



Australian Government

Ansto

Nuclear-based science benefiting all Australians



Annual Report 2010-2011

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ANSTO

Annual Report 2010-2011

Chairman's Letter

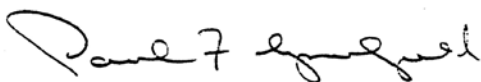
5 October 2011

Senator the Hon Kim Carr
Minister for Innovation, Industry, Science and Research
Parliament House
CANBERRA ACT 2601

Dear Minister

In accordance with Section 9 of the *Commonwealth Authorities and Companies Act 1997 (CAC Act)*, I am pleased to present the Annual Report of the Australian Nuclear Science and Technology Organisation (ANSTO) for the period 1 July 2010 to 30 June 2011. This Annual Report includes a Report of Research and Operations, the content and preparation of which the Board is responsible for under Section 9 of the *CAC Act*.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Paul Greenfield', written in a cursive style.

Professor Paul Greenfield AO
Chairman

Contents

Chairman's Letter	ii
Contents	iii
About ANSTO	1
Members of the Board	3
ANSTO Executive Team	5
Chairman's Report	7
Chief Executive Officer's Report	9
2010-2011 highlights	11
2010-2011 report of activities (Report of research and operations)	16
Performance against strategic objectives	38
Financial statements	40
Governance and performance	86
Appendices	96
Appendix 1 - Equality of Employment Opportunity	97
Appendix 2 - Functions and powers of the Organisation under the ANSTO Act	98
Appendix 3 - Environmental Protection and Biodiversity Conservation Act 1999, (EPBC Act) section 516A	103
Appendix 4 - Occupational Health and Safety (Commonwealth Employment) Act 1991, section 74	107
Appendix 5 - Freedom of Information Act 1982, subsection 8(1)	111
Appendix 6 - Index of compliance with reporting guidelines	113
Acronyms	114
Index	116
Contact details	125

About ANSTO

ANSTO – the Australian Nuclear Science and Technology Organisation – is home to Australia’s nuclear expertise. ANSTO employs over 1,100 people in southwest Sydney, and supplies Australia with outstanding nuclear research, medicine and technology capabilities.

The organisation provides policy advice to Government on all matters relating to nuclear science, technology and engineering. It supports Government in undertaking its international roles and obligations.

It also undertakes research and pursues innovation in areas aligned with the national research priorities and those that have the potential to deliver key outcomes to support Australians and Australian industry.

ANSTO strives to achieve key outcomes in publishing scientific research, securing intellectual property, training research students, developing software, providing engineering design and services, and consulting for industry.

Innovation is critical to increasing Australia’s productivity and competitiveness. The Australian Government invested over \$9 billion in science research and innovation in the 2010-2011 financial year and this investment is evident through the landmark science infrastructure Australian scientists can now access at ANSTO.

What we do

ANSTO is the custodian of nuclear knowledge and expertise in Australia and

operates OPAL, Australia’s only research reactor. OPAL is used for scientific research, the production of medical radioisotopes, the activation of targets and the irradiation of silicon used for microelectronics.

OPAL facilitates specialised research using a growing suite of neutron beam instruments at ANSTO’s Bragg Institute. ANSTO also operates two particle accelerators, which are fundamental to addressing the national research priorities and advancing knowledge in areas as important as climate change.

Each week ANSTO delivers 10,000 patient doses of potentially lifesaving nuclear medicines to over 250 partner hospitals and medical practices across Australia. The mining industry relies on ANSTO to provide advice and technology to handle naturally occurring radioactive materials in mineral processing. ANSTO also provides expert advice on the safe treatment and disposition of nuclear waste and specialised irradiation services.

Our networks

ANSTO is connected with all Australian and New Zealand universities through the Australian Institute of Nuclear Science and Engineering (AINSE), providing researchers access to Australia’s nuclear science, technology and engineering expertise and landmark infrastructure which in turn, facilitates greater national science collaboration.

ANSTO’s strategic international collaborations ensure Australian scientists

are connected with important global research projects. In 2010-2011 ANSTO broadened its relationship with Japan's High Energy Accelerator Research Organisation including exchanges between ANSTO's neutron beam facilities and the Japan Proton Accelerator Research Complex (J-PARC) neutron spallation source. These techniques are complementary in nature and the relationship between the organisations capitalises on the scientific infrastructure available to each country.

Other international collaborations initiated during the reporting period were with the French Atomic Energy Commission (CEA), including a staff exchange in reactor operations, and with the European Organisation for Nuclear Research (CERN), focusing on nuclear, accelerator and materials science.

Our Corporate Plan 2010-2015

In 2010, the ANSTO Corporate Plan for 2010-2015 was developed and approved by the ANSTO Board and accepted by the Minister for Innovation, Industry, Science and Research, Senator the Hon. Kim Carr. Our 2010-2015 Corporate Plan is a public document, available via the ANSTO website, and sets out the organisation's key goals and strategic direction for this period.

Our Vision

To deliver excellence in innovation, insight and discovery through our people, partnerships, nuclear expertise and landmark infrastructure.

Our strategic directions for 2010-2015

- Deliver world-class research and innovation in nuclear science and technology
- Expand ANSTO's reach and contribution, exploiting landmark technologies
- Serve the nuclear needs of government, industry, community and the people of Australia
- Drive organisational renewal.

Responsible Minister

Minister for Innovation, Industry, Science and Research, Senator the Hon. Kim Carr.



Senator the Hon. Kim Carr.

Statement of Compliance

This report is written with reference to the Commonwealth Authorities and Companies (Report of Operations) Orders 2008.

Members of the Board

Professor Paul Greenfield AO (Chair)

BE (Hons), B.Econ, PhD, FTSE, FIEAust, FICHE, FAICD, CPEng, CEng, CSci
Vice-Chancellor University of Queensland; academic, engineer.
Chairman from 24 February 2011
Appointed 25 July 2007
Reappointed 25 July 2010
Term concludes 24 July 2014

Dr Zygmunt (Ziggy) Switkowski (former Chair)

BSc (Hons), PhD, FAICD
Company director, former chief executive, scientist
Chair 1 March 2007 - 31 December 2010
Appointed 1 January 2006
Term concluded 31 December 2010

Professor Andrew Scott

MBBS (Hons), MD, FRACP, DDU, FAICD
Director, Ludwig Institute for Cancer Research; nuclear medicine physician, scientist and academic.
Appointed 26 September 2007
Term concludes 25 September 2011

Professor David Copolov OAM

MBBS, PhD, FRACP, FRANZCP, MPM, DPM
Pro Vice-Chancellor, Office of the Vice-Chancellor and Professor of Psychiatry, Monash University.
Appointed 1 May 2008
Term concludes 30 April 2012

Professor John Hearn

BSc, MSc, PhD
Deputy Vice-Chancellor (International) and Professor of Physiology
University of Sydney.
Appointed 1 May 2008
Term concludes 30 April 2012

Ms Erica Smyth

MSc, FAICD
Scientist and businesswoman.
Appointed 12 December 2008
Term concludes 11 December 2012

Ms Christine McLoughlin

BA, LLB (Hons)
Company Director; former financial services executive, lawyer and businesswoman.
Appointed 13 March 2009
Term concludes 12 March 2013

Dr Susan Pond AM

MBBS (Hons), MD, DSc, FTSE, FRACP
Adjunct Professor, University of Sydney; medicine, science, business.
Appointed 1 July 2010
Term concludes 30 June 2014

Mr John Ryan PSM

BEc, MEc
Executive Director, Cloon Economics
Appointed 24 February 2011
Term concludes 23 February 2016

Dr Adrian (Adi) Paterson

BSc, PhD
Chief Executive Officer.
Appointed 1 March 2009
Term concludes 28 February 2014



Pictured from left to right (back row) Erica Smyth, Adi Paterson, Christine McLoughlin, Andrew Scott, (front row) Susan Pond, David Copolov, Paul Greenfield, John Ryan.

Not present: John Hearn

ANSTO Executive Team

Dr Adrian (Adi) Paterson

Chief Executive Officer

Dr Greg Storr

General Manager, Nuclear Operations

Mr Peter Arambatzis

Chief Financial Officer

Mr Geoff Askew

Chief Security Officer (to 28 February 2011)

Mr Paul Jones

General Manager, Security and Safeguards
(from 17 January 2011)

Mr Douglas (Doug) Cubbin

Executive General Manager for Business
Development and Commercialisation

Professor John Dodson

Head, Institute for Environmental Research

Professor Lyndon Edwards

Head, Institute of Materials Engineering

Dr Ron Hutchings

Head, International Relations
(to 1 December 2010)

Mr Shaun Jenkinson

General Manager, ANSTO Health

Mr Con Lyras

General Manager, Engineering & Capital
Programs

Ms Amelia McArdle

General Manager, Human Resources
(to 18 May 2011)

Mr Robert (Rob) Blissett

General Manager, Human Resources
(from 28 April 2011)

Dr Robert (Bob) Ring

General Manager, ANSTO Minerals

Dr Robert (Rob) Robinson

Head, Bragg Institute

Dr Ron Weiner

Head, ANSTO LifeSciences
(to 28 February 2011)

Dr Marie-Claude Gregoire

Head, ANSTO LifeSciences
(from 1 March 2011)

By invitation:

Professor Richard Banati

Distinguished Research Fellow and
ANSTO LifeSciences

Mr Michael Beckett

General Manager, Support Services &
Chief Information Officer

Ms Stephanie Cole

Legal Counsel

Mr Hefin Griffiths

Manager, Safety, Environmental &
Radiological Assurance

Ms Nadia Levin

Head, Strategic Communications and
Government Affairs

Mr Kobus Naude

Senior Manager, Strategy & Planning
(from 8 November 2010)



Pictured from left to right (back row) Kobus Naude, Rob Blissett, Hefin Griffiths, Michael Beckett, Stephanie Cole, John Dodson, Lyndon Edwards, Rob Robinson, Paul Jones, Richard Banati (front row) Peter Arambatzis, Nadia Levin, Adi Paterson, Greg Storr, Marie-Claude Gregoire.

Not present: Shaun Jenkinson, Con Lyras, Doug Cubbin, Bob Ring, Ron Hutchings, Geoff Askew, Amelia McArdle, Ron Weiner.

Chairman's Report



ANSTO continues to fulfil its mission as an international centre of excellence in nuclear science and technology. Through the operation of the OPAL research reactor and its complementary suite of neutron beam instruments, ANSTO maintains its role as the home of nuclear and accelerator science expertise in Australia and attracts interest and collaboration from researchers around Australia and the world.

