which follow (Figures 2 and 3) reflect an analysis of these achievements in terms of (a) the type of product or service delivered by CSIRO and (b) the way in which these outputs contribute to benefits for Australia.

Information on each of the achievements listed below is available on our web site at www.csiro.au/annualreport

Figure 1: CSIRO's outcome and outputs framework

Outcome

The application or utilisation of the results of scientific research delivers:

- innovative and competitive industries
- healthy environments and lifestyles
- a technologically advanced society

Outputs

Research products and services for Information Technology, Manufacturing and Services	Research products and services for Sustainable Minerals and Energy	Research products and services for the Environment and Natural Resources	Research products and services for Agribusiness and Health

Output group 1: Information Technology, Manufacturing and Services

- Resilin – stretching the limits of materials science (see page 25)
- ColorClear™ wool whitening technology
- Wool filters for use in air-conditioning systems
- Quick dry merino – a new quick drying wool fabric (see page 14)
- Stronger, lighter high-pressure die castings
- Australian partnership in light metals research
- Securing Melbourne's water supply
- Cost-effective magnesium casting process
- Reducing the energy used in aluminium production
- CSIRO telescopes rank highly in world impact
- New spectrometer for the Mopra radio telescope
- New receiver for the Parkes radio telescope (see page 26)
- Commercialisation of search engine technology
- New satellite feed technology
- Solar car motor kits ordered by seven countries
- Integrated titanium metal industry for Australia (see page 21)

- Creating competitive advantage for Australian companies through cold spray innovation
- New material for lighter buildings (see page 16)
- Improving logistics infrastructure at Port Kembla
- Smooth particle hydrodynamics to speed up our swimmers
- Helping form new companies (see page 24)

Output group 2: Sustainable Minerals and Energy

- Improving iron ore characterisation
- New technologies for longwall coal mining automation
- Mine fire and explosion prevention
- Predicting the discovery of ore deposits
- Sirovision® to lower mining costs
- New technique protects mills from the daily grind – reducing internal damage to grinding mills (see page 13)
- Helping Australia meet global iron ore demands
- Venture capital firms support CSIRO spin-off company
- Using natural gas to aid copper recovery
- Intalysis Pty Ltd created to commercialise CSIRO's moisture analyser
- Solution to a salty problem in the Murray Basin
- New computer model set to transform the electricity market (see page 27)
- Extensive uptake of new sediment quality assessment protocols
- Commercialisation of coal preparation technologies
- Unique energy storage technology licensed internationally
- New National Solar Energy Centre (see page 19)
- Responsive intelligent distributed energy network
- Commercialisation of binderless coal briquetting
- Advanced geochemical analyses for the study of oil reservoirs
- Fluid history analysis – assisting exploration companies reduce risk (see page 22)

Output group 3: Environment and Natural Resources

- *Centipedes of Australia* – a comprehensive online key to Australian centipedes
- Green Guard – an environmentally safe product for controlling locusts
- Pesticide-eating enzymes clean-up the environment (see page 11)
- Analysing Perth's water options (see page 10)
- Managed aquifer recharge trial to supplement Perth's water supply
- Assessing future risks to Murray Darling Basin water supplies
- Adoption of water quality monitoring framework for the Tully-Murray catchment
- BLUElink delivering detailed forecasts of ocean currents for the Australian region (see page 18)
- CSIRO climate model results to be used for international benchmarking studies
- Critical input towards an Indian Ocean observation system
- New monitoring sensor network for water quality
- Environmental monitoring program to assist Adelaide's coastal waters

- Chowilla floodplains project – identifying the effects of river salinity
- Monitoring of land-ocean interactions in the Great Barrier Reef World Heritage Area
- Murrumbidgee water savings
- Assessing the impacts of climate change in Australia (see page 17)
- CSIRO's climate system model adopted for use by Australian universities
- Managing domestic ballast water discharges around Australia
- New classifications system for marine bioregions
- Fishery assessment in south-east Australia (see page 20)
- New stock assessment techniques for the Northern Prawn Fishery
- New method for calculating national greenhouse gas emissions
- CSIRO contributes to the State of the Environment Report
- Better estimates of air pollution in tunnels
- Sustainable farming systems for the Mallee regions of South Australia, New South Wales (NSW) and Victoria
- Assessing Market Based Instruments for the provision of ecosystems services
- New policy to support water quality in the Great Barrier Reef
- Planning for a sustainable future for south-west Western Australia
- Addressing land subsidence risk in coastal Gippsland

Output group 4: Agribusiness and Health

- Australian sawmillers adopt aerospace evaluation technologies
- Ensis tree breeding skills span the Tasman
- Assessment of plantations water use included in water allocation plans
- *Nectria* fungal infection in trees significantly reduced
- Commercialisation of Ensis research
- CSIRO Total Wellbeing Diet book exceeds expectations
- Commercialising technology to protect the viability of probiotics in foods
- Improving food safety through science based regulation
- Stopping the spread of avian influenza (bird 'flu) in animals (see page 28)
- AUSPIG – increasing the profitability of Australian pig production
- New beef gene marker commercialised
- Breeding merino sheep to meet modern consumer demands
- CropMan – a simulation tool for increasing farm profitability in Western Australia
- New mandarin varieties for the Australian citrus industry
- 'Stuart' – a new variety of soybean increasing the profitability of the Australian sugar industry
- Boosting willow control to protect waterways in south-east Australia
- New fabric for prevention of skin tears
- Environmental Stewardship Initiative for the Australian wool industry
- Boosting Australia's black tiger prawn and Atlantic salmon production through genetic improvement (see page 15)
- Supporting the establishment of the Australian Cancer Grid

- New understanding of consumer attitudes to screening for colorectal cancer
- Health data integration technology adopted by Queensland Department of Health
- Remote patient care through the Virtual Critical Care Unit (ViCCU™)
- Easing the hard swallow – helping to understand and treat dysphagia (see page 12)
- Improving the wine supply chain
- Developing software to support drug discovery and neurobiology
- International adoption of health advances from CSIRO
- New biodegradable polymer for medical applications (see page 23)
- Adoption of optimised loading pad locations within the NSW sugar industry
- VAPORMATE™ – a safe, fast fumigant for protection of grains in storage
- TIMERITE®– a package to control redlegged earth mites in pastures
- Improvements to sustainable farming practices in Indonesia
- Optimising the location of cane rail sidings in the Herbert sugar region
- New insect resistant cotton variety released

How do these achievements contribute to benefits for Australia?

CSIRO delivers four major types of research products and services:

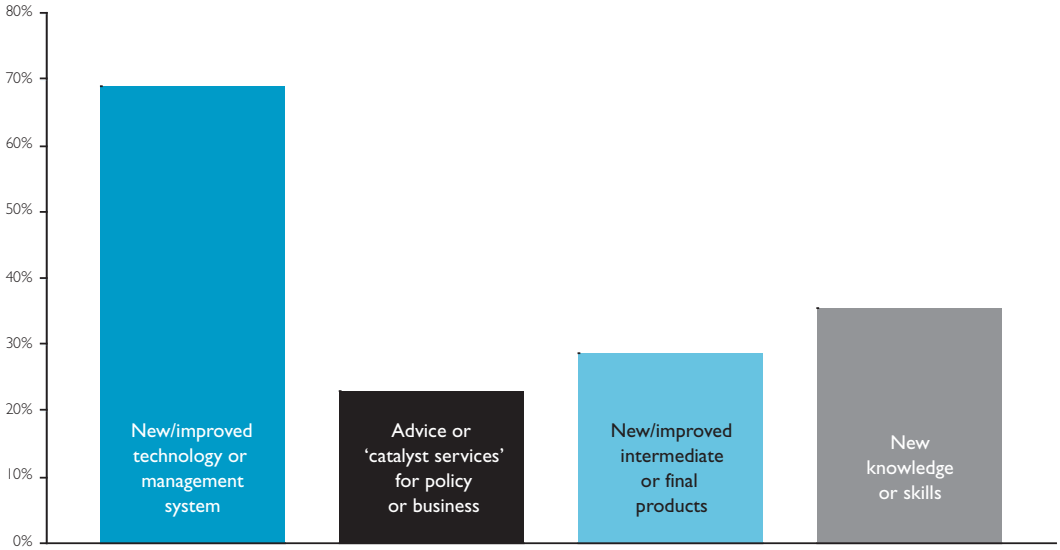
- new/improved technology and management systems
- 'catalyst' services and advice for policy and business
- new/improved intermediate and final products
- new knowledge and skills.

These products and services (outputs) contribute to economic, social and environmental benefits for Australia in a variety of different ways, but specifically by contributing to:

- innovative and competitive industries, through:
  - lower/more competitive production costs
  - improved quality of goods and services
  - new products, services and businesses
- healthy environment and lifestyles, through:
  - improved human health, safety and wellbeing
  - reduced pollution
  - improved environmental health
- a technologically advanced society, through:
  - development of skills (enhanced human capital)
  - informing policy (cost-effective public programs)
  - reduced risk (economic, environmental and/or social).

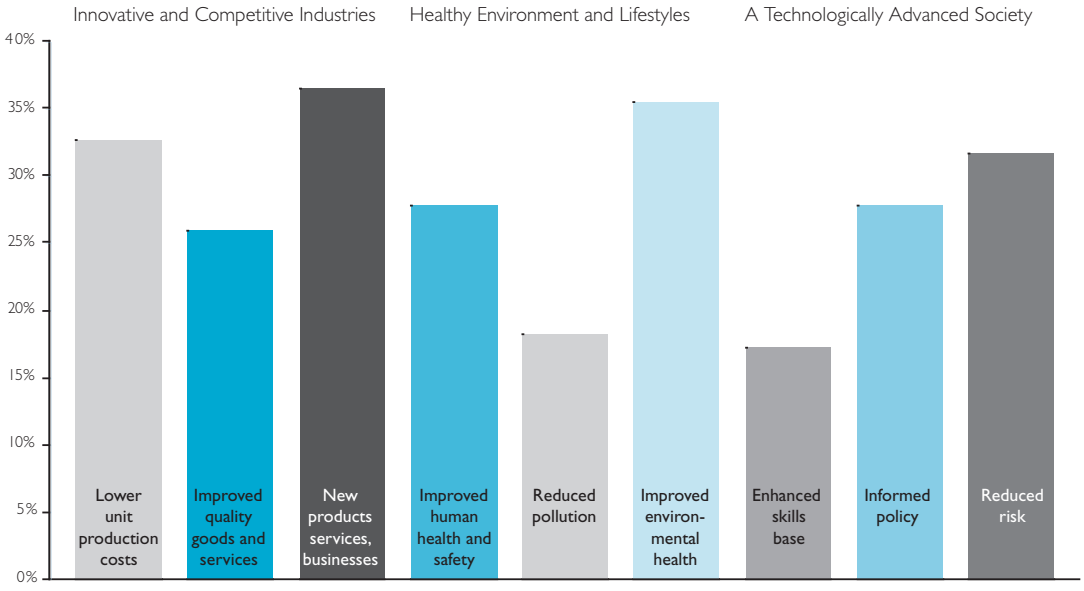
Figures 2 and 3 illustrate an assessment of the representative achievements listed above in terms of these output and benefit categories. It is important to note that each achievement may involve more than one type of output and may contribute to more than one type of benefit.

Figure 2: What did we deliver? CSIRO achievements by type of output, 2005–06 (Note: each achievement may involve more than one type of output/benefit; the sum, therefore, exceeds 100 per cent). Percentage of selected achievements delivering different types of outputs*



* *The selected achievements are those listed on pages 31-34 of the Report. It is important to note that each achievement may involve more than one type of output.*

Figure 3: How did our work benefit Australia? Contributions by representative CSIRO achievements, 2005–06 (Note: each achievement may involve more than one type of output/benefit; the sum, therefore, exceeds 100 per cent). Percentage of selected achievements contributing to each type of outcome*



* *The selected achievements are those listed on pages 31-34 of the Report. It is important to note that each achievement may contribute to more than one type of outcome.*

Awards and honours

In 2005–06, CSIRO scientists won international and national acclaim for the excellence of their work. These awards are further demonstration of our effectiveness in research and its application in industry and the community. Over 100 awards were received by CSIRO staff, including the prestigious Sir Ian Clunies Ross Award and Eureka Prizes for water research and bioinformatics research.

The Sir Ian Clunies Ross Award 2006

Drs Greg Constable (Plant Industry), **Gary Fitt** (Entomology) and **Danny Llewellyn** (Plant Industry) were awarded the *Australian Academy of Technological Sciences and Engineering (ATSE) Clunies Ross Award for 2006* to recognise their outstanding achievements in the application of science and technology for the social and economic benefit of Australia. Their work has helped make Australia a world leader in agricultural science. Their dedication to the cotton industry and to the thousands of people who rely on their endeavours has generated one of Australia's great environmental, economic and social successes.

From left to right: Mike Young; Roberta Brazil, Chairman, Land and Water Australia; and Jim McColl at the Eureka Prize ceremony. Photo: Stuart Humphreys © Australian Museum

Australian Museum Eureka Prizes 2005

Mr Jim McColl and **Dr Mike Young** (Land and Water) won the *Land & Water Australia Eureka Prize for Water Research* for contributions to water resources conservation for their work on the robust separation of functions in the definition of water rights.

From left to right: Major-General Adrian Clunies-Ross; Dr Danny Llewellyn; Dr Gary Fitt; Dr Greg Constable; and Mr Bruce Kean AM. Photo: Ross Gibb Photography

Dr Antonio Reverter-Gomez (Livestock Industries) was awarded the *NSW Ministry for Science and Medical Research Eureka Prize for Bioinformatics Research* for research on algorithms which enable understanding and use of massive amounts of genetic data.

Dr Toni Reverter (left) is pictured with Dr Geoff Garrett (Chief Executive) after winning the inaugural Eureka Award for Bioinformatics Research. Photo: Australian Musueum

Australian Honours

Order of Australia

Officer (AO)

Dr Ian Brooker (Ensis) for his work on Eucalyptus taxonomy and ecology.

Mr Paul Gottlieb (Minerals) for service to science and technology through the development and marketing of equipment and software for use in particle analysis and identification in the minerals processing sector.

International Awards

Mr Ken Atkinson and the **Carbon Nanotubes team** (Textile and Fibre Technology) won the *2006 Nanotech Briefs® Nano 50™ Award* in the technology category for CNT yarn fabrication.

Dr Greg Foliente (Sustainable Ecosystems) (team leader), **Dr Ivan Cole** (Manufacturing and Infrastructure Technology), **Dr Laurie Cookson** (Ensis) and **Drs Bob Leicester, Minh Nguyen, Chi-hsiang Wang** (Sustainable Ecosystems) won the prestigious international *Forest Products Society Wood Engineering Achievement Award 2006* for the development of a new software tool called 'Timberlife' which will demonstrate wood's credientials as an environmentally and economically attractive building material.

Dr Anthony Hughes (Manufacturing and Infrastructure Technology) received the *Royal Society of Chemistry Award in Corrosion Science* for his contributions to the understanding, prediction and resolution of corrosion problems in highly demanding aerospace applications, bringing intellectually sophisticated methods to bear on operational challenges while maintaining sensitivity to the associated environmental issues.

Dr Tony Koslow (Marine and Atmospheric Research) was awarded the *Don McAllister Award* by the George Institute for Biodiversity and Sustainability and the Marine Conservation Biology Institute for his work on the ecology and conservation of seamount ecosystems.

Dr Lan Lam (Energy Technology) won the *2005 International Lead Award* at the 11th Asian Battery Conference for his exceptional contributions to the ongoing scientific, technical and commercial success of the lead industry.

Dr Trevor McDougall (Marine and Atmospheric Research) received the *2006 Editor's Award* from the American Meteorological Society for outstanding reviews for the Journal of Physical Oceanography.

Dr Keith Millington (Textile and Fibre Technology) received a *Gold Research Medal* from the Worshipful Company of Dyers in

London for his work on textile photochemistry. This led to the invention of the Siroflash process in which a brief exposure to UV light followed by conventional bleaching is used to prepare wool fabric for printing. Siroflash also improves dye uptake and prevents the pilling of wool and cotton knitwear.

Dr Maarten Ryder (Sustainable Ecosystems) received the prestigious *Qilu Friendship Award* from the Shandong Province, China for his achievements made in the Shandong Province in regard to the control of plant diseases using natural soil microbes in wheat, vegetable and cotton crops.

Dr Adya Singh (Ensis) received the *Shorland Medal* by the New Zealand Association of Scientists for his outstanding contribution to basic and applied plant and wood sciences.

Australian Awards

Ms Karen Aitken (Plant Industry) as a member of the CRC team awarded the *CRC Association's 2006 Award for Excellence in Innovation* for its research on disease-resistant forage crops.

Dr Nazmul Alam and **the Laser Technology Project** (Manufacturing and Infrastructure Technology), in collaboration with Swinburne University, the CRC for Welded Structures and eleven power stations won the *TRUenergy & SP AusNet – Bright Ideas Competition* for their Project: 'In-situ laser repair of low pressure turbine blades'.

Dr Bob Anderssen (Mathematical and Information Sciences) was awarded the *Moyal Medal* by Macquarie University for his distinguished contribution to mathematics.

Dr Denis Anderson (Entomology) was awarded the *Goodacre Award* by the Australian Beekeeping Industry for meritorious service to apiculture in Australia.

Dr John Angus (Plant Industry) has been awarded the *Medal of Australian Agriculture 2006* by the Australian Institute of Science and Technology.

Mr Ken Atkinson and the **Carbon Nanotubes team** (Textile and Fibre Technology) won a 2006 *NanoVic Prize for Industry* for their work on carbon nanotube yarns and transparent sheets/webs.

Drs Michael Bange, Brian Duggan and **Stephen Yeates** (Plant Industry) were awarded the *Cotton Catchment Communities CRC Award* for collaboration on northern cotton research.

Ms Stephanie Bannister (Livestock Industries) was awarded the *Alfred Deakin Medal;* an award given to Deakin University's ten most outstanding undergraduate students graduating each year and the *David Stokes Award;* an award given in recognition of outstanding achievement for a qualifying student in the Science and Technology Faculty.

Dr Ken Bevington and the **Citrus Team NSW DPI-CSIRO-SARDI** were awarded the *Riverlink Scientific Team Award* for outstanding contribution to Riverlink research and extension in Sunraysia-Riverland for 'Postharvest Rind Breakdown in Navel Oranges'.

Dr Bernie Bindon (Livestock Industries) was awarded *Rural Press Beef Achiever, Rabobank Red Meat Innovation Awards* for the development, through his leadership of the Beef CRC, of a new research model based on multi-disciplinary, multi-organisational cooperation amongst research institutions and industry partners.

Dr Katharine Bossart (Livestock Industries) was awarded the *City of Greater Geelong/ BioGeelong Researcher of the Year Award* for her role in an international collaboration that identifies a human cell receptor for both Hendra and Nipah viruses. Dr Bossart also won the *Bendigo Bank Biomedical Award* for this research.

Dr Ian Brooker (Ensis) received the *Maxwell Ralph Jacobs Award* by the Australian Academy of Science for his promotion of research in forestry.

Dr Yun Chen, **Mr Arthur Read** and **Dr Brad Sherman**, (Land and Water) in collaboration with Queensland National Resources, Mines and

Water (NRMW) staff were awarded a *NRMW Highly Commended Award* at the NRMW awards in North Region for their work in the Great Barrier Reef Short-term Modelling Project.

Dr Evan Christen (Land and Water) won the *CRC for Irrigation Futures 2005 Leadership Award* for leading the Sustainability Challenge team.

Mr Shaun Coffey (Livestock Industries) was awarded the *University of Melbourne Faculty of Land and Food Resources' Centenary Medal* for outstanding contribution to agriculture in industry, research or education.

Dr Simon Cox (Exploration and Mining) was awarded the *Open Geospatial Consortium 2006 Kenneth D Gardels Medal* for his contributions towards the development and standardisation of 'next generation' geoprocessing.

Mr John Coleman (Land and Water), as part of a collaborative team, won the *2005 Victorian Stormwater Research Excellence Award*. The CRC for Catchment Hydrology team won the award for developing Tools for Evaluating the Financial, Social and Ecological Performance of Stormwater Management Measures.

Dr Arnold Dekker (Land and Water) and **Dr Stuart Phinn** (University of Queensland) (team leaders), **Ms Janet Anstee, Dr Vittorio Brando, Mr Paul Daniel, Mr Alan Marks** (Land and Water) and **Mr Chris Roelfsema** (University of Queensland), won the *Coastal CRC 2005 Excellence in Science Prize* for sophisticated water quality and seagrass mapping using remote sensing data.

Dr Tom Denmead (Land and Water) as a co-author for the paper awarded the *Australian Society of Soil Science Inc 2005 Publication Medal.* The paper was published in the international journal Atmospheric Environment on sulfur dioxide emissions from acid sulfate soils.

Dr Peter Dodds (Plant Industry) was awarded the *Peter Goldacre Award* for 2006 for work on understanding the molecular basis of disease resistance in plants using the flax rust disease model system from the Australian Society of Plant Scientists.

Dr Calum Drummond (Industrial Physics/ Molecular and Health Technologies) and **Dr Chee Tan** (Petroleum Resources) and **team** won the *Royal Australian Chemical Institute Green Chemistry Challenge Award* for environmentally friendly water-based drilling fluids for the petroleum industry.

Dr Andrew Graham (Sustainable Ecosystems) received a *Cassowary Award* from the Queensland Minister for Environment, the Hon Desley Boyle, for his contribution to the conservation and preservation of the Wet Tropics World Heritage Area.

Dr Rob Hough (Exploration and Mining) won the Perth Convention Bureau *2006 International Conference Scholarship* for his work in fundamental mineral exploration.

Dr Geoff Inman-Bamber (Sustainable Ecosystems) was recognised for his contribution to the Australian sugar industry with a *2006 Sugar Industry Innovator and R&D Award.*

Ms Melissa Kowalski (Livestock Industries) was awarded the *City of Greater Geelong/ BioGeelong Animal Health Award* for her work in developing better diagnostics for the plant-associated disease, annual ryegrass toxicity.

Ms Anna Lehmann (Education) was awarded the *2005 Peter Doherty Award for Excellence in Science and Science Education.*

Dr Rich Little (Marine and Atmospheric Research) received the *Modelling and Simulation Society of Australia & New Zealand Early Career Excellence Award* (Socioeconomics) for 2005.

Dr Ian Macreadie (Molecular and Health Technologies) won the *2005 Merck Sharp and Dohme ASM Mycology Award* for career contributions to mycology – specifically yeast genetics and molecular biology.

Ms Dianne Mayberry (Livestock Industries) was awarded a *Science and Innovation Award for Young People in Agriculture, Fisheries and Forestry* for her work on improving animal production on saline land.

Dr Ryan McAllister (Sustainable Ecosystems) was awarded a *2005 John Philip Award for the Promotion of Excellence in Young Scientists.* Dr McAllister is visiting CIRAD and CEMAGRAF in Montpellier, world leaders in integrating human behaviour into models of complex systems with links between society and the environment.

Dr Neil McKenzie and the **ASRIS website team** (Land and Water) won the *ESRI Australia's inaugural Web GIS Challenge* for the best web mapping internet site.

Dr Manny Noakes (Food Science Australia) was awarded the *Flinders University Inaugural Distinguished Alumni Award 2006.*

Drs John Oakeshott and **Robyn Russell** and **team** (Entomology) were awarded a *DuPont Innovation Award* for a bioremediation product, Landguard™, which removes pesticide residues from water.

Ms Maree O'Sullivan (Mathematical and Information Sciences) was awarded the *J B Douglas Postgraduate Award for Excellence in Statistics* from the Statistical Society of Australia (NSW) for excellence in postgraduate research.

Dr Silvia Pfeiffer (ICT Centre) was presented with a *Highly Commended award* at the NSW Pearcey Award for Young Achievers for her pioneering research in web-based technologies and for building a strong track record of commercial engagement with the media.

Drs Warren Potma, Peter Schaubs and **John Walshe** (Exploration and Mining) won an *Exploration and Mining Innovation Award* recognising the efforts of the MERIWA Embedded researcher project for developing a successful technique for transferring technology into the gold mining industry in Western Australia.

Dr Barbara Robson (Land and Water) won a *Modelling and Simulation Society of Australia and New Zealand Early Career Research Excellence Award* for Natural Systems Modelling.

Mr Mark Shepheard (Land and Water) won the *CRC for Irrigation Futures 2005 Teamwork and Collaboration Award* for building the Sustainability Challenge team.

Dr Mark Stafford Smith (Sustainable Ecosystems) was joint winner of the inaugural *Northern Territory Research and Innovations Awards* for exceptional contribution to desert knowledge through his tireless efforts in the development and implementation of the Desert Knowledge vision, culminating in the establishment of the Desert Knowledge Cooperative Research Centre.

Dr Brian Sowerby (Minerals) won the *Australian Nuclear Association Annual Award* for his contributions to the development and application of nuclear science and technology in the minerals and energy industries over 36 years.

Dr David Spratt (Sustainable Ecosystems) received an *Emeritus Award of the International Wildlife Disease Association* in recognition of meritorious contributions to the study and understanding of diseases of wildlife, also being named an emeritus life member of the Association.

Dr Chris Strauss (Molecular and Health Technologies) won the *A J Birch Medal* for excellence in organic chemistry from the Royal Australian Chemical Institute.

Dr James Tickner (Minerals) was awarded the *2006 Frederick White Prize* for his significant contributions to the development of nuclear instrumentation, with applications in the minerals industry, border security and humanitarian demining.

Dr Lewis Wilson (Plant Industry) was awarded the *Cotton Catchment Communities CRC Citizenship Award.*

CSIRO Medals and Awards

The CSIRO Medals 'Honouring Excellence'

The Chairman's Medal

The RNAi team (Plant Industry) won the *2005 Chairman's Medal*. The team led research in one of the most high profile, commercially relevant areas of modern molecular biology. RNAi is the term given to a natural mechanism in plants and animals that specifically destroys RNA in a cell. The team discovered what triggers and directs the mechanism in plants and how to use it for protection against viruses or to switch off genes.

The winners of the *Chairman's Medal* were:

Team leader: **Dr Peter Waterhouse**
Seminal contributors: **Dr Chris Helliwell, Mr Neil Smith** and **Dr Ming-Bo Wang**
Significant contributors: **Mr Geoff Ellacott, Dr Varsha Wesley, Ms Anna Wielopolska** and **Ms Limin Wu**.

The CSIRO Medals for Research Achievement

The *CSIRO Medals for Research Achievement* for 2005 were awarded to:

- **The CSIRO Fluid History Analysis Team** for the development of an innovative suite of techniques that reveal the step-wise fill history of petroleum reservoirs in previously unseen detail, which have positioned CSIRO as the world-leader in the application of fluid inclusion-based methods for reducing risk when oil companies drill exploration wells (see page 22).

Team leader: **Dr Peter Eadington**
Seminal contributors: **Dr Simon George, Dr Keyu Liu** and **Mr Mark Lisk**
Significant contributors: **Mr Mark Brincat, Dr Richard Kempton** and **Dr Herbert Volk**
Other contributors: **Mr Manzur Ahmed, Ms Patricia Cope, Dr Adriana Dutkiewicz,**

Winners of the Chairman's medal from left to right, top row: Mr Geoff Ellacott, Mr Neil Smith, Ms Catherine Livingstone (Chairman), Dr Peter Waterhouse, Dr Ming-Bo Wang and Dr Chris Helliwell. Bottom row: Ms Limin Wu, Dr Varsha Wesley and Ms Anna Wielopolska. Photo: Carl Davies

Members of the Fluid History Analysis team from left to right, top row: Dr Keyu Liu, Dr Herbert Volk, Dr Ron Sandland (Deputy Chief Executive), Dr Simon George, Dr Terry Cutler (CSIRO Board member), Dr Richard Kempton, Mr Mark Brincat, Mr Manzur Ahmed. Bottom row: Ms Heather Middleton, Dr Peter Eadington and Dr Adriana Dutkiewicz. Photo: Carl Davies

Mr Stephen Fenton, Mrs Susannah Gallagher, Mr Luke Johnson, Dr Frank Krieger, Dr Joseph Kurusingal, Ms Heather Middleton, Mr Robinson Quezada, Mr Andrew Ross and **Dr Tim Ruble.**

- **The CSIRO Total Wellbeing Diet Research Team** for the body of scientific research that led to the development of the *CSIRO Total Wellbeing Diet.*

  Team leaders: **Dr Peter Clifton** and **Dr Manny Noakes**

  Significant contributors: **Ms Jane Bowen, Dr Grant Brinkworth, Dr Michael Fenech, Mr Paul Foster, Ms Jennifer Keogh, Meat and Livestock Australia** and **Dr David Topping**

  Other contributors: **Dr Kathryn Baghurst, Ms Kathryn Bastiaans, Ms Cherie Keatch, Mr Mark Mano, Ms Rosemary McArthur, Ms Anne McGuffin, Ms Lisa Moran, Ms Candita Sullivan** and **Ms Julia Weaver.**

- **The NovoSorb Biodegradable Polymer Technology Team** for the development of a novel family of biodegradable polymers for advanced biomedical and tissue engineering applications (see page 23).

  Team leader: **Dr Thilak Gunatillake**
  Seminal contributors: **Dr Raju Adhikari,**

Members of the CSIRO Total Wellbeing Diet Research team from left to right, top row: Ms Julia Weaver, Ms Candita Sullivan, Ms Rosemary McArthur, Dr Ron Sandland (Deputy Chief Executive), Dr Manny Noakes, Dr Terry Cutler (CSIRO Board member), Ms Kathryn Bastiaans and Ms Anne McGuffin. Bottom row: Ms Jane Bowen, Ms Jennifer Keogh, Dr Grant Brinkworth and Ms Andrea Mortensen. Photo: Carl Davies

Members of the NovoSorb Biodegradable team from left to right, top row: Ms Jacinta White, Ms Penny Bean, Ms Tracy Tebb, Dr John Ramshaw, Dr Ron Sandland (Deputy Chief Executive), Dr Terry Cutler (CSIRO Board member), Dr Thilak Gunatillake, Mr Tim Moore, Dr Jerome Werkmeister, Dr Clive McFarland, Dr Stephen Danon and Mr Heng Taing. Bottom row: Ms Veronica Glattauer, Dr Roshan Mayadunne, Dr Ian Griffiths, Dr Raju Adhikari and Ms Tam Le. Photo: Carl Davies

Dr Ian Griffiths (PolyNovo Biomaterials), **Dr Roshan Mayadunne, Dr John Ramshaw, Dr Jerome Werkmeister** and **Dr Clive McFarland** (UNSW)

Significant contributors: **Ms Penny Bean, Dr Stephen Danon, Ms Veronica Glattauer, Ms Tam Le, Mr Heng Taing, Ms Tracy Tebb, Ms Jacinta White** and **Mr Tim Moore** (PolyNovo Biomaterials)

Other contributors: **Mr Rick Aarons, Ms Jan Bingley, Dr Megan Fisher, Dr Kathy Kociuba, Mr Jonathan King, Mr David Lau, Mr Nigel Poole, Dr Greg Simpson** and **Dr Heather St John** (Aortech Biomaterials).

The CSIRO Medal for Business Excellence

The *CSIRO Medal for Business Excellence* was awarded to the **CSIRO Total Wellbeing Diet book team** for the publication of the *CSIRO Total Wellbeing Diet* in the form of a book suitable for and able to be understood by ordinary Australians.

Team leader: **Mr Russell Tait**

Seminal contributors: **Dr Peter Clifton** and **Dr Manny Noakes**

Significant contributors: **Mr Robert Chalmers, Ms Alison Roy, Ms Jan Stokes, Dr Graeme Woodrow** and **Penguin Group (book publisher)**

Other contributors: **Dr Mavis Abbey, Mr Stephen Gilfedder, Mr Warwick Glynn, Dr Atul Kacker, Ms Sue McMaster, CSIRO Enquiries** and **Meat and Livestock Australia.**

The CSIRO Medal for Lifetime Achievement

Dr Jim Peacock (Plant Industry) was awarded a *CSIRO Medal for Lifetime Achievement* for his tremendous impact on CSIRO and

Winners of the CSIRO Medal for Business Excellence from left to right, top row: Dr Mavis Abbey, Dr Graeme Woodrow, Dr Ron Sandland (Deputy Chief Executive), Dr Jack Steele (Office of Executive, Director Business Services), Mr Russell Tait, Ms Alison Roy, Dr Terry Cutler (CSIRO Board member), Mr Stephen Gilfedder and Ms Jan Stokes. Bottom row: Mr Warrick Glynn, Dr Manny Noakes, Ms Julie Gibbs and Dr Atul Kacker. Photo: Carl Davies

science in Australia over the last forty years through his original research, science policy and administration, science education and interactions with industry.

Dr Ron Sandland (Deputy Chief Executive) and Dr Jim Peacock. Photo: Carl Davies

Fellowships and Societies

Dr Brian Boyle (Australia Telescope National Facility), **Dr Andrew Holmes** (Molecular and Health Technologies) and **Dr Steve Rintoul** (Marine and Atmospheric Research) were elected as Fellows of the *Australian Academy of Science.*

Dr Geoff Brooks (Minerals) was elected *Vice-Chairman of the Process Fundamentals Committee of TMS*, a professional organisation encompassing the entire range of materials and engineering, from minerals processing and primary metals production to basic research and advanced applications of materials.

Dr Peter Carberry (Sustainable Ecosystems), **Dr Hugh Dove** (Plant Industry) and **Dr John McIvor** (Sustainable Ecosystems) were elected Fellows of the *Australian Institute of Agricultural Science and Technology.*

Dr Clive Carlyle (Ensis) was awarded the *Hans Merensky Fellowship* for 2005 by Hans Merensky Holdings, South Africa. Dr Carlyle visited the Organisation's operations and will help build research and development opportunities with the timber growing and processing industries in South Africa.

Dr Ian Colditz (Livestock Industries) was awarded an *OECD Research Fellowship* with the Novartis Institutes for Biomedical Research, Vienna.

Dr Sharon Egan (Livestock Industries) was awarded the *R S Merkal Fellowship* from the International Association for Paratuberculosis for outstanding research by a postgraduate student on *Mycobacterium paratuberculosis.*

Dr Paul Fraser (Marine and Atmospheric Research) has been elected to the *Academy of Technological Sciences and Engineering.*

Dr Mike Lacey (Entomology) has been made a Fellow of the *Royal Society of Chemistry* in recognition of his outstanding contribution to chemistry.

Ms Tanya Patrick (Education) was awarded an *Australian Antarctic Arts Fellowship* by the Australian Antarctic Division. Ms Patrick will visit Antarctica and produce a special Antarctic issue of *Scientriffic* magazine.

Dr Simon Potter (Ensis) was awarded the prestigious *Gottstein Fellowship* for 2006. The Fellowship is awarded by the Joseph William Gottstein Memorial Trust Fund which was established in 1971 as a national education trust to promote the development of Australia's forest products industry.

Dr Lister Staveley-Smith (Australia Telescope National Facility) has been awarded one of two inaugural *Premier's Fellowships in Radio Astronomy* from the West Australian Government.

The CSIRO Awards – Celebrating 2005 Achievements

One-CSIRO Award

The *One-CSIRO Award* was awarded to the Centre for Complex Systems Science and Marine and Atmospheric Research for the success of their cross-disciplinary collaboration, and the integration of skills not found within any single CSIRO Division. Team Leader: **Dr John Finnigan** Team members were: **Dr David Batten, Dr Fabio Boschetti, Dr Roger Bradbury (ANU), Dr Markus Brede, Dr Freeman Cook, Ms Cheryl Drew, Dr Ian Enting, Dr Nicky Grigg, Dr David McDonald, Ms Jacqui Meyers, Dr David Newth, Mr Glynn Rogers, Mr Philip Valencia, Dr Brian Walker, Mr Paul Walker, Dr Rachel Williams** and **Dr Dave Winkler.**

Look Out!!! Award

The *Look Out!!! Award* was awarded to the Stimuli Responsive Polymer Additives Team, CRC-Polymers and Molecular and Health Technologies for developing methods to control photochromic dye switching speeds in polymers.

Team leader: **Dr Richard Evans.** Team members were: **Dr Graham Ball, Dr Jonathan Campbell, Prof Thomas Davis, Dr Tracey Hanley, Dr Lachlan Lee, Dr David Lewis, Dr Nino Malic, Dr Melissa Skidmore** and **Ms Georgina Such.**

Partnership Excellence Awards

The *Partnership Excellence Award* was awarded jointly to the Maldives Tsunami Task Force from CSIRO Marine and Atmospheric Research and partners from AIMS, GBRMPA, JCU, AusAID and the Maldives Research Centre for their assistance in post-tsunami relief efforts. The Australian team of reef system experts assisted with an assessment of reef damage in the islands.

Team Leader: **Dr John Gunn**. Team members were: **Mr Ofi Ahsan Adam, Dr Mohammed Shiham Adam, Ms Anne Domaradzki, Mr Laurie Engel, Mr Ismail Haleem, Dr David Milton, Mr Ibrahim Naeem, Mr Ahmed Najeeb, Mr Abdulla Naseer, Mr Kevin Parnell, Mr Yousef Shafiu, Mr Hugh Sweatman, Mr Angus Thompson, Mr David Wachenfeld, Mr Aha Waheed, Ms Mary Wakeford** and **Dr Hussain Zahir.**

The *Partnership Excellence Award* was awarded jointly to the Mallee Sustainable Farming Team, Sustainable Ecosystems, for the development of a tri-state participative R&D project with the principal objective of increasing the adoption of sustainable but profitable farming systems across the entire low-rainfall Mallee regions of SA, NSW and Victoria. Team leader: **Dr David Roget**. Team members were: **Dr Jeff Baldock, Mr John Coppi, Mr Bill Davoren, Dr Gary O'Leary, Dr Victor Sadras** and **Dr Gupta Vadakattu.**

The *Partnership Excellence Award* was awarded jointly to the Western Australian Marine Science Institution, CSIRO Marine and Atmospheric Research, the WA Department of Fisheries and the University of Western Australia. The team established a vision for a Western Australian Marine Science Institution, to be established as a strong partnership among 14 Western Australian marine research, education and natural resource management organisations and private companies. Team leaders: **Dr Tony Haymet** and **Dr John Keesing.** Team leaders: **Dr Bernard Bowen, Dr Alastair Robertson** and **Dr Peter Rogers.**

Occupational Health and Safety Achievement Award

The Occupational Health and Safety Achievement Award was awarded to the Ergonomics@Work team, Minerals. The program revitalised the promotion of safe work practices that prevent musculoskeletal injuries. By focusing on the overall wellbeing of staff and not just the compensable risk profile, the program helped change poor work practices and improve the work environment. Team leaders: **Ms Wendy**

Hayes and **Dr Angelica Vecchio-Sadus.** Team members were: **Mr David Abernethy, Ms Kathy Laurenceson, Ms Tracey MacDonald** and **Ms Antonia Riley** (Minerals) and **Mr Jeff Allen** (Exploration and Mining).

Environmental Achievement Awards

The *CSIRO Environmental Award* was awarded jointly to Site Management staff at Land and Water, Urrbrae, Adelaide, for implementation of leading environmental management initiatives at the site. Team leader: **Mr Bob Harris.** Team members were**: Mr Peter Bicanin, Mr Toney Hirnyk, Mr Brian Loveys, Ms Sue Maffei, Mr Chris Miller, Mr Marc Praulins, Mr Steve Rogers** and **Mr Ian Rosman.**

The *CSIRO Environmental Award* was awarded to the Sustainability@work team, Sustainable Ecosystems for their outstanding contribution during 2005 to successfully implementing the CSE Sustainability@work initiative which provides an exemplar for implementing the operational aspects of the Environmental Management System in CSIRO. Team leaders: **Mr Glen McPhee** and **Mr Jeff Marchant**. Team members were: **Ms Lyn Atkins, Mr Brett Cocks, Mr Glenn Dibben, Ms Joydee Frizzell, Ms Sandra Kay, Mr Bob Moore, Mr Garry Rabbett, Ms Jean Rae, Ms Teresa Shanahan, Ms Julie Thygesen** and **Ms Kylie Verry.**

Service from Science Awards

The *Service from Science Award* was awarded jointly to Land and Water for the Catchment Modelling Toolkit. The toolkit is a collection of software, frameworks, models, data and supporting documentation that is intended to improve the standard of catchment modelling in Australia. Team leaders: **Mr Geoff Podger** and **Mr Joel Rahman**. Team members were: **Mr Robert Bridgart, Dr Yun Chen, Mr John Coleman, Ms Susan Cuddy, Mr Geoff Davis, Mr Warrick Dawes, Mr Andrew Freebairn, Dr Mat Gilfedder, Dr Peter Hairsine, Mr Harold Hotham, Mr Ben Leighton, Mr Nick Murray, Mr Jean-Michel Perraud, Mr Arthur Read, Mr Shane Seaton, Mr Matt Stenson, Dr Rob Vertessy, Dr Peter Wallbrink** and **Dr Scott Wilkinson.**

The *Service from Science Award* was awarded jointly to the Vapormate Team, Entomology. The VAPORMATE® team has delivered a fast-acting, safe and versatile fumigant to the Australian grain industry. Team leader: **Dr Victoria Haritos**. Team members were: **Mrs Katherine Damcevski, Mr Greg Dojchinov** and **Ms Gaye Weller.**

Go for Growth Award

The *Go for Growth Award* was awarded to the P@NOPTIC Search Engine Team, ICT. The research team has developed an enterprise Search Engine that allows users of an organisation's website to find the right information they are looking for first time. Team leaders: **Mr Stuart Bell** and **Dr David Hawking**. Team members were: **Mr Francis Crimmins, Dr George Ferizis, Mr Brett Matson, Mr Tom Rowlands, Mr Matthew Sheppard** and **Mr Peter Thew.**

Section 2
Performance against our strategic objectives

Performance against our strategic objectives

Consistent with the Government's outcome and outputs framework and CSIRO's Triennium Funding Agreement, this section provides a comprehensive report on CSIRO's performance against the strategic goals and objectives as articulated in CSIRO's Strategic Plan 2003–07 and the specific success measures identified in CSIRO's Operational Plan for 2005–06.

Goal 1 – Focusing our science investment

CSIRO contributes to the National Innovation System in a unique way in that we deliver integrated science solutions that help drive national innovation. CSIRO's National Research Flagships are our key delivery mechanism for Australia's most important and complex challenges and opportunities in the areas of energy, water, health, and in growing new industries based on our rich mineral and agricultural resources, and in developing sustainable wealth from our oceans. Flagships ensure Australia can seize opportunities only attainable through large-scale partnerships and investment. Flagships focus CSIRO's and Australia's research efforts in areas of national significance and priority.

1.1 Play a significant role in delivering on Australia's National Research Priorities (NRPs)

Success measures:

- *Government acceptance of CSIRO's NRP Implementation Plan*
- *Share of science investment on NRPs*
- *Evidence of impact on NRPs*

The NRP Standing Committee has commended CSIRO for presenting a clear and concise account of its research against the NRP activities:

- for 2005–06, CSIRO's alignment to the NRPs represented 87 per cent of total R&D investment and an increase of three per cent from the previous year
- the Flagships Program continues to be CSIRO's key response to the NRPs. Each of the six Flagships addressed two or more of the NRP goals as their major objective. Each Division contributed to at least three NRP goals as major objectives.

1.2 Build critical mass and ensure quality in our core research programs

Success measures:

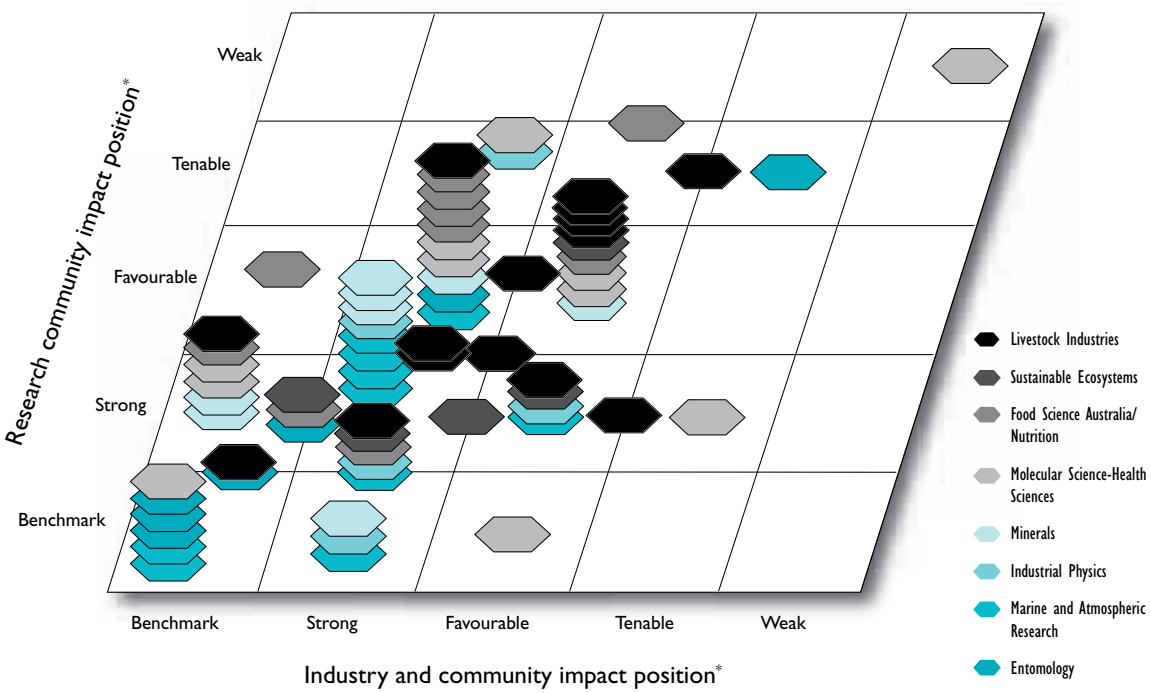
- *Implement the Program Performance Framework for core research*
- *Share of programs with critical mass*
- *Science assessment process (including implementation of recommendations of Divisional and other science reviews as appropriate)*

CSIRO's Program Performance Framework (PPF) has been implemented across the Organisation. The planning and reporting frameworks for each of our 17 Divisions, six Flagships, and two joint ventures are now based on themes, streams, research and engagement goals, and roadmaps. The PPF is contributing to CSIRO's goals of delivering excellent science while also developing an effective 'path to market'.

During 2005–06, CSIRO completed the second year (of the first cycle) of the Divisional science assessment reviews in line with its Triennium Funding Agreement for 2004–07. This important peer review process is an external assessment of each Division's science capabilities by independent experts, from both Australia and overseas.

These science reviews are a leading example of a robust, rigorous and independent process of assessment involving national and international scientific experts. The first two years of the cycle have confirmed that CSIRO's research capabilities, as a mission-driven research organisation, are appropriately aligned against the two dimensions of research community impact and industry/community impact (See Figure 1). The process has been well received

Figure 1: CSIRO Divisional Science Reviews



* See glossary for a guide to interpretation of definitions

by Government and is closely aligned with the broader and evolving national Research Quality Framework.

The reviews also continue to reaffirm:

- the high calibre of science being conducted in CSIRO
- the clear impact of the science at the regional, national and international level
- impressive linkages and delivery with relevant industry groups
- a high degree of enthusiasm by staff at all levels
- that emerging science directions are appropriate and that world-class status is within the reach of additional research groups in CSIRO through enhanced focus, increasing the size of research groups or targeted recruitment for senior scientists.

The keystone of the review process is the testing by the external review panel of each Division's self-assessment of its capabilities and their relationship with both the underpinning science-base and outcome-oriented applications. The assessment ratings use a scale from *benchmark* to *weak*, and are given for the research community and industry/community impact positions. Internal and external feedback has indicated that these criteria continue to be feasible and appropriate.

The findings of these reviews are provided to the CSIRO Board, along with a Divisional response. These findings are then provided to the Minister for Education, Science and Training via the Chief Scientist. There is a follow-up, post-review implementation report due 12 months later. The aim of the 12 month progress report is to convey the impact on the Division of both the science assessment review and other Divisional initiatives to improve science quality.

During 2005–06, the following Divisions were reviewed: Sustainable Ecosystems, Livestock

Industries, Land and Water, Energy Technology, Mathematical and Information Sciences and Exploration and Mining.

The first of the 12 month follow-up reports was provided to the Board for CSIRO Entomology: the Division has made significant progress in implementing the major recommendations of its Science Review, which was conducted in February 2005. Key initiatives implemented at Entomology to improve science quality and impact have already resulted in improved scientific publication results. Entomology has also reshaped its research portfolio with the view to focus future growth in the area of biodiversity. Food Science Australia has also made good progress following its review in April 2005. The review has assisted in redesigning its research portfolio, including the operational and strategic merger with CSIRO Human Nutrition, with the view to enhance the nutritional status of Australians and the competitiveness of the food industry. Initiatives, including monitoring procedures, have been implemented to improve science quality, scientific career development and scientific publications.

CSIRO Livestock Industries was reviewed at the beginning of 2006 and has made reasonable progress to date, including steps towards addressing the long-term financial sustainability of the Australian Animal Health Laboratory.

The merger between Molecular Science and Health Sciences and Nutrition's Protein and Structural Biology research groups to form CSIRO Molecular and Health Technologies (CMHT) has been completed with the appointment of a new Chief, Dr Graeme Woodrow.

1.3 Champion National Research Flagships to improve the lives of Australians and advance Australia's key industries

Success measures:

- *Flagship Programs operating successfully*
- *Proportion of Flagship Annual Performance Goals (APGs) achieved*
- *Share of CSIRO science budget (appropriation funding) in Flagships*
- *Total external revenue for Flagships*
- *Adoption and impact of Flagship Program outputs*
- *Active Flagship partnerships (new and developing partnerships with external parties)*

The six Flagships continue to perform strongly with some exciting achievements during 2005–06 with concerted progress (70 per cent of stream Annual Performance Goals achieved) towards their long-term objectives. In 2005–06, Flagship funding grew to 24.2 per cent of CSIRO appropriation (inclusive of corporate overheads), progressing towards our long-term goal of 30–40 per cent of resources devoted to Flagship Programs.

Some Flagship highlights for the year include:

- genetic improvement of farmed Atlantic salmon and prawns enhancing the profitability of these key aquaculture industries (Food Futures) (see page 15)
- establishment of the Australian Cancer Grid to facilitate linkage of cancer-related data across Australia (Preventative Health)
- development of a new mould casting process for magnesium providing major cost saving in the production of magnesium products (Light Metals)
- a major study on the potential impacts of climate change on Melbourne's water resources providing valuable policy input to government (Water for a Healthy Country)
- development of the 50-year projection of seabed change offering potential cost saving to the oil and gas industry (Wealth from Oceans)
- successful demonstration of storage of carbon dioxide in coal beds providing the potential to significantly reduce greenhouse emissions (Energy Transformed).

External revenue in the Flagships for 2005–06 was $26.8 million which was $7.7 million below original budget. However, external in-kind support

(such as use of partner's facilities and research expertise) was strong and estimated at $15.3 million for the year. This has meant that Flagship progress has not been adversely impacted by the targeted revenue shortfall. Partnerships with research and delivery collaborators have grown strongly with more than 250 industry partners and research collaborators now involved in the Flagships Program.

2005–06 was the first full year of operation for the Flagship Collaboration Fund. Two of the seven round one cluster agreements have been executed. They are:

- the Food Futures Cluster – Learning the principles of olfactory pattern recognition from invertebrates that involves a partnership between the Australian National University and Monash University
- the Light Metals Cluster – Australian Partnership in Light Metals Research, with a partnership between the CRC for Cast Metals Manufacturing (CAST CRC) and the Australian Research Council (ARC) Centre of Excellence for Design in Light Metals.

ARC Federation Fellows are involved in leading both of these first round Collaboration fund clusters.

There has been considerable progress towards promoting the Flagships Program in Federal Parliament and government this year. (see page 63 for information on 'Science for Breakfast' briefings). The report 'Improving lives through partnership' was published in June 2006 and widely distributed with positive responses received. The report can be viewed at: www.csiro.au/flagshippartnership

An external review of the National Research Flagships' progress to date was undertaken during June 2006 and will be a major component of CSIRO's 2007 Triennium funding submission. The Review, which was chaired by Professor Robin Batterham, former Chief Scientist, has strongly endorsed the Flagship model and has concluded that the Flagships are delivering powerful scientific solutions to national problems. In the words of the Panel, the 'overwhelming conclusion from the Panel is that the Flagship model has provided a compelling framework within which broad ranges of research capabilities are assembled to focus on outcomes of national significance to Australia'.

The Panel found that the quality of the science outcomes, the alignment with challenging national goals, the strength and quality of external partnerships and the strong underlying governance processes were areas of particular note. The Flagships can improve the articulation of the path to impact of research activities and, the broader understanding and use of the social sciences, particularly where impact is primarily dependent on behavioural change, is encouraged. The Panel observed that the success of the Flagship model could be more broadly applied across the NIS and they concluded that, 'It would appear that Flagships offer the most promising mechanism yet to drive large-scale activity addressing National Research Priorities in a collaborative, cooperative and intensively managed manner.'

1.4 Increase the impact of major cross-Divisional activities through a focused strategic investment process

Success measures:

- *Major cross-Divisional programs (MXDPs) operating successfully*
- *Adoption and impact of outputs from MXDPs*

This year we conducted the first round of our new Science Investment Process in which we undertook a detailed, whole-of-CSIRO analysis of our entire science portfolio against a robust set of criteria, and made investment decisions in seeking to maximise the relevance and impact of our science.

The goals of the Science Investment Process were to:

- increase linkages across the Organisation
- tap into our distinctive strengths in cross-disciplinary initiatives
- encourage longer-term perspectives in science planning
- increase transparency and rigour of decision making right through the Organisation
- promote a trust-based approach through which the correct people are making the appropriate decisions.

This has been a resounding success on a number of fronts including the increase in number of cross-organisational and cross-discipline activities.

The most significant MXDPs which CSIRO has established are: Minerals Down Under; Terabyte Science; Secure Australia (Counter-Terrorism); Sensors and Sensor Networks; and Synchrotron Science consistent with the recommendations from the outcomes of the Science Investment Process.

Minerals Down Under was fully supported with a budget of $11.9 million for 2006–07. Its rationale and scope has been developed through consultation with the Minerals Sector Advisory Council, the Flagship Oversight Committee and extensive involvement of industry stakeholders. A series of challenge workshops have been held and an industry review has been completed to identify and focus the proposed research into high impact areas.

The Terabyte Science initiative received $1 million in seed funding to support the development of a business case and develop early applications to apply to sensor networks.

The investment in Secure Australia (Counter-Terrorism) was doubled to a total of $7 million, an equivalent level to that of the Defence Science and Technology Organisation (DSTO) in the Publicly Funded Agencies' Collaborative Counter-Terrorism (PACCT) research program.

Through the Emerging Science Initiative and the Synchrotron Science project, six new postdoctoral positions have been appointed in CSIRO to build an internal capability in synchrotron techniques to support the established science programs.

During 2005–06, CSIRO has strategically reviewed its work in the area of Agricultural Sustainability across six of its Divisions with the view to provide a more focused research program and deliver greater impact. The key recommendations of this review will be implemented in 2006–07.

Examples of CSIRO research demonstrating the impact of major cross-Divisional activities can be found at www.csiro.au/annualreport

Goal 2 – Delivering world-class science

CSIRO's focus is on delivering world-class science solutions that create value for Australian industry and communities. In an increasingly competitive world, this requires CSIRO to be internationally well-connected and respected for its scientific leadership. We recognise that our people are the key to our international reputation for world-class science and that disciplined project management is also vital to successful delivery.

2.1 Concentrate people processes on developing, attracting, exciting and retaining talent

Success measures:

- ***Staff satisfaction index (Insight survey)***
- ***Staff commitment and engagement (Insight survey)***

- *Number of postgraduate students supervised*
- *Number of postdoctoral fellows*
- *New Federation Fellows in CSIRO*

A number of initiatives were undertaken in 2005–06 to improve internal communication related to change management including the establishment of the Change Partner Network and Strategy in Action Workshops to keep the leadership of all business units (more than 350 staff) informed, and to enable them to advise and support staff through the change process.

A full staff survey was not conducted during the reporting year, with the Insight survey now operating on a standard two year cycle. The next full survey is scheduled for 2007. In 2005–06, a sub-sample of staff contributed to the Enterprise Feedback Network, and along with the Change Partners, provided regular and invaluable feedback on organisational change initiatives.

Table 1: CSIRO staff satisfaction

Insight survey	2003	2005	2006
Staff satisfaction index	66	67	n/a
Target (global R&D norm)=63			

The Change Program Office works with the newly-formed Strategic Program Oversight Committee and Executive to respond to the issues raised by this feedback.

The Enterprise Agreement was implemented in November 2005. Work continues on defining CSIRO's approach to capability management and alignment of human resources systems.

In regard to CSIRO's engagement with postgraduate training, in partnership with university colleagues, the overall number of postgraduate students supervised, co-supervised and/or sponsored by CSIRO, currently totalling

Table 2: Number of students supervised and sponsored, and number of postdoctoral fellows employed by CSIRO

Sponsorsed	2001–02	2002–03	2003–04	2004–05	2005–06
PhD	144	179	219	232	259
Masters	9	4	3	11	8
Honours	8	11	13	2	10
Total sponsored	**161**	**194**	**235**	**245**	**277#**

Supervised	2001–02	2002–03	2003–04	2004–05	2005–06
PhD	433	425	464	463	352
Masters	53	48	46	32	40
Honours	71	62	56	43	31
Total	**557**	**535**	**566**	**513^**	**423**
With CRC	26%	21%	22%	23%	26%

 # This includes 215 under full sponsorship and 62 under partial sponsorship.

^ 2004–05 student numbers restated due to a misallocation of 25 students.

Postdoctoral fellows	2002–03	2003–04	2004–05	2005–06
Postdoctoral fellows	207	259	283*	290

**Number revised down from 288 (reported in the 2004–05 Annual Report) following recalculation.*

700 (as at June 2006), fell during the year, although the number of these students financially sponsored by CSIRO rose by 13 per cent over the year.

The number of postdoctoral fellows continues to show a steady year-on-year increase.

As noted in last year's Annual Report, CSIRO has established a special talent fund aimed at attracting high-performing, mid-career scientists from around the globe. Four appointments were made in 2005–06 under this scheme.

2.2 Optimise delivery of all research activities by improving project management

Success measures:

- *External/internal audit findings on project management practice*
- *Customer assessment of CSIRO 'Process and People'*
- *Proportion of projects completed on time, on brief and on budget*

In 2005–06, as part of wider improvements to the coordination of change management activities in CSIRO, ongoing development of project management practice has been integrated into the Project Leadership Initiative (PLI). During the year there was an eight point (nine per cent) improvement in project management practices as measured by the Organisation's Project Management Index.

The Project Management Index covers aspects of financial management, appropriate information in systems, cost attribution and project management training. The index was developed to take an active role in monitoring and improving project management practices in CSIRO. The Project Management Index (Table 3) is calculated using comparatives between planned and actuals and a lower score indicates better compliance with project management policy.

The Project Leadership Initiative was established in mid-2005 to address the wide variation in the current state of project leadership and management across the Organisation. Over a three-to-five year timeframe, PLI aims to identify, recommend and implement approaches that help CSIRO to improve the level of project leadership across the board, help us get better at working across boundaries and to ensure that CSIRO is well-placed to continue to deliver even greater impact from our research investments.

As a first step, a pilot project in Livestock Industries undertook a detailed scoping and diagnostic exercise, engaging with each of the other Divisions and the Flagships to understand the current status of aspects of project leadership and specific aspirations and needs. The scope and proposed approach to implementation has been formally approved and the team is now in a position to begin implementation in the first wave of Divisions. The focus for 2006–07 will be on building Foundations: an improved framework and approach to project management; skill-building in project leaders; tools to provide functional support to project leaders; and organisational development design work to further embed some of the changes.

Customer Value Survey (CVS) scores also provide an external assessment of attributes relevant to project management from the perspective of our customers. The most recent

Table 3: Project Management Index

Project Management	2002–03	2003–04	2004–05	2005–06
Relevant Strategic Objective 2.2				
Project Management Index*	n/a	85	85	78

* *A lower score indicates better compliance with project management policy. See glossary for interpretation of Project Management Index.*

Table 4: Customer assessment of CSIRO's performance: quality attributes

Attribute	Year to Jun 2004	Year to Jun 2005	Year to Jun 2006
Product and service			
CSIRO score	7.7	7.1	7.1
Comparative score	109	104	105
Process and people			
CSIRO score	7.5	7.1	7.0
Comparative score	108	105	104

See glossary for a guide to the interpretation of CVS scores.

results (Table 4) show that CSIRO achieved comparative value scores of 105 and 104 respectively for 'products and services' (on brief) and 'processes and people' (on time and budget) respectively. These scores indicate that customers who responded to the survey rated CSIRO more highly on these attributes than alternative providers.

During 2005–06, CSIRO ran two CVS surveys. A new CVS survey has been piloted successfully. The CVS results reported are based on the rolling average of the results from the last four surveys.

As noted in strategic objective 1.2, the implementation of CSIRO's Program Performance Framework (PPF) provides a mechanism for the active assessment of project performance in the light of both annual and longer-term goals. These regular internal PPF reports provide evidence of a significant level of resource reallocation including the 'fast-failing' of projects where warranted on the basis of past performance and future prospects.

2.3 Build our global recognition for leadership in our chosen science domains

Success measures:

- *Number of publications by type*
- *Citations of publications*
- *Number of publications, excluding client reports, per research scientist/engineer*

CSIRO's publication rates continue to increase with a five per cent increase in the number of journal articles published in 2005 compared with the previous year. The total increase across all publication types (excluding client reports) rose by over 13 per cent, with reports to clients increasing by over 30 per cent. Importantly the number of publications per research scientist continues to increase. Publication numbers have risen consistently over the past five years.

Relatedly, our citation rates (a critical measure of science quality) have also increased over the same period – up from 9.87 citations/papers in 2004 to 10.46 in 2005. This rate of increase is greater than the Australian average and almost double that of the world average. CSIRO's citation average remains second only to the ANU in Australia and is well above both Australian (9.08) and world (8.62) averages. CSIRO scientists also published 12 papers in the prestigious journal *Nature* (and its affiliates) in 2005, representing a new benchmark for us.

CSIRO now ranks in the top one per cent of the world's leading science institutions in 13 of 22 research fields (up from 11 in 2002) based on the total number of citations to papers published in these fields. The new field is computer science. CSIRO ranks sixth in the world in

the fields of Plant and Animal Sciences and Agricultural Sciences and seventh in the world for Environment/Ecology.

Our patent portfolio has also continued to grow, with increases in both the numbers of granted patents and live patent application cases.

Trend data for CSIRO's publication and patenting activity are shown in Tables 5 and 6.

Table 5: CSIRO publications and reports (number in each calendar year)

Type of publication	2001	2002	2003	2004	2005
Journal articles	1 631	1 686	1 836	1 858	1 945
Conference papers	1 096	1 142	1 428	1 713	1 852
Technical reports	153	240	442	277	620
Books and chapters	128	223	240	267	238
Total	**3 008**	**3 291**	**3 946**	**4 115**	**4 655**
Publications per research scientist/engineer	1.98	2.11	2.49	2.58	2.92
Client reports	9 324	10 486	8 451	8 242	10 774

Table 6: CSIRO intellectual property (number as at 30 June each year)

Patent category	2002	2003	2004	2005	2006
Inventions (patent families)	733	779	754	745	780
New inventions[3]	80	92	89	79	90
Current PCT[1] applications	104	90	92	95	74
Granted patents	1 801	2 002	2 079	2 048	2 113
Live patent cases	3 537	3 965	3 961	3 919	4 084
Australian trade marks	262	287	290	306	281
Foreign trade marks	84	93	92	100	91
Australian plant breeder's rights	65	62	77	80	113
Foreign plant breeder's rights	17	17	17	21	17
Australian registered designs	8	5	3	3	2
Foreign registered designs	9	12	12	12	12
Current Impact Index[2]	0.53	0.56	0.65	n/a	n/a

[1] *Patent Cooperation Treaty*

[2] *The Current Impact Index for the calendar year indicated. See glossary on page 206 for definition. The 2004 result shown here is for quarter one only. These data were sourced from CHI Research Inc. Later data not available due to change in provider.*

[3] *Of the 134 provisional applications in 2006, 45 are multiple applications filed in support of several inventions and these will ultimately finish up as one or two patent families. Therefore, the number of inventions for the purpose of comparison to previous years is approximately 90.*

2.4 Help Australia play a leadership role in major international science facilities such as the Square Kilometre Array

Success measures:

- *Australian engagement in the Square Kilometre Array (SKA)*
- *Initiatives to establish international science facilities*

CSIRO, through the Australia Telescope National Facility (ATNF) is taking a lead role in managing Australia's R&D for the SKA. Western Australia (WA) announced the creation of a radio astronomy park at Mileura, the Australian candidate SKA site. CSIRO proposes to consolidate Australia's credentials for SKA by establishing the Mileura site as a radio-quiet zone and world-premier radio astronomy location.

The plan is to construct a radio telescope of unparalleled capability on the Mileura site, based primarily on the CSIRO-led extended New Technology Demonstrator (xNTD) telescope technology. International collaboration on the telescope has been established with the USA and South Africa and collaboration with India and Canada is also being explored. Australian participants include CSIRO, the University of Sydney, University of Melbourne, the University of Tasmania, ANU, Curtin University and the University of WA.

In addition to the technical research and development towards the new facility, high priority activities include engaging international collaborators, establishing good governance arrangements for the facility, and supporting the WA State and Commonwealth Governments in international engagement regarding the SKA project.

Progress on the NTD and planning for the xNTD is proceeding according to plan. Two antennas obtained from Sydney University have been completely refurbished and erected at Marsfield, and the cabling and development of the antenna control systems has been completed. The prototype focal plane array has been integrated into the NTD receiver and digital beamforming equipment and testing on the antennas has begun. Three companies have been selected to prepare xNTD antenna design cost, feasibility and manufacturing studies within Australia. In December 2005, an industry consortium including CSIRO was awarded an AusIndustry, Industry Cooperative Innovation Program (ICIP) grant for an SKA Industry Cluster Mapping project.

CSIRO has also been very involved in discussions around the development of the National Collaborative Research Infrastructure Strategy (NCRIS), part of Backing Australia's Ability – Building our Future through Science and Innovation – which provides for major research facilities, supporting infrastructure and networks necessary for world-class research. CSIRO has a significant interest in seven of the ten initial priority capabilities identified by the NCRIS Roadmap, as well as two additional capabilities currently undergoing scoping studies. This represents a significant opportunity for CSIRO to help build national capability in partnership and, in cases where appropriate, to take a leadership role in the management and/or operation of major facilities in the National interest.

Goal 3 – Partnering for community impact

Partnering and collaboration arrangements are one of the significant ways in which CSIRO can leverage its existing capabilities and resources, both in discovery and delivery, for the benefit of Australia.

The spectrum of arrangements includes:

- joint venture entities, such as Ensis in the forestry and forest products domain and Food Science Australia with the Victorian Government
- joint venture operations such as Graingene, a joint venture focused on the development of new traits for wheat germplasm, the Queensland Centre for Low Emission Technology, and the Centre for Plant Biodiversity Research
- Cooperative Research Centres (CRCs) where CSIRO has been involved in more than 120 over the lifetime of the program
- collaborative research activities such as the West Australian Energy Research Alliance with the University of Western Australia and Curtin University and industrial partners
- through the Flagship Collaboration Fund with university and other publicly funded research agency partners
- accommodation – leveraged, with research synergy collaborative arrangements (such as the Bioscience Precinct with the University of Queensland)
- commercially driven arrangements including wholly or partly owned subsidiaries and spin-offs (eg Intellection Pty Ltd and Intalysis Pty Ltd)
- memoranda of understanding (such as CSIRO has with a number of overseas R&D organisations and currently with the Australian Bureau of Meteorology)
- other research alliances (eg as a founder member of the Global Research Alliance)
- a wide range of other contractual relationships (eg supplier, licensor, guarantor or research provider).

3.1 Focus and intensify collaboration with universities, Cooperative Research Centres (CRCs) and other agencies

Success measures:

- ***Partnerships focused on clear strategic goals***
- ***Partner feedback from collaboration with universities, CRCs and other agencies***
- ***Co-location of new facilities***
- ***Quality of CRC commercial engagement***

Significant progress was made during the year on improving the strategically important relationship between CSIRO and Cooperative Research Centres (CRCs). Mechanisms have now been put in place to foster ongoing dialogue between CSIRO and the CRC Association via membership of Sector Advisory Councils (SACs), by relevant CRC Chairs and Chief Executive Officers (CEOs), along with regular meetings between senior CSIRO personnel and Chairs and CEOs of the CRCs.

CSIRO continues to be committed to the CRC Program and during 2005–06 was a participant in 47 of the 71 currently active CRCs. Of these 47, CSIRO was a core participant in 44 CRCs, a supporting participant in two CRCs and an affiliate participant in the other. CSIRO's lifetime involvement in the CRC Program equates to participation in 120 CRCs and over $1 billion in total CSIRO investment. Ten Round 10 bids with CSIRO engagement (of a total of 11) have progressed to the next stage for submitting full business cases.

Seventeen applications were received for the second year of the CSIRO/Monash Collaborative Research Support Scheme with seven collaborative projects funded in 2005. The Scheme focuses on synergies through co-location at the Clayton site, as well as priority R&D areas agreed between CSIRO, Monash and the Victorian Government. Intense collaboration is emerging with the University and the State Government as part of a joint bid for National Collaborative Research Infrastructure Strategy (NCRIS) funding for Characterisation and Fabrication infrastructure. This will involve the sharing of facilities around the Monash campus and the Synchrotron site in Clayton.

Sixteen applications were also received for the 2005 round of the University of Melbourne – CSIRO Collaborative Research Support Scheme (CRSS), with nine collaborative projects funded. The nine new projects add to the portfolio of existing projects that are ongoing from 2004. Overall project duration is capped at two years, with the grant set at a maximum of $30 000 per year. The Scheme has two prime foci: (1) support for promising early career scientists to assist in their development of both external collaborations and a track record of successful grant applications, and (2) an intention to foster wide, cross-disciplinary projects, for example, connections that involve the university's legal, social, economic or political scientists and with those in CSIRO's more traditional biophysical domains of research.

Plans for the Waterford Minerals and Chemistry Precinct in Western Australia are progressing well. The facility will focus on hydrometallurgy, applied chemistry, forensic chemistry, nanochemistry and water. The precinct will be home to researchers and students from CSIRO, Curtin University, Chemistry Centre (WA government) and will be headquarters of the A J Parker Centre and the Centre for Sustainable Resource Processing CRCs, plus Western Australian offices of AMIRA International.

A Memorandum of Understanding (MOU) between CSIRO and the Queensland State Government for the approximately $400 million Ecoscience Precinct, Boggo Road and the Health and Food Precinct, Coopers Plains developments has been signed by all parties. The development has been announced in the Queensland State Budget. Approval processes are now proceeding.

In order to strategically grow Australia's core ICT research skills and capabilities, CSIRO, through the ICT Centre, has funded a collaborative program in excess of $1 million for PhD scholarships at the following universities: Australian National University; University of New South Wales; University of Sydney; University of Technology, Sydney; Queensland University of Technology and the University of Queensland.

Under a common framework agreement negotiated with all six universities – $150 000–$200 000 of funding has been provided to each university to fund PhD scholarships and top-ups over three years in areas of ICT research that are aligned with CSIRO capabilities and research theme outcomes.

In principle funding has been agreed between all parties (CSIRO, James Cook University (JCU), Australian Institute of Marine Science (AIMS) and the Queensland Department of Primary Industries and Fisheries) for the development of the Australian Tropical Science and Innovation Precinct development at JCU. The development was announced by the Queensland State Government on 16 June 2006.

Progress continues on the development and finalisation of the science and business plans for the Western Australian Marine Science Institution (WAMSI) joint venture. The initiative will involve CSIRO, AIMS, Bureau of Meteorology, Curtin University, Edith Cowan University, Murdoch University and the University of Western Australia, State Government Natural Resource Management agencies and Woodside Energy Ltd.

The Flagship Collaboration Fund, which is specifically targeted at promoting collaboration with universities and other Publicly Funded Research Agencies, has been successfully launched, with the first of the Cluster agreements recently executed. Activity in the areas of Flagship Fellowships, research projects and postgraduate studentships continues to grow (see strategic objective 1.3).

Agricultural Research Western Australia (ARWA), an unincorporated Joint Venture between the Department of Agriculture and the Universities of WA, Murdoch and Curtin, have further strengthened their relationship with CSIRO through inviting the Organisation as an independent member of the AWRA Board and Executive Management Group.

CSIRO and the Australian Nuclear Science and Technology Organisation (ANSTO) have recently signed an MOU to jointly explore and better understand food structure at the molecular level, with the view to produce food products that have enhanced taste, texture and health-improving qualities.

Livestock Industries and New Zealand's AgResearch have been working together to enhance respective R&D capabilities and capacities. A program of joint seminars, workshops, short-term staff visits and exchanges have been developed to explore combined research programs and commercial opportunities.

The beginning of the financial year also saw the enlargement of Ensis, CSIRO's Joint Venture with New Zealand's Scion (one of New Zealand's Crown Research Institutes).

Formerly known as Forest Research, Scion is focused on applying a deep knowledge of plantation forestry, wood and fibre to the development of new biomaterials from renewable plant resources. More information on Scion can be found at: www.scionresearch.com

All of CSIRO's research in Forestry and Forest Products is now conducted within Ensis, which is a 50:50 Joint Venture between the two parent organisations, now involving a total staff complement of 319 and a turnover in 2005–06 of $53 million.

3.2 Service the needs of government for informed policy setting

Success measures:

- ***Engagement with the federal and state/territory governments (including Parliament and administration)***
- ***Government satisfaction with CSIRO***

Our interactions with government have been enhanced during the year through a variety of means, for example:

- CSIRO provided submissions to 16 parliamentary, government and state inquiries, including, for example, a submission to the House of Representatives Standing Committee on Environment and Heritage inquiry into a Sustainability Charter; the Senate Rural and Regional Affairs Transport Committee on Water Policy Initiatives and on Australia's future oil supply and alternative transport fuels; and the Joint Foreign Affairs, Defence and Trade Committee on Australia's relationship with India as an emerging world power. Submissions such as this are an important mechanism for raising the awareness of the science available and required for addressing key issues facing Australia. CSIRO also appeared at nine hearings or inquiries.

- CSIRO continued to play a vital role in contributing to the development of the Research Quality Framework (RQF) via membership on the new Development Advisory Group. This has enabled close alignment of the CSIRO Science Assessment Reviews with the implementation phase of the RQF.

- CSIRO was a gold sponsor of the 2006 'Science meets Parliament' event.

- Five 'Science for Breakfast' briefings, hosted by the Minister for Education, Science and Training, were held for parliamentarians during the course of the year. The briefings focused on water reuse; the CSIRO Total Wellbeing Diet; preventative health; energy; and the future of food. Each breakfast briefing was accompanied by a series of briefings to relevant Departments, individual briefings to politicians and a briefing to Science Attachés and CSIRO staff.

- An Innovation Festival forum on 'Preventative Health – an economic imperative' was held in Adelaide. In Melbourne a forum titled 'Future Fibres – Medical, Nano, Electronic: an exploration by CSIRO of where fibre technology is headed' was also held. Both forums were well attended and the audience included Commonwealth and State politicians and advisers and other interest groups.

CSIRO led proposals to the Department of the Environment and Heritage, which will support R&D for enhanced management of public environmental assets.

CSIRO continues to engage with Government around our scientific contribution to the development of Australia's water resources policy. The Water Resources Observation Network (WRON) initiative has gained Government support and is set to significantly improve the National Water Resources Assessment and in turn the ability to set effective water resources management policy.

CSIRO's new Science into Policy Unit was established during 2005–06 with the Director of Science and Policy taking up his position on 1 September 2005 and the Principal Adviser on 4 October 2005. To date the Unit has played a lead role in helping develop terms of reference and background material for the review of CSIRO's role in, and process for, providing science input into policy development and the important revision of CSIRO's Policy on Public Comment, and has provided advice, guidance and briefing on policy engagement or policy issues to areas across CSIRO.

More recent developments in this area have consolidated the focus on science issues (Science Investment Process, science planning, science policy, science talent and fellowships and scholarships) within the Office of the Chief Executive.

3.3 Enhance communication to raise public and stakeholder excitement and trust in science

Success measures:

- *'The importance of the CSIRO brand name' (from the Customer Value Survey)*
- *Trust and excitement in science amongst target audiences*
- *Recognition of CSIRO's brand*
- *Establish benchmarks of brand acceptance and strength*

The Customer Value Survey tools and methods have been reassessed with the input of independent external advice, and issues identified in the review are being addressed. A redesigned pilot survey was completed in June and a full survey will be completed early in the new financial year.

The latest results from our Customer Value Survey again demonstrate how important the CSIRO brand name is when choosing an R&D provider (see Table 7).

Table 7: Customer value survey results: CSIRO brand preference*

Customer value survey	Year to Jun 2004	Year to Jun 2005	Year to Jun 2006
CSIRO score	6.8	6.6	6.5
Comparative score	119	121	117

** 'The importance of the CSIRO brand name in choosing an R&D provider'. See glossary for a guide to the interpretation of CVS scores.*

CSIRO has collaborated with Market Attitude Research Services to develop a National Brand Positioning and Performance survey for CSIRO during 2005–06. The Brand Positioning and Performance Study (BPPS) has provided an initial benchmark for CSIRO Brand Health (see Table 8).