The development of strategic research collaborations and landmark infrastructure is ensuring Australian researchers have a part to play in the global nuclear science landscape and share the benefits with Australia.

We can look back on 2010-2011 as being a year when ANSTO demonstrated just how important this organisation is to Australia.

Of course, one of the major events during this period was the earthquake

and tsunami in Japan and the subsequent accident at the nuclear power plant at Fukushima Daiichi.

ANSTO supported the Australian Government by providing timely technical advice during the crisis and our radiation protection experts helped keep Australia's emergency response teams in Japan safe by providing portable radiation monitoring equipment.

We are also proud that ANSTO has been able to offer Japanese scientists access to our neutron-beam instruments here in Australia while their own research reactors are out of operation. These offers have been gratefully accepted by our Japanese colleagues and we continue to offer assistance in their scientific endeavours.

In other areas, reliable operation of the OPAL reactor and ANSTO Health production facilities have continued to offer assistance in overcoming international shortfalls in the supply of radiopharmaceuticals due to scheduled and unscheduled shutdowns.

ANSTO Health has continued to deliver in excess of 10,000 patient doses of vital radiopharmaceuticals, used for the diagnosis and treatment of diseases including cancer, to the Australian health industry each week, and has commenced exports of radioisotopes to the United States (US). This is a major milestone for the Organisation and it is a testament to ANSTO Health's capabilities. ANSTO

is playing an important role in ensuring nuclear medicine reaches two million patients across the globe each year.

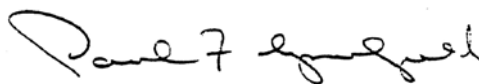
Notably, ANSTO was praised by the US Department of Energy for helping meet their need for nuclear medicine produced using low enriched uranium fuel and targets – which helps international efforts in nuclear non-proliferation.

While radiopharmaceuticals produced by ANSTO Health are experiencing record demand, ANSTO's commercial expertise in other areas is also proving to be a great national asset.

ANSTO Minerals is experiencing unprecedented demand for its consulting services from the mining industry and the Institute for Environmental Research is providing important information for scientists trying to better understand climate change. Meanwhile, researchers from LifeSciences are delivering exciting new insights into diseases such as Parkinson's disease and melanoma – breakthrough research that has the potential to significantly improve the health outcomes of millions of Australians.

The ANSTO Corporate Plan 2010-2015 provides clear direction for the organisation. Over the past twelve months, ANSTO has made commendable progress through its journey of organisational change and renewal and is emerging as a more sophisticated and outward looking organisation.

I am proud to present my first Annual Report, and hope you will share my sense of excitement about our achievements and the future prospects for ANSTO.



Professor Paul Greenfield AO
Chairman

Chief Executive Officer's Report



As a nuclear organisation, safety is fundamental to everything we do. The 2010-2011 financial year had a great focus on safety, both locally and across the international nuclear industry. I am proud that throughout the year, improving our safety record was a priority embraced by our entire organisation. Events previously considered insignificant are now being recorded, and importantly lost time injuries fell by more than half.

ANSTO is appreciative of the continued support from the Minister for Innovation, Industry, Science and Research, the Hon. Kim Carr and we welcomed the review of Current Health and Safety Arrangements at ANSTO Health. ANSTO's safety improvement journey is a continuing one but I would like to thank staff who have embraced a more robust safety culture during this period.

Every aspect of the global nuclear industry has been effected by the aftermath of the Japanese earthquake and tsunami that compromised the Fukushima Daiichi Nuclear Power station in March 2011.

Nuclear organisations around the world now find themselves operating in a very different landscape.

Despite the new challenges, there have been important learnings from the events that took place at Fukushima Daiichi, which were discussed at the IAEA Ministerial Conference on Nuclear Safety that I attended in June 2011. ANSTO's presence at events such as this ensures Australia benefits from the shared safety lessons and importantly, that we have a seat at the global nuclear table.

Locally, ANSTO has continued to thrive under a strong leadership team. We are seeing the fruits of good leadership, planning and hard work by all parts of the organisation.

During the past financial year we have seen the ANSTO Corporate Plan 2010-2015 come to life, and the organisation is tracking towards achieving its prescribed goals.

Collaboration is the framework for modern science, and in the past year ANSTO has worked to ensure we develop strategic collaborations both locally and internationally that will facilitate research to benefit all Australians.

We believe that the best way for us to continue to deliver world-class research outcomes is to engage with world-class researchers – and that is precisely what we are doing. In the past year we welcomed in excess of 243 researchers from other parts of Australia and around the world, who used our landmark facilities for multiple research projects.

In recent times, we have signed important

agreements with the likes of the Chinese Academy of Sciences, CEA, CERN, J-PARC and the Korea Atomic Energy Research Institute (KAERI). These collaborations open many doorways for our researchers.

OPAL is a fantastic example of the fact that investments in science can pay off in many different ways – but we are not resting on our laurels. ANSTO continues to invest in infrastructure, with numerous new instruments coming online or under construction in the Bragg Institute to maximise the advantages brought to us by OPAL.

The announcement of new investments in accelerators as part of the Australian Collaboration for Accelerator Science (ACAS) will complement our work with neutrons, and unite some of Australia's brightest research talents in physics.

Research outcomes at ANSTO continue to offer excellent prospects. Many of the big scientific questions are within the sights of our researchers, whether it is how to create more efficient batteries, better ways to manage scarce water resources, or new imaging techniques for melanoma or Parkinson's disease.

Our researchers not only find new solutions, they provide the insights we need for informed decision making.

In the environmental field, nuclear techniques have been used to gain a better understanding of the water cycle in the Murray-Darling Basin. ANSTO researchers have also discovered light responsive molecules with potential applications in detecting the presence of toxic levels of carbon dioxide; exciting new ways

of creating magnetic interfaces at the atomic level; and new understandings of the properties of crystals that can benefit industry.

As an organisation ANSTO is committed to the innovative application of nuclear technologies. We are pleased to encourage other scientific organisations to apply technology in innovative ways through the support of the inaugural ANSTO Eureka Prize for Innovative Use of Technology.

Importantly, ANSTO is engaging with the community and enjoying clear public support. This is evident in the record number of 11,114 visitors participating in tours of ANSTO facilities this year – an improvement of 16 per cent on the previous year and more than doubling since 2005-2006. One of the key messages conveyed by respondents in a 2010 public survey was that Australia should have a national nuclear science centre and that the organisation should provide advice on nuclear issues.

This Annual Report demonstrates how ANSTO is playing an important role and achieving outcomes that are benefiting the lives of many Australians. I would like to recognise the Board for their part as custodians of our vision and mission and for continuing to support the good governance and promotion of ANSTO.



Dr Adrian (Adi) Paterson
Chief Executive Officer

2010-2011 highlights

New leadership for ANSTO Board

ANSTO's continual delivery of excellence in the field of nuclear science and technology has been assured with the appointment of Professor Paul Greenfield AO as the Organisation's Chairman in February 2011.

Professor Greenfield takes over from the tremendous contribution of Dr Zygmunt (Ziggy) Switkowski. Professor Greenfield has been a member of the ANSTO Board since 2007 and his skills in science and senior management will ensure ANSTO's continued success.

ANSTO welcomed Dr Susan Pond as a member of the Board from 1 July 2010. Dr Pond has a distinguished record within the medical, science and business arenas including serving as the Chairman of Johnson & Johnson Research Pty Limited from 2003-2009, as Chairman of AusBiotech Limited from 2007-2008 and more recently as a non-Executive Director of Commercialisation Australia from 2010.

Mr John Ryan was also appointed as a member of the Board in February 2011. Mr Ryan has had several public sector roles, including Deputy Secretary of the Department of Resources, Energy and Tourism, and was head of the secretariat for the panel that delivered the Prime Minister's Uranium Mining, Processing and Nuclear Energy Review (UMPNER) in 2006.

ANSTO Board member, Professor David Copolov, was awarded the Order of Australia in the General Division (OAM) for

service to medical research, to professional organisations and to higher education.

International radioisotope production groups

ANSTO is a participant in the IAEA International Working Group on Conversion Planning for Mo-99 Production Facilities from highly enriched uranium (HEU) to low enriched uranium (LEU) and in the OECD Nuclear Energy Agency's (NEA) High-level Group on the Security of Supply of Medical Radioisotopes.

The IAEA working group aims to identify areas of potential multilateral collaboration in support of the conversion from HEU to proliferation-resistant LEU by current major producers of molybdenum-99 (Mo-99). ANSTO, as one of the few LEU producers of Mo-99 in the world, is in a position to provide a significant contribution to this working group. The NEA Working Group is examining ways in which future global supply shortages of Mo-99 can be avoided or ameliorated. OPAL's production capacity could make a significant contribution in this regard.

Award winning Moata decommissioning

ANSTO was honoured with two prestigious awards for project managing the decommissioning of the Moata research reactor, the first ever project of its kind on a nuclear reactor in Australia.

The national 'Best Small Project Award' was received from the Australian Institute



The core members of the Moata Reactor Decommissioning project team pictured from left to right, Gary Simms, John Macleod, Paul Gambell, Glen Felstead, Geoff Malone and Alec Kimber.

of Project Management, and the State Project Management Achievement Award was received from the NSW division of the Australian Institute of Project Management.

Both awards recognised the complexities of the project, which had to be delivered safely while complying with a complex range of state, national and international requirements. It was also delivered on time and within budget.

Moata operated successfully for 34 years until 1995. It was initially used for research and training and later included activation analysis and neutron radiography. Moata also played an important role in aircraft safety. Commercially, Moata was used for approximately 15 per cent of all procedures world-wide involving radiography to check the structural soundness of jet engine turbine blades. The reactor was also an

important tool for Australia's uranium mining industry, providing rapid and accurate measurements of ore.

External revenue outcomes

ANSTO delivered an external revenue outcome of \$69.68 million. This exceeded the budget estimate of \$65 million.

Of this total revenue, earnings by ANSTO business and commercial groups amounted to \$59.13 million in 2010-2011. This was up \$5.2 million, being a 9.6 per cent increase on the previous year.

Within this business and commercial revenue, ANSTO Health's earnings were \$27.18 million in 2010-2011, up \$4.56 million from the previous year. ANSTO Minerals revenue earning was again outstanding, with total earnings of \$12.22 million, a solid increase of 16 per cent against the 2009-2010 result.