Table 8: Brand Positioning and Performance Study results: CSIRO brand health*

Brand Positioning and Performance Study	Year to Jun 2006
CSIRO brand essence	7.3

**The CSIRO brand essence is defined as 'CSIRO improves lives through science'. See glossary for a guide to the interpretation of BPPS scores.*

There have been a number of noteworthy achievements this year that have contributed to raising public and stakeholder excitement and trust in science, including:

- our new unified web presence *CSIRO.au* which was launched in December 2005. Since the launch there has been a 33 per cent increase in traffic over its predecessor
- the 'Innovation for Industry' road shows held in all capital cities during the year were attended by over 600 Chief Executive Officers and senior business leaders. Of those attending 84 per cent said the event improved their perception of CSIRO and 94 per cent indicated that they had learnt something new about the work undertaken by CSIRO
- the *Solve* magazine has been published quarterly as an insert in the *Australian Financial Review*. Market research indicates significant reader impact and positive positioning for CSIRO's research
- over 600 000 copies of the CSIRO Total Wellbeing Diet have been sold
- CSIRO Alumni now has over 2 000 members
- over 300 000 students took part in CSIROSEC programs either in schools or through 'Lab on Legs' travelling performance. The CSIROSECs – Science Education Centres – celebrated their three millionth participant in 2005
- the Double Helix Science Club celebrated its 20th birthday and has a membership of over 17 000 members. *The Helix* and *Scientriffic* magazines have a total of 25 000 subscribers
- Science by Email has over 18 000 subscribers
- SCOPE – a top rating half-hour science program for young people appears each week on Network Ten and has over 400 000 viewers each week. CSIRO jointly produces this program with Network Ten and has developed the program website that includes video streams of some program segments. The host, Dr Rob, is a CSIRO education officer.
- there has been a marked increase in the number of interstate school visitors to CSIRO Discovery – which now has weekend openings.

Media analysis indicates improvements in our media ratings over the year. The leading messages being that CSIRO is a source of credible information with strong indications that our 'good news' science stories and responsive attitude are creating a favourable view of the Organisation amongst the public.

3.4 Partner with other agencies to advance Australia's global development contributions

Success measures:

- ***Partnerships with other agencies to advance global development***
- ***Level of global aid funding (including from Australia)***
- ***More focused and effective international effort***
- ***Evidence of impacts on global development***

CSIRO continues to apply our multidisciplinary expertise to problems of international humanitarian concern. In April 2006, CSIRO signed a Record of Understanding (ROU) with AusAID in support of joint activities in the Asia Pacific Region. The ROU sets out the principles under which CSIRO and AusAID collaborate. CSIRO has a similar agreement with the Australian Centre for International Agricultural Research (ACIAR). CSIRO also contributed to the development of the Australian Government's Aid White Paper and continues to liaise with AusAID and ACIAR regarding future collaborative activities.

Over the past twelve months, CSIRO has been awarded nine projects under AusAID's Public Sector Linkages Program (PSLP) including:

- a capacity building project for the Protected Area Management Board of Mt Kitanglad in Indonesia which will integrate leaf-oil production from existing and future genetic materials of Eucalyptus and Melaleuca species
- a breeding improvement program for high-quality tropical beef cattle in Thailand
- a project in the Philippines to raise technical capabilities to underpin trade and investment in biomass carbon.

AusAID have also approved funding of $1.6 million under the Australian/Indonesian Bilateral Program to provide laboratory training to the Indonesian Veterinary Laboratory Network on identification of avian influenza and are also developing appropriate surveillance programs in regional areas.

CSIRO, AusAID and the World Bank are developing a project in Indonesia on 'Government Policies, Natural Resources and the Environment: Analysing Paths to Sustainability in Indonesia'. The Phase One scoping study to develop the full project has just been completed in partnership with the Government of Indonesia.

CSIRO continues to be a member of the Global Research Alliance (GRA) with the 5th Annual Principals' meeting held in April 2005 in Columbus, Ohio. Recent involvement focused on the development of a science and technology based Water Scenario Workshop for sub-Saharan Africa and an Indigenous Knowledge Initiative aimed at integrating traditional and modern medicine. CSIRO leads the GRA's Water Initiative.

CSIRO has registered with the Asian Development Bank as a preferred supplier of services, with the Australian Development Gateway as a supplier of services and with the United Nations Development Business website to further promote our science capability.

CSIRO continues to focus its international efforts. An MOU was signed in 2006 with the Chinese Ministry of Science and Training and agreement has been reached with China's Ministry of Education to co-supervise Chinese PhD students under the MOU signed in 2005. The publication *CSIRO Celebrating 30 Years in China* was launched in September 2005.

CSIRO has been engaged in over 800 international activities in 75 countries over the past year.

Examples of CSIRO research with impact on global development can be found at www.csiro.au/annualreport

Goal 4 – Serving as a catalyst for industry innovation

By focusing on the current and future needs of our industry customers and stakeholders, we are making significant contributions to science and to Australia's economic prospects. Working closely with industry, we see considerable opportunities to deliver enhanced commercial impact for Australian industry, boosting gross domestic product growth.

Over the past year, CSIRO has implemented a new Science Investment Process which continues

to focus our co-investment activities towards the creation of increased scale and strategic impact from our partnerships. The effects of these developments are apparent in the client engagement results which follow. CSIRO remains committed to pursuing growth in client impact and engagement, maintaining the direction we have taken during the past year.

4.1 Intensify engagement with rural research and development corporations to grow regional and new industries

Success measures:

- *Value of significant commercial relationships with research and development corporations (RDCs) and States: $10 million threshold*
- *Revenue from RDCs*
- *Customer Value Survey results – RDCs*
- *Growth of targeted regional industries*
- *Impact of research co-funded with RDCs*

Rural Research and Development Corporations (RDCs) revenues for 2005–06 were $44.3 million, against $48 million in 2004–05. This year the Ensis Joint Venture received $1.4 million of revenue from RDCs, and as such these were not reflected as CSIRO revenues. Changes at the end of last year in the contributions by non-RDC participants in Graingene (a joint venture in the field of cereal germplasm development) resulted in a significant decrease in revenue. Our top three RDC partners (Grains RDC including Graingene, Australian Wool Innovation, and the Cotton RDC) generated $28.6 million in 2005–06, or 65 per cent of the total RDC segment.

New contracts with RDCs during the year amounted to $24.9 million and include a number of significant long-term agreements, such as:

- developing a systematic approach to winery wastewater management (Grape and Wine RDC)
- vines to wine (Grape and Wine RDC)
- breeding sheep that are resistant to breech strike (Australian Wool Innovation).

Table 9: Customer value survey results for RDCs

Overall value	Year to Jun 2004	Year to Jun 2005	Year to Jun 2006
CSIRO score	6.7	5.9	5.9
Comparative score	96	99	95

See glossary for a guide to the interpretation of CVS scores.

CSIRO's government business segment remained static at around $93.7 million for the year. We have continued to invest in managing relationships with State and Commonwealth Agencies directly, with continued significant participation by CSIRO's Executive Team, Flagship Directors, Division Chiefs and with the support of State Relationship Managers in Victoria and Queensland, and a Canberra-based Australian Government Relationship Manager. The successful work of CSIRO's State and Regional Partnership team continued during the year. As a result of the strong relationships being built between CSIRO and the Queensland government, the Queensland Department of State Development and Innovation is now one of CSIRO's top 20 research partners by revenue.

New contracts with Government agencies during the year amounted to $39.3 million.

Examples of CSIRO research serving as a catalyst for industry innovation can be found at www.csiro.au/annualreport

4.2 Structure deeper and more meaningful relationships with large corporations

Success measures:

- *Value of significant commercial relationships with large corporations: $2 million threshold*

- *Revenue from large companies*
- *Customer Value Survey results – large companies*
- *Impact of research for large companies*
- *Lifetime value for contracts with large corporations*
- *Review/overhaul the Customer Value Survey instrument and its application*

Co-investment, consulting and services revenue received from the Australian private sector in 2005–06 was $64.9 million, (up from $55.6 million in 2004–05). Of this, revenue from larger companies delivered $42.1 million in 2005–06 compared to $36.4 million in 2004–05. Significant ongoing customers included Bayer Cropscience, BHP Billiton, Commonwealth Bank, Orica, Schering Plough and, as a result of the success of the CSIRO Total Wellbeing Diet, Penguin Publishers.[1]

As part of the Minerals Down Under MXDP, CSIRO has been discussing drilling research requirements with various stakeholder groups including Rio and BHPB. CSIRO also sits on a Steering Group for the AMIRA International Drilling Roadmap initiative – which also involves high-level representation from all the major minerals houses.

The relationship with Boeing in the USA and Australia is continuing to deepen, with a series of workshops on collaboration in the advanced materials area currently underway and involving scientists from Manufacturing and Infrastructure Technology, Molecular and Health Technologies, Mathematical and Information Sciences and Industrial Physics.

CSIRO undertook a comprehensive Manufacturing Roadmap Study during 2005–06 financial year. The purpose of the Roadmap was to:

- investigate the manufacturing-related R&D of CSIRO and other Australian R&D providers
- determine the existing and future domestic manufacturing sectors R&D requirements
- garner a better understanding of international trends in manufacturing
- recommend how CSIRO can provide greater impact to domestic manufacturing through existing and future industries. This Roadmap will be considered by CSIRO as part of an ongoing investment through the next round Science Investment Process.

CVS scores for large corporations remained the same compared to last year.

Table 10: Customer value survey results for large corporations

Customer value survey	Year to Jun 2004	Year to Jun 2005	Year to Jun 2006
CSIRO score	6.8	6.4	6.4
Comparative score	106	101	102

See glossary for a guide to the interpretation of CVS scores.

Examples of CSIRO research with large corporations can be found at www.csiro.au/annualreport

4.3 Accelerate the growth of promising technology-based Small and Medium-sized Enterprises (SMEs)

Success measures:

- *Number of significant commercial relationships with SME growth stars: $100 000 threshold*
- *Revenue from SMEs*
- *Customer Value Survey results – Small enterprises and Medium enterprises*
- *Impact of research for SMEs*

[1] *Re-classification of customers during the year means that the 2004–05 figures are not the same as those reported in the 2004–05 annual report.*

- *Australian Growth Partnerships*
- *FastTrack contract simplification process*

Encouraging signs of growth in the SME sector have been observed. Co-investment, consulting and services revenue received from SMEs increased to $22.7 million in 2005–06, from $18.7 million in 2004–05. During 2005–06, CSIRO had relationships with 45 SMEs that generated over $100 000 each, compared to 35 in 2004–05, and these 45 clients generated more than 50 per cent of overall SME earnings.[1]

The total number of SMEs that we have had interactions with during the year has remained almost constant as compared to last year, at around 1 250. We observed last year that the move to eliminate subsidisation of consulting and testing services and to offer these services at market prices might be behind a decline in the number of SMEs we work with. This trend now appears to have stabilised; however, the effect, of the reduced subsidisation may have created pricing pressure concerns with clients, reflected in the CVS feedback summarised in Table 11.

Table 11: Customer value survey results for small and medium enterprises

Overall value	Year to Jun 2004	Year to Jun 2005	Year to Jun 2006
Small enterprises			
CSIRO score	7.0	6.8	6.4
Comparative score	104	99	96
Medium enterprises			
CSIRO score	6.9	6.5	6.3
Comparative score	102	103	97

See glossary for a guide to the interpretation of CVS scores.

CSIRO has participated in the formation of five new spin-off companies in 2005–06, each of which is an SME in its own right – Avipep Pty Ltd (antibody therapeutics); Intalysis Pty Ltd (low frequency microwave moisture analysis); HySSIL Pty Ltd (high tech concrete structures); Funnelback Pty Ltd (enterprise search engine); and DataTraceDNA Pty Ltd (chemical barcode technology). In addition, we also participated in three restructure and capitalisation transactions of companies based on CSIRO technology (Intellection Pty Ltd, Genetic Solutions Pty Ltd, and Phoslock Water Solutions Pty Ltd), the latter two of which we took equity in for the first time.

Examples of CSIRO research with small and medium enterprises can be found at www.csiro.au/annualreport

4.4 Reinvent our ICT capabilities to strengthen Australia's knowledge-based industries

Success measures:

- *Demonstrated impact in ICT research*
- *ICT Centre collaboration across CSIRO*

Significant progress has been made in reinventing the ICT Centre in line with our goal of becoming a niche player in the global ICT market. We have focused our activities into areas where we have both scale and world-class capabilities. This has resulted in the Centre partnering more broadly across the Organisation, including with all Flagships. The rejuvenation of the ICT Centre has also had a positive impact on the Centre's commercial performance. The Centre has entered into a longer-term relationship with key partners, exceeded external earnings targets, transferred technologies, improved the management of Intellectual Property and secured an appropriation increase through the Science Investment Process.

[1] *Re-classification of customers during the year means that the 2004–05 figures are not the same as those reported in the 2004–05 annual report.*

Science outputs are also improving and increasing. Through the focusing of our research, recruitment of key new staff, the creation of a centre-wide quality assurance and a targeted communications strategy, the Centre's reputation is growing. There have also been increased interactions with universities.

The Information and Communication Services Sector Advisory Council has supported the overall direction of the ICT Centre. The next stage of the delivery of the reinvention of ICT within CSIRO should see the ICT Centre take a broader role in benchmarking and coordinating ICT research activities across CSIRO. The location of the Centre's facilities is also being reviewed so that we may best serve our stakeholders while effectively leveraging maximum benefit from our partners.

Significant outcomes include:

- the renewal of funding to the Centre for Networking Technologies for the Information Economy (CeNTIE)
- continuation of the Joint Venture with the Queensland Government for the e-Health Research Centre
- a new ICT Centre site in Tasmania with funding from the Intelligent Island program
- a technology company spin-off with Panoptic search engine technology through Funnelback Pty Ltd
- the commercialisation of the ViCCU™ e-health technology through Telstra and the commercialisation of a temporal bone drilling surgical simulation application through Medic Vision Pty Ltd
- a world first demonstration of wireless broadband on a local area network at 600 megabits per second.

Goal 5 – Building One-CSIRO capability and commitment

To address major national challenges and opportunities more effectively, CSIRO must leverage its scale and scope through effective multidisciplinary and cross-boundary teamwork. This teamwork enables CSIRO to identify and exploit new opportunities across conventional boundaries. We call this 'One-CSIRO'.

5.1 Stimulate future breakthroughs by promoting cross-pollination, especially in frontier research

Success measures:

- ***Establish an Emerging Science Initiative (ESI) including implementation of the Program Performance Framework (PPF)***

During 2005–06, six cross-cutting science programs commenced with funding from the Emerging Science Program in five topic areas. Staff from ten CSIRO Divisions are contributing to the following initiatives:

- cellular re-programing to develop high-value products for Australian agriculture and health industries
- synchrotron science: extreme chemistry and environmental science
- synchrotron science: high resolution structure determination of integral membrane proteins
- hierarchical material structures: creating novel 3-D porous particulate systems by developing combinatorial and high throughput methodologies
- environmental nanovectors
- synthetic enzymes for synthetic chemistries.

Six new postdoctoral fellows have been appointed in Synchrotron science across four CSIRO Divisions. The CSIRO Synchrotron

Advisory Committee is also making a major contribution to the decadal planning process for the Australian Synchrotron to identify priorities for investment in new beamlines.

In addition to the development of a strategic research framework for CSIRO's future in energy R&D, the Sustainable Energy and Environment Group is currently developing a framework for ensuring CSIRO maintains its leading role in multi-disciplinary, cross-organisational climate impact and adaptation research beyond the cessation of the CSIRO Climate Program early next year. This is an important area of research that is high in the National Priorities and which presents an opportunity for significant development.

5.2 Be among the best in governance, HS&E and performance management processes

Success measures:

- *Improved H&S injury indicators and positive performance indicators*
- *Improved safety culture*
- *Management of performance and Annual Performance Agreement (APA) completion rates (Insight Survey results)*
- *Implementation of the Performance Measurement Framework*
- *Improve governance processes in commercial area*

There have been significant improvements in CSIRO's Occupational Health Safety and Environment (OHS&E) performance over the past year. Details can be found on pages 95 – 100. A number of key initiatives have enabled these improvements and include:

- the Employee Assistance Program (EAP) which is now a fully National service for CSIRO staff as of 1 May 2006. This will ensure EAP utilisation and activities are reported nationally and will aid in communication and designing mitigation strategies
- results from the Health and Wellbeing Week which have been encouraging, with continuing Health and Wellbeing activities being included in Divisional Improvement plans
- a Musculoskeletal Strategy which is under development, utilising an internally developed Ergonomics@work program for Divisional implementation.

An Environmental Sustainability Strategy is being developed to improve overall performance in reducing, risks, waste and energy costs by setting organisational targets and objectives. An internally developed Sustainability@work program is also under development for Divisional implementation.

CSIRO actively supported Minister Bishop's review of portfolio governance arrangements during 2005–06, arising from the government response to the *Review of Corporate Governance of Statutory Authorities and Office Holders*. The review led to the Minister for Finance and the Minister for Education, Science and Training agreeing that CSIRO retain its status as a Commonwealth Statutory Authority with a full governance board. Only minor changes are likely to CSIRO's comprehensive governance framework in 2006–07 to support the implementation of the Uhrig review recommendations.

As there has not been an Insight Poll undertaken during the reporting period, it has not been possible to collect data on the Organisation's Annual Performance Agreement completion rate. The implementation of Stage Two of SAP as a part of the Business Enabling Technologies Review (BETR) project initiative will enable organisation-wide reporting on APA completion rate.

The revised Performance Measurement Framework that was implemented during

2004–05 continues to provide the Executive Team and the CSIRO Board with regular Organisational Performance Reports in October and February, with whole-of-year performance detailed in an annual report (see page 87 for further details).

In the commercial area both ComEx and the Board Commercial Committee continue to function effectively in the provision of advice on major R&D and commercialisation transactions. With a view to continually improve the function of these committees a series of review workshops were held during the year.

5.3 Adopt a unified approach to improve service dramatically and grow top accounts

Success measures:

- *Number of active customer service teams*
- *Increased amount and share of research and services revenue from top five accounts*

2005–06 saw a significant reorganisation of CSIRO's business development activities with the Business Development (BD) and Commercialisation groups separated. A Business Development Council was established to review our approach, and revitalise our BD strategy. The State and Commonwealth relationship managers continue to develop opportunities in the government sector, with the lifetime value of transactions with this sector being over $259 million.

Some specific examples include: the collaboration opportunities progressing with the Victorian Government and key universities including initiatives on biosecurity, manufacturing and advanced materials, all under the NCRIS process; health under the Australian Cancer Grid project; and through the Water for a Healthy Country Flagship, the development of significant new corporate engagements with General Electric Water Process Technologies and other emerging opportunities with Chevron.

The top five accounts grew by $2.2 million, from 17.7 per cent of total research and services revenue in 2004–05 to 18 per cent in 2005–06 to a total of $48.8 million.

5.4 Implement standard processes and Information Technology (IT) systems to enhance collaboration and efficiency

Success measures:

- *Inter-Divisional collaboration in CSIRO-wide support*
- *Aggregated Insight Survey score for Working Relationships and Work Organisation and Efficiency*

The implementation of CSIRO IT has demonstrated a number of business and financial benefits as per the initial One–IT business case including:

- greater and improved ability to support Flagships and cross-Divisional initiatives
- enterprise alignment for IT with CSIRO strategy, especially 'One-CSIRO'
- improved service delivery practices, with the implementation of an industry standard model
- clear point of accountability for IT services to support science
- transparency of IT support services in CSIRO for the first time
- improved project management practices
- other enterprise wide IT initiatives have also been possible under CSIRO IT, including implementation of a number of improved security features that protect CSIRO every day from attack and spam and monitor traffic to ensure it appropriate
- improved contract management practices, resulting in provision of improved services in data storage, telecommunications and printing

- CSIRO IT has returned $3.2 million to CSIRO for reinvestment in 2005–06.

A formal review of CSIRO IT found implementation to be on track, that the model being established for CSIRO was suitable, and that the direction had the potential to deliver significant benefit to the Organisation. This review also made a number of useful recommendations for improvement.

The implementation of the BETR project has made significant progress toward the integration of our business support systems across the Organisation, with CSIRO IT having outsourced the SAP application development related to the BETR project, to Fujitsu. The BETR project is scheduled to deliver Phase One in 2006–07.

The launch of the new CSIRO.au website is reported under Goal 3.3.

Research Support Services (RSS) has been conducted in two stages in 2005–06. Stage One was completed in December 2005 culminating in the delivery of the RSS Implementation Plan. Stage Two is about enacting the plan based on a phased approach, with the first phase (Finance, Contract Administration, Commercialisation and Legal) launched in July 2006, and the second phase (People and Culture and Information Services) in September 2006. Property and Facilities will follow in March 2007.

Goal 6 – Securing a financial foundation for growth

As CSIRO succeeds and grows, the nation will benefit and the enterprise's impact and business will grow. So will CSIRO's people – as individuals and as teams – in capability and contribution.

Our overall financial performance during 2005–06 is summarised in Table 12.

Due to improved financial discipline and the good external earnings growth, CSIRO returned a surplus operating result this year of $14.5 million. After adjusting for a one-off revenue item due to a change in accounting standards, the underlying surplus was $303 000. This is a considerable improvement on the approved budget deficit of $14.7 million for the year.

Our total external revenue grew by 11.6 per cent, to $352.9 million, in 2005–06. This represents 37.3 per cent of our total revenue for the year, now $946.8 million. (Note these revenue figures do not include gains made through sales of property, plant and equipment.)

6.1 Secure greater federally funded support for CSIRO science investment

Success measures:

- *Appropriation revenue*

In 2003, CSIRO secured Triennium Funding for 2004–07 with an additional $305 million for Flagships over seven years. Planning has now commenced for discussions with Government in 2006–07 on the Organisation's future funding arrangements.

In conjunction with the development of the Organisation's next strategic plan, CSIRO will also complete reviews of its performance under the current Triennium Funding Agreement (in the form of a 'Lapsing Program Review') and the implementation of the Flagship initiative. Discussions have been held with the central agencies and terms of reference agreed with the relevant Ministers. Work on these activities is currently proceeding according to plan.

6.2 Proactively manage patent and equity portfolios to multiply IP-based revenue streams

Success measures:

- *Intellectual Property revenue*
- *Performance of 'RIPPERS' (Reclaimed Intellectual Property Promising Extraordinary Revenues)*

Table 12: Financial Summary

Revenue by Source	2000–01 $m	2001–02 $m	2002–03 $m	2003–04 $m	2004–05 $m	Restated 2004–05[7] $m	2005–06 $m	2005–06 CSIRO Group[6] $m	CSIRO Strategic Plan (2003–07) Target for 2005–06 $m
Co-investment, Consulting and Services									
Australian Private Sector	68.6	68.6	77.8	79.6	63.9	63.9	67.6	73.7	
Australian Government	66.8	75.6	76.8	87.0	89.7	89.7	96.5	101.8	
Research and Development Corporations	40.8	41.6	42.6	40.0	48.0	48.0	44.3	49.5	
Cooperative Research Centres	27.6	26.7	32.0	33.1	35.2	35.2	35.2	36.6	
Overseas Entities	31.0	35.3	34.3	33.0	33.5	33.5	36.4	42.2	
Not classified by source	5.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	
Work in Progress/Deferred Revenue Adjustment	-7.0	2.1	-1.9	1.4	-9.7	-9.7	-8.0	-8.0	
Total co-investment, Consulting and Services[1]	**233.0**	**250.1**	**261.6**	**274.1**	**260.5**	**260.5**	**272.0**	**295.8**	**339.0**
Intellectual Property, Royalties, etc	9.3	16.9	13.8	22.0	20.4	22.0	37.0	37.1	46.0
Total Research and Services Revenue	**242.3**	**267.0**	**275.4**	**296.1**	**280.9**	**282.5**	**309.0**	**332.9**	**385.0**
Other External Revenue (including interest)[2]	21.7	58.5	37.0	23.8	33.7	33.7	43.9	40.6	9.0
Total External Revenue	**264.0**	**325.5**	**312.4**	**319.9**	**314.6**	**316.2**	**352.9**	**373.5**	**394.0**[5]
Appropriation Revenue[3]	**497.0**	**509.5**	**532.3**	**568.6**	**577.1**	**577.1**	**593.9**	**593.9**	**612.0**
Total Revenue (excluding revenue related to assets)	**761.0**	**835.0**	**844.7**	**888.5**	**891.7**	**893.3**	**946.8**	**967.4**	**1 006**
Gain/(Loss) on sale of assets[4]	10.2	21.6	-2.0	5.0	14.2	0.0	15.5	15.2	0.0
Reversals of previous asset write-downs	0.0	0.0	0.0	0.0	3.1	3.1	0.0	0.0	0.0
Less: Expenses (excluding value of assets sold)	784.3	809.6	864.4	898.9	918.2	917.2	947.8	968.1	1 006
Operating Result[3,7]	**-13.1**	**47.0**	**-21.7**	**-5.3**	**-9.2**	**-20.8**	**14.5**	**14.5**	**0.0**

Notes

1. The decline in revenues in 2004–05 was impacted by transfer of the National Measurement Laboratory (NML) to the Department of Industry, Tourism and Resources (DITR) ($3 million) and partial transfer of Forestry and Forest Products (FFP) Division's research activities into the Ensis joint venture ($6 million).

2. The significant increase in Other External Revenue recorded in 2001–02 includes the one-off reinstatement of the $25 million receivable from Australian Magnesium Corporation.

3. All figures are net of Capital Use Charge (CUC), which was abolished from 1 July 2003.

4. The table shows net gain/loss on sale of assets. The gain on sale of assets recorded in 2004–05 includes net gains on sale of Lindfield property in Sydney of $14.2 million.

5. The Strategic Plan includes external revenues of $3 million for NML, $15 million for Food Science Australia (FSA) and $6 million for FFP component transferred to the Ensis joint venture.

6. 'CSIRO Group' includes CSIRO and its interest in the external revenues (excluding partner contributions) of the Food Science Australia joint venture (85 per cent, $13.1 million) and Ensis joint venture (50 per cent, $12 million). CSIRO's share of the FSA joint venture changed from 50 per cent to 85 per cent in 2004–05. The Ensis joint venture commenced operation on 1 July 2004 partially and subsequently fully on 1 July 2005.

7. Australian Equivalents to International Financial Reporting Standards (AEIFRS) adjustments in 2004–05 relate to increase in fair value gains ($1 638 000), decrease in depreciation and amortisation expense ($142 000), decrease in amortisation of intangibles ($892 000), and recognition of sale of Lindfield property from 2004–05 to 2005–06 of ($14 220 000). Before taking into account these AEIFRS adjustments CSIRO recorded an underlying operating surplus for 2005–06 of $303 000.

Income from intellectual property for 2005–06 was a record $37 million, up 69 per cent on last year's result. All areas of commercialisation improved their results, with running royalties increasing, especially from cotton, successful formation of five new spin-off companies, conversion of a number of licenses into equity and a profitable exit from a previous spin-off. The spin-off portfolio at year end has a record market value of $29 million.

Highlights for the year included:

- completion of a Series A capital raising for Intellection Pty Ltd, a previous spin-off in the area of mineral analysis, valuing that company at $12.5 million
- Intellection now has 50 employees, revenue approaching $10 million per annum and is a technology export success story. See www.intellection.com.au
- formation of DataTrace DNA Pty Ltd, a joint venture with ASX-listed DataDot Technology Ltd, to develop robust, affordable track and trace technology for a wide range of materials and products. See www.datadotdna.com
- formation of Funnelback Pty Ltd, a company formed to commercialise enterprise search engine technology applicable to enterprises. Funnelback already has customers worldwide including Staffordshire University, National Research Council of Canada, ABC, NineMSN and Westpac Banking Corporation, in addition to CSIRO and the Australian Government Information Management Office. See http://funnelback.com
- licence income from intellectual property in cotton exceeded $10 million for the year, as a good cotton crop in Australia and continued international market success for varieties bred in Australia. Australian-sourced high technology cotton now has a market share of 25 per cent in the US.

CSIRO continues to develop its 'RIPPERS' portfolio of IP opportunities with the Air Cargo Scanner, Wireless LAN and Gene Silencing projects making progress during the year.

6.3 Deliver customer value for money and eliminate subsidisation in consulting services

Success measures:

- *Aggregate CSIRO customer value score*
- *Subsidy in consulting services activity*
- *External revenue and total expenditure by investment domain*
- *External revenue by source/market segment*

The Customer Value Survey results for CSIRO as a whole, aggregated across all market segments, are shown in Table 13. While not discounting the message apparent in the continued lower values compared to previous years in customer ratings, it should be noted that a comparative value score of 101 or greater is regarded as 'above average' on world benchmarks. As noted previously, a significant element of CSIRO's strategic agenda for 2006–07 is to evaluate and improve on how we build relationships with, and deliver maximum benefit to, our many customers and diverse stakeholders.

Since June 2003, subsidisation of consulting services (excluding National Facilities) has greatly decreased from $3.9 million to $0.4 million in 2006. The subsidisation has effectively been eliminated as the figure of $0.4 million represents the difference in timing between completion of work and invoicing.

Table 13: Customer value survey results: overall value

Overall value – CSIRO	Year to Jun 2004	Year to Jun 2005	Year to Jun 2006
CSIRO score	7.0	6.5	6.4
Comparative score	107	102	101

See glossary for a guide to the interpretation of CVS scores.

The Customer Value Survey tools and methods have been reassessed with the input of independent external advice and issues identified in the review are being addressed. A redesigned pilot survey was completed in June and a full survey will be completed early in the new financial year.

External revenue by source is summarised in Table 12, and the results with regard to specific market segments have been discussed in Goal 4.

6.4 Reduce overhead and purchasing costs and manage balance sheet for reinvestment

Success measures:

- *Overhead and support costs (overhead ratio)*
- *Purchasing costs*
- *Overall financial result*

Significant progress was made with respect to this strategic initiative in 2005–06. The most substantial of these changes was the decision to implement the findings of the Research Support Services (RSS) review which will reduce the cost of 'in-scope' RSS services by approximately 18 per cent or $26 million per annum from year three of implementation.

In addition to the decision to proceed with the RSS reforms, the Organisation continued to build-up both the scale and number of national procurement contracts it has in place with new arrangements for teleconferencing, freight, data storage, desktop and mid-range servers and associated leasing services implemented this financial year. It is estimated that savings of $4.5 million will be realised as a result of these initiatives.



Section 3
Governance and support services

Governance and support services

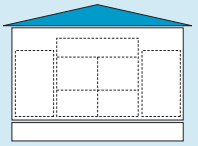
As described in an earlier section, CSIRO's Roles in the National Innovation System, certain key enabling functions are necessary in order to deliver upon CSIRO's roles. These other functions do not occur for their own sake, but only to the extent they enable CSIRO to fulfil its other roles. They provide direction, guidance and support to make delivery of the core roles easier and more effective.

In CSIRO the two most important enabling functions are:

- Enterprise Strategy and Governance
- Providing Research Support Services

Enterprise Governance

Role description:



- sets the framework and direction for CSIRO so it can most effectively achieve its organisational goals
- ensures a well-communicated and understood strategic and operational framework
- helps CSIRO staff fulfil their roles and helps external organisations interact more effectively with CSIRO
- to deliver effective enterprise strategy and governance, CSIRO must ensure that appropriate processes are in place for strategic direction setting and for overseeing key management decisions

The previous section (Performance against strategic objectives) has detailed the Organisation's performance over the 2005–06 financial year against our six strategic goals as articulated in our 2003–07 Strategic Plan. The following section reports on the key elements of CSIRO's Governance Framework.

In line with CSIRO's Strategic Plan 2003–07, the Board and management have continued to focus on good governance to ensure that CSIRO can continue to deliver excellent science for the benefit of Australia.

In 2005–06, a major focus was on the government's implementation of the findings of its *Review of the Corporate Governance of Statutory Authorities and Office Holders* (the Uhrig review). CSIRO's updated Governance Framework was an important input to the government's assessment of our governance arrangements.

We also continued to proactively improve key elements of our own governance during 2005–06. Achievements included:

- implementing the Science Investment Process, and associated improvements in Operational Planning
- continuing Science Assessment Reviews for all Divisions
- reviewing processes, roles and delegations as part of the move to shared research support services and an enterprise resource planning system
- continuing reform of organisational policy.

Good governance in CSIRO

Governance covers the way in which CSIRO is organised, directed and managed, the way in which we operate, engage with the outside world, and the way we are held accountable for our decisions and actions.

Good governance ensures that we can be trusted to do what we were established to do. This means that we have the right people and systems in place to ensure that we remain relevant in delivering excellent science for the benefit of Australia, and to ensure our ongoing sustainability.

Good governance also requires continuous improvement, open communication and the involvement and commitment of all staff at all levels within the Organisation. We recognise that good governance cannot be measured in purely financial terms in a public sector body because performance is measured against broader national, social and community objectives.

The Uhrig review

The Prime Minister announced the *Review of the Corporate Governance of Statutory Authorities and Office Holders* in 2002, with the government's response to the review's recommendations announced by the Minister for Finance and Administration in 2004.

The Uhrig review identified principles of good governance for Australian statutory authorities and proposed ways of standardising governance arrangements across the government sector. CSIRO's governance was assessed against these principles, and was found to be operating largely in line with the Uhrig review's description of best practice for statutory authorities with governing boards.

The result of the assessment will be that minor changes are required to our governing legislation, to the Board and Board Committee Charters and the Board's Directions to the Chief Executive (see below), along with the introduction of public Statements of Expectations and Intent between the Minister and CSIRO Board. These changes will be implemented during 2006–07 and will be reflected in our Governance Framework.

CSIRO Governance Framework

CSIRO's Governance Framework is designed to improve transparency and understanding about governance among people both within and outside the Organisation.

We can learn from best practice public sector governance as well as corporate governance in the private sector. However, our Governance Framework must reflect CSIRO's own unique role, culture, operations and accountabilities.

The CSIRO Governance Framework consists of:

1. Overarching elements:

- External – including CSIRO's governing legislation and its responsibilities to the Minister, Australian Government, Parliament and public
- Internal – CSIRO's own overarching governance structure, including the Board and executive management, their committees and delegations

2. Enabling elements:

- Directing – including strategic direction, investment decisions, operational planning and organisational policy
- Managing – key processes and procedures for the full range of CSIRO's operations
- Assuring – including the Science Assessment Reviews, Performance Measurement Framework and internal and external audits.

Overarching elements

Governing legislation

CSIRO is an Australian Government statutory authority constituted and operating under the provisions of the *Science and Industry Research Act 1949* (SIR Act). Reporting, accountability and other rules for CSIRO's operations are set out in the *Commonwealth Authorities and Companies Act 1997* (CAC Act).

Functions

In summary, our primary functions as set out in our governing legislation are:

- to carry out scientific research
  - to assist Australian industry and to further the interests of the Australian community
  - to contribute to national and international objectives and responsibilities of the Australian Government

- to encourage and facilitate the application and use of the results of our scientific research.

Secondary functions include international scientific liaison, training of research workers, publication of research results, technology transfer of other research, provision of scientific services and dissemination of information about science and technology.

Powers

In summary, the Organisation has power to do whatever is necessary for the best performance of its functions. In particular, it may:

- arrange for research and other work to be undertaken outside CSIRO
- form partnerships or companies
- make its discoveries and inventions available for fees, royalties or other consideration
- pay bonuses to staff for discoveries or inventions
- charge fees for research, facilities or services provided to others.

Responsible Minister

From 1 July 2005 to 26 January 2006 the Minister responsible for CSIRO was the Honourable Dr Brendan Nelson MP, Minister for Education, Science and Training.

From 27 January 2006 to 30 June 2006 the Minister responsible for CSIRO was the Honourable Julie Bishop MP, Minister for Education, Science and Training.

Under the *Science and Industry Research Act 1949*, the Minister has the power to:

- add to the purposes for which CSIRO may carry out scientific research (sub-paragraph 9(1)(a)(iv))
- provide to the CSIRO Board in writing, directions and guidelines with respect to the performance of the functions, or the exercise of the powers, of the Board or of the Organisation (section 13 (1)).

The Minister did not exercise any of these powers during 2005–06.

Under section 28 of the *Commonwealth Authorities and Companies Act 1997*, the Minister may, after consultation with the Board, notify the Board of a general policy of the Australian Government that is to apply to CSIRO.

The Minister did not notify the Board of such a general policy in 2005–06.

Structure and responsibilities of the CSIRO Board

Under the SIR Act, the CSIRO Board comprises a non-executive Chairman, up to eight other non-executive members and the full-time Chief Executive. All members, including the Chief Executive, are appointed by the Governor-General. Each member brings complementary skills and experience to the Board.

Further details of the 2005–06 Board members,

The CSIRO Board

Chairman

Ms Catherine Livingstone
BA(Hons) FCA FTSE
Company Director
1 January 2001 –
31 December 2006

Dr Geoff Garrett
BA(Hons) MA PhD
Chief Executive
8 January 2001 –
31 December 2008

Professor Suzanne Cory AC
BSc MSc PhD FAA FRS
Director
The Walter and Eliza Hall Institute of Medical Research
26 June 2002 – 25 June 2007

Dr Terry Cutler
BA(Hons) PhD FAIM
Principal
Cutler and Company Pty Ltd
25 July 2002 – 24 July 2007

Dr Eileen Doyle
BMath(Hons) MMath PhD FAICD
Company Director
16 February 2006 –
15 February 2011

Mr Brian Keane
FAICD
Company Director
30 July 2003 –
29 July 2008

Ms Deborah O'Toole
LLB
Company Director
16 April 2003 –
15 April 2008

Ms Lisa Paul*
BA(Hons) PSM
Secretary
Department of Education, Science and Training
16 December 2004 –
15 December 2009

Professor Alan Robson AM
BAgrSc PhD FTSE FAIAS
Vice-Chancellor
University of Western Australia
30 July 2003 – 29 July 2008

Mr Peter Willcox
BA(Hons) MA
Company Director
16 February 2006 –
15 February 2011

Other members during the year:

Mr Peter Duncan (resigned 31 August 2005)

Dr Ed Tweddell (deceased 4 August 2005)

* subject to Uhrig review outcomes

including qualifications, terms of appointment, remuneration, membership of Board Committees and attendance at meetings are shown on page 177 in the Financial Statements.

Under the SIR Act, the primary functions of the Board are:

(a) to ensure the proper and efficient performance of the functions of the Organisation

(b) to determine the policy of the Organisation with respect to any matter

(c) to give directions to the Chief Executive.

The role of the Board is described in detail in the CSIRO Board Charter. In summary, the Board is responsible to the Australian Government (through the responsible Minister) for the overall strategy, governance and performance of CSIRO. This role includes:

- providing strategic direction to CSIRO
- ensuring best practice governance is implemented in CSIRO, including legal compliance, risk management and commercial oversight
- approving strategic and operational plans and monitoring CSIRO's operating performance
- ensuring the Minister is kept properly informed, including approving all matters requiring Ministerial approval.

The Board has an Audit Committee, a Commercial Committee and a Remuneration Committee. All matters considered and determined by the Committees are submitted to the Board for information and, where appropriate, ratification or decision. Other committees can be established from time to time to assist in the execution of the Board's duties.

The Board and Committee Charters are reviewed annually, most recently in June 2005, and are accessible on the CSIRO intranet. (The Charters will be updated again in 2006–07 upon the finalisation of the Uhrig review implementation.) The Board Charter requires the Chairman to monitor Board performance and coordinate a review of performance at least every 18 months. The review in late 2005 found that the CSIRO Board is performing highly and there is harmony in the collective understanding of the Board's role, both within the Board and between the Board and management. Overall, participants were satisfied with monitoring, particularly at the strategic and compliance level. Board Committee Charters also require them to meet at least once per year to assess their performance and report the outcomes to the Board.

The Board meets formally every second month for one or two days. In the pursuit of their duties, Board members may take such independent professional advice as is considered necessary, and have complete access to senior management.

Board Audit Committee

The Board Audit Committee meets quarterly or more frequently as required. The Audit Committee's purpose as detailed in the Committee's Charter is:

- to assist CSIRO and its Board in key governance areas of risk management, internal control and compliance by monitoring and reporting on the following:
  - financial performance and the financial reporting process, including the annual financial statements
  - the acceptability of, correct accounting treatment for, and disclosure of, significant transactions which are not part of CSIRO's normal course of business
  - the operation and implementation of the risk management framework

– the effectiveness of systems of internal control, including delegations, management information systems and safety and environmental performance

– the scope of work, performance and independence of the Risk Assessment and Audit (RA&A) unit

– the scope of work, independence and performance of the external auditor

– CSIRO's process for monitoring compliance with laws and regulations, Government policy and its own Code of Conduct.

Under the CAC Act, the Commonwealth Auditor-General is the external auditor for CSIRO. The Board Audit Committee reviews the Australian National Audit Office (ANAO) audit plan and meets with the external auditor regularly throughout the year and specifically prior to recommending financial statements to be signed by the Board.

Board Commercial Committee

The Board Commercial Committee (BCC) meets at least four times per year. The purpose of the Committee is to assist the CSIRO Board in fulfilling its governance responsibilities in relation to CSIRO's business development and commercialisation activities by:

- considering reports and recommendations from CSIRO management on business development and commercialisation functions and providing advice on the proper and efficient performance of these
- recommending to the Board any new policies or directions that are required for these functions
- monitoring CSIRO processes relating to the business development and commercialisation activities and financial delegations in relation to transactions
- facilitating open communication between the CSIRO Board, Board Commercial Committee, senior management and the Commercial Executive (ComEx) Committee.

BCC is supported by management's ComEx Committee which provides advice on internal management processes and oversees commercial activities. The ComEx Committee includes both external advisors and management members and meets approximately 20 times per year.

Board Remuneration Committee

The Board Remuneration Committee meets at least twice per year. The purpose of the Committee is to assist by making recommendations to the Board in relation to the Chief Executive's remuneration arrangements and in ensuring that the Organisation has an appropriate and competitive remuneration structure by:

- determining the remuneration arrangements for, and assessing performance of, the Chief Executive
- ratifying recommendations of the Chief Executive in respect of the remuneration and performance assessment of Executive Team members
- exercising oversight of the remuneration policy of the Organisation including the senior executive banding structure (focus on positions, not individuals) and with references to the market.

In accordance with the Remuneration Tribunal, the CSIRO Board is the employing body for the Chief Executive, as a Principal Executive Officer (PEO). Under Section 12C of the *Remuneration Tribunal Act 1973* the employing body for a PEO may determine terms and conditions (including remuneration and allowances) applying to the office, providing that such terms and conditions

are not inconsistent with the PEO framework determined by the Tribunal.

The Remuneration Tribunal determines the remuneration and allowances of non-executive Board members.

Structure and responsibilities of CSIRO executive management

The Board Directions to the Chief Executive set out the formal directions given to the Chief Executive by the Board under the SIR Act. These Directions are reviewed annually and were updated and approved in June 2005. (They will also be updated in 2006–07 upon the finalisation of the Uhrig review implementation.) They are intended to harmonise the requirements of the SIR Act and the CAC Act so that CSIRO will be fully compliant with the requirements of both.

The Chief Executive is responsible to the Board for the overall development of strategy, management and performance of CSIRO. The Chief Executive manages the Organisation in accordance with the strategy, plans and policies approved by the Board to achieve agreed goals, and is supported by an Executive Team and Executive Management Council.

The Executive Team and Executive Management Council are supported by a number of Management and Advisory Committees. In 2005–06, a new management committee was formed – the Strategic Projects Oversight Committee.

CSIRO has an Authorities Manual that documents the delegations and authorities conferred by the Chief Executive, and provides information for staff on the principles for the devolution and accountable exercising of powers, as well as guidelines and details of approval processes. This is accessible to all staff on the CSIRO intranet and work commenced in 2005–06 to update this in line with the changing processes, roles and responsibilities as a result of the move to shared research support services and an enterprise resource planning system.

CSIRO commercial policies include specific processes and authorities for complex structures (eg formation of incorporated entities or joint-controlled operations), as well as transactions that for other reasons are of a sensitive nature. These decisions are supported by the ComEx Committee and subject to Board Commercial Committee, Board and Ministerial approval, as appropriate. In 2005–06, CSIRO reviewed and strengthened the governance of unincorporated joint ventures.

ComEx examines transaction over $1.5 million (lifetime value) and the Board Commercial Committee and Board transactions over $5 million. Transactions that involve receipt or expenditure of $5 million or more by CSIRO require approval by the responsible Minister. The Minister is also notified under the CAC Act about complex transactions and significant commercial events.

Disclosure of interests and ethical behaviour

Section 10F of the SIR Act requires written disclosure by the Chief Executive to the Minister of all direct or indirect pecuniary interests in any business or in any body corporate carrying on a business. Sections 27F-K of the CAC Act require the disclosure of material personal interests in a matter that is being considered by the Board and prohibits a member from being present during consideration or voting on such matters, unless otherwise determined by the Board or the Minister.

All of these requirements are currently being met.

The CSIRO Code of Conduct applies to the Organisation's Board, management and staff. It is accessible on the CSIRO intranet and provides a benchmark against which conduct can be assessed to ensure the highest ethical standards are met.

The CSIRO Executive Team during 2005–06

Dr Geoff Garrett
BA(Hons) MA PhD
Chief Executive

Dr Ron Sandland
BSc PhD AIA FTSE
Deputy Chief Executive

Dr Michael Barber
BSc PhD FAA
Executive Director:
Science Planning

Dr Michael Eyles
BSc(Hons) PhD
Executive Director:
Leadership and Organisation Development

Dr Rod Hill
DSc FTSE FAICD
Group Executive:
Information, Manufacturing and Minerals

Mr Peter May
BEc MA Grad Cert Mgt
Executive Director:
People and Culture

Dr Steve Morton
BSc(Hons) PhD
Group Executive:
Sustainable Energy and Environment

Mr Nigel Poole
LLB, BCom, FAICD
Executive Director: Business Services

Dr Alastair Robertson
BSc PhD FFSC CChem FIFST
Group Executive:
Agribusiness

Ms Donna Staunton
BA LLB
Executive Director:
Communications

Mr Mike Whelan
BEc
Executive Director:
Finance and Governance and Chief Finance Officer

Organisational Chart as at 30 June 2006

Minister
Minister for Education, Science and Training – The Hon Julie Bishop MP

CSIRO Board
Ms Catherine Livingstone (Chairman)
Professor Suzanne Cory – Dr Terry Cutler – Dr Eileen Doyle
Dr Geoff Garrett – Mr Brian Keane – Ms Deborah O'Toole
Ms Lisa Paul – Professor Alan Robson – Mr Peter Willcox

Executive Team
Dr Geoff Garrett – Dr Ron Sandland – Dr Rod Hill
Dr Steve Morton – Dr Alastair Robertson – Dr Michael Barber
Dr Michael Eyles – Mr Peter May – Mr Nigel Poole
Ms Donna Staunton – Mr Mike Whelan

Executive Management Council[1]

Agribusiness
Entomology
Livestock Industries
Plant Industry
Textile & Fibre Technology

Joint Ventures
Ensis[2]
Food Science Australia[3]

Sustainable Energy & Environment
Energy Technology
Land & Water
Marine & Atmospheric Research
Petroleum Resources
Sustainable Ecosystems

Information, Manufacturing & Minerals
Australia Telescope National Facility
Exploration & Mining
ICT Centre
Industrial Physics
Manufacturing & Infrastructure Technology
Mathematical & Information Sciences
Minerals
Molecular & Health Technologies

National Research Flagships
Energy Transformed
Food Futures
Light Metals
Preventative Health
Water for a Healthy Country
Wealth from Oceans

CSIRO–wide Support
Business Development
Commercialisation
Communications
Corporate Property
CSIRO IT
Finance
People Services
Science Policy

[1] *The Executive Management Council comprises members of the Executive Team, all Divisional Chiefs, Flagship Directors and a number of other Senior Managers*

[2] *joint venture in Forestry and Forest Products R&D with New Zealand's Crown Research Institute Scion*

[3] *joint venture with the Victorian Government*

Enabling elements

Future strategy

Building on the Strategic Plan 2003–07 and the six key messages therein, CSIRO commenced work on the development of the Organisation's future strategy during 2005–06. This work is also closely aligned with the early development of our proposal for funding in the 2007–08 to 2009–10 triennium.

Science Investment Process and Operational Planning

In 2004–05, a new Science Investment Process (SIP) was developed to enable CSIRO to take a more systematic, deliberate and transparent approach to managing our investment portfolio. It was designed to ensure that we are able to:

- focus skills and energies on the most important issues for Australia
- continue to increase the impact and relevance of CSIRO science
- maintain an appropriate balance between all the roles and responsibilities of CSIRO
- ensure the wise investment of taxpayers' dollars.

SIP was implemented in 2005–06, with the first high-level investment decisions informing budget allocations for the 2006–07 financial year.

Consistent with our responsibilities under the SIR Act, we also made changes to our Operational Planning processes in 2005–06. These provide the link between the Organisation's strategy and annual decisions on priority activities and resourcing, and were updated and improved to reflect the new investment process and to ensure that planning documentation was consistent and streamlined across the Organisation.

We plan our research and set priorities in consultation with Sector Advisory Councils (SACs) who represent industry and other stakeholder interests. These Councils cover energy and transport; environment and natural resource management; health; information, communication and services; manufacturing; and mineral resources. Details of the Sector Advisory Councils can be found at www.csiro.au/SAC

Performance Measurement Framework

CSIRO's Performance Measurement Framework is continually updated to ensure a continued focus on delivery and execution of the goals in the Strategic Plan 2003–07.

The Executive Team regularly receives an Organisational Performance Report consisting of the five elements below, with a report provided to the Board every four months:

- strategy implementation goals
- organisational health measures
- program performance
- science highlights
- outcomes.

CSIRO Policies

CSIRO continued its process of ongoing policy reform in 2005–06, to improve standardisation across the Organisation and accessibility and understanding among staff. During the financial year, operational policies were established or updated in the following areas:

Policy category	New and updated policies
Commercial	• Commercial policies updated to reflect new guidelines on partnering and collaboration
Financial	• All Financial policies updated
People and Culture	• People and Culture policies updated to reflect new CSIRO Enterprise Agreement 2005–08
Health, Safety and Environment	• New Visitor procedure released
	• New Plant Safety procedure released
	• First Aid procedure updated
	• Working Alone policy updated
	• Smoking in the Workplace policy updated
	• Medical Assessment procedure updated
	• Working from Home policy updated

Science Assessment Reviews

CSIRO began a process of Science Assessment Reviews in 2004–05 to ensure that the quality and relevance of our science base is maintained. All of CSIRO's Divisions are reviewed by external panels on a three-year rolling cycle. Reports are provided to the Board and Minister at the conclusion of each review. The findings of each review are analysed and organisational and other high-level issues are assessed as part of the annual Science Health Report (see page 51). The Board receives 12 month follow-up reports on the implementation of the agreed actions on each Assessment Review.

Recognising and managing risk

The Board has responsibility for ensuring an appropriate risk management framework is in place to identify and manage strategic and operational risks to the Organisation.

An organisational risk profile is completed annually, through the Board Audit Committee (BAC) and endorsed by the Board. Together with management, the Board focuses on strategic organisational risks and the BAC on operational organisational risks. The BAC reviews management's policies and procedures and internal compliance.

Taking organisational risks into account, the internal RA&A unit undertakes a systematic program of organisation-wide functional audits, Divisional assurance audits and project-specific risk assessments, in accordance with a formal charter endorsed by the Audit Committee.

The Executive Team is responsible for the implementation of mitigation strategies. In appropriate circumstances, insurance is used as a method to transfer the financial impact of risk. The Executive Team's risk management activities are supported by an Enterprise Risk Management Advisory Committee chaired by the Chief Finance Officer.

Safeguarding integrity in financial reporting

CSIRO's financial statements are required by clause 1(b) of Schedule 1 to the CAC Act 1997. The statements are prepared in accordance with the:

- Finance Minister's Orders
- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board
- Consensus views of the Urgent Issues Group.

The financial statements are accompanied by a Management Representation letter to the Australian National Audit Office (ANAO) signed by the Chief Executive and the Chief Finance Officer declaring that the statements present fairly the financial position of CSIRO and the results of its operations and cash flows as at year end.

This statement is supported by Accountability Checklists relating to compliance with policy signed by senior managers throughout the Organisation. This is a simple mechanism whereby specific assurances can be gained about the Organisation's financial state of affairs and control environment.

Fraud control

CSIRO remains committed to the Commonwealth Fraud Control Guidelines. A comprehensive fraud risk assessment was completed in 2004 and is currently under review. A result of the fraud risk assessment review will be to conduct a review of the CSIRO Fraud Control Plan in late 2006 in compliance with the Guidelines. In addition, appropriate fraud prevention, detection, investigation and reporting procedures and processes are in place. Annual fraud data has been collected and reported in accordance with the guidelines.

Security

Protective, physical, personnel and administrative security practices continue in accordance with the CSIRO Corporate Security Plan. The plan was developed to identify security objectives that require improvement or continued management by the Corporate Security Adviser, Zone Managers and Divisional Security Officers. The plan is also subject to an annual review process to ensure that it reflects changes to Government and CSIRO Security Policy.

Developments since 30 June 2006

The CAC Act requires CSIRO to report developments since the end of the financial year, giving particulars of any matter or circumstance that has arisen and has significantly affected or may significantly affect:

(i) the authority's operations in future financial years

(ii) the results of those operations in future years

(iii) the authority's state of affairs in future financial years.

Since 30 June 2006 no developments have arisen that have significantly affected or may significantly affect CSIRO's operations or state of affairs.

Service Charter

The CSIRO Service Charter sets out the standards of service we aim to deliver to our customers and our commitment to ensuring that these standards are maintained. For a complete version of CSIRO's Service Charter see www.csiro.au/servicecharter or page 2 for more details.

Since 1926, CSIRO has been advancing the frontiers of science in selected fields and forming important alliances with government, industry and communities in over 80 countries. We value our collaborations as they have enabled us to reach a much broader constituency with our science and create impact in Australia and around the world.

Other CSIRO services include: training of research workers, publication of research results, and dissemination of information about science and technology.

Our customers

Our customers are essential to our success. They include partners from:

- Commonwealth, State and Territory governments and their agencies
- Australian and global business, industries and research organisations
- the Australian and International community.

We believe that

- our customers and partners are essential to our success
- our diversity and breadth allow us to tackle complex problems and opportunities on a national and global scale
- scientific innovation is an important driver of Australia's economic growth.

Relevance

CSIRO maintains relevance in our work through:

- input from advisory committees representing the government, industry and research community
- listening to the community and recognising its concerns where they relate to matters of science or our behaviour.

Our service standards

Communication

When you communicate with CSIRO, we will:

- be courteous
- be willing to assist you and be responsive to your needs
- treat you fairly and professionally
- be sensitive to diversity issues
- be accountable and adhere to sound business practices in accordance with relevant legislation.

Service delivery

When we perform services for you, we will:

- explain our services and deliverables to you
- aim to exceed your expectations
- demonstrate technical and professional competence in providing the services
- respect and maintain customer confidentiality.

Service evaluation

After we have completed our service delivery, we will:

- use customer review tools such as our Customer Value Survey to seek feedback from our customer base on our performance

- review the feedback you provide to us and consider measures to further improve our service delivery
- continue to respect customer confidentiality beyond the term of our engagement.

Provide feedback to CSIRO

CSIRO greatly welcomes feedback on our performance. Should you wish to contact us in this regard, the first port of call would normally be the CSIRO officer with whom you have been dealing; alternatively senior management in the relevant Division or Business Unit.

General feedback should be forwarded to:

CSIRO Enquiries

Bag 10
Clayton South, VIC 3169

Phone: 1300 363 400
Fax: +61 3 9545 2175
Email: enquiries@csiro.au
Website: www.csiro.au

Administrative law

Freedom of information

The *Freedom of Information Act 1982* ('FOI Act') provides the public with a general right of access to documents held by Australian Government agencies including CSIRO. The general right is limited by exceptions to protect essential public interests or the privacy or business affairs of those who give information to the agency.

The following information is provided in compliance with section 8 of the FOI Act:

- the functions and powers of CSIRO are set out on page 79-80
- information about CSIRO's procedures for external consultation can be found at www.csiro.au/SAC
- CSIRO holds the following categories of documents:
  - corporate records including documents relating to government, policy, finance, personnel, business development, commercialisation, communication, real property, intellectual property and education
  - business unit records including documents relating to scientific research and technology transfer
- members of the public may obtain access to scientific and technical publications from CSIRO Publishing (www.publish.csiro.au). CSIRO administrative manuals are available from the Freedom of Information Officer.

Part V of the FOI Act confers a right to request amendment of a document to which lawful access has been granted, where the applicant claims that information in the document:

- relates to his or her personal affairs
- is incomplete, incorrect, out-of-date or misleading
- has been used, is being used, or is available for use by the agency or Minister for an administrative purpose.

In the year to 30 June 2006, CSIRO received 15 requests for information under the FOI Act and no requests for amendment in relation to documents provided under the Act.

Archives

CSIRO maintains an archives collection which includes records dating from the establishment in 1926 of the Council for Science and Industrial Research, the predecessor of CSIRO. Certain CSIRO records are held by Australian Archives. Disposal arrangements for CSIRO records are made in accordance with the provisions of the *Archives Act 1983*. Access to records over 30 years old is provided in accordance with that Act.

Privacy

The *Privacy Act 1988* provides for Information Privacy Principles (IPPs) and National Privacy Principles (NPPs). In the year to 30 June 2006, the Privacy Commissioner did not undertake any investigations under section 36 of the *Privacy Act 1988* in relation to CSIRO.

Administrative Decisions (Judicial Review) Act

The *Administrative Decisions (Judicial Review) Act 1977* enables a person aggrieved by certain classes of administrative decisions made by Australian Government agencies including CSIRO to obtain reasons for or challenge those decisions. In the year to 30 June 2006, CSIRO received no challenges or requests for statements of reasons under the ADJR Act.

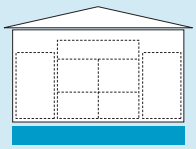
Contact

All enquiries under the above legislation (including FOI requests) should be directed to:

Freedom of Information Officer
and Privacy Officer
CSIRO
PO Box 225
CAMPBELL ACT 2602
Phone: 02 6276 6123
Fax: 02 6276 6437
Email: rosemary.caldwell@csiro.au

Research Support Services

Role description:



- under this role, CSIRO provides the Research Support Services and infrastructure required to enable and facilitate research, technology transfer and community/industry engagement

Core functions include laboratory management and support; corporate finance and accounting; corporate property management; payroll and human resources benefit administration; CSIRO communications; procurement; and management of IT systems.

Staff demographics

CSIRO staff are employed under section 32 of the *Science and Industry Research Act 1949*.

At 30 June 2006 CSIRO had a total staff of 6 558, which has an equivalent full-time (EFT) value of 5 903.

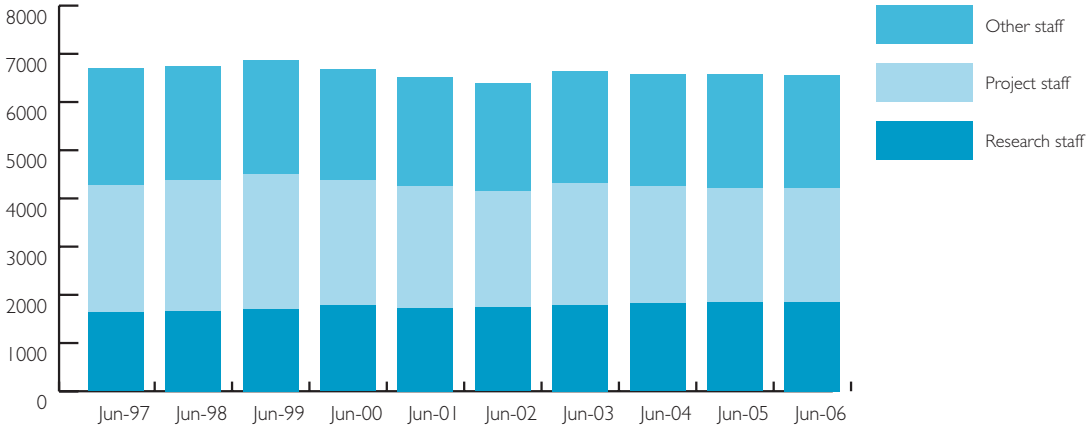
The numbers of staff employed in different job categories as at 30 June 2006 are shown below.

Staff by gender and principal functional area (comparisons with 2004–05)

	Female	Male	Total
	2005–06 (2004–05)	**2005–06** (2004–05)	**2005–06** *(2004–05)*
Research Scientists	**328** *(318)*	**1 302** *(1 305)*	**1 630** *(1 623)*
Research Project staff	**976** *(975)*	**1 382** *(1 400)*	**2 358** *(2 375)*
Senior Specialists	**7** *(7)*	**31** *(34)*	**38** *(41)*
Research Management	**13** *(16)*	**174** *(174)*	**187** *(190)*
Research Consulting	**5** *(3)*	**28** *(20)*	**33** *(23)*
Technical Services	**78** *(80)*	**544** *(560)*	**622** *(640)*
Communication and Information Services[1]	**275** *(272)*	**164** *(166)*	**439** *(438)*
General Services	**46** *(42)*	**41** *(39)*	**87** *(81)*
Administrative Support	**761** *(766)*	**280** *(281)*	**1 041** *(1 047)*
General Management	**33** *(30)*	**90** *(88)*	**123** *(118)*
TOTAL	**2 522** *(2 509)*	**4 036** *(4 067)*	**6 558** *(6 576)*

[1] *These numbers include the following staff: 75 CSIRO Education and 22 Discovery Centre; 75 Library and Records; 71 CSIRO IT; 40 CSIRO Publishing.*

CSIRO Headcount[2]



[2] *CSIRO Officers only. 1997–2006 figures at 30 June.*

Note that while CSIRO staff numbers have decreased from 6 709 in 1997 to 6 558 in 2006, the number of research staff has increased from 1 636 in 1997 to 1 850 in 2006.

Health and safety

CSIRO is required to report annually in accordance with the requirements of section 74 of the *Occupational Health and Safety (Commonwealth Employment) Act 1991* (OH&S Act).

CSIRO, by nature of its research and development work, faces some of the most diverse range of occupational health and safety hazards compared to other Australian government departments and agencies. To manage these risks, Health, Safety and Environment (HS&E) staff work together with management, our researchers and support staff integrating HS&E management strategies into the business activities of the Organisation. This collaboration has enabled proactive processes to be implemented to reduce down time associated with incidents and to allow our researchers to continue with their research.

Health and safety improvement strategies

In 2005–06, initiatives undertaken to maintain the health and safety of employees and visitors in the workplace included:

- implementing a CSIRO Health and Wellbeing Strategy with supporting programs and web site
- establishing Divisional specific musculoskeletal programs to reduce the potential for injury and illness
- conducting hazard specific reviews across CSIRO focusing on electrical safety, asbestos management and ultraviolet transilluminators
- implementing *CSIROSafe* audit program and Comcare audits on manual handling
- updating procedures covering Plant Safety, Visitors and Working from Home
- the addition of questions in the Staff Insight Poll addressing safety culture
- progressing actions in the 2004–07 Occupational Health, Safety and Environment (OHS&E) Strategic Plan
- implementing recommendations on the high-level residual risks identified in the OH&S Risk Review
- completing a BOC Gas safety program.

Health and wellbeing strategy

Promoting a healthy working life supports and complements our objectives for health and safety and our goal to achieve a proactive safety culture within CSIRO. Over the last few years, however, an increase in incidents relating to personal health and wellbeing issues, in particular, occupational overuse, overload and psychological injuries (including stress) has been reported.

In response a Health and Wellbeing Strategy 2005–07 was developed. The strategic priorities are:

- access to a wide range of health and wellbeing information and assistance via a web portal
- health awareness training for managers and staff
- the National Employee Assistance Program provider conducting organisational wide EAP awareness sessions
- employee health checks to be supported.

A Health and Wellbeing week was conducted in February 2006 across most CSIRO sites. This initiative was well supported and staff have been encouraged to provide ideas and participate in planning for future Health and Wellbeing activities, which will be reflected in Divisional annual HS&E improvement plans.

Hazard specific surveys

Analysis of incident trends, audit reports and workers compensation data is used to identify specific health and safety issues that require focused attention across the Organisation. The following areas were specifically targeted by CSIRO during the reporting year:

- asbestos management
- electrical safety
- non-ionising radiation – ultraviolet producing apparatus
- CSIRO/BOC gas safety program (audits and training)
- national incident improvement plan from the Australian Animal Health Laboratory incident recommendations.

Safety culture improvements – Staff Opinion

Although, as previously mentioned in the Report, no full Staff Opinion Survey (Insight) was undertaken during 2005–06, the Insight Poll completed in 2005 indicated excellent outcomes and continuing improvement for HS&E.

Working Environment and Safety, one of 21 survey categories, was ranked highest in 2005 with an overall score of 85 per cent – a three per cent improvement from 2003.

A continuing goal is to encourage staff participation in all HS&E activities and to improve our safety culture.

CSIRO/BOC Gas Safety Program

A partnership between CSIRO and BOC Gases was formed in 2002 to address identified gas hazards and gas handling issues. This was a new venture which allowed a single provider to deliver a range of safety service standards across CSIRO. The CSIRO/BOC Gas Safety Program aimed to provide safety reviews and training to support safe practices for the handling of industrial gases within CSIRO. The program was completed in October 2005.

Health and Safety Committee

The joint management/union CSIRO Health and Safety Committee formally merged with the Environmental Management Systems Committee to form the CSIRO HS&E Committee in 2006. Joint meetings have been deemed a success as they allow common issues between HS&E to be actioned with the input and consensus from both committees.

CSIRO 2005 HS&E Annual Conference

The CSIRO 2005 HS&E Conference was held in Adelaide. The objectives, chosen by staff for more information on health and wellbeing were:

- foster continuous improvement in HS&E performance across CSIRO
- communicate successful approaches to managing HS&E issues
- raise awareness of current and emerging HS&E challenges of relevance to CSIRO
- explore opportunities to implement improvement initiatives detailed in the CSIRO OHS&E Strategic Plan
- build and strengthen the CSIRO HS&E network through face-to-face interactions
- improve CSIRO's capacity to deliver healthy, safe, clean science.

Over 100 staff attended the conference and heard from internal and external speakers. The HS&E conference is designed to build on knowledge and learning and share in experiences whilst networking with colleagues from across Australia.

Employee Assistance Program (EAP)

CSIRO adopted a National EAP service provider in June 2005. The transition was completed in May 2006, during which the Corporate HS&E Office assumed the management of the EAP. The adoption of a National Provider has enabled Organisational reporting on EAP utilisation rates and identification of issues and trends from an organisational perspective.

A network of Regional EAP Coordinators was established from the HS&E Network to facilitate support, communications and dissemination of the Regional and National reports.

Ensuring capability

To enable us to meet our strategic organisational objectives, several HS&E initiatives are underway.

A recent review of our health and safety risks indicated that musculoskeletal injuries are our highest injury cost, accounting for 43 per cent of all claims. A strategy to reduce the potential of staff injury is a priority on our agenda.

Many of our staff are required to travel and work overseas or work in remote locations in Australia, and as such are exposed to some unique and high risks. The HS&E Network Project Teams are developing and revising other procedures including:

- Emergency Management
- Overseas travel safety
- Field safety (incorporating vehicle travel)
- HS&E induction.

The HS&E Network works in partnership with Corporate Property on HS&E issues.

The two groups have worked on a number of collaborations in 2005 including development of procedures for Plant, Gas and Electrical safety, Contractor Management and Safety and the development of solutions to the Organisation's radiation waste storage at Woomera.

Safety, Rehabilitation and Compensation Commission (SRCC) Awards

Corporate HS&E received a Commended award for their submission on 'Road to a Collaborative HS&E Network in CSIRO' at the 2005 SRCC Awards.

Notifiable incidents

Notifiable incidents are reported to Comcare under the OH&S Act and other authorities such as the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) under their legislation. The incidents reported are those that result in death, serious personal injury, incapacity of more than 30 successive days or shifts, or a dangerous occurrence which could have produced any of these conditions.

CSIRO reports and investigates any incident deemed to have caused or have the potential for causing an injury or an illness through the HS&E incident reporting, recording and investigation procedure.

A total of 34 notifiable incidents were reported to Comcare over the year. This included 14 serious personal injuries, one incapacity of more than 30 days and 19 dangerous occurrences. This is considerably lower than last year where there were 42 reported incidents.

Health and safety statistics

CSIRO continues to demonstrate improvements in health and safety.

Approximately ten per cent of incidents are attributed to sports and travel and this figure has remained fairly constant over the last four years.

The injury performance measures are reported quarterly. Improvements have been made in the Lost Time Injury Frequency Rate (LTIFR) and the Medical Treatment Frequency Rate (MTFR).

CSIRO's injury performance is now one of the lowest when compared to the injury rates for all Australian Government agencies. Our performance also reflects on our Workers Compensation Premium with our Premium Rate, determined on previous four year injury and claims performance, at one of the lowest for all agencies.

Figure 1: CSIRO's Health and Safety performance 2002–06

Year to date	Incidents	Number of claims	LTI > 1 day	Cost to date ($)	Time lost to date (weeks)	MTFR	LTIFR	ATLR
30 June 2002	1 035	318	82	690 037	222	20 (19)	7.1 (6.4)	2.7 (2.6)
30 June 2003	1 044	238	67	457 910	264	20 (17)	6.0 (5.0)	3.9 (3.0)
30 June 2004	975	278	70	594 728	145	24 (20)	5.9 (4.4)	2.1 (1.9)
30 June 2005	873	220	40	314 447	139	19 (17)	3.6 (3.1)	3.5 (3.8)
30 June 2006	767	205	42	425 305	188	16 (14)	3.3 (2.7)	4.5 (5.1)

( ) less sporting and travel to and from work injuries

Definitions:

- *Lost Time Injury Frequency Rate (LTIFR) is the number of incidents involving lost time from work greater than or equal to one full day or shift per million hours worked*
- *Medical Treatment Frequency Rate (MTFR) is the number of compensation claims per million hours worked*
- *Average Time Lost Rate (ATLR) is the average time lost for the number of incidents during the period*

Figure 2: CSIRO – MTFR and LTIFR

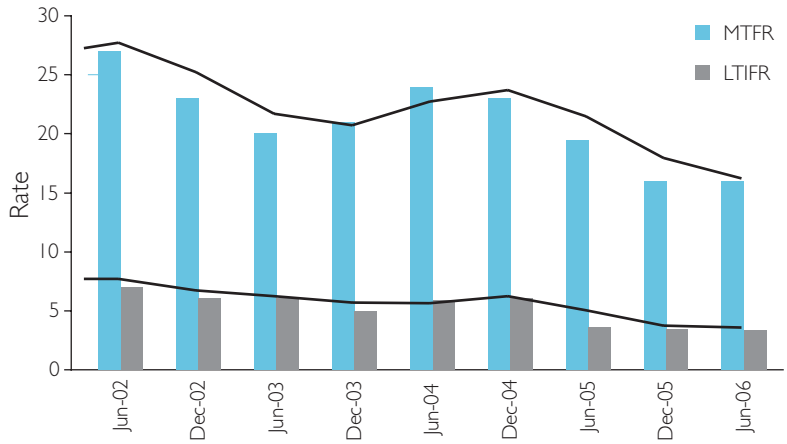


Figure 3: CSIRO performance in comparison to Australian Government agencies

Premium Rate (% of payroll)	CSIRO	All agencies
2005–06	0.77%	1.77%
2004–05	0.74%	1.67%

HS&E Annual Report 2005

This is the third public report on CSIRO's HS&E achievements. The report was prepared by the HS&E Managers' Network and details major structural changes and improvements to CSIRO's HS&E performance over the last four years. This report can be viewed on the internet at: www.csiro.au/OHSE_Report

H&S investigations

Provisional improvement notices (PIN)

A PIN is a notice served to an employer or an employee by a Health and Safety Representative (HSR) who believes that a contravention of the Act has or is occurring. It is usually issued when there is no supervisor present or when consultation has broken down.

No provisional improvement notices were raised.

Prohibition and improvement notices (Comcare)

Prohibition notice

A notice issued during the course of an investigation by an investigator to an employer to cease an activity or remove an immediate threat that poses a risk to the health and safety of any person.

Improvement notice

A notice issued during the course of an investigation by an investigator who believes that a person is, has and/or is likely to again, contravene a provision of the Act or regulations. The notice specifies the provision(s) of the Act being contravened and the time frame by which the contraventions must be rectified.

No prohibition or improvement notices were raised.

Comcare audits

Comcare conducted two audits of CSIRO Divisions covering compliance with asbestos legislation and regulations and compliance with manual handling regulations:

- Asbestos legislation and regulations – three Divisions were audited: Marine and Atmospheric Research (Vic), Manufacturing and Infrastructure Technology (Vic) and Industrial Physics (NSW). The report indicates satisfaction with compliance at all three sites with some minor improvements to be made to procedures and activities at one site.
- Manual handling regulations – five Divisions were audited: Sustainable Ecosystems, Entomology and Land and Water (ACT), Industrial Physics (NSW) and Livestock Industries (Qld).

The reports indicated satisfaction with compliance and included recommendations to improve training, records and procedures.

Comcare investigations

An investigation was conducted following the injury of a contractor at Minerals Division, Clayton, Victoria. Recommendations are being met in the updated Contractor Safety Management procedure due for release this year.

An investigation was conducted into allegations of long-term toxic dust exposure at Manufacturing and Infrastructure Technology, North Ryde, NSW. Comcare reported their satisfaction on the completion of

recommendations to prevent re-occurrences. CSIRO is meeting Comcare expectations through detailed action plans which demonstrate commitment in addressing recommendations.

ARPANSA investigations

In response to an ultra-violet (UV) overexposure incident in Plant Industry, Queensland Bioscience Precinct, the Chief Executive Officer of ARPANSA issued a letter to CSIRO's Chief Executive to undertake additional safety measures to protect maintenance staff.

The Chief Executive instructed all Divisions to ensure that all UV equipment capable of producing harmful non-ionising radiation is registered as a controlled apparatus and that all Divisions undertake additional safety measures to determine that safety precautions are in line with ARPANSA instructions. All actions were completed within the specified timeframes and to ARPANSA's satisfaction.

Coronial inquest into the death of a CSIRO employee in 2001

A Coronial Inquest into the death in December 2001 of Mr Set Van Nguyen, a CSIRO employee, at the Australian Animal Health Laboratory (AAHL) took place in June this year in Geelong, Victoria. The purpose of the inquest was to determine the cause of Mr Van Nguyen's death. At the time of writing this report the Coroner's report was not available.

A 2002 CSIRO Committee of Inquiry report made 24 recommendations regarding the operations at AAHL and a further eight recommendations across CSIRO. All of these recommendations have been implemented to the satisfaction of Comcare.

Mr Van Nguyen's death was a tragedy and CSIRO has implemented systems and operations to ensure a similar accident will not happen again. The accident and its causes did not involve any threat to the biosecurity of AAHL.

Commonwealth disability strategy reporting

For the purposes of the Commonwealth Disability Strategy (CDS), CSIRO's 'Role' is that of an 'Employer'. Activities relevant to the Strategy form part of CSIRO's Workplace Diversity Plan.

As noted in last year's Annual Report, the annual staff survey had recorded some negativity from staff with a disability. In the subsequent survey (2005), responses were more positive and consistent with the overall CSIRO results in 16 of the 21 categories surveyed, compared to only nine of 21 categories in the 2004 survey.

The scale of this improvement, in the absence of any intervention by CSIRO, suggests that volatility is due to the small number of participants in the survey who identify themselves as having a disability (two per cent) and is likely to remain at least until the participation rate reaches five to six per cent, which reflects the percentage of total staff recorded as having a disability.

As a result of a major review of the structure and operation of the human resources function during 2005–06, planned disability-related activities were not completed. Under the revised structure, to be implemented in the first half of 2006–07, there will be an increase in workplace diversity/EEO resources, which will allow greater focus on disability initiatives.

Performance against the indicators issued by the Office of Disability is detailed below:

Performance indicator	Actions 2005–06
Employment policies, procedures and practices comply with the requirements of the *Disability Discrimination Act (DDA) 1992.*	In this reporting period the following policies were reviewed: Part-time work, recreation leave, parental leave, maternity leave, adoption leave, carers' leave, grievances, fixed term employment.
Recruitment information for potential job applicants is available in accessible formats on request.	All web authors must comply with the Web Content Accessibility Guidelines.
Agency recruiters and managers apply the principle of 'reasonable adjustment'.	CSIRO policy encourages managers make adjustments to accommodate the needs of staff with a disability so that they can satisfy the inherent requirements of the job.
Training and development programs consider the needs of staff with disabilities.	Corporate development programs are conducted at venues that can cater to the needs of participants with disabilities.
Training and development programs include information on disability issues as they relate to the program.	The Organisation's Managing People Program covers managing diversity, including staff with a disability.
Complaints/grievance mechanism, including access to external mechanisms, in place to address issues and concerns raised by staff.	CSIRO has internal mechanisms for resolving complaints that, in the formal stages, involve investigation by an independent investigator, as well as scope to refer the matter to the Human Rights and Equal Opportunity Commission.

Environmental management, energy and heritage

CSIRO is committed to ensuring a safe working environment and acting in an environmentally responsible manner in all of its operations and research programs. Our approach to environmental management is incorporated in the CSIRO's Environment Policy which commits CSIRO to ensuring that environmental management of operations remains a high priority and a key to sustainable development for the Organisation.

Environment improvement strategies

To enable CSIRO to meet its environmental objectives and address our environmental issues, our improvement strategies for 2005 included:

- implementing ISO 14001 based Environmental Management Systems (EMS)
- auditing trade waste management across all operational sites
- annual reporting on environmental performance indicators
- undertaking site specific resource saving measures, in particular, water
- establishing quarterly meetings of the Environmental Management Systems Committee (EMSC) to review actions to improve the management of environmental activities
- incorporating Environmental Management roles and responsibilities in HS&E for the Supervisors' training course
- establishing a new EMS training course and a Trade Waste training course available for all staff
- developing a new procedure 'Reducing and Controlling Wastes on CSIRO Sites'
- the Chemwatch Gold© internet based hazardous substances management and material safety data sheet program for all staff
- updating the risk assessment procedure aimed at improving environmental risk assessment
- auditing of hazardous substances management
- auditing of general waste management practices.