2010-2011 highlights

Increase in local processing ability for Mo-99

ANSTO began exporting supplies of the critical diagnostic agent Mo-99 to the US with the first shipments for clinical use made on 22 May 2011. Radioisotopes produced using LEU targets are favoured by customers such as the US because they ensure that the uranium targets can only be used for peaceful applications.

ANSTO's reactor is one of the few research reactors in the world that both runs on LEU and can produce commercial quantities of medical isotopes using LEU targets. OPAL's fuel and targets consist of around 20 per cent uranium-235, which compares to older research reactors requiring as much as 95 per cent enriched uranium.

Mo-99 is the raw isotope used to produce technetium-99m (Tc-99m), a product that is used in the diagnosis of illnesses like cancer and heart disease. ANSTO is the only producer of this nuclear medicine in Australia, and supplies hospitals across the country with around 10,000 patient doses each week.

Globally, the majority of Mo-99 is supplied by Canada, The Netherlands, Belgium and South Africa but scheduled and unscheduled shutdowns have caused supply problems in recent years. With Tc-99m used in over 80 per cent of nuclear medicine procedures worldwide, ANSTO's production increase has bolstered international supplies as required.

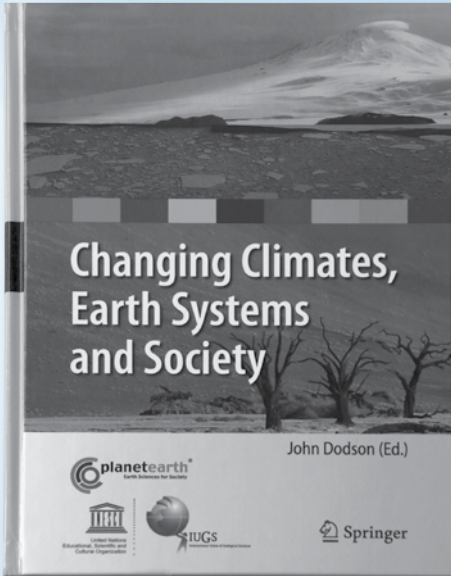


New software aids reliable power supply

Australia's demand for electricity is skyrocketing while the country's power infrastructure ages. But a new software program developed by ANSTO's materials engineering specialists is helping coal-fired power stations improve their efficiency and sustain a reliable output. The software, 'RemLife', is already in use by several power companies across Australia to gauge the wear and tear of plant infrastructure.

ANSTO's software means power stations can generate electricity more reliably. The software calculates the damage a power plant sustains during its operating cycle, which allows predictions of how much longer the plant can operate safely.

If plant operators better manage their operating profiles and more accurately identify areas that need pro-active



John Dodson's book – *Changing Climates, Earth Systems and Society*

maintenance, then they have the capacity to increase the life of the station and boost the efficiency of the unit.

RemLife is quick and cost-effective, rather than spending a week to assess a single component within the power plant, the assessment can be carried out in minutes.

Professor John Dodson book release

Head of ANSTO's Institute for Environmental Research (IER), Professor John Dodson, edited a new book on the effects of climate change - *Changing Climates, Earth Systems and Society*.

The book offers insights into the climate change phenomenon, with a particular focus on the impacts on human society. It brings together authors from around the world to take an in-depth look at



Mohana Yethiraj (left) and Sergey Danilkin (right) working on ANSTO's triple-axis spectrometer, Taipan.

climate change and its impact including melting ice caps, spread of disease and food insecurity.

Taipan unleashed

The operating licence for ANSTO's seventh neutron beam instrument, Taipan, was issued on Friday 15 October 2010 by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

Taipan is a thermal neutron 3-axis spectrometer. As one of the most advanced of its kind, the \$7 million instrument's precise measurements will provide insight into how materials like superconductors and high-performance magnets change structure. These studies will be used to advance magnetic information storage, shape memory materials and thermo-electric materials.

2010-2011 highlights



The IME team pictured from left to right, Bob Harrison, David Carr, Michael Drew, Paul Di Pietro, Ondrej Muransky, Phil Bendeich and Lyndon Edwards.

Top honours for Materials Engineering

ANSTO's Institute of Materials Engineering (IME) won the prestigious Welding Technology Institute of Australia (WTIA) Company of the Year award in acknowledgment of their work in the science and technology of welding and welded structures, which has contributed to Australia's high international profile and competitiveness in these fields.

ANSTO has been involved with welding and welded structure research and development for over 50 years, providing materials selection advice, inspections, fabrication advice, design review and material investigations for the power

generation, petrochemical, defence and transportation industries.

IME also contributes to WTIA Panels and Australian Standards committees, and undertakes remaining life and structural integrity research and consultation.

ANSTO Eureka Prize for Innovative Use of Technology

In 2011, ANSTO was proud to establish a new category in the Australian Museum Eureka Prizes. The Eureka Prizes showcase the best of Australian science, research and innovation every year, and the ANSTO Eureka Prize for Innovative Use of Technology aims to put outstanding Australian research and technological innovation under the spotlight.

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**2010-2011
report of activities**

2010-2011 report of activities

Australia's nuclear expertise

Advice to Government on Fukushima

Following the March 2011 earthquake and tsunami in Japan and associated disaster at the Fukushima Daiichi nuclear power plant, ANSTO supported government by providing technical information and advice to the Interdepartmental Emergency Task Force chaired by the Department of Foreign Affairs and Trade. ANSTO provided advice on issues such as the effects of the presence of mixed oxide (MOX) fuel in Unit 3 and the likely impact of a hypothetical melt of spent fuel in the Unit 4 spent fuel pond (which did not eventuate).

IAEA Ministerial Conference on Nuclear Safety

ANSTO CEO, Dr Adi Paterson attended the IAEA Ministerial Conference on Nuclear Safety in Vienna from 20-24 June 2011. The conference was aimed at ensuring the worldwide safety and emergency preparedness of nuclear facilities, and the radiation protection of people and the environment.

IAEA member states from across the globe were present at the conference which identified and discussed lessons learned from the March nuclear accident at the Fukushima Daiichi Nuclear Power Station in Japan.

Indonesian radiation safety

The Indonesian emergency preparedness and response (EPR) Project is conducted



A radiological worker from Indonesia's national nuclear agency, BATAN, participates in an emergency preparedness and response workshop at ANSTO.

under the ANSTO BATAN Memorandum of Cooperation and funded by the Australian Government through the Indonesian Counter Terrorism Cooperation. ANSTO has conducted EPR workshops with the National Nuclear Energy Agency of Indonesia (BATAN) both at ANSTO and in Indonesia.

These workshops focused on potential terrorist incidents involving radiological or nuclear materials. They enabled participants to assess and advise on nuclear and radiological hazards during emergencies; make contaminated areas safe; and recommend protective measures for response personnel and others involved in the incident.



ANSTO LifeSciences' Mel050 research team, pictured from left to right, Andrew Katsifis, Naomi Wyatt, Cathy Jiang, Tien Pham and Ivan Greguric.

Health and life sciences

Promising new melanoma diagnostic

An ANSTO LifeSciences research team, led by Ivan Greguric, has played a key role in the development of a promising new radiopharmaceutical to characterise melanoma tumours.

A key feature of many primary melanoma tumours is the increased level of melanin, characterised by the high level of pigmentation. The new radiopharmaceutical, [18F]N-(2-(diethylamino)-ethyl)-6-fluoronicotinamide, known as Mel050, has been designed to specifically target melanin, which is often present in high concentrations in the cancer cells, offering opportunities for better disease localisation. More importantly related compounds

labelled with I-131 may offer potential radiotherapeutic applications for this deadly disease.

Mel050 is being developed as part of the Cooperative Research Centre for Biomedical Imaging Development's (CRCBID) research program. Collaborators in this project are the Peter MacCallum Cancer Centre and Cyclotek (Aust) Pty Ltd.

Next generation radiopharmaceuticals

ANSTO is undertaking research to optimise the specific radioactivity of radionuclides obtained from OPAL irradiations. This, in turn, should improve the effectiveness of radiopharmaceuticals that are taken up by receptors and/or antigens on tumour cells. Enhancing the specific activity allows

2010-2011 report of activities



Neutrons and Food Workshop attendees, 31 October - 3 November 2010

more radioactive atoms to be delivered to the tumour, either enhancing the image quality in biomedical imaging or improving the effectiveness of internally deposited radionuclides for radiotherapeutic treatments. This research should improve the formulation of radiopharmaceuticals that treat tumours in several different cancers including neuroendocrine tumours, breast and colon cancer, and lymphomas.

Neutrons and Food Workshop

ANSTO hosted the Neutrons and Food Workshop in Sydney in late 2010, which looked at the future of smart food and food packaging including the potential for producing foods that reduce weight and prevent disease, and packaging that tells you how fresh and nutritious the contents are.

ANSTO's Jaroslav Blazek and Elliot Gilbert presented a paper on their research

looking at how bowel cancer, the second most deadly cancer, could be prevented by better understanding the molecular structure of starch and how it is digested in the human body.

This type of research may be the key to reducing the incidence of diet-related disease such as colorectal cancer and type 2 diabetes. The paper showed that the tiny pores and channels in starch play a key role in processes of digestion.

Blazek and Gilbert have also published their findings in the international journal, *Biomacromolecules*.

Two steps better than one

A two or dual step reactor radiolabelling module which is known as FlexLAB, being tested by ANSTO, is a key goal in the research program of the CRCBID, which is developing novel radiopharmaceuticals for use in diagnosis.

Making a radiopharmaceutical that will be injected into the human body is a complex procedure. Each step in the production process is carefully designed and measured to make sure the radiopharmaceutical - or tracer as they are more commonly known - can do the important job it is made to do.

To ensure the manufacturing process is as easy, safe and efficient as possible, a new production system has been developed that reduces the level of manual handling of radioactive materials that scientists need to do when making a tracer.

The new two step reactor provides the scientists with two 'pots' or reactors in which the synthesis of more complex, novel tracers can be carried out in an automated process. This also means that the cost of supply of the tracer is kept as low as possible, due to the efficiencies of automated manufacture, which is good for patients and doctors alike.

The FlexLAB is the result of a cooperative effort of the commercial and research partners of CRCBID, which includes ANSTO LifeSciences, the Peter MacCallum Cancer Centre and Cyclotek (Aust.) Pty Ltd.

Environment and climate change

Darling River evaporation and groundwater inputs during drought

The Darling River faces environmental pressures from both direct human influence and climate change. Irrigation demands have dramatically altered the

riverine ecosystem over the last century, but during drought it is evaporation and saline groundwater that impact the river's water quality through the formation of algal blooms, salinisation and acidification.

Dryland rivers are particularly challenging to monitor because they experience variable rainfall, low flow and evaporation. This is why more sophisticated tools such as isotopic tracers are being used to establish baseline signatures of these river systems.

Since mid-2002 ANSTO has been monitoring the changes along the Darling River using stable isotopes and subsequently modelled evaporative losses and saline groundwater input to the river during the long drought of the last decade. Research such as this is being used to help inform decision makers in charge of managing the river system.

Unravelling farming and metallurgy in ancient China with nuclear science

Nuclear techniques are being used increasingly to tell us who we are and where we have come from. ANSTO research is shedding new light on early cultural connectivity across Eurasia by investigating sites in northwest China. Separate systems of agriculture emerged independently in eastern and western Asia around 8000 -10,000 years ago.

In the east, incipient agriculture centred on cultivating millet and rice, while in the west it centred on wheat and barley.

2010-2011 report of activities



Scientists with view of the Prince Charles Mountain flanking the Lambert Glacier near Loewe Massif, Antarctica.

ANSTO is applying isotopic methods and atomic mass-spectrometry with radiocarbon dating to archaeological remains from Bronze Age sites in northern China in order to better understand cereal cultivation, animal husbandry and bronze metal-work technology.

Using cosmic rays and radionuclides to measure the contribution of the East Antarctic Ice Sheet to changes in global sea-level

Current global climate models do not fully incorporate the contribution of Antarctic ice sheets to changes in sea level despite dramatic changes in the past.

Projected sea-level rise by the end of the 21st century ranges from 20 to 60 centimetres, mainly attributed to the

Antarctic Peninsula, Greenland and ocean thermal expansion.

During the last ice age, about 20,000-25,000 years ago, the sea-level was 120 metres lower and Antarctic ice volume three times larger than today. Hence, documenting the size and retreat rate of the East Antarctic Ice Sheet since the last ice age (called the Last Glacial Maximum) will allow a better understanding of ice sheet dynamics and sensitivity to increasing warming, and validate predictions of future sea-level change.

Using the new innovative technique of *in situ* cosmogenic radionuclide surface exposure dating, ANSTO has for the first time provided quantitative geochronological constraints on the variability and sensitivity of East Antarctic



Jordan Iles (left) and Debashish Mazumder (right) taking samples from Australian wetlands.

ice volume, suggesting that parts of the Ice Sheet respond more rapidly to global climate change than previously assumed and that East Antarctica was not responsible for a controversial dramatic pulse in sea-level rise of 20 metres 14,500 years ago.

Understanding and managing wetland health

ANSTO is conducting research on Australia's fragile wetlands. These wetlands undergo frequent stresses from droughts and floods, which in turn impact a diverse range of aquatic, avian, and terrestrial biota. During these periods of change in water levels, the food webs of the wetland shift, increasing the competition between native and introduced species.

ANSTO measures these impacts using isotopes of carbon and nitrogen -

the fundamental building blocks of wetland animals and plants. ANSTO's study is adding to the understanding of how wetland health fluctuates as a result of natural and human-caused changes, and provides information about what actions are needed to sustain functioning wetlands.

Wading into sediment studies

ANSTO research being conducted in conjunction with Queensland's James Cook University is using accelerator mass spectrometry (AMS) dating techniques at ANSTO's accelerator facilities to analyse sediment of low-lying reef islands.

The research centres on the study of skeletal components in sediment like coral, coralline algae, molluscs, and the naturally-occurring carbon-14 (C-14) radioisotope in each layer. Analysis of the specimens is undertaken using ANSTO's Australian National Tandem Accelerator for Applied

2010-2011 report of activities



An aerial image of a tracer plume in Darwin Harbour and study team. Photos courtesy Simon Hobbs.

Research (ANTARES) and Small Tandem for Applied Research (STAR) accelerators.

By studying the sediment, scientists are able to find out the age of the particular layer, examine patterns of sediment production and more accurately determine the growth rates of reef islands. This research will enable an improved understanding of the environmental change in tropical marine ecosystems and will help marine authorities in implementing a sustainable management framework for the Great Barrier Reef.

A cleaner future for Darwin Harbour

ANSTO's expertise is providing a scientific basis for good environmental management in the Northern Territory's Darwin Harbour.

ANSTO's Dr Cath Hughes, Stuart Hankin and Robert Chisari recently travelled to Darwin at the invitation of the Northern Territory's Power and Water Corporation to collect data to help model currents and the dispersion of pollutants in Darwin Harbour.

Power and Water, which is responsible for sewerage services in Darwin, has been working with Charles Darwin University

to develop a hydrodynamic water quality modeling tool to help predict the dispersion of treated wastewater discharged into Darwin Harbour.

The model can also provide an important environmental management tool to assist environmental regulators to investigate spills and contaminated runoff from the catchment. The model will also be used to optimise the location for an extension of the existing outfall at Darwin's East Point.

Materials

Waste – a resource when using selective separation

Selective separation of aqueous elements is a vitally important and industrially significant process not only with regards to reducing the volumes of nuclear waste materials, but also for extracting industrially important elements: all rely upon the ability to remove a specific element from a complex mixture of elements.

ANSTO research is creating new functionally designed materials for selective separation, in particular, for the nuclear industry.



Neeraj Sharma preparing samples for Li-ion battery research.

Making better Li-ion batteries using neutron diffraction

Lithium ion (Li-ion) batteries are ubiquitous in Australian households. They can be found in mobile phones, media players, laptop computers and many other portable devices. ANSTO research uses neutron diffraction to learn what happens to the molecular-scale structure of components within Li-ion batteries during use and re-charge.

ANSTO researchers are exploring electrochemical properties and the mechanism of charge-transfer in order to improve our understanding of the performance of Li-ion batteries. Both the Wombat and Echidna neutron diffraction



Tamim Darwish pictured is developing chemical sensors that can visually detect CO₂ in the air.

instruments are used in undertaking this research.

Developing radiation-tolerant materials

ANSTO is conducting research on materials that will be used in future nuclear energy production that need to perform under extreme levels of irradiation and elevated temperature. These materials need to perform without significant degradation of properties for a specified service life.

ANSTO's research investigates radiation damage in complex perovskite systems, by testing the theory that a coupling exists between the radiation damage recovery mechanism and a phase transition system.

2010-2011 report of activities

Visual probes for carbon dioxide and new molecular logic-systems

Excessive exposure to high levels of carbon dioxide (CO₂) can endanger human health and even be fatal. As CO₂ is invisible to the naked eye, it can only be monitored using electronic equipment. ANSTO is developing chemical sensors that are highly sensitive to the presence of CO₂ and more importantly can be used to visually detect toxic levels of CO₂ in the air.

A spectrum of colours, from purple to yellow, can be obtained depending on the concentration of CO₂ being introduced. Just like photochromic (light-responsive) molecules darken UV sensitive sunglasses when exposed to the sun, this research has the potential to develop products that will change colour when exposed to high levels of CO₂.

Interfaces of ionic liquids to improve industrial electrochemical processes

Ionic liquids are simply salts with a melting point below 100°C. Their rather varied physical and chemical properties are interesting because they can be employed in improving various chemical processes, such as the electrodeposition of metals.

They have attracted particular interest because they may allow aluminium to be smelted at room temperature. ANSTO has used modelling combined with neutron and X-ray reflectometry to examine the structure of ionic liquids at the air-liquid and electrode-liquid interfaces to understand the electrochemical processes.

Engineering/technology

Research to improve nuclear safety

ANSTO's research into the flow characteristics of oddly shaped, or 'deformed', bubbles at high gas velocities in nuclear power reactors aims to improve the safety of nuclear reactors around the world.

Although the behaviour and impact of spherical bubbles is quite well understood, there has been little research into the behaviour of 'deformed' bubbles which behave quite differently.

ANSTO's research will create computer models that will identify reactor design and operational factors that cause or encourage the presence of 'deformed' bubbles.

The modelling data can then be used to inform regulators, reactor designers and operators on more efficient reactor designs and operating procedures.

Operation of OPAL and other facilities

OPAL

In the 2010-2011 financial year, the OPAL research reactor operated for 276 days at high power, which translates to a total availability of 76 per cent. This was 4 per cent less than the target, mainly attributable to some extra maintenance activities that were required as operation proceeded. OPAL reliability, which is defined as adherence to the published schedule, was greater than 90 per cent. This result compares favourably with

other highly utilised research reactors around the world.

Production increased significantly during the year. The irradiation of uranium plates for the production of Mo-99 was increased from two runs to four runs per week in the second half of 2010, and has been maintained at that level. More than 27 tonnes of silicon ingots were irradiated in OPAL during the year, generating revenue for ANSTO. On time delivery of irradiated products has met the internal client demand.

The Cold Neutron Source, which supplies important low energy neutrons for research, was unavailable for about 30 per cent of the year due to several equipment failures. While this affected research for ANSTO and university scientists, remedial work has been undertaken to improve its reliability.

Construction of a Heavy Water Isotopic Purification System plant was completed. The plant should be fully operational by late 2011. It will be used to purify the heavy water that surrounds the reactor core, leading to improved efficiency and production.

ANSTO plans to operate the reactor for 300 days in 2011-2012.

Neutron-beam instruments

OPAL's neutron research facilities contain neutron-beam instruments which use OPAL's neutrons for solving complex research and industrial problems in many important fields.

Neutron scattering allows scientists to

see what X-rays cannot. Neutrons are used to see the internal structure of many classes of materials, thus helping scientists understand why materials have the properties that they do, and helping tailor new materials that suit specific technological needs in computing, refrigeration, mobile batteries, solar cells, renewable plastic packaging and medicine.

ANSTO's operating neutron-beam instruments are:

Echidna – high-resolution powder diffractometer

Koala – single-crystal Laue diffractometer

Kowari – residual-stress diffractometer

Platypus – neutron reflectometer

Quokka – small-angle neutron scattering instrument (SANS)

Taipan – thermal triple-axis spectrometer

Wombat – high-intensity powder diffractometer

In October 2010, ARPANSA approval to operate Taipan was obtained, completing the initial suite of neutron-scattering instruments at OPAL.

Six additional neutron-scattering instruments were under procurement or construction, four of which were funded under a national Education Investment Fund (EIF) project:

- The time-of-flight spectrometer (Pelican) and a cold triple-axis spectrometer (SIKA) were nearing completion, with first neutrons expected in early 2012.