Environmental Management System (EMS)

Each CSIRO Division or site has a unique set of environmental issues and risks and, as such, Divisional/site management is responsible for managing them. For this reason, each Division/site is responsible for implementing its own customised EMS based on the ISO 14001 standard. A corporate EMS manual and procedure templates are provided to guide and assist EMS implementation across our diverse and geographically dispersed range of sites.

ISO 14001 Certification

CSIRO Livestock Industries' Australian Animal Health Laboratory (AAHL) in Geelong has been formally assessed and granted ISO 14001 Certification. This has been a great achievement of the dedicated team at AAHL, which included HS&E staff and other staff volunteers. All members at AAHL have played their part, responding to the team's preparation processes and a three stage external audit.

Environmental Management Systems Committee (EMSC)

The EMSC merged with the OH&S Committee in early 2006 to form a combined Health, Safety and Environment Committee (HSEC). The HSEC is responsible for the development and implementation of Environment Policy, an Environmental Management System, and reports to the CSIRO Executive and Board on CSIRO's environmental performance. The Committee meets every three months and all staff have access to the minutes of the meetings via the intranet.

Environmental audits

Trade waste

The 'CSIRO Environmental Risk Review 2004' highlighted the potential significant environmental impact CSIRO has due to pollution and environmental damage arising from improper management of trade waste. In response to the findings of the review, an audit of trade waste management was undertaken in early 2005. Following the completion of these audits, an action plan has been implemented for completion by June 2006 to address a number of deficiencies detected by these audits.

General waste

The Risk Assessment and Audit (RA&A) unit completed a general waste management audit, 'CSIROWaste', in sample Divisions. This audit targeted management of general waste, landfills, domestic, medical, biological, laboratory and radioactive waste. Initial feedback indicates that waste management is not consistent across all Divisions but they are working on sustainability strategies to address numerous issues including waste.

Divisions will now deploy CSIROWaste audits across all their sites to assist them in developing and implementing appropriate waste management practices. A full report will be provided in 2007.

Hazardous substances

The RA&A unit completed a Hazardous Substances audit in 2006. The audit found that an appropriate control framework was in place to manage hazardous substances and applauded the environmental legal obligations database in place. The audit did, however, highlight some failings in the procurement of hazardous substances and made recommendations for better management of the receipt, storage, issue, usage and disposal of hazardous substances. An action plan will now be formulated to address the findings of this audit.

External audits

The Australian National Audit Office (ANAO) conducted a Green Office Procurement Audit of Government agencies in late 2005. Five areas were identified to be addressed in the audit; sustainable policies and initiatives, waste, water, procurement practices and motor vehicles.

The report highlighted positive activities by CSIRO and identified recommendations for all Australian Government agencies and the Department of the Environment and Heritage to conduct in order to support agencies. Eighteen recommendations impact on CSIRO which CSIRO has agreed to, with four of those recommendations having agreement with qualification. These recommendations will be addressed as part of the development of an Organisational Environmental Sustainability Strategy.

Training

All new employees at CSIRO undergo an HS&E induction on their first day of employment. The new employee is provided with information on corporate policies and procedures, and employee expectations, including information on environmental management. This year two new internal courses have also been developed: an EMS Awareness course and a Trade Waste Management training course.

Staff Insight Poll

The staff satisfaction survey (Insight Poll) conducted in 2005 included a question to assess perceptions of the Organisation's environmental management. The response to the question was favourable, indicating that an overwhelming majority of staff believe the Organisation is environmentally responsible.

Notifiable incidents

CSIRO reports and investigates any incident deemed to have an environmental impact through the HS&E incident reporting, recording and investigation procedure. Notifiable environmental incidents are reported to the state authorities.

There were two environmental notifiable incidents during 2005–06. One involved a breach of an environmental authority to operate a sewage treatment plant at our Queensland Centre for Advanced Technologies (QCAT) site in March 2005. A filter was installed to prevent scums and litter from being present in the final effluent.

The second incident arose following routine monthly tests of cooling towers, when a high reading of legionella bacteria was discovered in cooling tower water at CSIRO's Kensington site in Western Australia. An initial assessment by the WA Department of Health and local council indicated the risk to CSIRO staff and the public was negligible. Subsequent dosing and monitoring have indicated no excess readings.

Environmental performance

We monitor our performance using environmental performance indicators that apply across all Divisions. Improvement targets are set at Divisional and site level. In 2005, we set a target for all of our Divisions to have an ISO 14001 based EMS implemented. This was achieved in June 2005. Further information on CSIRO's environmental performance, including a detailed scorecard is included in CSIRO's HS&E Annual Report, which can be accessed via the CSIRO intranet at: www.csiro.au/OHSE_Report.

Resource use

CSIRO conforms with current government Energy Policy by reporting its energy use to government annually through the Australian Greenhouse Office (AGO).

Resource performance indicators

Accurate measurement and monitoring of environmental resource usage is an important part of effective and efficient science, management and business. Two indicators were selected for performance reporting: electricity and water consumption.

CSIRO's sites have been able to consistently measure their electricity consumption over the past three years. Figure 1 shows usage trends for these sites.

CSIRO's sites have been able to consistently measure their water consumption over the past

Figure 1: Electricity consumption for CSIRO's 56 sites

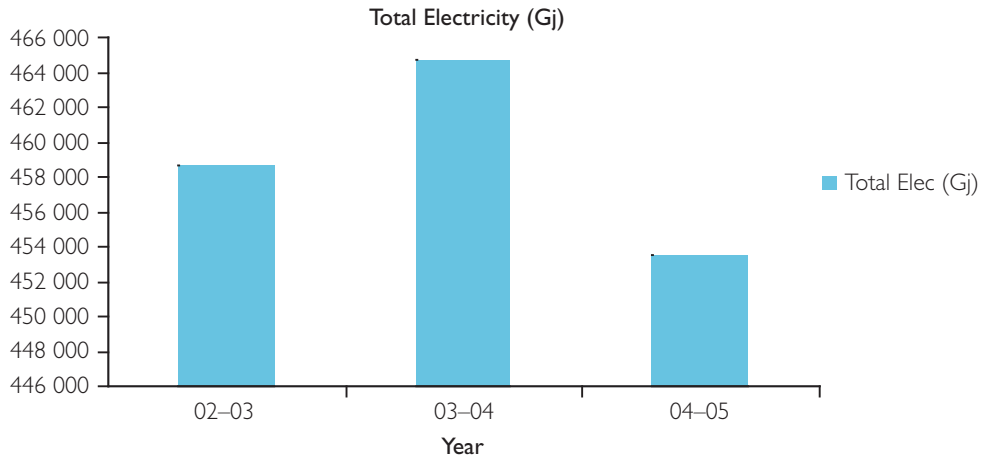
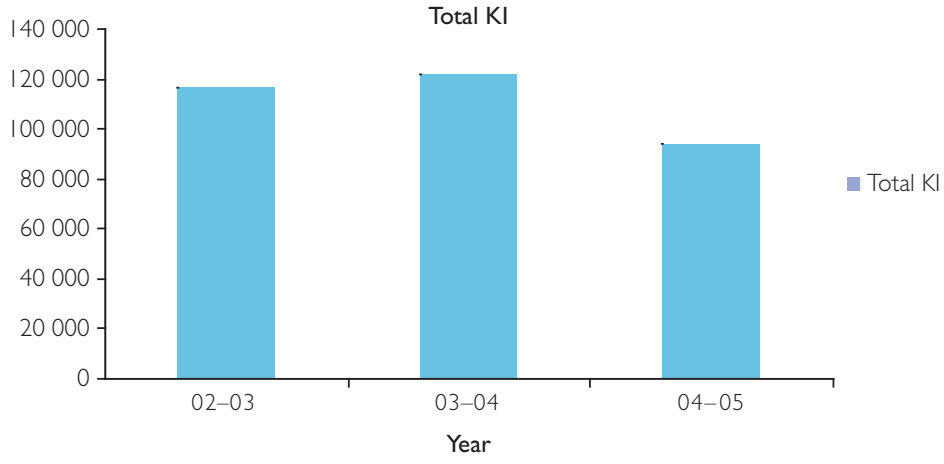


Figure 2: Water consumption of CSIRO's 56 sites



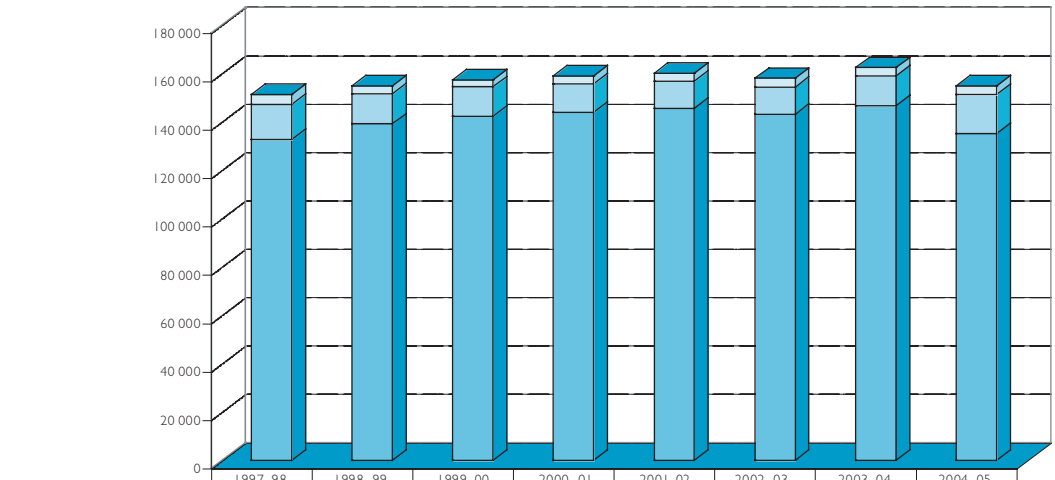
three years. Figure 2 shows usage trends for these sites.

Greenhouse gas emissions

CSIRO's greenhouse gas emissions (GHG) (Figure 3) have fallen five per cent compared to last year. Over 87 per cent of the Organisation's GHG emissions are generated by the use of electricity.

To proactively reduce our emissions from electricity further, Corporate Property negotiated the purchase of ten per cent green power (produced from clean, renewable sources) between 1 July 2004 and 30 June 2006, building upon the five per cent green power component in existing contracts. Corporate Property also negotiated, in the current financial year, 25 per cent green power for our WA sites. The average quantity of green power across

Figure 3: Greenhouse gas emissions in CSIRO. Financial Years: 1997–98 to 2004–05



	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	2004–05
Transport and other fuel sources	3 984	3 195	2 940	3 357	3 322	3 779	3 370	3 702
Natural Gas source	14 504	12 482	12 230	11 621	11 105	11 090	12 332	16 025
Electricity source	132 830	139 190	142 275	144 020	145 702	143 208	146 732	135 317

the Organisation is now 8.1 per cent of total electricity consumed.

It is planned that by 2008, 15 per cent of our electricity will be from green power. This will ensure the Organisation continues to lead the AGO laboratories category for green power.

Energy consumption

Data collated by the AGO indicates that CSIRO is the second highest energy consumer amongst Australian Government agencies, accounting for 9.35 per cent of the Commonwealth's energy consumption in 2004–05. Electricity and natural gas comprises 93 per cent of our energy use, with the remainder used in transport and standby generating plant.

CSIRO bettered the Commonwealth Energy Policy Target for offices; however, the Central Services target was not met. It is worth noting that consumption figures for office buildings only represent 0.8 per cent of CSIRO's total energy use. Laboratories and support facilities comprise the majority of the CSIRO estate, however, targets for laboratories are not yet recorded by the AGO.

Energy usage in 2004–05

CSIRO's energy usage in 2004–05 decreased by 1.1 per cent over 2003–04. The main component of the decrease was electricity at 2.6 per cent. In contrast to its decline over the five years prior to 2003–04, natural gas increased by 1.5 per cent. Natural gas is mainly used for comfort heating in buildings and glasshouse heating for science and is very sensitive to weather pattern changes.

CSIRO National Environmental Protection Measures (NEPMs) submissions

Of the five NEPMs required to be reported against by Australian Government agencies, three were applicable to CSIRO in 2004–05:

- **Diesel vehicle emissions**
  CSIRO reported on 161 diesel vehicles under this NEPM. All new and leased vehicles are maintained regularly in accordance with the manufacturer's recommendations.

- **National Pollutants Inventory (NPI)**
  CSIRO reported four sites that are above the emissions thresholds for this NEPM. All four sites: Clayton; AAHL and Belmont (Geelong) in Victoria; and Black Mountain in the ACT burn natural gas in excess of 400 tonnes per year and were added to the NPI database in 2005.

- **Air toxics**
  CSIRO conducted a site inventory of sources of air toxics, in order to identify locations where significantly elevated concentrations of one or more air toxics are expected to occur. We found no sites where elevated levels of air toxics are likely to occur.

Corporate Property Environmental Management

Corporate Property manages the CSIRO estate on behalf of the Organisation. Part of its responsibilities include overseeing the environmental impacts of buildings, plant, infrastructure and grounds. They also assess and implement any remediation activities that may be required on CSIRO properties.

Any CSIRO property that is intended for disposal has an environmental assessment performed, with any issues identified to be remediated prior to disposal. Corporate Property manages these activities with due regard to Commonwealth and State environment laws. CSIRO undertook two successful remediation activities in 2005 at Marmion (WA) and Bradfield Park (NSW).

Environmental due diligence audits have also been undertaken for the Indooroopilly, Cleveland, Cannon Hill, Atherton and Woodville sites.

Environmental Sustainability considerations are also an essential component of Corporate Property's policy and initiatives in the design and construction of new and refurbished buildings.

Corporate Property continues to have a supporting role for the storage of low-level radioactive waste stored in Woomera (SA). Regular audits are conducted to ensure security and HS&E considerations are satisfactory.

Energy Services

Corporate Property provides professional technical advice and assistance on energy, water and sustainability initiatives across the Organisation to minimise the environmental impact and energy costs of CSIRO's operations. It does this by improving energy efficiency of its facilities, reducing GHG emissions and promoting sustainability. Financial sustainability has been achieved through value-for-money energy tariffs and resource management accountability.

CSIRO is committed to current Australian Government energy policy and reports its energy use to the government annually through the Department of the Environment and Heritage (DEH).

Corporate Property is responsible for negotiating energy supply contracts for CSIRO. A contract was negotiated in 2006 from a single supplier for the three year supply of electricity to CSIRO sites within the Australian Capital Territory, New South Wales, Queensland, Victoria and South Australia.

Corporate Property is further consolidating supply agreements for supply of electricity to WA sites as well as the consolidation of gas supply for Victorian and NSW sites. The recent negotiation by Corporate Property of the supply of gas in a single contract for CSIRO's Geelong facilities has yielded a saving of eight per cent to those sites.

CSIRO's enterprise-wide procurement strategy through consolidating national and State-based electricity and natural gas supply agreements will continue to provide ongoing cost savings for the Organisation.

Heritage Sites

CSIRO has a strong association over its 80 year history with the development of industry, agriculture, environment and social aspects of Australia's history. As a community leader and Australian Government agency, CSIRO has an obligation, both statutory (*Environmental Protection and Biodiversity Conservation Act 1999* (EP&BC Act)) and morally, to protect and maintain the heritage within its control. CSIRO holds its heritage responsibility in high importance and is pro-active in assessing and maintaining any of its assets of architectural, natural, cultural and social significance.

Corporate Property is currently developing a Heritage Strategy for its estate. Whilst CSIRO occupies 56 sites, it owns or controls for the purpose of the EP&BC Act, 40 properties. Three properties contain assets on the Commonwealth Heritage List. Other properties have a range of heritage values, albeit natural, indigenous, social, physical or a combination.

Prior to any development activity occurring on a CSIRO owned or controlled property, heritage values are assessed and incorporated into the development proposal. Mindful of both its own and Australia's history, CSIRO strives to retain those elements in developing its facilities whilst ensuring it provides a scientific and research capability to support an economic and

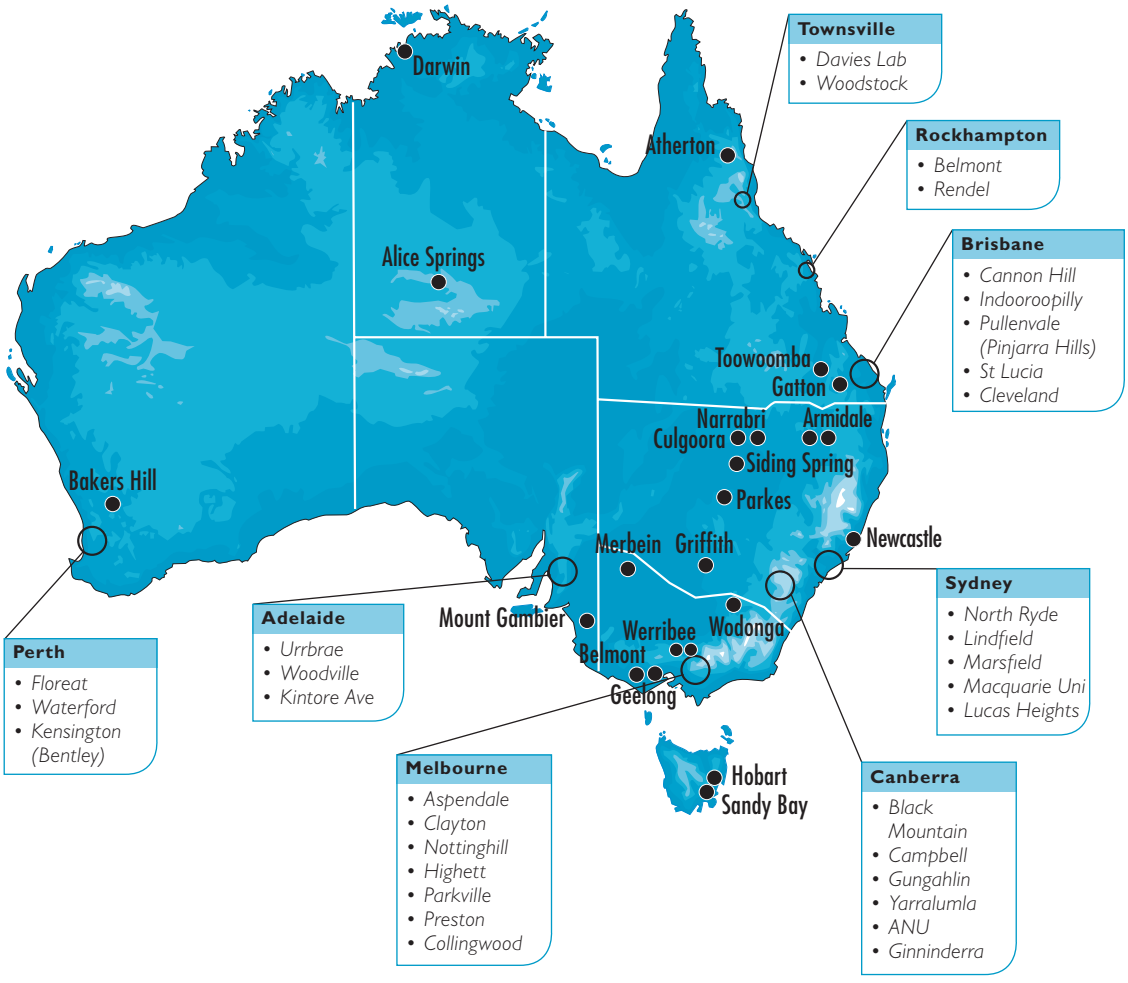
environmentally sustainable future for Australia.

As part of the Heritage Strategy, CSIRO will publish on its public website details of its heritage including:

- assets on the Commonwealth Heritage List
- assets of heritage significance but not on the Commonwealth Heritage List
- assets under consideration for their heritage values
- national collections
- other items of heritage (land and buildings) or environmental (natural, endangered species) importance
- heritage assets not owned or controlled but of interest to CSIRO.

As from 2007, CSIRO will also report to government on assets of national significance, any new listing on the Commonwealth Heritage List, expenditure on the management and maintenance of heritage assets, and actions of significance impacting on heritage values.

CSIRO locations



Section 4 – Financial Statements

INDEPENDENT AUDIT REPORT

To the Minister for Education, Science and Training

Scope

The financial statements and Board Members' responsibility

The financial statements comprise:

- Statement by Board Members and Chief Executive;
- Income Statement, Balance Sheet and Statement of Cash Flows;
- Statement of Changes in Equity;
- Schedules of Commitments and Contingencies; and
- Notes to and forming part of the Financial Statements

of the Commonwealth Scientific and Industrial Research Organisation, for the year ended 30 June 2006.

The members of the Board are responsible for preparing the financial statements that give a true and fair view of the financial position and performance of the Organisation, and that comply with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* and Accounting Standards and mandatory financial reporting requirements in Australia. The members of the Board are also responsible for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial statements.

Audit approach

I have conducted an independent audit of the financial statements in order to express an opinion on them to you. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing and Assurance Standards, in order to provide reasonable assurance as to whether the financial statements are free of material misstatement. The nature of an audit is influenced by factors such as the use of professional judgement, selective testing, the inherent limitations of internal control, and the availability of persuasive, rather than conclusive, evidence. Therefore, an audit cannot guarantee that all material misstatements have been detected.

While the effectiveness of management's internal controls over financial reporting was considered when determining the nature and extent of audit procedures, the audit was not designed to provide assurance on internal controls.

GPO Box 707 CANBERRA ACT 2601
19 National Circuit BARTON ACT
Phone (02) 6203 7300 Fax (02) 6203 7777

I have performed procedures to assess whether, in all material respects, the financial statements present fairly, in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* and Accounting Standards and other mandatory financial reporting requirements in Australia, a view which is consistent with my understanding of the Organisation's financial position, and of its financial performance and cash flows.

The audit opinion is formed on the basis of these procedures, which included:

- examining, on a test basis, information to provide evidence supporting the amounts and disclosures in the financial statements; and
- assessing the appropriateness of the accounting policies and disclosures used, and the reasonableness of significant accounting estimates made by the Board.

Independence

In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the ethical requirements of the Australian accounting profession.

Audit Opinion

In my opinion, the financial statements of the Commonwealth Scientific and Industrial Research Organisation:

(a) have been prepared in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997;* and

(b) give a true and fair view of the Organisation's financial position as at 30 June 2006 and of its performance and cash flows for the year then ended, in accordance with:

  (i) the matters required by the Finance Minister's Orders; and

  (ii) applicable Accounting Standards and other mandatory financial reporting requirements in Australia.

Australian National Audit Office

Michael J. Watson
Group Executive Director

Delegate of the Auditor-General
Canberra

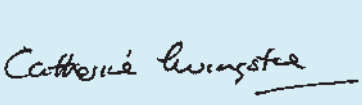
24 August 2006

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
STATEMENT BY BOARD MEMBERS AND CHIEF EXECUTIVE

In our opinion, the attached financial statements for the year ended 30 June 2006 are based on properly maintained financial records and give a true and fair view of the matters required by the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* .

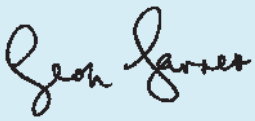
In our opinion, at the date of this statement, there are reasonable grounds to believe that the Organisation will be able to pay its debts as and when they become due and payable.

This Statement is made in accordance with the resolution of the Board Members.



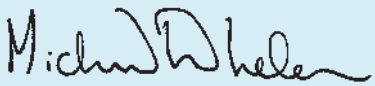
Catherine B Livingstone
Chairman of the Board

23 August 2006



Geoff G Garrett
Chief Executive and Board Member

23 August 2006



Michael S Whelan
Chief Financial Officer

23 August 2006

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
INCOME STATEMENT
For the year ended 30 June 2006

	Notes	2006 $'000	2005 $'000
INCOME			
Revenue			
Revenues from Government	6.1	593 928	577 138
Goods and services	6.2	272 037	260 528
Interest	6.3	7 626	7 884
Rents	6.4	6 173	5 497
Royalties	6.2	20 508	15 058
Other revenue	6.5	29 641	24 337
Total Revenue		**929 913**	**890 442**
Gains			
Fair value gains	6.6	4 551	1 638
Reversals of previous asset write-downs	6.7	-	3 046
Net gains from sale of property, plant and equipment	6.8	15 467	-
Net gains from sale of equity investments and intellectual property	6.2	11 910	5 307
Net foreign exchange gains	6.9	186	-
Total Gains		**32 114**	**9 991**
TOTAL INCOME		**962 027**	**900 433**
EXPENSES			
Employees	7.1	548 099	535 208
Suppliers	7.2	316 991	303 318
Depreciation and amortisation	7.3	79 930	77 037
Finance costs	7.4	3 592	3 481
Write-down and impairment of assets	7.5	(829)	2 045
Net foreign exchange losses	7.6	-	163
TOTAL EXPENSES		**947 783**	**921 252**
Net surplus/(deficit)		**14 244**	**(20 819)**
Share of net operating surplus/(deficit) of joint ventures accounted for using the equity method	10	279	14
Net Surplus/(Deficit) Attributable to the Australian Government		**14 523**	**(20 805)**

The above statement should be read in conjunction with the accompanying notes.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
BALANCE SHEET
As at 30 June 2006

	Notes	2006 $'000	2005 $'000
ASSETS			
Financial Assets			
Cash and cash equivalents	8	153 328	158 675
Receivables	9	63 648	56 104
Investments accounted for using the equity method	10	795	516
Other investments	11	34 728	14 817
Total financial assets		**252 499**	**230 112**
Non-Financial Assets			
Land and buildings	12	1 008 561	1 039 615
Plant and equipment	13	221 239	217 330
Investment properties	14 (a)	37 810	5 699
Land held for sale	14 (b)	-	14 216
Intangibles	15	17 954	7 408
Inventories	16	1 064	966
Other non-financial assets	17	19 889	20 245
Total non-financial assets		**1 306 517**	**1 305 479**
TOTAL ASSETS		**1 559 016**	**1 535 591**
LIABILITIES			
Payables			
Suppliers	18	50 006	38 743
Other payables	19	62 478	71 004
Total payables		**112 484**	**109 747**
Interest Bearing Liabilities			
Leases	20	76 200	79 817
Deposits	21	19 705	15 118
Total interest bearing liabilities		**95 905**	**94 935**
Provisions			
Employees	22	184 673	178 417
Other provisions	23	-	1 100
Total provisions		**184 673**	**179 517**
TOTAL LIABILITIES		**393 062**	**384 199**
NET ASSETS		**1 165 954**	**1 151 392**
EQUITY			
Reserves		710 476	710 476
Retained surpluses		455 478	440 916
TOTAL EQUITY		**1 165 954**	**1 151 392**
Current assets		**237 929**	**250 206**
Non-current assets		**1 321 087**	**1 285 385**
Current liabilities		**309 348**	**295 886**
Non-current liabilities		**83 714**	**88 313**

The above statement should be read in conjunction with the accompanying notes.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
STATEMENT OF CASH FLOW
For the year ended 30 June 2006

	Notes	2006 $'000	2005 $'000
OPERATING ACTIVITIES			
Cash received			
Appropriations		593 928	577 138
Goods and services		347 590	349 282
Interest		7 055	7 884
Net GST received		855	15 380
Deposits		4 587	-
Total cash received		**954 015**	**949 684**
Cash used			
Employees		555 611	535 968
Suppliers		328 276	360 324
Financing costs		3 677	7 419
Deposits		-	3 310
Total cash used		**887 564**	**907 021**
Net cash from operating activities	26	**66 451**	**42 663**
INVESTING ACTIVITIES			
Cash received			
Proceeds from sale of property, plant and equipment		33 085	2 154
Proceeds from sale of equity investments		16 461	8 879
Loans repaid		1 025	-
Total cash received		**50 571**	**11 033**
Cash used			
Purchase of property, plant and equipment		98 841	64 830
Purchase of equity investments		19 912	3 974
Total cash used		**118 753**	**68 804**
Net cash used by investing activities		**(68 182)**	**(57 771)**
FINANCING ACTIVITIES			
Cash used			
Cash used for other financing activities		3 616	5 215
Total cash used		**3 616**	**5 215**
Net cash used by financing activities		**(3 616)**	**(5 215)**
Net increase/(decrease) in cash held		(5 347)	(20 323)
Cash at beginning of the reporting period		158 675	178 998
Cash at end of the reporting period	8	**153 328**	**158 675**

The above statement should be read in conjunction with the accompanying notes.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
STATEMENT OF CHANGES IN EQUITY
For the year ended 30 June 2006

	Retained Surpluses		Asset Revaluation Reserve		Total Equity	
	2006 $'000	**2005 $'000**	**2006 $'000**	**2005 $'000**	**2006 $'000**	**2005 $'000**
Opening Balance	**440 916**	463 369	**710 476**	481 251	**1 151 392**	944 620
Income and expenses recognised directly in equity						
Fair value gains adjustment on 1 July 2005 on investment 'held at fair value through profit and loss' per AASB 139	**39**	-	-	-	**39**	-
Net fair value revaluation increase for property, plant & equipment	-	-	-	235 799	-	235 799
Transfer from asset revaluation reserve to retained surpluses on realisation of assets with owners (Note 24)	-	6 574	-	(6 574)	-	-
Subtotal income and expenses recognised directly in equity	**39**	6 574	**-**	229 225	**39**	235 799
Net Operating surplus/(deficit)	**14 523**	(20 805)	**-**	**-**	**14 523**	(20 805)
Total income and expenses recognised directly in equity	**14 562**	(14 231)	**-**	229 225	**14 562**	214 994
Transactions with Owners						
Distributions to Owners:						
Restructuring (Note 24)	-	(8 222)	-	-	-	(8 222)
Subtotal transactions with Owners	**-**	(8 222)	**-**	**-**	**-**	(8 222)
Closing balance at 30 June	**455 478**	440 916	**710 476**	710 476	**1 165 954**	1 151 392

The above statement should be read in conjunction with the accompanying notes.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
SCHEDULE OF COMMITMENTS
As at 30 June 2006

	2006	2005
BY TYPE	**$'000**	**$'000**
Capital commitments		
Land and buildings [1]	13 890	27 186
Plant and equipment [2]	1 703	2 205
Investments [3]	2 662	6 105
Total capital commitments	**18 255**	**35 496**
Other commitments		
Operating leases [4]	367 316	384 697
Research and development commitments [5]	246 020	278 745
Other commitments	15 128	4 588
Total other commitments	**628 464**	**668 030**
Commitments receivable		
Research and development commitments	185 857	219 633
Other receivables	12 797	17 594
Total commitments receivable	**198 654**	**237 227**
Net commitments by type	**448 065**	**466 299**
BY MATURITY		
Capital commitments		
One year or less	16 927	31 261
From one to five years	1 328	4 235
Total capital commitments	**18 255**	**35 496**
Operating lease commitments		
One year or less	29 040	29 551
From one to five years	92 580	88 166
Over five years	245 696	266 980
Total operating lease commitments	**367 316**	**384 697**
Other commitments		
One year or less	153 527	166 032
From one to five years	104 322	113 728
Over five years	3 299	3 573
Total other commitments	**261 148**	**283 333**
Commitments receivable	(198 654)	(237 227)
Net commitments by maturity	**448 065**	**466 299**

SCHEDULE OF COMMITMENTS (cont)

1. Land and building commitments are outstanding contractual payments for buildings under construction.

2. Plant and equipment commitments are for the purchase of plant and equipment.

3. Investment commitments are commitments for additional contributions for equity investment.

4. Operating leases are effectively non-cancellable and comprise:

Nature of lease	General Description of leasing arrangement
Leases for office and scientific research accommodation	Lease payments are subject to annual increase in accordance with the terms of agreement eg. upwards movements in the Consumer Price Index. The accommodation leases are still current and each may be renewed at the Organisation's option.
Leases for motor vehicles	No contingent rentals exist. There are no purchase options available to the Organisation.
Leases for computer equipment	Lessor provides computer equipment designated as necessary in the supply contract for a general period of 2−3 years.

5. Research and development commitments are Agreements Equally Proportionately Unperformed commitments payable and receivable for research and development contracts.

The above schedule should be read in conjunction with the accompanying notes.
Commitments are GST inclusive where relevant.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
SCHEDULE OF CONTINGENCIES
As at 30 June 2006

	Notes	Guarantees		Claims for Damages/Costs		Total	
		2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000
Contingent liabilities	25						
Balance from previous period		44	86 855 *	525	1 100	569	87 955
New		-	44	-	525	-	569
Re-measurement		-	(86 855)	(275)	-	(275)	(86 855)
Liabilities crystallised		-	-	-	-	-	-
Obligations expired		(44)	-	-	(1 100)	(44)	(1 100)
Total contingent liabilities		-	**44**	**250**	**525**	**250**	**569**
Contingent assets	25						
Balance from previous period		-	86 855	-	-	-	86 855
New		-	-	-	-	-	-
Re-measurement		-	(86 855)	-	-	-	(86 855)
Liabilities crystallised		-	-	-	-	-	-
Expired		-	-	-	-	-	-
Total contingent assets		**-**	**-**	**-**	**-**	**-**	**-**
Net contingent liabilities						**250**	**569**

Details of each class of contingent liabilities and assets, including those not included above because they cannot be quantified, or are considered remote, are shown at Note 25: Contingent Liabilities and Assets.

* Contingent asset and liability for Advanced Magnesium Ltd which was previously reported in 2003−04 was reclassified as less than remote in 2004−05.

The above schedule should be read in conjunction with the accompanying notes.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
For the year ended 30 June 2006

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
For the year ended 30 June 2006

Note 1 Summary of Significant Accounting Policies

1.1 Basis of Preparation of the Financial Statements

The financial statements are required by clause 1(b) of Schedule 1 to the *Commonwealth Authorities and Companies Act 1997* and are a general purpose financial report.

The continued existence of the Organisation in its present form and with its present programs is dependent on Government policy and on continuing appropriations by Parliament for the Organisation's administration and programs.

The statements have been prepared in accordance with:

- Finance Minister's Orders (or FMOs), being the *Commonwealth Authorities and Companies Orders (Financial Statements for the periods ending on or after 1 July 2005)* ;
- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board that apply for the reporting period; and
- Interpretations issued by the AASB and UIG that apply for the reporting period.

This is the first financial report prepared under Australian Equivalents to International Financial Reporting Standards (AEIFRS). The impacts of adopting AEIFRS are disclosed in Note 2.

The Income Statement, Balance Sheet, and Statement of Changes in Equity have been prepared on an accrual basis and are in accordance with the historical cost convention, except for certain assets, which, as noted, are at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The financial report is presented in Australian dollars and values are rounded to the nearest thousand dollars unless disclosure of the full amount is specifically required.

Unless alternative treatment is specifically required by an accounting standard, assets and liabilities are recognised in the Balance Sheet when and only when it is probable that future economic benefits will flow and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under agreements equally proportionately unperformed are not recognised unless required by an Accounting Standard. Liabilities and assets that are unrecognised are reported in the Schedule of Commitments and the Schedule of Contingencies (other than unquantifiable or remote contingencies, which are reported at Note 25).

Unless alternative treatment is specifically required by an accounting standard, revenues and expenses are recognised in the Income Statement when and only when the flow or consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 **Significant Accounting Judgements and Estimates**

In the process of applying the accounting policies listed in this note, the Organisation has made the following judgements that have the most significant impact on the amounts recorded in the financial statements:

- The fair value of land and buildings designated for possible sale and investment property has been taken to be the market value of similar properties as determined by an independent valuer. However, land and buildings which will continue to be used for research activities have been valued by the Organisation's registered valuer using fair value methodology.
- The fair value of plant and equipment has been valued by the Australian Valuation Office using fair value methodology.
- The fair value of investments in unlisted companies is based either on independent valuation, the recent price paid by investors, or at cost and assessed for impairment.

No accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period.

1.3 **Statement of Compliance**

The financial report complies with Australian Accounting Standards, which include Australian Equivalents to International Financial Reporting Standards (AEIFRS).

Australian Accounting Standards require CSIRO to disclose Australian Accounting Standards that have not been applied, for standards that have been issued but are not yet effective.

The AASB has issued amendments to existing standards, these amendments are denoted by year and then number, for example 2005−1 indicates amendment 1 issued in 2005.

The table below illustrates standards and amendments that will become effective for the Organisation in the future. The nature of the impending change within the table, has been out of necessity abbreviated and users should consult the full version available on the AASB's website to identify the full impact of the change. The expected impact on the financial report of adoption of these standards is based on the Organisation's initial assessment at this date, but may change. The Organisation intends to adopt all standards upon their application date.

Standard affected	Application date*	Nature of impending change	Impact expected on financial report
AASB 139	1 January 2006	Amends hedging requirements for foreign currency risk of a highly probable intra-group transaction.	No expected impact.
AASB 139, AASB 132, AASB 1, AASB 1023 and AASB 1038	1 January 2006	Amends AASB 139, AASB 1023 and AASB 1038 to restrict the option to fair value through profit or loss and makes consequential amendments to AASB 1 and AASB 132.	No expected impact.
AASB 1 and AASB 139	1 January 2006	Amends AASB 1 to allow an entity to determine whether an arrangement is, or contains, a lease. Amends AASB 139 to scope out a contractual right to receive reimbursement (in accordance with AASB 137) in the form of cash.	No expected impact.
AASB 3	1 January 2006	Amends the scope to exclude business combinations involving entities or businesses under common control.	No expected impact.
AASB 4, AASB 1023, AASB 139 and AASB 132	1 January 2006	Amended standards in regards to financial guarantee contracts.	No expected impact.
AASB 132, AASB 101, AASB 114, AASB 117, AASB 133, AASB 139, AASB 1, AASB 4, AASB 1023 and AASB 1038	1 January 2007	Amended requirements subsequent to the issuing of AASB 7.	No expected impact.
AASB 121	31 December 2006	Changes in requirements for net investments in foreign subsidiaries depending on denominated currency.	No expected impact.
AASB7 Financial Instruments: Disclosures	1 July 2007	Revise the disclosure requirements for financial instruments from AASB132 requirements.	No expected impact.

* Application date is for annual reporting periods beginning on or after the date shown.

1.4 **Consolidation**

The Organisation has investments in a number of companies (see Note 10 and 11) over which it has a controlling interest and/or significant influence. These companies have been established for the purpose of i) commercialisation of intellectual property and held for sale, ii) provision of specific services to owners or iii) participation in the Ensis joint venture.

The Organisation's policy is to only consolidate and/or equity account these entities where they are not held for sale and have a material impact on the Organisation's financial statements.

As none of these entities is assessed as having a material impact they have not been consolidated or equity accounted in the financial statements.

1.5 **Revenue**

The revenues described in this Note are revenues relating to the core operating activities of the Organisation.

Revenue from contract research and development activities is recognised by reference to the stage of completion of contracts at the reporting date. The stage of completion is determined according to costs incurred to date after taking into account the total contract values and the estimated total costs. The balances of contract research and development activities in progress are accounted as either contract research work in progress (Note 17) or contract research revenue received in advance (Note 19). Where necessary, a surplus or deficit is recognised progressively for each contract research and development activity.

Revenue from sale of other goods (including non-current assets) and services is recognised upon delivery of goods and services performed and when:

- The risks and rewards of ownership have been transferred to the buyer;
- The seller retains no managerial involvement nor effective control over the goods and services;
- The revenue and transaction costs incurred can be reliably measured; and
- It is probable that the economic benefits associated with the transaction will flow to the Organisation.