2010-2011 report of activities

- The high-resolution backscattering spectrometer (Emu), an ultra small-angle scattering instrument (Kookaburra), a neutron radiography, tomography and imaging station (Dingo) and a time-of-flight SANS instrument (Bilby) were in the procurement phase and scheduled for completion in 2013.

Radiopharmaceutical production facilities

ANSTO supplies radiopharmaceuticals to over 220 nuclear medicine centres across Australia and exports to New Zealand, Southeast Asia, the US and South Africa.

ANSTO produces large quantities of different isotopes used in the diagnosis and treatment of serious illnesses such as cancer.

ANSTO's processing facility manufactures Mo-99 to meet the demand for this important radiopharmaceutical which is used in 80 per cent of nuclear medicine procedures performed around the world.

The other main radiopharmaceuticals distributed are iodine-131 (I-131) for the diagnosis and treatment of thyroid cancer and hyperthyroidism; gallium-67 (Ga-67) to determine the extent of Hodgkin's disease, lymphomas and bronchogenic carcinoma; iodine-123 mIBG (I-123) for detection, staging and follow-up to therapy for neuroblastomas; and thallium-201 (Tl-201) used in myocardial perfusion imaging for the diagnosis and localisation of myocardial infarction.

National Deuteration Facility

ANSTO's National Deuteration Facility

offers the capability to produce molecules where all or part of the molecular hydrogen is in the form of the stable non-radioactive isotope of hydrogen called deuterium.

This important technique enables scientists to more effectively investigate the relationship between the structure and function of proteins, DNA, synthetic polymers and other materials known as 'soft matter'.

Deuteration of parts of a molecule creates contrast between those parts containing deuterium and those with normal hydrogen, thus providing more information about the molecular structure.

Molecular deuteration assists in making it possible to observe the arrangement of sub-units of an enzyme, or changes in shape when molecules interact or become active or inactive. This can be done with molecules in solution under relevant real life conditions. Hydrogen and deuterium atoms scatter neutrons quite differently when placed in front of a neutron beam.

Accelerators

Accelerators are used to analyse materials - often using extremely small samples - to determine their elemental composition and age. ANSTO currently has two accelerators, ANTARES and STAR, both of which are used in ion beam analysis and accelerator mass spectrometry.

ANSTO is also in the planning stages of the Federal Government funded Centre for Accelerator Science (CAS) at ANSTO. ANSTO will develop the Centre over the next few years.

The new accelerators are a low-energy multi-isotope accelerator mass spectrometer and a new medium-energy tandem accelerator.

The Centre will act as a strong drawcard for Australian and overseas scientists from nearly every scientific field, working in areas such as radiocarbon dating and environmental studies.

Irradiation facility

ANSTO's irradiation facility, known as GATRI (Gamma Technology Research Irradiator), is used to irradiate items for medical health, industry, agriculture and research.

GATRI is the only Australian provider of high precision irradiation services including:

- ANSTO underpins the sterility of donated human bone and tendons for transplants and grafting in surgery, leading to improved outcomes for patients.
- Irradiation of the Queensland fruit fly to help control infestations
- Irradiation of quarantined goods
- Plant mutation studies
- Sterilisation of medical products
- Accelerating long term storage effects on products such as plastics and electronics.

Decommissioning – HIFAR and the National Medical Cyclotron

Following the successful decommissioning of the Moata reactor, ANSTO has commenced decommissioning of the



Visitors enjoying a tour of ANSTO facilities.

National Medical Cyclotron (NMC) at Camperdown NSW, and continued preparation for the decommissioning of the HIFAR reactor at Lucas Heights.

The 2010-2011 Federal Government budget allocated \$9.7 million towards the continued safe decommissioning of ANSTO's disused nuclear facilities. The decommissioning is undertaken in accordance with highly regulated national and international safety requirements.

Community and education

Record number of visitors

In the 2010-2011 financial year a record 11,114 visitors took tours of ANSTO's facilities, up 16 per cent on the previous record of 9,543 visitors in 2009-2010, with the number of visitors more than doubling since 2005-2006.

2010-2011 report of activities



2011 ANSTO Australia Day stand at Cronulla Beach.

The community and school tours are designed to introduce more visitors, including potential scientists of the future, to the world of nuclear science and technology.

Year 9 and 10 students benefit greatly from a visit to ANSTO as these students are in the process of choosing their Higher School Certificate subjects, and are formulating opinions of science in general. The tours have been adapted to be more age appropriate, and to reflect the broad sweep of ANSTO research, with Biology and Earth and Environment Science excursions recently added to the traditional Physics, Chemistry and General Science tours.

The tours differ slightly but typically involve a presentation in the Visitor Centre, followed by visits to ANSTO's state-of-the-art research reactor, OPAL, and one of ANSTO's accelerators, where guests are encouraged to try the hands-on exhibits.

Likewise, visits to ANSTO's website were at an all-time high, with 30,080 visits to the website in June 2011, up 67 per cent on June 2010.

Sponsorships

In 2010-2011, ANSTO sponsored a range of research and community events. Sponsorship highlights included the inaugural ANSTO Eureka Prize for Innovative Use of Technology, significant involvement in the National Youth Science Forum (NYSF), and the continuation of the Fulbright Professional or Senior Scholarship in Nuclear Science and Technology for Australians undertaking research in the US. NYSF is a forum bringing together Australia's brightest year 11 students to engage with researchers and discover exciting and fascinating career options in science.

ANSTO has continued to focus on education, supporting the Australian



Pictured from left to right, Richard Banati, Neeraj Sharma, Michael Zetting, Jasmin Craufurd-Hill, Michael Weir, Debashish Mazumder, Alexander Szabo and Justin Davies at the Science meets Parliament event at Parliament House.

Museum's Science in the Bush/Suburbs/City program which brings hands-on science to primary and secondary school students across New South Wales. ANSTO also sponsored two high school students attending the International Science Olympiads.

ANSTO also supported key international conferences and workshops to increase its profile and awareness of the user access program that allows researchers access to landmark infrastructure on a merit-based system.

ANSTO participated in a number of conferences, including:

- the International Conference on Coordination Chemistry (ICCC 39) in Adelaide
- the 11th South Pacific Environmental Radioactivity Association Conference (SPERA 2010) in Surfers Paradise

- the 2010 Chemeca chemistry conference in Sydney
- the 19th Australian Institute of Physics Congress in Melbourne
- the 35th Annual Condensed Matter and Materials Meeting in Wagga Wagga
- the Accelerator Mass Spectrometry Conference (AMS 12) in Wellington, New Zealand.

An important part of ANSTO's sponsorship work is community support and engagement, which increases awareness of the outstanding science and innovation being performed in Australia. Examples of this include sponsorship and participation in the Sutherland Shire Australia Day events, and the Women in Science and Engineering Summit and Science meets Parliament events at Parliament House in Canberra.

2010-2011 report of activities

Distinguished Lecture Series

In 2010-2011 ANSTO continued to run the popular Distinguished Lecture Series which is open to the general public. The world-class scientists speaking this year included:

- Dr Michael Doser, Senior Physicist from CERN in Switzerland, who spoke on antimatter
- Professor David Wehe from the University of Michigan, who presented on radiation detection
- Associate Professor Robyn Sloggett, Director and Chief Conservator at the Centre for Cultural Materials Conservation in the University of Melbourne, who discussed the latest methods used to conserve priceless cultural materials
- Dr Stephen Myers, Director of Accelerators and Technology also from CERN, who spoke about the world famous Large Hadron Collider (LHC)
- Dr William Thomlinson from Monash University, who spoke on the increasing use of synchrotrons
- Professor (Emeritus) Martin Suter from the Laboratory of Ion Beam Physics, ETH Zürich, Switzerland, who talked on AMS
- Mr John Carlson, former Director General of the Australian Safeguards and Non-Proliferation Office (ASNO), who discussed nuclear governance for the 21st century.

Outstanding staff achievements

Institute of Materials Engineering

The IME has won the prestigious WTIA Company of the Year award in acknowledgment of their work in the science and technology of welding and welded structures.

ANSTO has been involved with welding and welded structure research and development for over 50 years. IME provides materials selection advice, inspections, fabrication advice, design review and investigations for the power generation, petrochemical, defence and transportation industries.

Professor John Dodson

Professor John Dodson, Head of ANSTO's Institute for Environmental Research, released *Changing Climates, Earth Systems and Society*. The book provides insights into the phenomenon of climate change and its impact on society.

Dr David Cohen

Three decades of scientific research by ANSTO's Senior Principal Research Scientist, Dr David Cohen, was recognised by the Australian Nuclear Association (ANA) who awarded Dr Cohen the 2010 Annual Award. Dr Cohen received the award for his outstanding contributions to research and applications of accelerator science and technology.

Dr Cohen's current research is helping identify the sources of fine particle pollution across Asia.



David Cohen

Businesses

External Earnings by ANSTO business and commercial groups amounted to \$59.13 million in 2010-2011. This was up \$5.2 million, being a 9.6 per cent increase on the previous year.

ANSTO Health

ANSTO Health is the commercial division of ANSTO that produces radiopharmaceuticals in Australia and operates a production facility from ANSTO's southern Sydney campus. ANSTO Health plays an important role in the nuclear medicine and health industries in Australia, supplying around 550,000 patient doses of radiopharmaceuticals each year. The ANSTO Health business continues to grow and as mentioned previously, now exports Mo-99 to the US.

ANSTO Health's revenue earning was \$27.18 million in 2010-2011. This was up \$4.56 million from the previous year.

Lutetium-177

Lutetium-177 (Lu-177) is a radioisotope used for therapeutic applications.

In March 2011 ANSTO signed an agreement with Isotope Technologies Garching (ITG) to enable local production to support growing demand for this radioisotope.

ANSTO Minerals

ANSTO Minerals is a commercial consultancy group focussed on the uranium and rare earths mining sector. ANSTO has over 30 years experience and expertise that includes chemical engineering, metallurgy, mineralogy, chemistry, geology and radiation safety. ANSTO Minerals offer solutions and innovative technology including flow sheet design, bench testing and scale up pilot plant. These services delivered by ANSTO Minerals generate substantial financial and environmental benefits to mining and mineral processing customers.

ANSTO Minerals' revenue earnings for 2010-2011 was \$12.22 million. This was up \$1.7 million from the previous year. This is due to continual commercial activities in uranium and rare earths.

Partnerships and associated organisations

CERN

ANSTO signed an agreement with CERN which will allow scientists affiliated with each organisation to collaborate and receive reciprocal use of equipment. This

2010-2011 report of activities



Adi Paterson and Kim Carr in front of the Large Hadron Collider in Geneva, Switzerland.

means scientists from CERN benefit from access to ANSTO's facilities, including the OPAL reactor.

The agreement is expected to lay a pathway for collaborative research by Australia's best and brightest scientists in areas such as accelerator science, health and life sciences, information technology and radiation detection.

Australia is among a number of countries outside of the European Union to sign an agreement allowing access to the famous facilities.

By engaging with CERN, ANSTO and Australia will benefit from cutting-edge research and develop expertise in areas

such as particle-therapy platforms and large-scale accelerator facilities.

The collaboration may also involve the joint supervision of research students, staff exchanges and negotiated arrangements for the exploitation of intellectual property.

Australian Synchrotron

Synchrotron radiation-based techniques are vital to a wide range of research fields including physics, chemistry, materials science, structural biology, polymer research, environmental science and geophysics.

Synchrotron radiation techniques are similar to neutron scattering techniques that require a reactor such as OPAL,

and the results from each are often complementary. While there are things a reactor can do that a synchrotron cannot, there is significant overlap in the user communities.

ANSTO is one of ten foundation investors in the Australian Synchrotron and has special access to it, averaging six days per year on each beamline. Proposals for this special access are internally reviewed by ANSTO.

ANSTO has used this beamtime to perform strategic experiments; to initiate new projects; to conduct preliminary and pilot studies; for training and familiarisation of staff on new techniques; for a small molecule crystallography service; and to give increased time allocations to ANSTO proposals which have been submitted via the regular scientific merit system.

This year, ANSTO researchers were awarded 30 days of beamtime at the Australian Synchrotron. While all eight operating beamlines were used, a clear trend of increasing demand for the small angle X-ray scattering (SAXS) beamline has emerged, reflecting the close complementarity of this technique with SANS at the Quokka instrument at OPAL.

In addition, the synchrotron's online proposal and user administration system was developed and continues to be maintained by the Bragg Institute under a contract from the Australian Synchrotron.

This is a significant benefit to users of the synchrotron and the neutron scattering

instruments at OPAL as both facilities run the same online user system.

ANSTO, the Australian Synchrotron, Monash University and other partners organised the 'Synchrotron and Neutron New Users Symposium' to educate potential new users about the landmark infrastructure available and the user-access programs at ANSTO's Bragg Institute and the Australian Synchrotron.

AINSE

Located on ANSTO's southern Sydney campus, AINSE provides universities and other tertiary institutions with access to ANSTO's nuclear facilities, facilitating a culture of cooperation in the nuclear science and engineering fields. AINSE arranges for the training of scientific research workers and the award of scientific research studentships in matters associated with nuclear science and engineering. AINSE's membership comprises 39 Australian and New Zealand universities plus GNS Science, New Zealand, and ANSTO.

IMSS - KEK

ANSTO signed a memorandum of understanding (MOU) with the Institute of Materials Structure Science (IMSS), High Energy Accelerator Research Organisation (KEK) in Tsukuba, Japan.

The agreement is aimed at promoting collaborative research and science using neutron and synchrotron research facilities at ANSTO's OPAL research reactor and the J-PARC Materials and Life Science

2010-2011 report of activities



Turning of the sod on the new Environmental Radioactivity Measurement Centre. Pictured from left to right, John Dodson, Con Lyras, Steve Vikatos and Henk Heijnis.

Experimental Facility spallation source and Photon Factory synchrotron in Japan.

SINAP

ANSTO began negotiations for a general MOU with the Shanghai Institute of Applied Physics (SINAP) that covers a range of potential collaborative research projects in areas of mutual interest such as nuclear materials engineering, air pollution studies, ground water and water sustainability research, radiopharmaceutical research and development, and detector development projects.

The agreement will cover many of Australia's National Research Priorities and aims to enhance Australian engagement with China, which is a Federal Government priority area for international research and innovation engagement.

Details of the agreements were developed during a two-day workshop in Shanghai, hosted by SINAP and attended by nine of ANSTO's top scientists. The workshop was supported by the Federal Government's International Science Linkages program.

Austin Health

ANSTO announced it will be investing \$1.5 million to construct a state-of-the-art laboratory at the Austin Hospital in Victoria. The laboratory will be used to develop new treatments and imaging tools to advance medical research into cancer detection and treatment.

This investment is in addition to the Victorian Government's \$4.3 million investment in a new cyclotron at Austin Health's Centre for Positron Emission Tomography.

Austin Health's Centre for Positron Emission Technology (PET) is the largest academic PET centre in Australia and has an international reputation as a leader in research into cancer and neurological disorders.

Workshops

ANSTO/AINSE Neutron School

The Bragg Institute, in conjunction with AINSE, hosted over 30 domestic and international tertiary students for the six-day ANSTO/AINSE Neutron School on Dynamics and Kinetics 2010.

Drawing participants from universities in Australia, New Zealand, Singapore, Taiwan, China and South Africa, the program was aimed at PhD students, postdoctorate and novice users, new to neutron scattering techniques.

Italian and Australian Archaeology and Cultural Heritage Workshop

Organised by the Embassy of Italy and ANSTO, the Italian and Australian Archaeology and Cultural Heritage Workshop looked at how research facilities, such as ANSTO, are used in archaeological and cultural heritage research and discussed potential new fields of collaboration.

ANSTO speakers highlighted the work already done here in the field of cultural heritage and archaeology using neutron scattering, X-ray techniques, accelerators and neutron activation analysis. Australian

Synchrotron speakers discussed techniques available at the synchrotron that are complementary to those provided by ANSTO.

Access to Major Research Facilities Program

ANSTO operated the Access to Major Research Facilities Program.

This program included large facilities not available in Australia, such as high flux neutron beam sources and high energy physics and astronomical facilities.

During the 2010-2011 financial year, the program funded 81 teams to perform experiments using facilities in the US, South America, Europe and Asia. ANSTO led 14 of these teams.

Capital investment


Numerous major construction projects are underway at ANSTO that will deliver highly improved scientific facilities and infrastructure.

Some of the key constructions include:

- The Environmental Radioactivity Measurement Centre, which will provide new laboratories and office space to be used for the reconstruction of human impacts on ecosystems over the past 8000 years, and to monitor ANSTO's local environment. It will be built from materials with low background radiation levels to ensure interference does not occur during tests of low levels of radioactivity

2010-2011 report of activities

- the Integrated Waste Management Facility which will improve efficiency through the consolidation of a number of operations currently carried out at different locations across site
- the ANSTO Minerals Precinct Facilities, which will allow the amount and scope of work undertaken by this successful ANSTO business to be expanded. It includes bays, offices, laboratories and associated services infrastructure
- the OPAL building project, which will include a two storey office building, laboratories and workshops to accommodate 100 nuclear operations staff currently located in other areas across site
- the Centre for Accelerator Science (CAS), which will reinforce ANSTO's place at the forefront of AMS and ion beam analysis research. The new facilities will feature two new accelerators for radiocarbon dating, analysis of long-lived radioisotopes and materials microanalysis, and laboratory facilities for sample preparation.

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Performance against strategic objectives

2010-2011 report of activities

Key Performance Indicators	2009-2010	2010-2011
Facility availability		
- Neutron Beam instruments - % days operated per days beamline availability	85%	83%
- Total availability of OPAL: % of days at power	73%	76%
- Planned availability of OPAL: % of actual operating to scheduled operating time	93%	90%
- Accelerators: average % of days operated per planned operation	78%	78%
Nuclear Science Facilities project		
- percentage of capital funding completed	32%	48.4% ¹
Radiopharmaceutical doses		
- Potential Doses	2,113,396	2,276,764

¹ Actual expenditure was less than estimated. The draw-down of funds from the Department was decreased accordingly.

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Financial statements



INDEPENDENT AUDITOR'S REPORT

To the Minister for Innovation, Industry, Science and Research

Report on the Financial Statements

I have audited the accompanying financial statements of the Australian Nuclear Science and Technology Organisation and the consolidated entity for the year ended 30 June 2011, which comprise: the Statement by Directors and Chief Financial Officer; the Consolidated Statement of Comprehensive Income; Consolidated Balance Sheet; Consolidated Statement of Changes in Equity; Consolidated Statement of Cash Flows; Consolidated Schedule of Commitments not Recognised as Liabilities; Schedule of Contingencies; Schedule of Asset Additions; and Notes to and forming part of the financial statements, including a Summary of Significant Accounting Policies. The consolidated entity comprises the Australian Nuclear Science and Technology Organisation and the entities it controlled at the year's end or from time to time during the financial year.

Directors' Responsibility for the Financial Statements

The directors of the Australian Nuclear Science and Technology Organisation are responsible for the preparation of the financial statements that give a true and fair view in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards, and for such internal control as the directors determine is necessary to enable the preparation of the financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate Australian Auditing Standards. These auditing standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Authority's preparation of the financial statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Australian Nuclear Science and Technology Organisation's internal control. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting

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estimates made by the directors, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

In conducting my audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the requirements of the Australian accounting profession.

Opinion

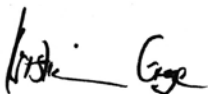
In my opinion, the financial statements of the Australian Nuclear Science and Technology Organisation and the consolidated entity:

- (a) have been prepared in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards; and
- (b) give a true and fair view of the matters required by the Finance Minister's Orders including the Australian Nuclear Science and Technology Organisation's and the consolidated entity's financial positions as at 30 June 2011 and of their financial performance and cash flows for the year then ended.

Report on Other Legal and Regulatory Requirements

I have not acted as auditor of, or audited, the financial statements of subsidiaries so identified in note 7D to the financial statements. I have audited the financial information of the subsidiaries that is relevant to the consolidated financial statements of the Organisation.

Australian National Audit Office



Kristian Gage
Audit Principal

Delegate of the Auditor-General

Canberra

15 August 2011

Statement by Directors and Chief Financial Officer



Australian Government



Australian Nuclear Science and Technology Organisation

In our opinion, the attached financial statements for the year ended 30 June 2011 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 as amended*.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Australian Nuclear Science and Technology Organisation will be able to pay its debts as and when they become due and payable.

Signed in accordance with a resolution of the Board of Directors.

Handwritten signature of Paul Greenfield in black ink.

Paul Greenfield
Chairman

15 August 2011

Handwritten signature of Adi Paterson in black ink.

Adi Paterson
Chief Executive Officer

15 August 2011

Handwritten signature of Peter Arambatzis in black ink.