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts less any provision for doubtful debts. Collectability of debts is reviewed at balance date. Provisions are made when collectability of the debt is no longer probable.

Interest revenue is recognised using the effective interest method as set out in AASB 139.

Royalties are recognised on an accrual basis in accordance with the substance of the relevant royalty agreements.

Revenues from Government − Output Appropriations
The full amount of the appropriation for the Organisation's output for the year is recognised as revenue.

Resources Received Free of Charge
Services received free of charge are recognised as revenue when and only when the fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised as revenue at their fair value when the asset qualifies for recognition.

1.6 **Research and Development Expenditure and Intellectual Property**

All research and development costs, including costs associated with protecting intellectual property (eg patents and trademarks) are expensed as incurred.

1.7 **Transactions with the Government as Owners**

Restructuring of Administrative Arrangements

In 2004−05, net assets relinquished to another Commonwealth authority under a restructuring of administrative arrangements were adjusted at their book value directly against contributed equity. Refer Note 24.

1.8 **Employee Benefits**

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for 'short-term employee benefits' (as defined in AASB 119) and termination benefits due within twelve months are measured at their nominal amounts. The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

All other employee benefit liabilities are measured at the present value of the estimated future cash outflows to be made in respect of services provided by employees up to the reporting date.

Leave

The liability for employee benefits includes provisions for annual leave, long service leave and severance payments.

The leave liabilities are calculated on the basis of employees' remuneration, including the Organisation's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the work of an actuary. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotions and inflation.

Separation and redundancy

Provision is made for separation and redundancy benefit payments in circumstances where the Organisation has developed a detailed formal plan for termination, including relocation as a result of restructuring and relocation of Divisions and has informed those employees affected that it will carry out the termination and relocation.

Superannuation

Employees of the Organisation are either members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS), or the PSS accumulation plan (PSSap).

The CSS and PSS are defined benefit schemes for the Commonwealth. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course.

The Organisation makes contributions to the schemes at rates determined by regular actuarial review to be sufficient to meet the cost to the Government of the superannuation entitlements of the Organisation's employees. In addition a 3% Employer Productivity Superannuation Contribution is paid for CSS and PSS members. For term employees who have chosen not to join the CSS or PSS, a 9% employer productivity superannuation contribution is paid to the Australian Government Employees Superannuation Trust (AGEST) or other eligible superannuation funds.

From 1 July 2005, new employees are eligible to join the PSSap scheme.

1.9 **Workers' Compensation**

The Organisation's workers' compensation liability is covered by the premium paid to the Commission for the Safety, Rehabilitation and Compensation of Commonwealth Employees 'Comcare' and no additional provision for liability is required.

1.10 **Insurance**

As part of its risk management strategy, the Organisation has insured for risks through the Commonwealth Government's insurable risk managed fund 'Comcover'.

1.11 **Bad and Doubtful Debts**

Bad debts are written off in the year in which they are identified. A provision is raised for doubtful debts based on a review of all receivables outstanding for more than 60 days at year-end and any other specific debt where the collection of the full amount is considered doubtful.

1.12 **Cash and Cash Equivalents**

Cash and cash equivalents means notes and coins held and any deposits held at call with a bank or financial institution. Cash is recognised at its nominal amount. Interest is credited to revenue as it accrues.

1.13 **Investments**

In accordance with AASB 139: Financial Instruments: Recognition and Measurement, the Organisation has elected to initially designate its equity investment as 'held at fair value through profit and loss' as at 1 July 2005. Any movements in their fair values during the year are recognised as fair value gains or losses in the Income Statement.

Disclosure requirements have been made in accordance with AASB 132, Financial Instruments: Presentation and Disclosures and applying the fair value method.

For listed investments/joint ventures, the quoted market price is their fair value. However, for unlisted companies (including controlled, joint venture and associate entities disclosed in Note 11) which are established for the purpose of commercialisation of Intellectual Property, the Organisation's Audit Committee has endorsed the policy of assessing their fair values in accordance with the Australian Venture Capital Association Ltd's *Valuation Guidelines* , where companies are identified as 'early stage', 'mid/expansion stage' or 'later stage' investments. These start up companies have mainly been identified as 'early stage' investments. If an active market does not exist but evidence exists of the price paid for the investment, then fair value is based on that price. Where no market exists, fair value is based either on the net assets of the investee entity or cost tested for impairment loss.

The reason for the Organisation to invest in or form start up companies disclosed in Note 11 is to maximise the public or private commercial impact from science investment. In accordance with the Organisation's policy, it is not a long −term portfolio shareholder in these entities. They are held for sale at fair values and equity accounting is not adopted for interests in joint venture and associate entities. They are accounted for in accordance with AASB 5 and classified as non −current assets held for sale at fair value. However, for investments in special purpose entities disclosed in Note 11(b) (eg AARNet, VERNet and Provisor), where investments are made to use the research facilities/networks or to provide services to owners, they are not held for sale and are valued at cost and assessed for impairment each year.

1.14 **Property, Plant and Equipment**

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the Balance Sheet, except for purchases costing less than $3 000 which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

Assets acquired at no cost or for nominal considerations are initially recognised as assets and revenues at their fair value at the date of acquisition.

Revaluations

Basis

Property, plant and equipment, including assets under finance leases are carried at fair value, being revalued with sufficient frequency such that the carrying amount of each asset is not materially different, at reporting date, from its fair value. The last revaluation at fair value was undertaken as at 30 June 2005 using fair value methodology. This is in accordance with the Finance Minister's Orders and AASB 116. The Organisation's registered valuers and Australian Valuation Office have confirmed that there is no material difference in fair values for property, plant and equipment during the reporting period.

Land, which will continue to be used for research activity, is valued by the Organisation's registered valuer at fair value, ie 'existing use value', and the valuation methodology has been endorsed by independent valuers. Existing use contemplates the continued use of the asset for the same application as at the date of valuation, having regard to the asset's capacity to continue contributing to the value of the Organisation but ignoring alternative uses.

Buildings and leasehold improvements, which will continue to be used for research activities, are valued using the fair value methodology. This valuation approach determines the depreciated replacement cost using current building prices to arrive at current gross replacement cost less accumulated depreciation having regard to the age, condition and suitability for research and development activities. Building valuations include plant, fit-outs, fixtures and fittings, which form an integral part of the building.

Investment properties, including land and buildings designated for possible sale are valued at market value by registered valuers at 30 June 2005.

All plant and equipment have been revalued by the Australian Valuation Office using the fair value methodology. Assets which would not be replaced, or are surplus to requirements, are valued at net realisable value.

Property, plant and equipment which are purchased from contract research funds and where the control and subsequent sale proceeds are refunded to contributors under the terms of the agreements, are expensed during the year of purchase. Separate records for these assets are maintained and disclosed in Note 28.

Depreciation and Amortisation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Organisation using, in all cases, the straight-line method of depreciation. Leasehold improvements are depreciated on a straight-line basis over the lesser of the estimated useful life of the improvements or the unexpired period of the lease.

During the reporting period, depreciation/amortisation rates (useful lives), residual values and methods were reviewed and revised in consultation with the Australian Valuation Office and adjustments totalling a $5.5 million reduction in depreciation/amortisation charges were recognised in the reporting period and disclosed in the Income Statement.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2006	2005
Building on freehold land	40 to 50 years	40 to 50 years
Leasehold improvements	Lease term	Lease term
Passenger vehicles	7 years	5 years
Agricultural and transport equipment	3 to 20 years	3 to 15 years
Computing equipment	2 to 5 years	2 to 5 years
Scientific equipment	5 to 20 years	5 to 25 years
Furniture and office equipment	5 to 15 years	4 to 15 years
Workshop equipment	20 to 25 years	20 years
Research vessels	25 years	25 years
Australia Telescope	15 to 58 years	12 to 55 years

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed in Note 7.3.

Impairment

All assets were assessed for impairment at 30 June 2006. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its *fair value less costs to sell* and its *value in use* . *Value in use* is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the Organisation were deprived of the asset, its *value in use* is taken to be its depreciated replacement cost.

No indicators of impairment were found for assets at fair value.

1.15 **Intangibles**

Internally developed and externally acquired computer software with an estimated cost of more than a $250 000 threshold is carried at cost. Computer software is amortised on a straight-line basis over its remaining useful life of between 2 to 10 years.

All software assets were assessed for indications of impairment as at 30 June 2006.

1.16 **Inventories**

Inventories held at the reporting date represent books, CD-ROMs and videos of publishing and media products. They are held for resale and valued at the lower of cost and net realisable value.

1.17 **Consumable Stores**

Stocks of consumable stores, which are not held for resale, are expensed during the year of purchase. These stores mainly consist of fuel and lubricants, chemical supplies, maintenance materials and stationery. The total value is not considered material in terms of total expenditure or total assets.

1.18 **Leases**

A distinction is made between finance leases, which effectively transfer from the lessor to the lessee substantially all the risks and benefits incidental to ownership of leased non-current assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains all such risks and benefits.

Where a non-current asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Operating lease payments are expensed on a straight line basis which is representative of the pattern of benefits derived from the leased assets.

1.19 **Trade Creditors and Accruals**

Trade creditors and accruals are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

1.20 **Foreign Currency Transactions**

Transactions denominated in a foreign currency are converted at the exchange rate prevailing at the date of the transaction. Foreign currency receivables and payables are also translated at the exchange rates prevailing at balance date. Associated currency gains and losses are brought to account in the Income Statement. The Organisation does not enter into specific forward exchange contracts during the reporting period.

1.21 **Taxation/Competitive Neutrality**

Taxation
In accordance with section 53 of the *Science and Industry Research Act 1949* , the Organisation is exempt from all forms of Australian taxation except Fringe Benefits Tax and the Goods and Services Tax. The Organisation pays applicable taxes in overseas countries.

Revenues, expenses and assets are recognised net of GST:

- except where the amount of GST incurred is not recoverable from the Australian Taxation Office; and
- except for receivables and payables.

Competitive neutrality
The Australian Government *Competitive Neutrality Guidelines for Managers* require that government bodies operate with no net competitive advantages over private sector competitors. For CSIRO, Competitive Neutrality policy is applied to consulting and services. Neutrality is achieved by incorporating tax equivalence and rate of return components in pricing of these services.

1.22 **Rounding**

Amounts are rounded to the nearest $1 000 except in relation to:

- remuneration of Board Members
- remuneration of Officers
- remuneration of auditors

1.23 **Joint Ventures**

Joint venture operations − Co-operative Research Centres (CRCs)

The proportionate interest in CRCs regarded as joint venture operations are disclosed in the financial statements under appropriate headings. Their primary source of funding is from the Commonwealth Government and funding is progressively drawn down over the life of the CRCs and distributed to participants such as CSIRO and Universities for research and development work. CSIRO's contributions to the CRCs are expensed as incurred and funds received from CRCs are recognised as revenue to the extent that work has been performed in the Income Statement. Details of specific 'joint venture operations' are disclosed in Note 27.

Joint venture entities − unincorporated

The interest in a joint venture entity is accounted for using the equity method.

Food Science Australia (FSA) . The Organisation's 85% interest in FSA is not accounted for using the equity method because the carrying amount of the Organisation's investment in FSA has been reduced below zero due to its share of FSA's accumulated losses (refer Note 10). The share of FSA's operating surplus for the year has been netted off against its share of its accumulated deficits and recognised as a liability in the Balance Sheet.

Murray Darling Freshwater Research Centre (MDFRC) . The Organisation's 50% interest in the MDFRC is accounted for using the equity method (Refer Note 10).

Ensis . The Organisation's 50% interest in the joint venture entity Ensis, is, via its fully owned subsidiary, CSIRO FFP Pty Ltd. The Organisation's 50% share of Ensis' gross margin for the year has been accounted for by CSIRO FFP Pty Ltd using the equity method. Details of CSIRO FFP Pty Ltd's share of Ensis gross profit margin are disclosed in Note 10.

1.24 **Financial Instruments**

Interest rate risk, fair values and credit risk exposures for financial instruments are disclosed in Note 37.

1.25 **Borrowing Costs**

All borrowing costs are expensed as incurred.

1.26 **Contingent Liabilities and Contingent Assets**

Contingent Liabilities and Assets are not recognised in the Balance Sheet but are discussed in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset, or represent an existing liability or asset in respect of which settlement is not probable or the amount cannot be reliably measured. Remote contingencies are part of this disclosure. Where settlement becomes probable, a liability or asset is recognised. A liability or asset is recognised when its existence is confirmed by a future event, when settlement becomes probable (virtually certain for assets) or when reliable measurement becomes possible.

These contingent liabilities are considered remote and consequently are detailed in Note 25 Contingent Liabilities and Assets. At the time of completion of the financial statements, there was no reason to believe that the contingent liabilities provided by the Organisation would be called upon, and recognition of the liability was therefore not required.

1.27 **Comparative Figures**

Where necessary, comparative figures have been adjusted to conform to changes in presentation in these financial statements.

	2005 $'000	2004 $'000
Note 2 The Impact of the Transition to AEIFRS from Previous AGAAP		
Reconciliation of total equity as presented under previous AGAAP to that under AEIFRS		
Total Equity under previous AGAAP	1 165 073	944 933
Adjustments to retained surpluses:		
Land and buildings[1]	(5 699)	(4 031)
Investment property[1]	5 699	4 031
Derecognise depreciation on investment property	142	-
Write down intangibles[2]	(623)	(1 515)
Provision for employee expenses[3]	1 162	1 202
Gain on fair value of investment property	1 638	-
Derecognise receivable on property sales under AEIFRS	(28 436)	-
Recognise land held for sale under AEIFRS	14 216	-
Adjustments to other reserves:		
Asset revaluation reserve[2]	(1 780)	-
Total equity translated to AEIFRS	**1 151 392**	**944 620**
Reconciliation of net operating surplus/(deficit) as presented under previous AGAAP to AEIFRS		
Prior year net operating surplus/(deficit) under AGAAP	(9 217)	
Adjustments:		
Amortisation of intangibles[4]	892	
Provision of employee expenses[3]	(40)	
Depreciation of investment property	142	
Gain on fair value of investment property	1 638	
Derecognise receivable on property sales under AEIFRS	(28 436)	
Recognise land held for sale under AEIFRS	14 216	
Prior year net operating surplus/(deficit) translated to AEIFRS	**(20 805)**	

[1] Reclassification of investment property under AEIFRS.

[2] AEIFRS allow intangible assets to be revalued only where an active market exists. The Organisation has previously revalued highly specialised intangible assets under AGAAP for which no active market existed. The carrying value of the revalued component of these intangible assets therefore has been derecognised.

[3] Being adjustment required under AEIFRS for the non-current portion of recreation leave provisions discounted to its present value.

[4] The operating result has been adjusted due to the derecognition of revalued amounts of intangibles and that has resulted in a decrease in amortisation adjustment.

Note 3 Economic Dependency

The Organisation was established by the *Science and Industry Research Act 1949* and is controlled by the Commonwealth of Australia. It receives approximately two thirds of its funding from Commonwealth Parliamentary appropriations. The current Triennium Funding Agreement with the Australian Government covers the period 2004–05 to 2006–07.

The Organisation is dependent on appropriations from the Parliament of the Commonwealth of Australia for its continued existence and ability to carry out its normal activities.

Note 4 Segment Reporting

The Organisation principally operates in the field of scientific and industrial research and development in Australia with a small overseas presence related to specific Australian research objectives. It is therefore considered that for segment reporting, it operates in one industry (scientific research and development) and principally one geographical location (Australia).

Note 5 Events Occurring After Reporting Date

At the time of completion of this note, the Organisation was not aware of any events occurring after reporting date.

			Notes	2006 $'000	2005 $'000
Note 6	**Income**				
	Revenues				
	6.1	**Revenues from Government**			
		Appropriations for outputs		**593 928**	**577 138**
	6.2	**Goods and services**			
		Strategic R&D – co-investment activities		210 136	199 660
		Services and consulting		61 901	60 868
				272 037	**260 528**
		Intellectual property revenues			
		Royalties		20 508	15 058
		Net gains from sale of equity investments and intellectual property (a)		11 910	5 307
				32 418	**20 365**
		Total sale of goods and services		**304 455**	**280 893**
		Goods and services			
		Goods		7 637	6 892
		Services		296 818	274 001
		Total sales of goods and services		**304 455**	**280 893**
		Provision of goods to:			
		Related entities		-	3
		External entities		7 637	6 889
		Total sales of goods		**7 637**	**6 892**
		Rendering of services to:			
		Related entities		76 968	86 264
		External entities		219 850	187 737
		Total rendering of services		**296 818**	**274 001**
		Cost of goods sold − inventories only		**1 025**	**941**
	6.3	**Interest**			
		Bank and term deposits		**7 626**	**7 884**
	6.4	**Rents**			
		Rental income		**6 173**	**5 497**

Note 6	Income (cont)	Notes	2006 $'000	2005 $'000
6.5	**Other revenues**			
	Vehicle contributions – staff		88	89
	Sale of primary produce		879	1 364
	Share of FSA operating surplus	10	337	967
	FSA cost recovery, except employee costs		4 581	4 021
	FFP research support cost recovery	10	4 447	1 556
	FFP direct cost recovery, except employee costs	10	6 484	3 807
	Donations		138	160
	Other		12 687	12 373
	Total other revenues		**29 641**	**24 337**
	Gains			
6.6	**Fair value gains**			
	Investment properties		-	1 638
	Equity investments 'held at fair value through profit and loss'		4 551	-
	Total fair value gains		**4 551**	**1 638**
6.7	**Reversals of previous asset write-downs**			
	Decrease in provision for doubtful debts		-	1 981
	Decrease in provision for diminution in value of investment		-	1 065
	Total reversals of previous asset write-downs		**-**	**3 046**
6.8	**Net gains/(losses) from sale of property, plant and equipment**			
	Land and Buildings			
	Proceeds from sale		30 566	294
	Less, Net book value		(15 067)	(231)
	Net gains/(loss)		15 499	63
	Plant and equipment			
	Proceeds from sale		2 519	1 860
	Less, Net book value		(2 551)	(1 923)
	Net gains/(loss)		(32)	(63)
	Total net gains/(loss) from sale of property, plant & equipment		**15 467**	**-**

Note 6	**Income** (cont)	Notes	2006 $'000	2005 $'000
	6.9 Net foreign exchange gains			
	Non-speculative		**186**	**-**
	(a) Net gains from sale of equity investment, including intellectual property (IP) (Note 6.2).			
	Proceeds from sale of equity investments		2 618	8 050
	Gains on sale of IP to subsidiaries		2 969	-
	Gain on sale of IP to joint venture and other entities		6 341	829
			11 928	8 879
	Less, Net book value		(18)	(3 572)
	Total net gains		**11 910**	**5 307**

		Notes	2006 $'000	2005 $'000
Note 7	**Expenses**			
7.1	**Employee expenses**			
	Wages and salaries		422 157	415 544
	Superannuation		76 567	74 711
	Leave and other entitlements		72 407	60 492
	Separation and redundancy		7 079	8 017
	Workers' compensation premiums		3 174	2 891
			581 384	561 655
	Less, Recovery of employee expenses from Food Science Australia		(19 520)	(18 161)
	Less, Recovery of employee expenses from CSIRO FFP Pty Ltd		(13 765)	(8 286)
	Total employee expenses		**548 099**	**535 208**
7.2	**Suppliers**			
	Provision of goods − related entities		427	169
	Provision of goods − external entities		71 187	65 065
	Rendering of services − related entities		14 212	12 148
	Rendering of services − external entities		219 784	215 919
	Operating lease rentals*		11 381	10 017
	Total supplier expenses		**316 991**	**303 318**
	* These comprise minimum lease payments			
7.3	**Depreciation and amortisation**			
	Depreciation			
	Plant and equipment		33 869	37 310
	Buildings and leasehold improvements		45 339	39 451
	Total depreciation		79 208	76 761
	Amortisation			
	Intangibles − computer software		722	276
	Total depreciation and amortisation		**79 930**	**77 037**

Depreciation expenses are $5.56 million (2004−05 $nil) lower than they would have been as a result of the extension of useful lives of plant and equipment assets and the re-assessment of residual values. These changes in depreciation and residual values were reviewed in consultation with the Australian Valuation Office.

			Notes	2006 $'000	2005 $'000
Note 7	**Expenses** (cont)				
	7.4	**Finance costs**			
		Finance costs on leases		**3 592**	**3 481**
	7.5	**Write-down and impairment of assets**			
		Bad debts		268	2 010
		Increase in provision for doubtful debts		3	-
		Write down of investments to recoverable amount		-	35
		Reversal of other provisions	23	(1 100)	-
		Total write-down and impairment of assets		**(829)**	**2 045**
	7.6	**Net foreign exchange losses**			
		Non-speculative		**-**	**163**

		Notes	2006 $'000	2005 $'000
Note 8	**Cash and Cash Equivalents** (current)			
	Cash at bank and on hand		38 328	23 675
	Deposits made under Section 18 of the CAC Act		115 000	135 000
	Total cash		**153 328**	**158 675**
	Total cash includes deposits held on behalf of third parties totalling $19 705 239 (2005 $15 118 353).	21		
Note 9	**Receivables** (current)			
	Goods and services		53 073	47 831
	Less, Provision for doubtful debts		(640)	(637)
			52 433	47 194
	Net GST receivable		1 134	1 014
	Interest receivable		1 086	549
	Loans receivable		400	1 425
	Other		8 595	5 922
	Total net receivables		**63 648**	**56 104**
	Gross receivables are aged as follows:			
	Current		48 928	41 078
	Overdue by:			
	Less than 30 days		7 943	9 085
	30 to 60 days		3 221	1 959
	60 to 90 days		977	1 085
	More than 90 days		3 219	3 534
			15 360	15 663
	Total gross receivables		**64 288**	**56 741**
	Provision for doubtful debts is aged as follows:			
	Overdue by:			
	Less than 30 days		72	-
	30 to 60 days		54	36
	60 to 90 days		60	-
	More than 90 days		454	601
	Total provision for doubtful debts		**640**	**637**

Note 10 Investments Accounted for Using the Equity Method

	2006 $'000	2005 $'000
Joint venture entities – unincorporated		
Murray-Darling Fresh Water Research Centre (MDFRC)	**795**	**516**

CSIRO's 50% investment in MDFRC is accounted for using the equity method. During the year, MDFRC incurred an operating surplus (unaudited) of $294k (2005 $28k). In accordance with the joint venture agreement, the operating surplus is shared 50/50 between the joint venture parties. CSIRO's share of MDFRC's operating surplus for the year was $147k (2005 unaudited $14k). The unaudited net assets of MDFRC for the year ended 30 June 2006 are $1.59 million (ie total assets of $3.58 million less total liabilities of $1.99 million) and CSIRO's 50% share of its net asset equity investment is $795k.

Movements of carrying amount of investment in MDFRC joint venture entity is as follows:

Carrying amount at beginning of the financial year	516	502
Share of MDFRC's net operating surplus/(deficit) for the year	147	14
Other adjustments	132	-
	279	14
Carrying amount of investment in MDFRC as at 30 June	**795**	**516**

The equity accounting method has not been applied in the following unincorporated joint venture entities due to: i) the discontinuation of equity accounting for FSA; and ii) the Ensis joint venture is conducted through CSIRO's wholly owned subsidiary, CSIRO FFP Pty Ltd.

Food Science Australia (FSA)

The carrying amount of CSIRO's 85% investment in FSA has been reduced below zero and the equity accounting method has been discontinued. The discontinuation of equity accounting will remain until FSA's accumulated deficits have been fully offset by its operating surpluses. During the year, FSA incurred an operating surplus (unaudited) of $397k (2005 $1,137k). In accordance with the joint venture agreement the operating surplus/(deficit) of FSA is shared 85/15 between the joint venture parties. CSIRO's share of the operating surplus was $337k (2005 $967k surplus).

Movements in carrying amount of investment/(liability) in FSA joint venture entity is as follows:

Carrying amount at beginning of the financial year	(459)	(1 426)
Share of FSA's net operating surplus/(deficit) for the year	337	967
Liability to FSA as at 30 June	**(122)**	**(459)**

Note 10 Investments Accounted for Using the Equity Method (cont)

Ensis

CSIRO has established a fully owned subsidiary, CSIRO FFP Pty Ltd to enter into an unincorporated 50/50 joint venture named Ensis between CSIRO and Scion. CSIRO's contributions and direct costs attributable to Ensis are charged to Ensis via CSIRO FFP Pty Ltd. Ensis gross contribution margin for the year (unaudited) of $8.90 million (2005 $6.296 million) is shared 50/50 by the participants. CSIRO FFP Pty Ltd adopts the equity method to account for its 50% share of Ensis' gross contribution margin and that amounted to $4.45 million (2005 $3.148 million). This is offset by the CSIRO's research support and overhead charges totalling $4.45 million (2005 $3.147 million), leaving a net break-even operating result (2005 $1k).

Joint venture entities

Name	Principal Activities
Murray Darling Fresh Water Research Centre (MDFRC)	A collaborative joint venture for the purpose of Murray-Darling Basin freshwater research and the generation of knowledge required to ensure the sustainable management of water and associated environmental resources of the Murray-Darling Basin.
Food Science Australia (FSA)	Undertakes both strategic and applied research, helping the food industry to develop, package, preserve and transport food products.
Ensis	Conducts research and development into forestry, wood and paper science. The joint venture is conducted through the Organisation's wholly owned subsidiary.

The following is a summary of the financial performance and position of CSIRO's joint venture entities:

	Total Revenues (100%) $'000	Net Operating (100%) $'000	Total Assets (100%) $'000	Total Liabilities (100%) $'000	Net Assets (100%) $'000
2006 (unaudited)					
FSA	40 429	397	11 686	11 686	-
MDFRC	4 190	294	3 578	1 986	1 592
2005 (audited)					
FSA	37 627	1 137	9 893	9 893	-
MDFRC	4 197	90	2 805	1 508	1 297

Note 10 **Investments Accounted for Using the Equity Method** (cont)

The following is a summary of the financial performance and position of Ensis, the joint venture entity operated through CSIRO's wholly owned subsidiary, CSIRO FFP Pty Ltd:

	Total Revenues (100%) $'000	Net Operating (100%) $'000	Total Assets (100%) $'000	Total Liabilities (100%) $'000	Net Assets (100%) $'000
2006 (unaudited)					
Ensis	53 543	9 212	8 611	2 948	5 663
2005 (audited)					
Ensis	27 687	6 305	6 526	186	6 340

* For Ensis, this relates to the gross contribution margin as per the Ensis joint venture agreement.

Note 11 **Other Investments** (non–current)

	% CSIRO Interest		2006 $'000	2005 $'000
	2006	2005		
(a) Listed companies			1 488	185
(b) Unlisted companies				
(i) Controlled entities			4 480	-
(ii) Associate and joint venture entities			10 769	5 767
(iii) Other entities			17 991	8 865
			33 240	14 632
Total investments			**34 728**	**14 817**
(a) Listed companies – held for sale (at fair value)				
Advanced Magnesium Ltd	0.1	1.0	4	3
EvoGenix Ltd	1.9	1.9	929	182
Phoslock Water Solutions Ltd	2.8	-	555	-
			1 488	**185**

Note 11 Other Investments (cont)

(b) Unlisted companies

Name	% CSIRO Interest		Controlled Entities[1]		Associate and Joint Venture Entities[2]		Other Entities	
	2006	2005	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000
Start up investment companies for commercialisation of intellectual property or units in Fund – held for sale (at fair value)								
Advanced Polymerik Pty Ltd	18.7	18.7					767	734
Ascentia Pty Ltd (wound up 05/06)	100.0	90.0	-	-				
Ausmodel Pty Ltd	16.7	16.7					-	-
Avipep Pty Ltd	50.0	-			406	-		
Betabiotics Pty Ltd	93.9	93.9	-	-				
ComEnergy Pty Ltd	50.0	50.0			-	-		
DataTrace DNA Pty Ltd	50.0	-			3 696	-		
EpiTactix Pty Ltd	21.5	16.7					164	255
Funnelback Pty Ltd	100.0	-	2 200	-				
Gene Shears Pty Ltd	50.0	50.0			-	-		
Genetic Solutions Holdings Pty Ltd	10.0	-					826	-
HySSIL Pty Ltd	29.7	-					1 092	-
HRZ Wheats Pty Ltd	32.1	24.6					-	-
Innovative Carbon Technology Pty Ltd	16.5	16.5					-	-
Intalysis Pty Ltd	100.0	-	2 280	-				
Intellection Pty Ltd	40.4	100.0					5 135	2 250
PolyNovo Pty Ltd	40.0	50.0			6 000	5 100		
Quickstep Holdings Pty Ltd (sold 05/06)	-	20.2					-	-
SciVentures Pre-Seed Fund	3.4	3.4					277	210
VacTX Pty Ltd	11.6	14.0					345	689
Windlab Pty Ltd	37.3	35.9			667	667		
WQI Ltd	10.6	10.6					-	-
XRT Ltd	25.1	25.1					774	-

Note 11 Other Investments (cont)

(b) Unlisted companies (cont)

Name	% CSIRO Interest		Controlled Entities[1]		Associate and Joint Venture Entities[2]		Other Entities	
	2006	2005	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000
Special purpose companies/Fund – investment made to gain access to research facilities/networks (at cost)								
AARNet Pty Ltd	2.6	2.6					1	-
Australian Wool Innovation Ltd	0.8	0.8					-	-
CSIRO FFP Pty Ltd	100.0	100.0	-	-				
Provisor Pty Ltd	41.4	41.4					2 146	1 649
Synchotron Beamline Trust Fund	-	-					5 000	2 500
VERNet Pty Ltd	14.4	13.7					1 464	578
Special purpose vehicle companies – established to provide services to owners (at fair value)								
CO2 CRC Management Pty Ltd	7.7	7.7					-	-
Dunlena Pty Ltd	47.0	47.0			-	-		
R&D Syndication Companies	100.0	100.0	-	-				
WLAN Services Pty Ltd	100.0	100.0	-	-				
			4 480	**-**	**10 769**	**5 767**	**17 991**	**8 865**

[1] Refer accounting policy Note 1.4 on Consolidation.

[2] Not accounted for under the equity method as the above associates and joint venture entities are held for sale. Refer accounting policy Note 1.13 on Investments.

Note 11 **Other Investments** (cont)

Unlisted companies – at fair value

Name	Principal Activities
(i) Controlled entities	
Ascentia Pty Ltd	The company was wound up and deregistered in May 2006.
Betabiotics Pty Ltd	Develop a new class of antibiotics.
CSIRO FFP Pty Ltd	A special purpose company established by CSIRO to enter into an unincorporated joint venture named Ensis between CSIRO and Scion.
Funnelback Pty Ltd	An enterprise search engine providing search requirements for a specific entity's website and intranet site.
Intalysis Pty Ltd	Commercialise Low Frequency Microwave Moisture Analyser technology that measures the moisture content in minerals.
R&D Syndication Companies	The following 7 companies were acquired prior to 2001– 02 when investors in the Syndication exercised their put options under the agreements. They have not traded since acquisition and are in the process of being wound up. Exsynd 1 Pty Ltd Exsynd 2 Pty Ltd Exsynd 3 Pty Ltd Exsynd 4 Pty Ltd Exsynd 5 Pty Ltd Exsynd 6 Pty Ltd Exsynd 7 Pty Ltd
WLAN Services Pty Ltd	The Organisation's not for profit special purpose service company.
(ii) Associate and joint venture entities	
Avipep Pty Ltd	A start-up biotechnology company undertaking research and development of anti-body like proteins for the treatment of major diseases.
ComEnergy Pty Ltd	Utilise technology that generates electricity from coal waste and mine drainage gases.
DataTraceDNA Pty Ltd	Develop and commercialise Luminescent Marker Technology as an identification technology.

Note 11 **Other Investments** (cont)

Name	Principal Activities
(ii) Associate and joint venture entities *(cont)*	
Dunlena Pty Ltd	A trustee company for intellectual property generated by Dupont/CSIRO joint venture research.
Gene Shears Pty Ltd	Investigate licensing and development of its Ribozyme technology for commercial applications.
PolyNovo Biomaterials Pty Ltd	Commercialise biomaterials technology platform to improve biomedical and surgical outcomes.
Windlab Pty Ltd	Develop and market '*Windscape'* technology to locate the best wind farm sites faster.
(iii) Other entities	
AARNet Pty Ltd	Provide internet services to the education and research communities.
Advanced Polymerik Pty Ltd	A company established by the CRC for Polymers to commercialise its technology. The company holds a 65% interest in Ceram Polymerik Pty Ltd in trust for the CRC participants including CSIRO.
Australian Wool Innovation Ltd	Initiate research, development and innovation in the Australian Wool industry.
Ausmodel Pty Ltd	A company established by the Predictive Minerals Discovery CRC to commercialise its intellectual property.
CO2 CRC Management Pty Ltd	A Centre agent management company for a CRC.
Epitactix Pty Ltd	Develop and conduct semi-conductor business activities.
HRZ Wheats Pty Ltd	Design profitable new milling wheat varieties for farmers.
Innovative Carbon Technology Pty Ltd	A CRC spin off company to commercialise the CRC technology.

Note 11 **Other Investments** (cont)

Name	Principal Activities
(iii) Other entities *(cont)*	
Intellection Pty Ltd	Production and sale of complete systems that are used for process improvement in large mineral process operations.
Provisor Pty Ltd	Provide world-class research facilities to grape and wine industries.
SciVentures Pre-Seed Fund	A venture capital fund primarily targeting commercially promising R&D opportunities at the pre-seed stage.
Synchrotron Beamline Trust Fund	The Organisation has contributed $5 million (2005 $2.5 million) towards the establishment of the Australian Synchrotron facility in Victoria. It is anticipated that a company will be incorporated and contributors will be issued shares in the company based on contributions made.
VacTX Pty Ltd	A CRC company to commercialise peptide vaccine technologies.
VERNet Pty Ltd	A collaborative initiative between Universities and TAFE institutions in Victoria, including CSIRO to establish and implement intra-state connections for an advanced broadband network.
WQI Ltd (NZ)	Commercialise new technologies and knowledge that improve wood quality.
XRT Ltd	Build X-ray ultra microscopes and licence imaging technology to manufacturers of X-ray imaging equipment.

		2006 $'000	2005 $'000
Note 12	**Land and Buildings** (non-current)		
	Land		
	Land – at fair value	**176 620**	**189 400**
	Buildings		
	Buildings – at fair value	1 494 166	1 529 831
	Less, Accumulated depreciation	(896 755)	(910 760)
		597 411	619 071
	Capital works in progress – at fair value	38 020	29 965
		635 431	**649 036**
	Leasehold improvements		
	Leasehold improvements – at fair value	155 082	150 951
	Less, Accumulated amortisation	(58 229)	(52 918)
		96 853	**98 033**
	Buildings under finance lease		
	Buildings under finance lease – at fair value	133 391	130 598
	Less, Accumulated amortisation	(33 734)	(27 452)
		99 657	**103 146**
	Total land and buildings	**1 008 561**	**1 039 615**
Note 13	**Property, Plant and Equipment** (non-current)		
	Plant and equipment		
	Plant and equipment – at fair value	545 005	521 588
	Work in progress – at fair value	8 608	3 558
		553 613	525 146
	Less, Accumulated depreciation	(341 476)	(318 395)
		212 137	**206 751**
	Research vessels		
	Research vessels – at fair value	13 659	13 800
	Less, Accumulated depreciation	(8 174)	(7 771)
		5 485	**6 029**
	Plant and equipment under finance lease		
	Plant and equipment under finance lease – at fair value	6 214	8 001
	Less, Accumulated amortisation	(2 597)	(3 451)
		3 617	**4 550**
	Total plant and equipment	**221 239**	**217 330**

Note 13 Property, Plant and Equipment (cont)

(a) Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment

Item	Land	Buildings on Freehold Land	Buildings on Leasehold Land	Buildings Total	Land and Buildings Total	Investment Property Total	Plant & Equipment Total
	$'000	$'000	$'000	$'000	$'000	$'000	$'000
As at 1 July 2005							
Gross book value	189 400	1 688 326	153 019	1 841 345	2 030 745	5 699	546 947
Accumulated depreciation/ amortisation	-	(938 212)	(52 918)	(991 130)	(991 130)	-	(329 617)
Opening net book value	**189 400**	**750 114**	**100 101**	**850 215**	**1 039 615**	**5 699**	**217 330**
Additions	100	39 195	7 952	47 147	47 247	-	40 329
Reclassification	(12 400)	(19 711)	-	(19 711)	(32 111)	32 111	-
Net revaluation increment/ decrement	-	-	-	-	-	-	-
Depreciation/ amortisation	-	(40 028)	(5 311)	(45 339)	(45 339)	-	(33 869)
Disposals	(14 696)	(356)	(15)	(371)	(15 067)	-	(2 551)
As at 30 June 2006							
Gross book value	176 620	1 659 703	160 956	1 820 659	1 997 279	37 810	573 485
Accumulated depreciation/ amortisation	-	(930 489)	(58 229)	(988 718)	(988 718)	-	(352 246)
Closing net book value	**176 620**	**729 214**	**102 727**	**831 941**	**1 008 561**	**37 810**	**221 239**

Note 13 Property, Plant and Equipment (cont)

(b) Property, Plant, Equipment held under Finance Lease

Item	Land $'000	Buildings on Freehold Land $'000	Buildings on Leasehold Land $'000	Buildings Total $'000	Plant & Equipment Total $'000
As at 30 June 2006					
Gross value	-	133 391	-	133 391	6 214
Accumulated depreciation/ amortisation	-	(33 734)	-	(33 734)	(2 597)
Net book value	-	**99 657**	-	**99 657**	**3 617**
As at 30 June 2005					
Gross value	-	130 598	-	130 598	8 001
Accumulated depreciation/ amortisation	-	(27 452)	-	(27 452)	(3 451)
Net book value	-	**103 146**	-	**103 146**	**4 550**

(c) Property, Plant and Equipment under Construction

Item	Buildings on Freehold Land $'000	Buildings on Leasehold Land $'000	Buildings Total $'000	Plant & Equipment Total $'000
Carrying amount as at 30 June 2006	**32 146**	**5 874**	**38 020**	**8 608**
Carrying amount as at 30 June 2005	**27 897**	**2 068**	**29 965**	**3 558**

(d) Total land and buildings, including leasehold improvements and finance lease buildings classified by title, specific uses and zoning

Description	Land Total $'000	Buildings on Freehold Land $'000	Buildings on Leasehold Land $'000	Buildings Total $'000	Investment Properties Total $'000
Freehold	154 720	713 725	-	713 725	37 810
Commonwealth Crown Leases	11 100	242 458	-	242 458	-
Leasehold	-	-	155 082	155 082	-
National Facilities	10 800	537 983	-	537 983	-
Finance Lease	-	133 391	-	133 391	-
Designated for Sale	-	-	-	-	-
Capital Works in Progress	-	32 146	5,874	38 020	-
Gross value	**176 620**	**1 659 703**	**160 956**	**1 820 659**	**37 810**
Accumulated depreciation/amortisation	-	(930 489)	(58 229)	(988 718)	-
Net book value as at 30 June 2006	**176 620**	**729 214**	**102 727**	**831 941**	**37 810**

Note 13 Property, Plant and Equipment (cont)

Freehold	Held in Fee Simple – however, the majority of freehold properties are zoned 'Public Purpose Commonwealth' which restricts sale potential.
Commonwealth Crown Leases	Represents ACT sites that are held on 99 year leases with a restricted purpose clause 'Scientific Research Purposes' commonly regarded as freehold land in ACT.
Leasehold	Property covered by various lease arrangements with Universities, State Governments and other entities.
National facilities	Represents Australian Animal Health Laboratory, Australia Telescope and the Oceanographic Research Vessel 'Southern Surveyor' managed by the Organisation on behalf of the Australian Government.
Designated for sale	Properties identified for sale due to rationalisation and consolidation of research sites and a joint property review by the Organisation and the Department of Finance and Administration.
Finance leases	Represents land and buildings subject to finance lease arrangements with State Governments.
Capital works in progress	Relates to building works currently under construction.