Peter Arambatzis
Chief Financial Officer

15 August 2011

Financial Statements 2010-2011

Consolidated statement of comprehensive income
for the year ended 30 June 2011

	Notes	Consolidated	
		2011 \$'000	2010 \$'000
EXPENSES			
Employee benefits	6A	103,062	90,164
Suppliers expenses	6B	61,255	73,867
Depreciation and amortisation	6C	80,174	54,422
Write down and impairment of assets	6D	5,241	17
Grants	6E	6,225	4,330
Finance costs	6F	15,192	14,060
Foreign exchange losses	6G	696	353
Losses from asset sales	6H	3,151	1,748
TOTAL EXPENSES		274,996	238,961
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	5B	56,582	47,660
Interest	5D	7,357	6,268
Grants	5C	2,084	4,222
Total own-source revenue		66,023	58,150
Gains			
Gains from sale of assets	5E	270	634
Foreign exchange gains - non speculative	5F	832	949
Other income	5G	2,550	108
Total gains		3,652	1,691
Total own-source income		69,675	59,841
Net cost of services		205,321	179,120
Revenue from Government	5A	165,592	155,240
(Deficit) before income tax on continuing operations		(39,729)	(23,880)
Income tax (expense) benefit	23	(345)	138
(Deficit) after income tax on continuing operations		(40,074)	(23,742)
(Deficit) after income tax		(40,074)	(23,742)
(Deficit) attributable to the Australian Government		(40,074)	(23,742)
OTHER COMPREHENSIVE INCOME			
Changes in asset revaluation reserves	10	10,652	34,185
Total other comprehensive income (deficit) after income tax		(29,422)	10,443
Total comprehensive income (deficit) attributable to the Australian Government		(29,422)	10,443

The above statement should be read in conjunction with the accompanying notes

Financial Statements 2010-2011

Consolidated balance sheet
as at 30 June 2011

	Notes	Consolidated		
		2011 \$'000	2010 \$'000	2009 \$'000
ASSETS				
Financial assets				
Cash and cash equivalents	7A, 21	3,278	5,023	3,752
Trade and other receivables	7B, 21	11,727	9,045	9,557
Investments	7C, 21	115,268	134,000	142,661
Total financial assets		130,273	148,068	155,970
Non-financial assets				
Land and buildings	8A	209,164	196,510	157,645
Infrastructure, plant and equipment and major facilities	8B	696,513	688,655	612,299
Inventories	8C	15,629	13,784	8,711
Intangibles	8D	18,948	15,417	5,241
Tax assets	8E	-	433	318
Other	8E	7,255	6,226	4,086
Total non-financial assets		947,509	921,025	788,300
Total assets		1,077,782	1,069,093	944,270
LIABILITIES				
Payables				
Suppliers	9E, 21	11,383	12,578	8,263
Employees	9F, 21	3,836	2,815	1,609
Grants	9G, 21	687	562	575
Other	9H, 21	1,433	1,557	1,171
Total payables		17,339	17,512	11,618
Interest bearing liabilities				
Other	9A, 21	2,484	3,497	3,308
Total interest bearing liabilities		2,484	3,497	3,308
Provisions				
Employee provisions	9B	28,528	25,487	23,213
Decommissioning provision	9C	291,465	269,517	181,762
Other	9D	286	270	2,007
Total provisions		320,279	295,274	206,982
Total liabilities		340,102	316,283	221,908
Net Assets		737,680	752,810	722,362
EQUITY				
Contributed equity	10	481,956	467,856	447,856
Reserves		350,809	343,358	307,679
Retained (deficit)		(95,085)	(58,404)	(33,173)
Total equity		737,680	752,810	722,362

The above statement should be read in conjunction with the accompanying notes

Financial Statements 2010-2011

Consolidated statement of cash flows
for the year ended 30 June 2011

	Note	Consolidated	
		2011 \$'000	2010 \$'000
		Inflows (Outflows)	Inflows (Outflows)
OPERATING ACTIVITIES			
Cash received			
Sales of goods and rendering of services		56,640	53,738
Interest		8,377	5,984
Receipts from Government		165,592	155,240
Total cash received		230,609	214,962
Cash used			
Employees		(99,000)	(86,684)
Suppliers		(81,201)	(85,956)
Total cash used		(180,201)	(172,640)
NET CASH FLOWS FROM OPERATING ACTIVITIES	11	50,408	42,322
INVESTING ACTIVITIES			
Cash received			
Proceeds from sale of property, plant and equipment		1,526	1,707
Proceeds from investment sales		173,525	274,626
Total cash received		175,051	276,333
Cash used			
Purchase of property, plant and equipment		(81,511)	(70,737)
Purchase of investments		(159,793)	(266,647)
Total cash used		(241,304)	(337,384)
NET CASH USED BY INVESTING ACTIVITIES		(66,253)	(61,051)
FINANCING ACTIVITIES			
Cash received			
Appropriation - contributed equity		14,100	20,000
NET CASH FLOWS FROM FINANCING ACTIVITIES		14,100	20,000
NET INCREASE/(DECREASE) IN CASH HELD		(1,745)	1,271
Cash and cash equivalents at the beginning of the reporting period		5,023	3,752
Cash and cash equivalents at the end of the reporting period		3,278	5,023

The above statement should be read in conjunction with the accompanying notes

Financial Statements 2010-2011

Consolidated statement of changes in equity for the year ended 30 June 2011

	Consolidated					
	Retained Surpluses		Asset		Other Reserves	
	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Opening Balance	(58,404)	(33,173)	328,456	294,271	14,902	13,408
Foreign currency translation	-	-	-	-	201	16
Revaluation increment	-	-	10,652	34,185	-	-
Other	-	-	-	-	(139)	(11)
Surplus (deficit) for the period (a)	(40,074)	(23,742)	-	-	-	-
Total comprehensive income	(40,074)	(23,742)	10,652	34,185	62	5
Contributions by Owners						
Appropriation (equity injection) (a)	-	-	-	-	-	-
Sub-total Transactions with Owners	-	-	-	-	-	-
Transfers between equity components	3,393	(1,489)	-	-	(3,263)	1,489
Closing balance as at 30 June	(95,085)	(58,404)	339,108	328,456	11,701	14,902
Closing balance attributable to Australian Government	(95,085)	(58,404)	339,108	328,456	11,701	14,902

	Consolidated			
	Contributed Equity/Capital		Total Equity	
	2011 \$'000	2010 \$'000	2010 \$'000	2010 \$'000
Opening Balance	467,856	447,856	752,810	722,362
Foreign currency translation	-	-	201	16
Revaluation increment	-	-	10,652	34,185
Other	-	-	(139)	(11)
Surplus (deficit) for the period (a)	-	-	(40,074)	(23,742)
Total comprehensive income	-	-	(29,360)	10,448
Contributions by Owners				
Appropriation (equity injection) (a)	14,100	20,000	14,100	20,000
Sub-total Transactions with Owners	14,100	20,000	14,100	20,000
Transfers between equity components	-	-	130	-
Closing balance as at 30 June	481,956	467,856	737,680	752,810
Closing balance attributable to Australian Government	481,956	467,856	737,680	752,810

Note

(a) Changes to 2010 comparatives are covered in note 26.

The above statement should be read in conjunction with the accompanying notes

Financial Statements 2010-2011

Consolidated schedule of commitments not recognised as liabilities
as at 30 June 2011

	Notes	Consolidated	
		2011 \$'000	2010 \$'000
BY TYPE			
Commitments receivable			
Other commitments receivable			
GST recoverable from Australian Taxation Office on Commitments		6,290	1,293
Total other commitments receivable		<u>6,290</u>	<u>1,293</u>
Commitments payables			
CAPITAL COMMITMENTS			
Infrastructure, plant and equipment		67,944	6,563
Total capital commitments		<u>67,944</u>	<u>6,563</u>
OTHER COMMITMENTS			
Replacement Research Reactor Project (OPAL)	(a)	6,786	6,819
Operating lease	(b)	1,862	1,999
Fuel elements purchase		1,242	5,527
Mo-99 plates purchase		901	2,135
Total other commitments		<u>10,791</u>	<u>16,480</u>
Net commitments by type		<u>72,445</u>	<u>21,750</u>
By maturity			
Capital commitments payable			
One year or less		22,693	3,318
From one to five years		45,251	3,245
		<u>67,944</u>	<u>6,563</u>
OTHER COMMITMENTS			
One year or less		9,066	14,738
From one to five years	(a)	685	1,682
Over five years		1,040	60
Total other commitments		<u>10,791</u>	<u>16,480</u>
Other commitments receivable			
One year or less		2,176	1,293
From one to five years		4,114	-
		<u>6,290</u>	<u>1,293</u>
Net commitments by maturity		<u>72,445</u>	<u>21,750</u>

(a) A contract was executed on 13 July 2000 between ANSTO and INVAP SE for the design, construction and commissioning of a replacement research reactor at Lucas Heights. The remaining amount of \$6.786 million (2010: \$6.819 million) is included in commitments

(b) ANSTO has a twenty five year lease contract with Central Sydney Area Health Services that will expire on 29 Jan 2025 with an annual rental payable of \$137,000 (2010: \$137,000). The annual rental is subject to review every three years.

The amounts reported as commitments payable includes GST where relevant. Recoveries due from the Australian Taxation Office in relation to commitments payable are disclosed as commitments receivable.

The above schedule should be read in conjunction with the accompanying notes.

Financial Statements 2010-2011

Schedule of contingencies as at 30 June 2011

Unquantifiable Contingencies

At 30 June 2011, ANSTO still has the likelihood of claims in relation to asbestos related diseases. It is not possible to estimate the amounts of any eventual payments that may be required in relation to these claims. Such claims are however covered by the Department of Finance and Deregulation provision dealing with asbestos related claims against any Commonwealth Authorities including ANSTO in the event of any litigation or claim for compensation.

The above schedule should be read in conjunction with the accompanying notes.