The specialised nature of the Organisation's buildings and the zoning restrictions on land use, and the consequent low levels of demand for such properties, mean that the market values of the properties may be significantly lower than the 'existing use value' to the Organisation. Where this is the case the property is valued at 'existing use value'.

Note 13 Property, Plant and Equipment (cont)

(e) National Facilities

The Australian Animal Health Laboratory (AAHL), the Australia Telescope (AT), and the Oceanographic Research Vessel (ORV) 'Southern Surveyor' have been established by the Australian Government as National facilities to satisfy an identified national research need. The term 'National Facility' denotes substantial instrumentation, equipment and costs of such magnitude that the expense can only be justified on the basis of shared use by researchers from several organisations. The primary criteria require that the facilities are specifically designated for national use and that they are made available to scientists according to the merit of their proposals. These facilities are controlled and administered by the Organisation on behalf of the Australian Government.

Details of National Facilities included in the above total of Land and Buildings and Plant and Equipment are as follows:

	AAHL $'000	AT $'000	ORV $'000	Total $'000
Land	**10 800**	**-**	**-**	**10 800**
Buildings	537 983	-	-	537 983
Accumulated depreciation	(249 013)	-	-	(249 013)
	288 970	**-**	**-**	**288 970**
Plant and equipment	8 253	133 483	13 787	155 523
Accumulated depreciation	(5 185)	(73 011)	(8 174)	(86 370)
	3 068	**60 472**	**5 613**	**69 153**
Net book value as at 30 June 2006	**302 838**	**60 472**	**5 613**	**368 923**
Net book value as at 30 June 2005	**314 747**	**61 317**	**6 029**	**382 093**

The operating expenses for the above National facilities for the financial year amounting to $75 192 986 (2005 $70 539 276) are included in the Organisation's Income Statement.

		Notes	2006 $'000	2005 $'000
Note 14 (a)	**Investment Properties** (non current)			
	Investment properties – at fair value		**37 810**	**5 699**
Note 14 (b)	**Land Held for Sale** (current)			
	Land held for sale – at fair value		-	**14 216**
Note 15	**Intangibles** (non-current)			
	Computer software – in use	1.15		
	Internally developed and acquired software		7 800	1 973
	Acquired software – in progress		4 026	221
	Internally developed – in progress		7 219	5 583
			19 045	**7 777**
	Less, Accumulated amortisation		(1 091)	(369)
	Total intangibles		**17 954**	**7 408**

Reconciliation of Opening and Closing Balances for Intangibles:

Description	Computer software internally developed	Computer software purchased	Total
	$'000	$'000	$'000
As at 1 July 2005			
Gross book value	7 556	221	7 777
Less, Accumulated amortisation	(369)	-	(369)
Opening net book value	**7 187**	**221**	**7 408**
Movements:			
Additions	7 219	4 049	11 269
Amortisation	(681)	(41)	(722)
Disposals	-	-	-
As at 30 June 2006			
Gross Book Value	14 775	4 270	19 045
Less, Accumulated amortisation	(1 050)	(41)	(1 091)
Closing net book value	**13 725**	**4 229**	**17 954**

		Notes	2006 $'000	2005 $'000
Note 16	**Inventories Held for Resale** (current)			
	Books and media products – at lower of cost and net realisable value	1.16	**1 064**	**966**

		Notes	2006 $'000	2005 $'000
Note 17	**Other Non-Financial Assets** (current)			
	Contract research work in progress – at cost	1.5	15 417	17 404
	Prepaid property rentals		1 478	1 530
	Other prepayments		2 994	1 311
	Total other non-financial assets		**19 889**	**20 245**
Note 18	**Supplier Payables** (current)			
	Trade creditors		**50 006**	**38 743**
Note 19	**Other Payables** (current)			
	Contract research revenue received in advance		51 764	45 772
	Other creditors – accrued expenses		10 592	24 773
	Amount owing to FSA	10	122	459
	Total other payables		**62 478**	**71 004**
Note 20	**Leases**			
	Finance lease liability is payable as follows:			
	Within one year		7 260	7 494
	In one to five years		26 761	30 561
	In more than five years		73 161	76 087
	Minimum lease payments		107 182	114 142
	Future finance charges		(30 982)	(34 325)
	Total finance lease liability		**76 200**	**79 817**
	Current		4 210	4 316
	Non-Current		71 990	75 501
	Total finance lease liability		**76 200**	**79 817**

Finance leases exist in relation to certain buildings and major equipment assets. The leases are non-cancellable and for fixed terms ranging from 2 to 25 years. The Organisation guarantees the residual values of all assets leased. There are no contingent rentals. The interest rate implicit in the leases averaged 4% (2005 4%). The lease liabilities are secured by the lease assets.

		Notes	2006 $'000	2005 $'000
Note 21	**Deposits** (current)			
	Deposits		**19 705**	**15 118**
	Deposits represent monies held on behalf of the following third parties:			
	Co-operative Research Centres		6 272	6 722
	National Aeronautical Space Agency (NASA)		8 015	2 908
	Energy Solutions for a Sustainable Future		1 775	3 236
	Australian National Wildlife Collection Foundation		314	316
	Lower Emissions Energy Centre		2 674	1 451
	Others		655	485
	Total deposits		**19 705**	**15 118**
Note 22	**Employee Provisions**			
	Accrued wages and salaries		5 024	2 570
	Provision for annual leave		50 375	53 510
	Provision for long service leave		118 294	111 008
	Provision for severance pay		7 032	6 394
	Provision for redundancy		3 948	4 934
	Total employee provision		**184 673**	**178 417**
	Current		172 949	166 705
	Non-current		11 724	11 712
	Total employee provisions		**184 673**	**178 417**
Note 23	**Other Provisions** (non-current)			
	Provision for litigation		-	500
	Provision for clean-up		-	600
	Total other provisions		-	**1 100**

Note 24 Equity

Restructuring

The Government announced the establishment of the National Measurement Institute (NMI) in the 2003–04 Budget. As a result of that announcement, it had resulted in transactions with the owners last financial year and the total assets and liabilities noted below had been transferred to NMI.

There is no restructuring during this reporting period which has resulted in transactions with the owners.

Details of transfer to NMI last financial year as at 1 July 2004 were as follows:

	2006 $'000	2005 $'000
Financial assets		
Cash	-	3 903
Receivables	-	443
Total financial assets	-	4 346
Non-financial assets		
Plant and equipment	-	7 649
Other	-	193
Total non-financial assets	-	7 842
Total assets	**-**	**12 188**
Liabilities		
Employee provisions	-	3 903
Supplier payables	-	63
Total liabilities	-	**3 966**
Net assets transferred	**-**	**8 222**

Note 25 Contingent Liabilities and Assets

	2006 $'000	2005 $'000
Contingent liabilities		
Bank Guarantee	-	44
Estimated legal claims arising from employment, motor vehicle accidents, commercial and patent disputes. The Organisation has denied liability and is defending the claims. The estimate is based on precedent in such cases.	250	525
Total contingent liabilities	**250**	**569**

Unquantifiable Contingencies

CSIRO is currently involved in several legal proceedings in the US related to a wireless local area network (WLAN) patent which it owns and wishes to license broadly. The proceedings include an infringement action against two companies and two actions brought against CSIRO under which declarations of non-infringement and patent invalidity against CSIRO have been sought. These proceedings are in various phases. If successful, CSIRO expects to earn significant revenue from royalty payments which would exceed the associated legal costs over time. At this stage, the revenue and costs are considered unquantifiable.

At 30 June 2006, the Organisation had a number of legal claims arising from employment, motor vehicle accidents, commercial and patent disputes. The Organisation has denied liability and is defending the claims. It is not possible to estimate the amounts of any eventual payments that may be required in relation to these claims. An aggregate estimate of $250k for 2006–07 has been included above as a quantifiable contingent liability.

Remote Contingencies

Remote contingent asset
On 8 December 2003, CSIRO, the State of Queensland (acting through its Department of Primary Industries and Fisheries (QDPIE)) and Benitec Limited and its subsidiaries (Benitec) entered into agreements relating to the ownership of certain gene silencing technology and the sharing of the proceeds of future commercialisation of the technology. Under the agreements, Benitec will focus on commercialising the technology for human applications and CSIRO will focus on commercialising non-human applications of the technology. It is impossible to quantify the total value of CSIRO's entitlements under the settlement agreements as a whole at this time. The current likelihood of CSIRO receiving any payment under the settlement agreements is considered remote.

Remote contingent liability
The Organisation provides certain indemnities and warranties as part of its business activities. The Organisation would not under normal business arrangements generally provide guarantees or letters of comfort.

Note 25 Contingent Liabilities and Assets (cont)

Remote Contingencies (cont)

In 2005–06, CSIRO continued efforts to reach understandings with all relevant Commonwealth agencies to allow parties to intra-Commonwealth contracts to comply with the Commonwealth's 'Guidelines for Issuing and Managing Indemnities, Guarantees, Warranties and Letters of Comfort' (September 2003). Significant progress was made towards this goal, particularly with the Department of Education, Science and Training, and the Department of the Environment and Heritage. Negotiations with other agencies, notably the Department of Agriculture, Fisheries and Forestry, are continuing.

The Organisation has procedures in place to capture all contracts likely to contain warranties, indemnities, guarantees and letters of comfort which may create a liability for the Organisation and to determine the extent and materiality of any such undertakings.

The Organisation had insurance coverage in 2005–06. The Organisation has renewed this insurance coverage with Comcover for 2006–07. This includes coverage for indemnities and warranties on a case by case basis in accordance with the terms of the policy.

Most warranties do not extend the Organisation's liability beyond that at common law or statute. That is, if they were to be triggered by an event of default, the Organisation's legal liability would generally be the same as if the warranty had not been given because it is implied by the general law or statute in any case. The Organisation considers that there is a remote chance of one or more events occurring under these warranties that would result in an uninsured liability being recognised. Due to the inherent uncertainty of the basis of the claims, such warranties are assessed as being not material.

Of the contractual indemnities issued by the Organisation, the majority relate to liabilities for which the Organisation would otherwise be liable in the absence of the indemnity (either under common law or statute). The Organisation considers that there is a remote chance of one or more events occurring under these indemnities that would result in an uninsured liability being recognised. Due to the inherent uncertainty of the basis of the claims, the indemnities are assessed as being not material.

Note 26 Cash Flow Reconciliation	Notes	2006 $'000	2005 $'000
(a) Reconciliation of operating surplus/(deficit) to net cash from operating activities			
Operating surplus/(deficit)		**14 523**	**(20 805)**
Non-cash items			
Depreciation and amortisation of property, plant & equipment		79 208	76 903
Amortisation of intangibles		722	1 168
Increase write down to recoverable amount		-	35
(Gains)/loss from sale of property, plant & equipment		(15 467)	-
(Gains)/loss from sale of shares and IP		(16 461)	(5 307)
Changes in assets and liabilities			
(Increase)/decrease in receivables		(8 361)	(9 766)
(Increase)/decrease in inventories		(97)	(170)
Increase/(decrease) in provision for diminution in value		-	(1 065)
(Increase)/decrease in investment in joint venture		(702)	(966)
Increase/(decrease) in other assets		1 987	11 106
Increase/(decrease) in employee liabilities		6 253	(849)
Increase/(decrease) in liability to suppliers		(5 612)	17 935
Increase/(decrease) in other liabilities		5 991	(22 132)
Increase/(decrease) in GST receivable		(120)	(114)
Increase/(decrease) in deposits – liabilities		4 587	(3 310)
Net cash from operating activities		**66 451**	**42 663**
(b) Reconciliation of cash			
Cash and cash equivalents comprise:			
Cash at bank and on hand		38 328	23 675
Deposits under Section 18 of the CAC Act*		115 000	135 000
Balance of cash as at end of reporting period	8	**153 328**	**158 675**

* Deposits – being temporary surplus funds, mainly from monthly draw downs of appropriations, are placed in short-term deposits at call with approved banks and earn an effective rate of interest.

Note 27 Joint Ventures – Cooperative Research Centres (CRCs)

CSIRO was a party to 47 CRCs as at 30 June 2006, of which 16 were incorporated and 31 were unincorporated. These are accounted for in accordance with AASB131 'Interest in Joint Ventures'.

All CRCs have been classified as joint venture operations as the purpose is for the pursuit of collaborative scientific research where participants share in the scientific outcomes and outputs of the CRCs. In the event that CRC research results in a move to commercialisation, a separate legal entity is established and CSIRO's share of the new entity is treated either as an equity investment, joint venture or associate in the balance sheet as appropriate.

CSIRO's total cash and in-kind contribution (eg. staff and use of assets) to CRCs from its own resources was $60.5 million (2005 $64.1 million). Contributions made by CSIRO are expensed as incurred and these are included in the Income Statement.

Approximately $19.1 million (2005 $24.3 million) of CSIRO's plant and equipment are used for CRC activities. Plant and equipment includes specialised scientific equipment and instruments and general assets such as vehicles.

CSIRO's interest in the output of each CRC is determined by the individual CRC agreement. These are:

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
INCORPORATED CRCs					
Bushfire CRC conducts a range of research projects that collectively aim to enhance the management of the bushfire risk to the community in an economically and ecologically sustainable way.	12.0%	1 330	1 307	288	30-Jun-10
CAST CRC focuses on the provision and implementation of quality research and education on important issues for light metals processing and manufacturing.	11.2%	1 776	1 786	2 991	30-Jun-12
Cotton Catchments Communities CRC undertakes collaborative research, education and commercialisation activities to provide innovative knowledge for the benefit of the Australian Cotton Industry.	18.3%	1 638	2 083	130	30-Jun-12

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
INCORPORATED CRCs (cont)					
CRC for Advanced Automotive Technology aims to provide the automotive industry with the opportunity to work with research providers in design, engineering and manufacturing research to enhance the industry's international competitiveness.	1.9%	229	256	-	30-Jun-12
CRC for Beef Genetic Technologies aims to use emerging gene discovery and gene expression technologies to focus on a much broader range of beef industry priority issues to equip Australia for precision cattle breeding and management.	-	1 458	180	861	30-Jun-12
CRC for Advanced Composite Structures aims to provide a focus for the development of advanced technologies which foster the growth of an efficient, globally-competitive, Australian composite industry.	6.0%	213	-	-	30-Jun-10
CRC for Forestry aims to manage challenges across the forestry business chain, from site selection to delivery of wood at mill gate.	11.0%	1 140	857	-	30-Jun-12
CRC for Intelligent Manufacturing Systems and Technologies II aims to enhance the development and application of intelligent manufacturing systems and supporting technologies for the economic benefit of Australian industry.	7.0%	309	81	38	30-Jun-06
CRC for National Plant Biosecurity focuses on innovative research and development, in key areas that will deliver benefits across a range of plant commodity groups.	10.3%	39	5	-	30-Jun-12

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
INCORPORATED CRCs (cont)					
CRC for Polymers III conducts leading-edge polymer research to deliver the technically advanced polymeric materials and polymer engineering required to transform Australian industries and to establish and expand companies in emerging high-growth areas of the economy.	9.0%	1 323	416	-	30-Jun-12
CRC for the Great Barrier Reef's principal activity is to plan, fund and manage world-leading science for the sustainable use of the Great Barrier Reef World Heritage Area.	4.5%	820	508	105	30-Jun-06
CRC for Welded Structures aims to maximise the economic, environmental and social benefits to Australia through customer research, technology transfer, and education in the total product life cycle engineering of welded structures.	14.0%	528	204	357	30-Jun-06
eWater CRC builds and supports decision systems and models for total water cycle management in urban and rural catchments, integrating water quality and quantity, stream ecology and economics.	22.9%	1 700	860	24	30-Jun-12
Invasive Animals CRC aims to counteract the impact of invasive animals through the development and application of new technologies and by integrating approaches across agencies and jurisdictions.	18.4%	662	1 196	4	30-Jun-12
Parker CRC for Integrated Hydrometallurgy Solutions aims to maximise the returns from Australia's mineral resources derived using hydrometallurgical processes whilst reducing the environmental impacts of these processes.	49.0%	4 667	4 997	6 480	30-Jun-12

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
INCORPORATED CRCs (cont)					
The Vision CRC aims to establish Australia as a world leader in research, education and delivery of vision correction, improve international eye care and maximise commercial opportunities for the Centre and the eye care industry.	9.6%	1 062	680	-	30-Jun-10
UNINCORPORATED CRCs					
Australian Biosecurity CRC aims to protect Australia's public health, livestock, wildlife and economic resources through research and education that strengthens the national capability to detect, identify, diagnose, assess, predict and respond to emerging infectious disease threats on national and regional biosecurity.	40.0%	5 059	667	490	30-Jun-10
Australian Sheep Industry CRC aims to ensure the Australian sheep industry has the technology and know-how to deliver, in a profitable and sustainable manner, products highly desired by domestic and export customers.	34.0%	2 085	1 008	1 153	30-Jun-08
Australian Telecommunications CRC aims to develop new capabilities in networking and mobile telecommunications technologies and transfers them to industry.	2.0%	-	-	-	30-Jun-06
CRC for Antarctic Climate and Ecosystems aims to understand the variability of Antarctica and the Southern Ocean processes and their role in regional and global climate change, and Australia's future.	13.7%	1 714	862	191	30-Jun-10
CRC for Australian Weed Management aims to enhance the sustainability of farming systems and the conservation status of natural ecosystems that targets generic control problems using integrated weed management.	13.8%	1 575	991	251	30-Jun-08

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
UNINCORPORATED CRCs (cont)					
CRC for Bioproducts aims to develop commercial applications of new bioproducts and bioprocesses.	18.0%	360	96	-	30-Jun-06
CRC for Clean Power from Lignite focuses research on new technologies for Power Generation from Lignites.	15.0%	651	338	1 829	30-Jun-06
CRC for Coal in Sustainable Development aims to optimise the contribution of coal to a sustainable future, including control of pollutant emissions, coal in coke making and iron making.	14.0%	1 359	680	-	30-Jun-08
CRC for Coastal Zone, Estuary and Waterway Management aims to study areas and application of new technologies and techniques around the Australian coast.	27.0%	1 355	604	146	30-Jun-06
CRC for Construction Innovation focuses on the needs of the property, design, construction and facility management sectors.	22.0%	1 729	1 061	33	30-Jun-08
CRC for Diagnostics aims to develop and exploit diagnostic platforms to enable more patient specific screening of predisposition of selected diseases and medical conditions.	24.8%	1 967	489	6	30-Jun-08
CRC for Functional Communication Surfaces aims to develop new products and manufacture processes to make substrates and their coating materials 'smart' to take advantage of new computer-related technologies.	29.0%	1 581	628	52	30-Jun-08

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
UNINCORPORATED CRCs (cont)					
CRC for Greenhouse Accounting provides national leadership in greenhouse accounting research, promoting its research findings for the economic, environmental and social benefit of Australia and the world.	16.0%	887	407	11	30-Jun-06
CRC for Greenhouse Gas Technologies focuses on carbon dioxide capture and geological storage (geosequestration).	53.0%	1 430	529	252	30-Jun-10
CRC for Innovative Dairy Products aims to apply cutting-edge genetic research to provide diary farmers, processors and manufacturers with access to advanced technologies and products.	7.0%	989	590	614	30-Jun-08
CRC for Irrigation Futures aims to deliver research, education and training which gives confidence to growers, industry, governments and the communities to invest in better irrigation, a better environment and a better future.	16.0%	1 461	1 013	6	30-Jun-10
CRC for Landscape Environments and Mineral Exploration aims to develop a greater understanding of Australia's terrain when applied to mineral exploration and environmental management, dry land salinity, water supply and water quality.	28.0%	2 838	2 901	1 016	30-Jun-08
CRC for Plant-Based Management of Dryland Salinity focuses on solving the problem of salinity, which will require a 'revolution' in agriculture, with change to agricultural systems across the landscape on a massive scale.	7.0%	1 187	857	37	30-Jun-08

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
UNINCORPORATED CRCs (cont)					
CRC for Predictive Mineral Discovery's aims to generate a shift in exploration practice and cost-effectiveness by developing a vastly improved understanding of mineralising processes and an understanding of the evolution of the geology of mineralised terrains.	16.0%	2 118	2 600	34	30-Jun-08
CRC for Sugar Industry Innovation through Biotechnology aims to combine strengths in molecular genetics, sugarcane biology, agriculture, and industrial extraction that will value-add to the sugarcane industry.	19.0%	960	1 005	81	30-Jun-10
CRC for Sustainable Aquaculture of Finfish aims to develop technologies which will enable the sustainable and rapid growth of finfish aquaculture.	14.4%	481	588	122	30-Jun-08
CRC for Sustainable Resource Processing aims to create new methods to produce minerals and metals in a way that benefits the environment and industry and find technical solutions for progressively eliminating waste and emissions in the materials cycle.	23.0%	1 135	1 265	146	30-Jun-10
CRC for the Australian Poultry Industries aims to enhance the competitiveness of the Australian egg and chicken meat industries.	-	1 527	591	21	30-Jun-10
CRC for Tropical Plant Protection focuses on the prevention of pests and diseases in northern Australian flora.	27.0%	570	540	-	30-Jun-06
CRC for Tropical Rainforest Ecology and Management II aims to support the sustainable conservation and management of Australia's tropical rainforests.	37.0%	1 421	699	254	30-Jun-06

Note 27 Joint Ventures – Cooperative Research Centres (CRCs) (cont)

Name of CRC & Principal Activity	% CSIRO Interest	In-kind & Cash Contributions 2005–06 $'000	CRC Funding Received 2005–06 $'000	Estimated value of P&E used 2005–06 $'000	Termination date
UNINCORPORATED CRCs (cont)					
CRC for Tropical Savannas Management aims to ensure that Australia's tropical savannas are healthy and managed to provide long-term benefits to those who use them and to sustain the biodiversity band habitat endemic to them.	19.0%	1 103	849	215	30-Jun-08
CRC for Vaccine Technology II aims to develop the science and technology needed to improve the efficacy of current vaccines and assist in the design and construction of the next generation of medical and veterinary vaccines.	26.0%	384	53	148	30-Jun-06
CRC for Viticulture II aims to accelerate quality viticultural management, ensuring the economic and environmental sustainability of Australia's grape-growing industries.	24.0%	1 157	2 379	245	30-Sep-06
CRC for Water Quality and Treatment II focuses on issues relating to water quality management and health risk reduction, from catchments and reservoir management and water treatment to the distribution of drinking water to consumers' taps.	8.0%	671	408	137	30-Jun-08
CRC for Wood Innovations aims to provide the timber and wood products industries with applied technologies and training programs.	5.0%	624	396	196	30-Jun-08
Desert Knowledge CRC aims at linking indigenous and local knowledge with science and education to improve desert livelihoods.	8.0%	1 233	1 317	127	30-Jun-10
Total		**60 505**	**41 827**	**19 091**	

Note 28 Resources made available to the Organisation and not included in the Balance Sheet

	Land	Buildings	Plant and Equipment	Total
	$'000	$'000	$'000	$'000
At fair value	3 860	958	30 711	35 529
Less, Accumulated depreciation	-	(958)	(27 074)	(28 032)
Net value as at 30 June 2006	**3 860**	-	**3 637**	**7 497**
Net value as at 30 June 2005	**3 860**	-	**3 553**	**7 413**

The above assets are made available to the Organisation at little or no cost in accordance with formal agreements with contributors. They have either been purchased out of contract research monies and expensed in the year of purchase in accordance with accounting policy Note 1.5, or made available to the Organisation at little or no cost. The assets include vehicles, computers and scientific equipment.

These assets are controlled and accounted for in the contributors' books and any proceeds from their disposal are refundable to the contributors in accordance with formal agreements on equity share. The fair value of in-kind contributions of these assets could not be reliably determined and therefore is not brought to account in the Income Statement. Although a valuable resource, these assets can be a constraint to management decision making in that they must be operated in accordance with the terms of their provision to the Organisation.

Note 29 Monies Held in Trust

	2006 $'000	2005 $'000
Monies held in trust represented by cash, deposits and investments for the benefit of the Organisation, which are not included in the Balance Sheet, are:		
Sir Ian McLennan Achievement for Industry Award – established to award outstanding contributions by the Organisations' scientists to national development.	272	237
The Elwood and Hannah Zimmerman Trust Fund – established to fund weevil research and the curation of the Australian National Insect Collection (ANIC) weevil collection.	1 993	1 647
The Schlinger Trust – established to research the taxonomy, biosystematics, general biology and biogeography of Australasian Diptera conducted by the Australian National Insect Collection.	846	787
Total monies held in trust as at 30 June	**3 111**	**2 671**

Movement summary of monies held in trust:

	McLennan $'000	Zimmerman $'000	Schlinger $'000	Total $'000
Balance at 1 July 2005	237	1 647	787	2 671
Receipts during the year	-	-	-	-
Interest and dividends	46	346	59	451
Expenditure	(11)	-	-	(11)
Balance at 30 June 2006	**272**	**1 993**	**846**	**3 111**

Note 30 Collections

The Organisation owns several collections used for scientific research. The Organisation's collections have been established over time and cover an extensive range of evolution and change in species. The collections are irreplaceable, bear scientific and historical value and are not reliably measurable in monetary terms. Therefore, the Organisation has not recognised them as an asset in its financial statements. The main collections held by the Organisation are:

Australian National Herbarium (ANH) – The ANH is one of the largest plant collections in Australia with approximately one million preserved plant specimens. It is unique among the Australian Herbaria in having a national focus for its collections, acquisition and research programs.

Australian National Insect Collection (ANIC) – The ANIC has over 11 million specimens and is the largest research collection of Australian insects and related organisms in the world.

Australian National Wildlife Collection (ANWC) – The ANWC, with over 80 000 specimens, holds land vertebrate collections, including the most comprehensively documented collections of Australian-New Guinean birds in the world.

CSIRO National Fish Collection (ANFC) – CSIRO's ANFC, also known as the 'ISR Munro Ichthyological Collection', houses more than 80 000 registered adult and 40 000 registered larval specimens of almost 3 000 species from Australasia, Asia, Antarctica, and the Sub Antarctic Islands. It is among Australia's most diverse ichthyological collections and contains one of the largest collections of sharks, rays and deepwater fishes in the Southern Hemisphere.

Other Collections – These include the Australian Tree Seed Collection, CSIRO's Dadswell wood collection, CSIRO collection of living microalgae and wood inhabiting fungi collection.

Note 31 Remuneration of Auditors

	2006 $	2005 $
The cost of financial statement audit services provided to the Organisation was:	202 000	224 000

No other services were provided by the Auditor-General.

Note 32 Remuneration of Board Members

Total remuneration including superannuation benefits received or due and receivable by full-time and part-time Board Members, excluding the Chief Executive Officer were:

	2006 $	2005 $
Board Members' remuneration	344 610	376 028
Payments to superannuation funds for Board Members	30 604	29 201
Total remuneration	**375 214**	**405 229**

The remuneration of the Chief Executive Officer, who is also a Board Member of the Organisation, is reported under Note 33 Remuneration of Senior Executives.

The number of Board Members who received or were due to receive total remuneration, which fell within the following bands were:

$	Number	Number
Nil - 14 999	3	2
15 000 - 29 999	2	-
30 000 - 44 999	3	4
45 000 - 59 999	2	3
75 000 - 84 999	1	1
Total	**11**	**10**

Note 33 Remuneration of Senior Executives

	$	$
The aggregate amount for the total cost of employment of Senior Executives shown below	**10 960 745**	**10 682 596**
The aggregate amount of separation and redundancy/termination benefit payments during the financial year to Senior Executives shown below	**101 079**	**-**

Note 33 Remuneration of Senior Executives (cont)

The number of Senior Executives, who received or were due to receive total remuneration of $130 000 or more (consistent with new reporting standards), and includes officers concerned with taking part in the management of the Organisation.

During 2005–06 those positions were: the Chief Executive and other members of the Executive Team (11), Chiefs of Divisions (18), joint venture chief executive officers (2) and Flagship Directors (6), a total of 37 positions. During 2004–05 there were 39 positions, the difference being the result of two Divisional mergers.

$	2006 Number	2005 Number
145 000 - 159 999	-	1
160 000 - 174 999	-	-
175 000 - 189 999	1	2
190 000 - 204 999	1	1
205 000 - 219 999	1	-
220 000 - 234 999	3	2
235 000 - 249 999	1	7
250 000 - 264 999	5	6
265 000 - 279 999	4	9
280 000 - 294 999	3	1
295 000 - 309 999	5	1
310 000 - 324 999	1	-
325 000 - 339 999	3	4
340 000 - 354 999	3	2
355 000 - 369 999	-	2
370 000 - 384 999	3	-
385 000 - 399 999	-	-
400 000 - 414 999	1	-
415 000 - 429 999	1	-
430 000 - 444 999	-	-
445 000 - 459 999	-	-
460 000 - 474 999	-	-
475 000 - 489 999	-	1
490 000 - 504 999	1	-
Total	**37**	**39**

The above table is not confined to payroll expenditures only and reflects additional items that come within the definition of remuneration under AASB119, Employee Benefits (for example accrued annual leave).

The actual position numbers can vary from the nominal position numbers, ie in a given year more than one person may occupy the same position due to the timing of appointments (or cessations) and be in excess of the $130 000 threshold, or the exclusion of an officer below that threshold where the Senior Executive did not occupy the position for the full reporting period. In addition, the table includes changes associated with a number of promotions and/or job changes.

Note 34 Meetings of the CSIRO Board and Board Committees

During the financial year, six Board meetings, four Board Audit Committee meetings, six Board Remuneration Committee meetings and ten Board Commercial Committee meetings were held. The number of meetings attended by each of the Board members was as follows:

Board Member	Board		Board Audit Committee		Board Remuneration Committee		Board Commercial Committee	
	Number eligible to attend as a member	Number attended	Number eligible to attend as a member	Number attended	Number eligible to attend as a member	Number attended	Number eligible to attend as a member	Number attended
C B Livingstone (Chairman)	6	6	4	4	6	6	10	10
S Cory	6	4	–	–	–	–	–	–
T A Cutler	6	6	4	4	1	1	10	10
E J Doyle	3	3	–	–	–	–	4	4
P J B Duncan	1	1	–	–	1	1	2	2
G G Garrett	6	6	–	–	–	–	10	10
B F Keane	6	6	–	–	6	6	10	10
D M O'Toole	6	6	4	4	–	–	–	–
L Paul	6	3	–	–	–	–	–	–
A D Robson	6	6	–	–	5	5	–	–
P J Willcox	3	3	1	1	–	–	–	–

PJB Duncan resigned on 31 August 2005

Note 35 Related Party Disclosures

Board Members – The Board Members of the Organisation during the financial year were:

C B Livingstone (Chairman)
S Cory
T A Cutler
E J Doyle (appointed 16.02.06)
P J B Duncan (resigned 31.08.05)
G G Garrett (Chief Executive)
B F Keane
L Paul
D M O'Toole
A D Robson
E D Tweddell (deceased 4.08.05)
P J Willcox (appointed 16.02.06)

Remuneration – The aggregate remuneration of Board Members is disclosed in Note 32.

Board Members' interest in contracts

Since 1 July 2005 no Board Member of CSIRO has received or become entitled to receive a benefit, other than a benefit included in the aggregate amount of remuneration received or due and receivable shown in Note 32 by reason of a contract made by CSIRO with the Board Member or with a firm of which the Board Member is a member or with a company in which the Board Member has a substantial financial interest.

Other transactions of Board Members – related entities

Ms C B Livingstone is a Director of Telstra Corporation Ltd and Macquarie Bank Ltd. She was Chairman of the Australian Business Foundation until 30 September 2005 and a member of the Advisory Board of the Department of Accounting and Finance at the Macquarie University until 16 September 2005 and of the Sydney Institute Board until 2 November 2005. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Professor S Cory is Director of the Walter and Eliza Hall Institute of Medical Research and Professor of Medical Biology at the University of Melbourne. She is also a Director of Bio21 Australia Limited, a member of the Council of the Cancer Council Victoria and President of the Association of Australian Medical Research Institutes. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Note 35 Related Party Disclosures (cont)

Dr T A Cutler is the Principal of Cutler & Company, a consultancy in information and communications technology. He is also Chairman of the CRC for Interaction Design and ArtsHub and a Director of Mindsharing Pty Ltd, Churchill Club Ltd, Universiti Telekom Sdn. Bhd. Malaysia. He is also a member of the MSC technology Centre Sdn Bhd., Malaysia; International Advisory Panel for Malaysia's Multimedia Supercorridor and the Council of the Queensland University of Technology (QUT). He was a Director of Comindico Pty Ltd until December 2005 and President of the Australian Centre for the Moving Image until December 2005. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Dr E J Doyle is Chair of the Port Waratah Coal Services and the Hunter Valley Research Foundation. She is a Director of OneSteel, the Hunter Medical Research Institute, State Super Financial Services, Ross Human Directions Ltd and Steel & Tube Ltd, New Zealand. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Mr P J B Duncan resigned from CSIRO Board on 31 August 2005 and at that time was Chairman of Scandia Australia and a Director of Orica Ltd, National Australia Bank and GasNet. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Mr B F Keane is the Principal of Brian Keane and Associates, a management and insurance consulting firm. He is a member of the Board and a Director of Medibank Private Ltd, Hollard Insurance Company, Law Cover Pty Ltd (NSW Solicitors Professional Indemnity Fund), Motor Traders' Association (Insurance Agency) and Aurora Energy Pty Ltd. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Ms D M O'Toole is a Director of Raheny Consulting Pty Ltd. She was the Chief Financial Officer for Queensland Cotton until January 2006 and remains a business consultant to that firm. She is also a member of the Queensland Biotech Advisory Council and a member of the Queensland University of Technology Business School Advisory Council. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Ms L Paul is the Secretary of the Department of Education, Science and Training. All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Note 35 **Related Party Disclosures** (cont)

Professor A D Robson is Vice Chancellor of the University of Western Australia and member of the Premier's Science Council (Western Australia). All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

The late Dr E D Tweddell was Chairman of Ansell Limited and Nepenthe Group Pty Ltd and was a Director of National Australia Bank and Australia Post. Dr Tweddell died on 4 August 2005.

Mr P J Willcox is the Chairman of Mayne Pharma Limited and a Director of Telstra Corporation Ltd and a member of the Advisory Board of CVC Asia Pacific (Australia). All contracts and transactions between these entities and CSIRO are based on normal commercial terms and conditions, and there is no personal benefit to the CSIRO Board Member.

Dr G Garrett has no involvement in related entities.

Note 36 **Average Staffing Levels**

	2006 Number	2005 Number
The average staffing levels measured on full-time equivalent basis for the Organisation during the reporting period.	**5 879**	**5 910**

Note the actual staff numbers based on headcount at 30 June 2006 was 6 558 (2005 6 576).

Note 37 Financial Instruments

(a) Interest rate risk

Financial Instrument	Notes	Floating Interest Rate		Fixed Interest Rate								Non Interest Bearing		Total		Weighted Average Effective Interest Rate	
				1 year or less		1 to 2 years		2 to 5 years		> 5 years							
		2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 %	2005 %
Financial assets																	
Cash at bank and cash on hand	8	38 328	23 675											38 328	23 675	5.4	5.5
Deposits – S18 CAC Act	8			115 000	135 000									115 000	135 000	5.7	5.8
Receivables for goods and services	9											52 433	47 194	52 433	47 194	n/a	n/a
Loans receivable	9											400	1 425	400	1 425	n/a	n/a
Net GST receivable	9											1 134	1 014	1 134	1 014	n/a	n/a
Other receivables	9											9 681	6 471	9 681	6 471	n/a	n/a
Investments	10, 11											35 523	15 333	35 523	15 333	n/a	n/a
Total financial assets		**38 328**	**23 675**	**115 000**	**135 000**	-	-	-	-	-	-	**99 171**	**71 437**	**252 499**	**230 112**		
Total assets														**1 559 016**	**1 535 591**		
Financial liabilities																	
Finance lease liabilities	20			19 090	18 297			3 909	6 715	53 201	54 805			76,200	79 817	4.6	4.4
Trade creditors	18											50 006	38 743	50 006	38 743	n/a	n/a
Research revenue received in advance	19											51 764	45 772	51 764	45 772	n/a	n/a
Deposits	21	19 705	15 118											19 705	15 118	5.6	5.5
Other creditors	19											10 714	25 232	10 714	25 232	n/a	n/a
Total financial liabilities		**19 705**	**15 118**	**19 090**	**18 297**	-	-	**3 909**	**6 715**	**53 201**	**58 386**	**112 484**	**109 747**	**208 389**	**204 682**		
Total liabilities														**393 062**	**384 199**		
Liabilities not recognised																	
Legal claims and Loans payable	25											250	525	250	525	n/a	n/a
Guarantee	25											-	44	-	44	n/a	n/a

Note 37 Financial Instruments

(b) Fair values of financial assets and liabilities

	Notes	2006 Total carrying amount $'000	2006 Aggregate net fair value $'000	2005 Total carrying amount $'000	2005 Aggregate net fair value $'000
Financial assets (recognised)					
Cash at bank and on hand	8	38 328	38 328	23 675	23 675
Deposits under S18 CAC Act	8	115 000	115 000	135 000	135 000
Receivables for goods and services	9	52 433	52 433	47 194	47 194
Loans receivable	9	400	400	1 425	1 425
GST receivable	9	1 134	1 134	1 014	1 014
Other receivables	9	9 681	9 681	6 471	6 471
Investments	10,11	35 523	35 523	15 333	15 333
		252 499	**252 499**	**230 112**	**230 112**
Financial liabilities (recognised)					
Finance lease liabilities	20	76 200	76 200	79 817	79 817
Trade creditors	18	50 006	50 006	38 743	38 743
Research revenue received in advance	19	51 764	51 764	45 772	45 772
Deposits	21	19 705	19 705	15 118	15 118
Other creditors	19	10 714	10 714	25 232	25 232
		208 389	**208 389**	**204 682**	**204 682**
Financial liabilities (unrecognised)					
Legal claims and bank guarantee	25	**250**	**250**	**569**	**569**

(c) Credit risk exposures

The Organisation's maximum exposure to credit risk at reporting date in relation to each class of recognised financial assets is the carrying amount of those assets as indicated in the Balance Sheet.

The Organisation has no significant exposures to any concentrations of credit risk.

All figures for credit risk referred to do not take into account the value of any collateral or other security.

Note 38 Reporting of Outcomes and Outputs

(a) Reporting of outcome

The Organisation's outputs contribute to a single outcome:
'The application or utilisation of the results of scientific research delivers:

- Innovative and competitive industries
- Healthy environment and lifestyles
- A technologically advanced society'.

(b) Net cost of outcome delivery	2006 $'000	2005 $'000
Total expenses	**947 783**	**921 252**
Other external revenues:		
Sale of goods and services – to related entities	76 968	86 267
Sale of goods and services – to external entities	227 487	194 626
Interest	7 626	7 884
Net gains from sale of assets	15 467	-
Reversals of previous asset write-downs	-	3 046
Donations	138	160
Rents	6 173	5 497
Sale of primary produce	879	1 364
Other	33 361	24 451
Total other external revenues	**368 099**	**323 295**
Net cost of outcome	**579 684**	**597 957**

During the 2005–06 financial year, the Organisation applied the same methodology as last year for the allocation of corporate costs to enable a more accurate pricing of outputs. This methodology involves management estimation and decision as to the most appropriate choice of cost drivers such as staff numbers, floor space and Divisional function per output.

Note 38 Reporting of Outcomes and Outputs (cont)

(c) Major Organisational Revenues and Expenses by Output Groups

	Output 1		Output 2		Output 3		Output 4		Total	
	Research products and services for Information Technology and Manufacturing Services		Research products and services for Sustainable Minerals and Energy		Research products and services for Environment and Natural Resources		Research products and services for Agribusiness and Health			
	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000
Operating Expenses										
Employees	186 312	164 566	87 282	82 031	153 086	153 133	121 419	135 477	548 099	535 208
Suppliers	96 423	84 489	45 840	44 809	72 061	72 966	102 668	101 054	316 991	303 318
Depreciation and amortisation	25 305	23 760	11 128	9 814	15 129	15 759	28 367	27 703	79 930	77 037
Write-down of assets	(64)	392	(161)	409	(301)	210	(303)	1 034	(829)	2 045
Other	1 491	1 186	488	506	762	837	851	1 115	3 592	3 644
Total operating expenses	**309 467**	**274 393**	**144 577**	**137 569**	**240 737**	**242 906**	**253 002**	**266 383**	**947 783**	**921 252**
Funded by:										
Revenues from Government	202 088	119 380	90 790	132 420	146 218	160 837	154 832	164 501	593 928	577 138
Sale of goods and services	86 578	69 552	48 748	41 198	80 754	82 700	55 957	67 078	272 037	260 528
Royalties	4 510	3 747	1 565	1 755	730	762	13 703	8 794	20 508	15 058
Reversals of previous asset write downs	-	104	-	203	-	775	-	1 964	-	3 046
Net gains from sale of property, plant and equipment	4 659	-	2 404	-	4 156	-	4 248	-	15 467	-
Fair value gains and net gains on sale of investments and IP	11 139	2 287	4 030	262	862	409	430	3 987	16 461	6 945
Other	7 723	8 877	1 616	4 057	6 964	8 416	27 601	16 382	43 904	37 732
Total operating revenues	**316 697**	**203 947**	**149 153**	**179 895**	**239 684**	**253 899**	**256 771**	**262 706**	**962 305**	**900 447**

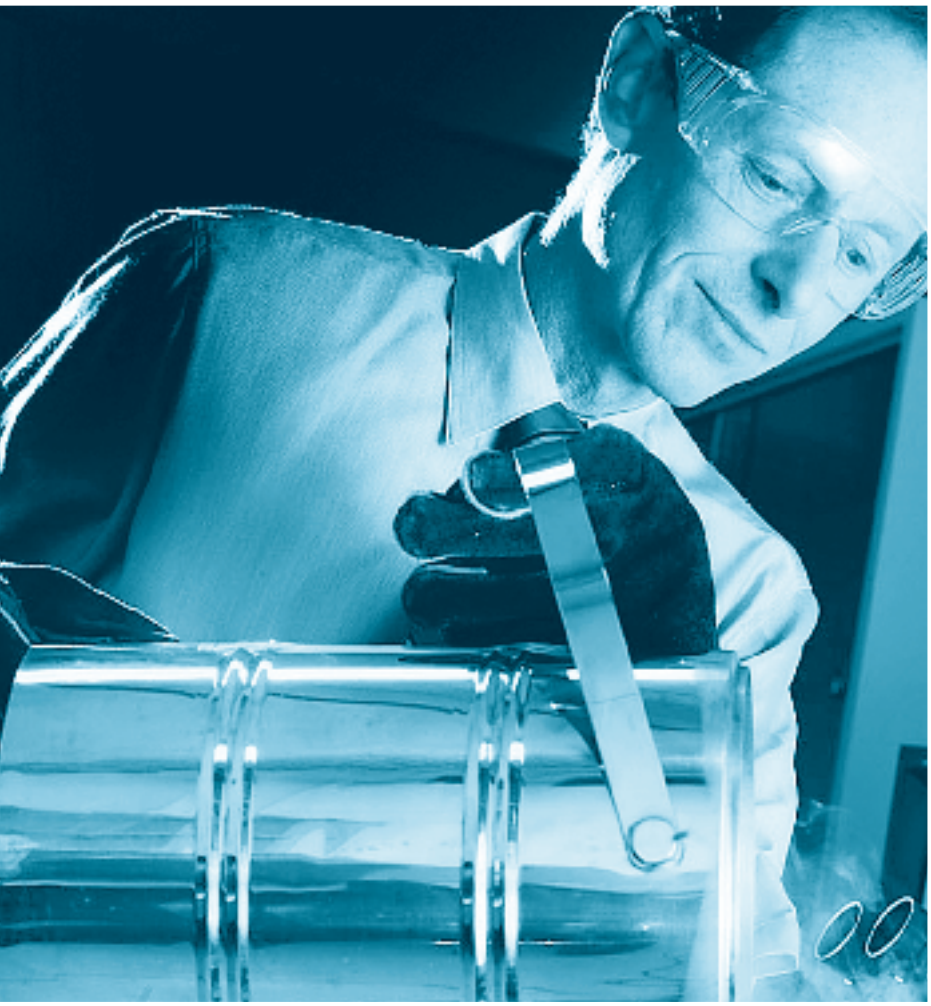
The Organisation's outcomes and outputs are described in Note 38(a).

Note 39 Appropriations

Acquittal of the Organisation to Draw Cash from the Consolidated Revenue Fund for Ordinary Annual Services Appropriations

Particulars	Outputs		Loans		Equity		Total	
	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000	2006 $'000	2005 $'000
Year ended 30 June								
Balance carried forward from previous year	-	-	-	-	-	-	-	-
Appropriation Act 1	593 928	577 138	-	-	-	-	593 928	577 138
Appropriation Act 3	-	-	-	-	-	-	-	-
Total available for payment	**593 928**	**577 138**	**-**	**-**	**-**	**-**	**593 928**	**577 138**
Total payments	**593 928**	**577 138**	**-**	**-**	**-**	**-**	**593 928**	**577 138**
Balance carried forward to next period	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

This table reports on appropriations made by the Parliament of the Consolidated Revenue Fund (CRF) for payment to the Organisation. When received by the Organisation, the payments made are legally the money of the Organisation and do not represent any balance remaining to the CRF.



Section 5 – Appendixes

Appendix 1

Consultancy services

CSIRO's policy on selection and engagement of consultants is based on the principles of:

- value for money
- open and effective competition
- ethics and fair dealing
- accountability and reporting
- national competitiveness and industry development
- support for other Australian Government policies.

These principles are included in CSIRO's consultancy procedures that are included in the CSIRO Procurement Policy.

CSIRO engages individuals and companies to provide professional services, taking account of the skills and resources required for the task, the skills available internally and the cost-effectiveness of these options.

CSIRO spent $1 753 193 (including goods and services tax (GST)) on consultancies during 2005–06 ($2.02 million in 2004–05). There were 42 consultancies let during the year with the total whole-of-life value of $1 585 734 (including GST) ($2.61 million in 2004–05). The following table provides details of consultancy services let by CSIRO during 2005–06 with a contract value, GST inclusive, of $10 000 or more.

Registration number	Consultant	Nature and purpose of consultancy	Estimated total life cost of consultancy (GST inclusive)	Reason for consultancy	Procurement method
2005/07/01	H3 Consulting Pty Ltd	Provide advice on strategic business directions and opportunities for the Optimisation in Air Traffic Management (OATM) Group.	$33 000	IS	EX
2005/08/01	Centre for International Economics	Undertake a series of economic analyses in developing a business case in agricultural production sustainability.	$57 000	IS, SS	EX
2005/08/02	Deloitte Touche Tomatsu	Assess Australia's current and future competitive position in manufacturing.	$438 900	IS	OT
2005/08/07	Transform ID Pty Ltd	Distil brand information from current qualitative research and assist with incorporating this brand information into a larger quantitative survey.	$21 395	IS	OT
2005/08/08	Chessell Research Pty Ltd	Provide advice, guide new technology opportunities and critique the current Secure Australia projects.	$25 000	IS, SS	EX
2005/09/01	Design Managers Australia Pty Ltd	Review of the Communications Capability within CSIRO and recommend a best practice model and assist with its implementation.	$27 500	IS, PA	EX
2005/09/02	A R Liiband and Associates Pty Ltd	Implement approaches to improve business outcomes to ensure that methods of planned change are achieved beyond the stated objectives for ENSIS.	$70 000	PA	EX
2005/09/03	Belinda Everingham, Peter Everingham, and Angus Taylor	Assess probability of success for projects and portfolio value at any point in time.	$49 500	IS	EX

Registration number	Consultant	Nature and purpose of consultancy	Estimated total life cost of consultancy (GST inclusive)	Reason for consultancy	Procurement method
2005/10/02	Dr John Steel	Review of existing information from reports and experts in relevant science areas to formulate a scoping study in the Aquafeeds area.	$23 000	IS	EX
2005/10/03	Hassall and Associates	Develop a 'how to' guide to accompany the Evaluation Framework, to implement the framework into Sustainable Ecosystems.	$28 000	SS	EX
2005/10/04	Maureen Puettmann	Advise on plan for life cycle assessment of timber in Australia and assist with workshop presentations and debriefings.	$13 000	SS	EX
2005/12/01	I J Duncan Consulting	Assist in identifying scope and scale of Cooperative Research Centre (CRC) proposal and securing industry support for the bid.	$18 480	SS	EX
2006/02/01	HWL Consulting	Market research study for the potential commercialisation of a glycemic index measuring instrument.	$25 080	IS	EX
2006/02/05	Andrew Speers	Provide assistance on the completion of a report on water wise opportunities for Australian cities.	$15 000	SS	EX
2006/03/01	Deloitte Touche Tomatsu	Assist with development of ENSIS-CSIRO-Scion Finance Service Level Agreement.	$82 000	IS	PM
2006/03/02	Consulting and Implementation Services (CIS)	Develop strategy document to determine if CSIRO should be involved in supporting the National Research Priority of Safeguarding Australia and development of Counter-Terrorism Research Theme.	$16 500	IS	EX

Registration number	Consultant	Nature and purpose of consultancy	Estimated total life cost of consultancy (GST inclusive)	Reason for consultancy	Procurement method
2006/04/01	Channel Financial Communication	Analyse and report on causes and implications of recent media activity on CSIRO brand and reputation.	$35 750	IS	EX
2006/04/02	Dr Dennis Brown (Mackenzie Energy) and Mr Michael Williams	Advise about the broad direction of CSIRO's gas strategy.	$30 000	SS	EX
2006/04/03	Port Jackson Partners	Independent support for Strategic Plan (process guidance, facilitation, external strategic advice and external calibration).	$55 000	PA	RQ
2006/04/04	Deloitte Touche Tomatsu	Advisory service to assist the Strategic Program Oversight Committee on governance, policy and procedures.	$25 000	PA	PM
2006/04/05	Dr Jeremy Barker	Scoping study into the development and application of molecular genetic technologies for aquaculture breed enhancement.	$30 000	EX	IS
2006/05/01	Deloitte Touche Tomatsu	Independent subject matter expertise required to assist with the review of CSIRO.au.	$24 000	PA	PM
2006/05/02	Global Foresight Network	Facilitate the formulation and development of the CSIRO wool science strategy to assist the Australian Wool Industry manage its current and future challenges.	$50 000	PA	RQ
2006/05/03	Competitive Dynamics Pty Ltd	Evaluation of the performance of the CSIRO Board.	$29 352	IS	RQ
2006/05/04	CyberTrust Australia Pty Ltd	Study of CSIRO's data centre options.	$26 125	IS	RQ

Registration number	Consultant	Nature and purpose of consultancy	Estimated total life cost of consultancy (GST inclusive)	Reason for consultancy	Procurement method
2006/05/05	ACIL Tasman Ltd	Review of CSIRO's impact including economic analysis.	$46 030	IS	EX
2006/05/06	ACIL Tasman Ltd	Preparation of National Collaborative Research Infrastructure Strategy (NCRIS) investment plan to NCRIS as required by the DEST-CSIRO funding contract.	$44 000	IS	RQ
2006/05/09	Fairo Holdings Pty Ltd	Revision of Land and Water's research capabilities, underpinning scientific skills and disciplines and the associated outputs.	$11 550	IS	RQ
2006/06/01	R G Mein and Associates	Revision of Land and Water's research capabilities, underpinning scientific skills and disciplines and the associated outputs.	$14 850	IS	RQ
2006/06/05	Thombolo Pty Ltd	Preparation of research proposal for a vital coastal Australia.	$11 000	IS	RQ
2006/06/06	Market Attitude Research Services (MARS)	Undertake the CSIRO National Brand Positioning and Performance Quantitative Study for 2005–06.	$90 750	IS	PM
2006/06/07	STEM Partnership	Preparation of submission for a supplementary bid to the CRC for National Plant Protection.	$49 500	IS	RQ
2006/06/08	Deloitte Touche Tomatsu	Assist with the CSIRO IT Review.	$34 650	IS	PM
Total value of consultancies below $10 000			$34 822		
Total value of consultancies let during 2005–06			**$1 585 734**		

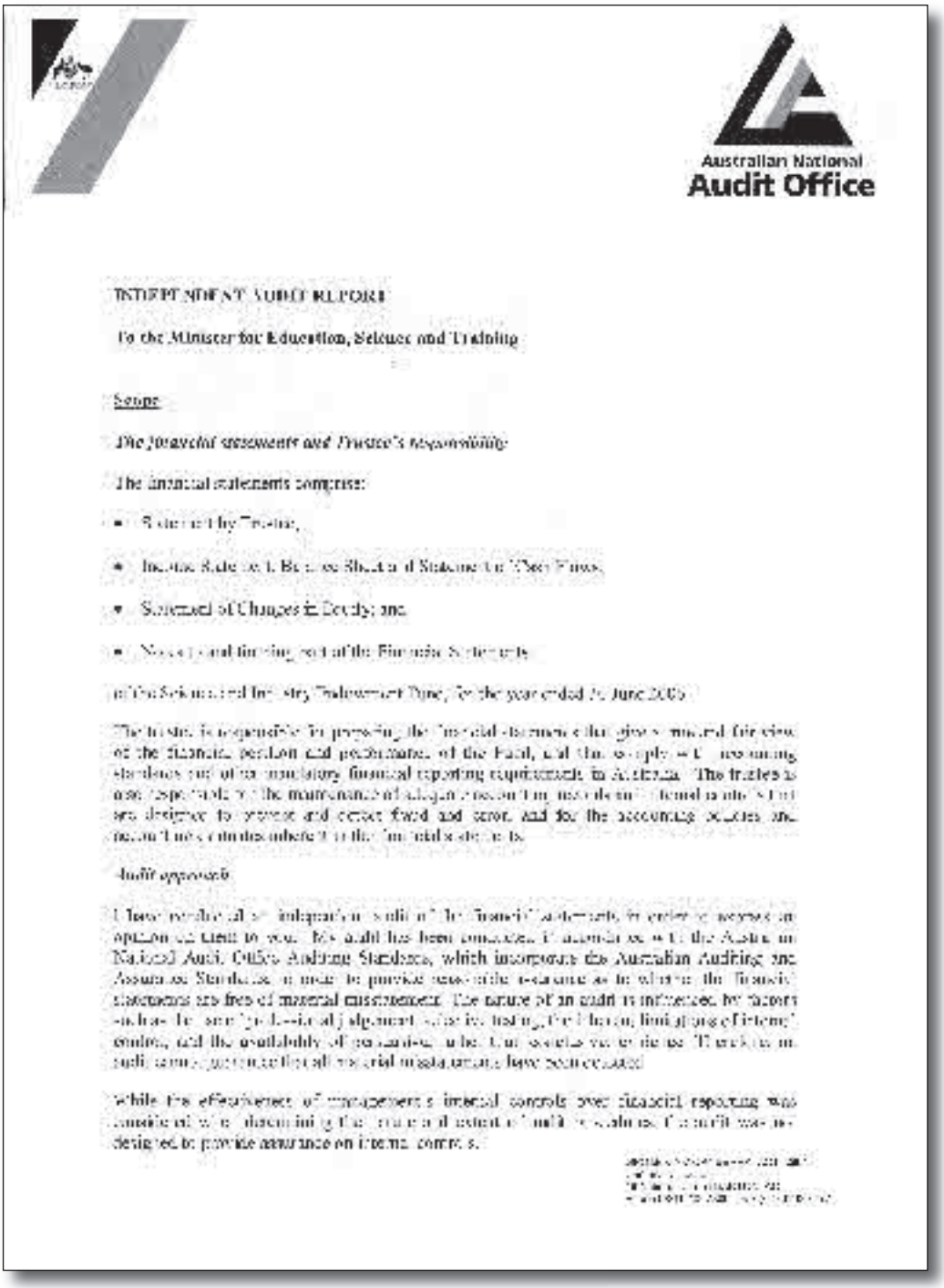
Notes to table

Reason code	Reason for consultancy
IS	Need for independent study/evaluation.
PA	Need for professional assistance to manage and facilitate change and its consequence.
SS	Specialist skills were not otherwise available.

Procurement code	Procurement method
PM	An existing panel member – this category includes standing offers, common use arrangements and approved supplier panels.
OT	Tenders sought from the market place (Request for Proposal, Request for Tender, Expressions of Interest).
ST	Tenders being sought from suppliers who have pre-qualified through some form of previous competitive process.
RQ	Purchasing thresholds consistent with CSIRO's minimal standards.
EX	Exemption arrangement such as sole supplier, pre-eminent expertise or urgency and/or practicality.

Appendix 2

Science and Industry Endowment Fund Statements



Australian National Audit Office

INDEPENDENT AUDIT REPORT

To the Minister for Education, Science and Training

Scope

The financial statements and Trustee's responsibility

The financial statements comprise:

- Statement by Trustee;
- Income Statement, Balance Sheet and Statement of Cash Flows;
- Statement of Changes in Equity; and
- Notes to and forming part of the Financial Statements

of the Science and Industry Endowment Fund, for the year ended 30 June 2006.

The trustee is responsible for preparing the financial statements that give a true and fair view of the financial position and performance of the Fund, and that comply with Australian Accounting Standards and other mandatory financial reporting requirements in Australia. The trustee is also responsible for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial statements.

Audit approach

I have conducted an independent audit of the financial statements in order to express an opinion on them to you. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing and Assurance Standards, in order to provide reasonable assurance as to whether the financial statements are free of material misstatement. The nature of an audit is influenced by factors such as the use of professional judgement, selective testing, the inherent limitations of internal controls, and the availability of persuasive rather than conclusive evidence. Therefore, an audit cannot guarantee that all material misstatements have been detected.

While the effectiveness of management's internal controls over financial reporting was considered when determining the nature and extent of audit procedures, the audit was not designed to provide assurance on internal controls.

I have performed procedures to assess whether, in all material respects, the financial statements present fairly, in accordance with Australian Accounting Standards and other mandatory financial reporting requirements in Australia, a view which is consistent with my understanding of the Fund's financial position, and of its financial performance and cash flows.

The audit opinion is formed on the basis of these procedures, which included:

- examining, on a test basis, information to provide evidence supporting the amounts and disclosures in the financial statements; and
- assessing the appropriateness of the accounting policies and disclosures used, and the reasonableness of significant accounting estimates made by the trustee of the Fund.

Independence

In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the ethical requirements of the Australian accounting profession.

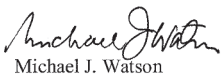
Audit Opinion

In my opinion, the financial statements of the Science and Industry Endowment Fund:

(a) have been prepared in accordance with the Australian Accounting Standards and other mandatory financial reporting requirements; and

(b) give a true and fair view of the Fund's financial position as at 30 June 2006 and of its performance and cash flows for the year then ended, in accordance with applicable accounting standards and other mandatory financial reporting requirements in Australia.

Australian National Audit Office



Michael J. Watson
Group Executive Director

Delegate of the Auditor-General

Canberra
31 August 2006

SCIENCE AND INDUSTRY ENDOWMENT FUND
STATEMENT BY TRUSTEE

In our opinion, the attached financial statements for the year ended 30 June 2006 have been prepared based on properly maintained financial records and in accordance with Australian Accounting Standards and other mandatory financial reporting requirements in Australia, and give a true and fair view of the financial position of the Fund as at 30 June 2006 and of its performance for the year then ended.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Fund will be able to pay its debts as and when they become due and payable.

Geoff G Garrett
Chief Executive

29 August 2006

Michael S Whelan
Chief Financial Officer

29 August 2006

SCIENCE AND INDUSTRY ENDOWMENT FUND
INCOME STATEMENT
For the year ended 30 June 2006

	Notes	2006 $	2005 $
INCOME			
Revenue			
Interest		28 109	28 009
Total Revenue		**28 109**	**28 009**
Gains			
In-kind contributions received	4	5 834	5 022
Total Gains		**5 834**	**5 022**
TOTAL INCOME		**33 943**	**33 031**
EXPENSES			
Scientific research grants		23 804	16 822
Bank fees		30	32
In-kind expenses:			
– advertising and approval fees	4	2 000	1 700
– accounting, secretarial and audit	4	3 834	3 322
TOTAL EXPENSES		**29 668**	**21 876**
Net operating surplus/(deficit)		**4 275**	**11 155**

The above statement should be read in conjunction with the accompanying notes.

SCIENCE AND INDUSTRY ENDOWMENT FUND
BALANCE SHEET
As at 30 June 2006

	Notes	2006 $	2005 $
ASSETS			
Financial Assets			
Cash	5	487 047	469 238
Receivables	6	13 184	26 718
Total assets		**500 231**	**495 956**
LIABILITIES			
Payables			
Awards		-	-
Total liabilities		**-**	**-**
NET ASSETS		**500 231**	**495 956**
EQUITY			
Contributed equity		200 000	200 000
Accumulated surpluses		300 231	295 956
Total equity		**500 231**	**495 956**
Current assets		**500 231**	**495 956**
Non-current assets		**-**	**-**
Current liabilities		**-**	**-**
Non-current liabilities		**-**	**-**

The above statement should be read in conjunction with the accompanying notes.

SCIENCE AND INDUSTRY ENDOWMENT FUND
STATEMENT OF CASH FLOWS
For the year ended 30 June 2006

	Notes	2006 $	2005 $
OPERATING ACTIVITIES			
Cash received			
Interest		41 642	3 334
Total cash received		**41 642**	**3 334**
Cash used			
Grants		23 804	16 822
Other		30	32
Total cash used		**23 834**	**16 854**
Net cash from/(used by) operating activities	7	**17 808**	**(13 520)**
Net increase/(decrease) in cash held		17 808	(13 520)
Cash at the beginning of the reporting period		469 239	482 759
Cash at the end of the reporting period		**487 047**	**469 239**

The above statement should be read in conjunction with the accompanying notes.

SCIENCE AND INDUSTRY ENDOWMENT FUND
STATEMENT OF CHANGES IN EQUITY
For the year ended 30 June 2006

	Accumulated Surpluses		Contributed Equity		Total Equity	
	2006 $	2005 $	**2006 $**	2005 $	**2006 $**	2005 $
Opening balance at 1 July	**295 956**	284 801	**200 000**	200 000	**495 956**	484 801
Net Operating surplus/(deficit)	**4 275**	11 155	**-**	-	**4 275**	11 155
Closing balance at 30 June	**300 231**	295 956	**200 000**	200 000	**500 231**	495 956

The above statement should be read in conjunction with the accompanying notes.

SCIENCE AND INDUSTRY ENDOWMENT FUND
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
For the year ended 30 June 2006

Note 1 Summary of Significant Accounting Policies

1.1 Basis of Preparation of the Financial Statements

The financial statements are required by section 10 of the *Science and Industry Endowment Act 1926* and are a general purpose financial report.

The statements are prepared in accordance with:

- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board that apply for the reporting period
- Interpretations issued by the AASB and Urgent Issues Group that apply for the reporting period.

This is the first financial report prepared under Australian Equivalents to International Financial Reporting Standards (AEIFRS). There is no impact to the financial statements since adopting AEIFRS.

The financial statements have been prepared on an accrual basis and are in accordance with the historical cost convention. No allowance is made for the effect of changing prices on the results or the financial position.

Assets and liabilities are recognised in the Balance Sheet when, and only when, it is probable that future economic benefits will flow and the amounts of the assets or liabilities can be reliably measured.

Revenues and expenses are recognised in the Income Statement when, and only when, the flow or consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 Cash

For the purpose of the Statement of Cash Flows, cash includes cash at bank and deposits at call. They are readily convertible to cash.

1.3 Revenue

Interest revenue is recognised on a proportional basis taking into account the interest rates applicable to the financial assets.

1.4 Resources Received Free of Charge

Services received free of charge are recognised as gains when, and only when, a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

1.5 Financial Instruments

Accounting policies for financial instruments are stated in Note 8.

Note 2 **Contingencies and Commitments**

No contingent liabilities and commitments exist as at 30 June 2006.

Note 3 **Principal Activity**

The Fund was established under the *Science and Industry Endowment Act 1926* with the Trustee of the Fund being the CSIRO Chief Executive. An appropriation of 100 000 pounds was received at the time the fund was established. The funds were invested and have subsequently earned interest over time.

The principal activity of the Science and Industry Endowment Fund is to provide assistance to persons engaged in scientific research and in the training of students in scientific research.

Note 4 **In-kind Contributions**

	2006 $	2005 $
CSIRO are as follows:		
– accounting and secretarial services	2 234	2 122
– advertising and approval fees*	2 000	1 700
– auditors remuneration paid and payable to the Auditor-General for auditing the financial statements of SIEF	1600	1200
	5 834	**5 022**

*Estimated advertising and approval fees.

Note 5 **Cash** (current)

Cash at bank	3 050	2 723
Deposits – at call	483 997	466 515
	487 047	**469 238**

Note 6 **Receivables** (current)

Interest receivable	**13 184**	**26 718**
Gross receivables are aged as follows:		
Not overdue	**13 184**	**26 718**

Note 7 **Cash Flow Reconciliation**

	2006 $	2005 $
Reconciliation of operating surplus to net cash from/(used by) operating activities:		
Operating surplus/(deficit)	**4 275**	**11 155**
Changes in assets and liabilities		
(Increase)/decrease in receivables	13 533	(24 675)
Increase/(decrease) in payables	-	-
Net cash from/(used by) operating activities	**17 808**	**(13 520)**

Note 8 **Financial Instruments**

The aggregate net fair value of cash, deposits at call, and receivables disclosed in the Balance Sheet are their total carrying amounts.

Interest Rate Risk – Average rate of return on cash and short-term deposits was 5.9% (2005 5.88%)

Indexes

Acronyms

AAHL	Australian Animal Health Laboratory
ACIAR	Australian Centre for International Agricultural Research
ADJR Act	*Administrative Decisions (Judicial Review) Act 1977*
AEIFRS	Australian Equivalents to International Financial Reporting Standards
AFMA	Australian Fisheries Management Authority
AGO	Australian Greenhouse Office
AIMS	Australian Institute of Marine Science
ANAO	Australian National Audit Office
ANSTO	Australian Nuclear Science and Technology Organisation
APA	Annual Performance Agreement
APGs	Annual Performance Goals
ARC	Australian Research Council
ARPANSA	Australian Radiation and Nuclear Safety Agency
ARWA	Agricultural Research Western Australia
ATLR	Average Time Lost Rate
ATNF	Australia Telescope National Facility
AWI	Australian Wool Innovation
BAC	Board Audit Committee
BCC	Board Commercial Committee
BD	Business Development
BETR	Business Enabling Technologies Review
BPPS	Brand Positioning and Performance Study
CAC Act	*Commonwealth Authorities and Companies Act 1997*
CeNTIE	Centre for Networking Technologies for the Information Economy
CDS	Commonwealth Disability Strategy
ComEx	Commercial Executive
CRC	Cooperative Research Centre
CSIR	Council for Scientific and Industrial Research
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSIROSEC	CSIRO Science Education Centre
CVS	Customer Value Survey
DDA Act	*Disability Discrimination Act 1992*
DEH	Department of the Environment and Heritage
DEST	Department of Education, Science and Training
DSTO	Defence Science and Technology Organisation
EAP	Employee Assistance Program
EMC	Executive Management Council
EMS	Environmental Management System
EP&BC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ESI	Emerging Science Initiative
FAO	Food and Agriculture Organisation
FHA	Fluid history analysis
FOI Act	*Freedom of Information Act 1982*
GHG	Greenhouse gas

GRA	Global Research Alliance
ICIP	Industry Cooperative Innovation Program
ICT	Information and Communication Technologies
IP	Intellectual Property
IPPs	Information Privacy Principles
ISI	Institute for Scientific Information
LTIFR	Lost Time Injury Frequency Rate
MMB	Methanol MultiBeam
MOU	Memorandum of Understanding
MTFR	Medical Treatment Frequency Rate
MXDPs	Major Cross-Divisional Programs
NCRIS	National Collaborative Research Infrastructure Strategy
NEMSIM	National Electricity Market Simulator
NEPM	National Environmental Protection Measures
NIS	National Innovation System
NPI	National Pollutants Inventory
NPPs	National Privacy Principles
NRP	National Research Priorities
NSEC	National Solar Energy Centre
NSW	New South Wales
OH&S	Occupational Health and Safety
OHS&E	Occupational Health, Safety and Environment
PACCT	Publicly Funded Agencies Collaborative Counter-Terrorism
PIN	Provisional Improvement Notice
PLI	Project Leadership Initiative
PMF	Performance Management Framework
PSLP	Public Sector Linkages Program
QCAT	Queensland Centre for Advanced Technologies
RA&A	Risk Assessment and Audit
RDC	Research and Development Corporation
RIPPERS	Reclaimed Intellectual Property Promising Extraordinary Revenues
ROU	Record of Understanding
RQF	Research Quality Framework
RSS	Research Support Services
SAC	Sector Advisory Council
SIA	Strategy in Action
SIEF	Science and Industry Endowment Fund
SESSF	Southern and Eastern Scalefish and Shark Fishery
SIP	Science Investment Process
SIR Act	*Science and Industry Research Act 1949*
SKA	Square Kilometre Array
SME	Small and Medium sized Enterprise
SRCC	Safety, Rehabilitation and Compensation Commission
UV	Ultraviolet
ViCCU™	Virtual Critical Care Unit
WAMSI	Western Australian Marine Science Institution
WRON	Water Resources Observation Network
XNTD	Extended New Technology Demonstrator

Glossary

Capabilities

- Skills, relationships and assets are the three components of capabilities. A capability is an integration of these components that results in some particularly useful functionality – a capability is more than the simple sum of the underpinning scientific/technical and other skills.

Customer Value Survey

- An average of approximately 150 customers are surveyed quarterly. CSIRO's Score is given on a ten point scale. [1 = very poor; 10 = excellent]. The comparative score is calculated as CSIRO's score divided by the score our customer gives to an alternative provider, multiplied by 100. For example, 7.81 / 7.65 * 100 = 102. Thus a comparative score greater than 100 indicates that the customer rates CSIRO more highly than their main alternative R&D provider on the attribute in question.

Brand Positioning and Performance Study

- A reading of 1–2 is 'poor' performance, 3–4 is 'weak' performance, 5–6 is 'moderate' performance, 7–8 is 'good' performance and 9 and above 'very strong/excellent' performance.

Divisional Science Reviews

Research community impact position

Benchmark Sustained scientific leader – well recognised in the international research community for this.

Strong Able to set and sustain new scientific/technical directions within the international research community.

Favourable Able to maintain a good position in the international research community "pack"; not a scientific leader except in developing niches (not mainstream areas).

Tenable Not able to set or sustain independent scientific/technical directions – a sense of being continually a follower.

Weak Declining quality of scientific/technical output compared with other research groups. Often a short term "fire-fighting" focus.

Industry and community impact position

Benchmark Research results used to set the pace and direction of technically-based commercial, environmental, community or policy development – recognised in industry or community for this.

Strong Research results able to be used by organisations to distinguish themselves from peers or competitors.

Favourable Research results able to be used by organisations to improve their position relative to peers or competitors.

Tenable Research results able to be used by organisations to maintain, but not improve, their position relative to peers or competitors. Research results not able to be used to differentiate organisations from their peers or competition.

Weak Research results not able to be used by organisations to even maintain their position relative to peers or competitors.

Intellectual Property

- **Current Impact Index (CII):** this is the number of times a company's previous five years of patents are cited in the current year, relative to all patents in the US patent system. Indicates patent portfolio quality. A value of 1.0 represents average citation frequency; a value of 2.0 represents twice average citation frequency; and 0.25 represents 25 per cent of average citation frequency.

(CII's vary by technology. For example, they are high in biotechnology and pharmaceuticals, and low in textiles).

- **Granted Patents:** once a patent application has been examined and satisfies various patentability criteria it becomes a granted patent. It remains a granted patent until the end of the patent period (normally 20 years) provided renewal fees are paid.
- **Inventions:** this is the number of inventions where one or more patent/applications are current. Accordingly an invention might include a granted patent that is near the end of its life (eg 20 years), or it might include a provisional patent application that has only recently been filed. Further, one invention might relate to a patent application in one country only, or it might relate to over 20 patents/applications in different countries covering the one invention.
- **Live Patent Cases:** a live patent case is where either a patent application or a granted patent exists. It does not include cases that have lapsed, expired or been withdrawn. Applications may include provisional applications, PCT applications, and applications pending in Australia or foreign jurisdictions.
- **New inventions:** this is the number of new inventions where an application (normally an Australian provisional application) is filed for the first time to protect that invention. A major implication of filing that provisional application is that it provides the applicant with an internationally recognised priority date. It should be noted that a small percentage of CSIRO's new inventions are filed as US provisional applications.
- **PCT Applications:** international PCT (Patent Cooperation Treaty) applications are a 'temporary' phase in any international patenting process and these have a life span of 18 months. This type of application is very common in major international corporations and is used by CSIRO when it considers its invention may have wide commercial application. In view of the 18-month time span, it is reasonable to approximate that 2/3 of the reported number were filed in the previous 12 month period.

HS&E

- **Average Time Lost Rate** is the average time lost for the number of incidents during the period.
- **Lost Time Injury Frequency Rate** is the number of incidents involving lost time from work greater than or equal to one full day or shift per million hours worked.
- **Medical Treatment Frequency Rate** is the number of compensation claims per million hours worked.

Outputs and Outcomes

- Outputs are products or services provided to individuals or organisations external to CSIRO. Outcomes are the impacts that outputs have on individuals or organisations external to CSIRO. Outcomes encompass economic, social and environmental benefits and may include evidence of changes in awareness, adoption and behaviour that have led (or clearly will lead) to such benefits.

Program Performance Framework (PPF)

- The PPF incorporates a set of tools developed to promote robust business planning, good target setting and strong accountability in the implementation and performance of major programs of work. CSIRO's research programs are organised into **Themes, Streams and Projects**. This classification method has been adopted across the Organisation to enable a greater ability to ensure the alignment of individual projects with high-level strategic goals and to monitor progress toward these goals.
- **Program**: a Program focuses significant CSIRO effort and resources on a defined high-level goal (eg The Preventative Health Flagship Program's goal is *to improve the health and wellbeing of Australians and save $2 billion in annual direct health costs by 2020 through the prevention and early detection of chronic diseases*).

- **Theme/Theme Goal**: a Theme refers to a major area of research that is directed towards a clear and measurable strategic goal which is a key part of the Program's mission (eg the goal for the Colorectal Cancer Theme in Preventative Health is to *reduce colorectal cancer incidence by ten per cent and increase five-year survival from around 63 per cent to 70 per cent by 2020*).
- **Stream**: a Stream represents a collection of related projects that address a particular aspect of the Theme Goal. (eg The Colorectal Cancer Theme Goal is pursued through three streams of activity: developing protective foods; developing novel diagnostics; and developing policies and guidelines). Each Stream has an explicit medium-term Stream Objective supported by specific annual performance goals.
- **Project**: a Project is the core unit of research activity and budgetary control within a Division. (eg Developing novel diagnostics Stream in the Colorectal Cancer Theme consists of numerous projects such as *Novel protein scaffolds* that is delivering protein structures and scaffolds for measurement of key markers of the disease and *Abnormal methylation for prognosis and early diagnosis of Colorectal Cancer* that is mapping methylation of DNA as an additional potential marker).

Project Management Index

- The Project Management Index covers aspects of financial management, appropriate information in systems, cost attribution and project management training. The Index is calculated through comparison of planned and actual performance on these attributes and a lower score indicates better compliance with project management policy.

Publications

- **Journal Articles**: journal article or other item published as part of a journal eg editorial, book review.
- **Conference Papers**: published conference paper, abstract or edited proceedings.
- **Technical Reports**: includes individually authored chapters as well as whole reports. Subject to review and usually publicly released.
- **Books or Chapters**: monograph, complete or a chapter, usually published by a commercial publisher.
- **Client Reports**: report produced under collaborative or contractual arrangements. Includes individually authored chapters as well as whole reports. Often not publicly released.

Strategic Goals and Objectives

- Six strategic goals and 24 underpinning objectives articulated in CSIRO's Strategic Plan for 2003–07.

Students Supervised and Sponsored

- Students are deemed to be **sponsored** if they receive a full or partial scholarship paid from CSIRO funds to pursue a research project leading to a PhD or Honours/Masters degree. This excludes CSIRO employees, whose study expenses are considered to be 'training and development'.
- Students are deemed to be **supervised** if they have a CSIRO staff member appointed officially by the University as the supervisor for their research project. Normally, CSIRO staff are joint supervisors in conjunction with a university academic.

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Compliance Index – Statutory Reporting Requirements

CSIRO – the Commonwealth Scientific and Industrial Research Organisation – is one of the largest and most diverse scientific organisations in the world. It has 6 558 staff located across 56 sites throughout Australia and overseas.

CSIRO is an independent statutory authority constituted and operating under the provisions of the *Science and Industry Research Act 1949* and the *Commonwealth Authorities and Companies Act 1997.*

Our purpose states:

By igniting the creative spirit of our people, we deliver great science and innovative solutions for industry, society and the environment.

CSIRO Head Office
Limestone Avenue
Campbell ACT 2612
PO Box 225
Dickson ACT 2602
Tel: 1300 363 400

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Contact Us

Phone: 1300 363 400
+61 3 9545 2176

Email: Enquiries@csiro.au
Web: www.csiro.au

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Australia is founding its future on science and innovation. Its national science agency, CSIRO, is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.