Financial Statements 2010-2011

Schedule of asset additions for the year ended 30 June 2011

SCHEDULE OF ASSET ADDITIONS								
The following non-financial non-current assets were added in 2010-11: (Consolidated)								
Additions funded in the current year	Land \$'000	Buildings \$'000	Investment Properties \$'000	Heritage & cultural \$'000	Other property, plant & equipment \$'000	Intangibles \$'000	Other \$'000	Total \$'000
By purchase - Government funding	-	16,733	-	-	54,071	10,196	-	81,000
By purchase - donated funds	-	24	-	-	487	-	-	511
By purchase - other	-	-	-	-	-	-	-	-
Assets received as gifts/donations	-	-	-	-	-	-	-	-
From acquisition of entities or operations (including restructuring)	-	-	-	-	-	-	-	-
Total additions funded in the current year	-	16,757	-	-	54,558	10,196	-	81,511
Additions recognised in 2010-11 - to be funded in future years								
Decommissioning costs by finance lease - future years	-	1,553	-	-	25,942	-	-	27,495
Other	-	-	-	-	-	-	-	-
Total additions funded in the future year	-	1,553	-	-	25,942	-	-	27,495
Total asset additions	-	18,310	-	-	80,500	10,196	-	109,006
The following non-financial non-assets were added in 2009-10 (Consolidated)								
Additions funded in the current year	Land \$'000	Buildings \$'000	Investment Properties \$'000	Heritage & cultural \$'000	Other property, plant & equipment \$'000	Intangibles \$'000	Other \$'000	Total \$'000
By purchase - Government funding	-	18,266	-	-	41,198	10,286	-	69,750
By purchase - donated funds	-	-	-	-	987	-	-	987
By purchase - other	-	-	-	-	-	-	-	-
Assets received as gifts/donations	-	-	-	-	-	-	-	-
From acquisition of entities or operations (including restructuring)	-	-	-	-	-	-	-	-
Total additions funded in the current year	-	18,266	-	-	42,185	10,286	-	70,737
Additions recognised in 2009-10 - to be funded in future years								
Decommissioning costs by finance lease - future years	-	10,869	-	-	104,213	-	-	115,082
Other	-	-	-	-	-	-	-	-
Total additions funded in the future year	-	10,869	-	-	104,213	-	-	115,082
Total asset additions	-	29,135	-	-	146,398	10,286	-	185,819

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

Note Description

- 1 Objectives of the entity
- 2 Summary of significant accounting policies
- 3 Events subsequent to reporting date
- 4 Reporting of outcomes
- 5 Income
- 6 Expenses
- 7 Financial assets
- 8 Non-financial assets
- 9 Liabilities
- 10 Equity
- 11 Cash flow reconciliation
- 12 Government funding
- 13 Board membership
- 14 Remuneration of members of the Board
- 15 Remuneration of senior executives
- 16 OPAL Nuclear Research Reactor
- 17 Insurances
- 18 Remuneration of auditors
- 19 Related party disclosures
- 20 Trust money
- 21 Financial instruments
- 22 Operating lease arrangements
- 23 Income tax expense
- 24 Other comprehensive income
- 25 Information relating to ANSTO ('the parent entity')
- 26 Prior year adjustments

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

1 Objectives of Australian Nuclear Science and Technology Organisation

Australian Nuclear Science and Technology Organisation (ANSTO) is an Australian Government controlled entity. The objectives of ANSTO are detailed in the body of this Annual Report.

ANSTO has only one outcome as reflected in the 2010-11 Portfolio Budget Statement as indicated below:

Outcome 1: Improved knowledge, innovative capacity and healthcare through nuclear -based facilities, research, training, products, services and advice to Government, industry, the education sector and the Australian population.

ANSTO's activities contributing towards the outcome are classified as departmental. Departmental activities involve the use of assets, liabilities, revenues and expenses controlled or incurred by ANSTO in its own right. Administered activities involve the management or oversight by ANSTO, on behalf of the Government, of items controlled by the Government. ANSTO does not have any administered activities.

The continued existence and operations of the Australian Nuclear Science and Technology Organisation (ANSTO) and its present programs is dependent on Government policy and on continuing funding by the Commonwealth Government for ANSTO's administration and programs.

Where it refers to ANSTO, this means ANSTO Consolidated except for under taxation note 2(s).

2 Summary of significant accounting policies

(a) Basis of preparation of the Financial Statements

The financial statements and notes are required by clause 1(b) of Schedule 1 to the *Commonwealth Authorities and Companies Act 1997 (CAC Act)* and are general purpose financial statements.

They have been prepared:

- i. having regard to the provisions of the Australian Nuclear Science and Technology Organisation (*ANSTO*) Act 1987 (*as amended*)
- ii. in accordance with:
 - . Finance Minister's Orders (FMOs) for reporting periods ending on or after 1 July 2010; and
 - . Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accruals basis and in accordance with the historical cost convention, except for certain assets which are stated 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 otherwise specified.

Unless an alternative treatment is specifically required by an Accounting Standard or the FMOs, assets and liabilities are recognised in the Balance Sheet when and only when it is probable that future economic benefits will flow to ANSTO or a future sacrifice of economic benefits will be required and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under executor contracts are not recognised unless required by an Accounting Standard. Liabilities and assets that are unrecognised are reported in the Schedule of Commitments or the Schedule of Contingencies.

Unless alternative treatment is specifically required by an Accounting Standard, income and expenses are recognised in the Statement of Comprehensive Income when and only when the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

(b) Significant Accounting Judgements and Estimates

In the process of applying the accounting policies listed in this note, ANSTO 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 has been taken by the Directors to be the market value of similar properties .
- The fair value of OPAL and other plant and equipment and their useful life.
- Decommissioning costs provision.

Apart from these assumptions and estimates no other 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.

(c) Statement of Compliance

Australian Accounting Standards require a statement of compliance with International Financial Reporting Standards (IFRSs) to be made where the financial report complies with these standards. Some Australian equivalents to IFRSs and other Australian Accounting Standards contain requirements specific to not-for-profit entities that are inconsistent with IFRS requirements. ANSTO is a not-for-profit entity and has applied these requirements, so while this financial report complies with Australian Accounting Standards including Australian Equivalents to International Financial Reporting Standards (AEIFRSs) it does not comply with IFRS in all respects.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

(d) Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date as stated in the standard.

No new standards/revised standards/Interpretations or amending standards were issued prior to the signing of the statement by the chief executive and chief financial officer, which were applicable to the current reporting period and had a financial impact on ANSTO.

Other new standards/revised standards/Interpretations or amending standards that were issued prior to the signing of the statement by the chief executive and chief financial officer and are applicable to the current reporting period did not have a financial impact, and are not expected to have a future financial impact on ANSTO.

Future Australian Accounting Standard Requirements

No new standards/revised standards/Interpretations or amending standards were issued by the Australian Accounting Standards Board prior to the signing of the statement by the chief executive and chief financial officer, which are expected to have a financial impact on ANSTO for future reporting periods.

Other new standards/revised standards/Interpretations or amending standards that were issued prior to the signing of the statement by the chief executive and chief financial officer and are applicable to the future reporting period are not expected to have a future financial impact on ANSTO.

(e) Reporting by outcomes

A comparison of current and prior years' figures by outcome as specified in the Portfolio Budget Statements relevant to ANSTO, is presented in Note 4.

(f) Revenue recognition

Revenue from Government

Funding received or receivable from Department of Innovation, Industry, Science and Research (DIISR) (appropriated to ANSTO as a CAC Act body) is recognised as Revenue from Government unless it is in the nature of an equity injection.

Equity injections

Amounts that are designated as equity injections for a year are recognised directly in contributed equity in that year.

Operating revenue from goods and services

Revenue from the sale of goods is recognised when:

- The risks and rewards of ownership have been transferred to the buyer;
- ANSTO Consolidated retains no managerial involvement nor effective control over the goods;
- 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 ANSTO.

Receivables for goods and services are recognised at the nominal amounts due less any impairment allowance. Collectability of debts is reviewed at balance date. Allowance is made when collectability of the debt is no longer probable.

Revenue received in advance

Revenue received in advance is initially brought to account as "unearned revenue" and subsequently recognised as revenue when earned.

Contract revenue

Revenue from the rendering of a service is recognised by reference to the stage of completion of each contract. The stage of completion is determined by reference to the proportion that the completed physical contract work bears to the estimated total physical contract work.

Interest revenue

Interest revenue is recognised using the effective interest method as set out in AASB 139 Financial Instruments: Recognition and Measurement.

Gains from sale of assets

Revenue is recognised when control of the asset has passed to the buyer.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

Core operations

All material revenues described in this note are revenues relating to the core operating activities of ANSTO. Details of revenue amounts are given in Note 5.

Resources Received Free of Charge

Resources received free of charge are recognised as revenue 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.

Resources received free of charge are recorded as either revenue or gains depending on their nature i.e. whether they have been generated in the course of the ordinary activities of ANSTO.

Parental Leave Payments Scheme

Amounts received under the Parental Leave Payments Scheme not yet paid to employees would be presented gross as cash and a liability (payable). No amount has been received under this scheme as this will start on 1 July 2011.

(g) Employee benefits

Benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for wages and salaries and annual leave are measured at their nominal amounts. Other employees benefits expected to be settled within 12 months of their reporting date are also measured at their nominal amounts.

The provision for employee entitlements encompasses annual leave and long service leave that ANSTO has a present obligation to pay resulting from employee services provided up to balance date. The leave liabilities are calculated on the basis of employees' remuneration, including 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 an actuary review as of 30 June 2011. However, ANSTO has used the Finance shorthand method in valuation of the liability. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

General leave

The Enterprise Agreement provides under the heading General Leave for an employee entitlement which combines sick leave, carer's leave and leave for other prescribed purposes. No provision has been made for general leave as all such leave is non-vesting and the average general leave taken by employees is less than the annual entitlement.

Separation and redundancy

Provision is made for separation and redundancy benefits payments. ANSTO recognises a provision for termination when it has developed a detailed formal plan for the termination and has informed those employees affected that it will carry out the termination. The total provision in the financial statements for 5 staff (2010: 3) amounted to \$ 436,000 (2010: \$327,000).

(h) Superannuation

ANSTO contributes to the Commonwealth Superannuation (CSS) and the Public Sector (PSS) superannuation schemes or PSS accumulation plan (PSSap) which provide retirement, death and disability benefits to employees.

The CSS and PSS are defined benefit schemes for the Commonwealth while the PSSap is a defined contribution scheme. Contributions to the schemes are at rates calculated to cover existing and emerging obligations. Applicable contribution rates in 2011 were 14.4% (2010 13.9%) of salary (PSS), 17.0% (2010 19.1%) of salary (CSS), and 15.4% (2010 15.4%) of salary (PSSap). An additional 3% is contributed to PSS and CSS for employer productivity benefits. The Enterprise Agreement signed in April 2009 provided that all ANSTO employees under the agreement who contributed to non Commonwealth superannuation schemes, are to receive a contribution equivalent to 15.4% of salary. For those staff who do not contribute to any of these schemes and are not covered by Enterprise Agreement, ANSTO contributes an amount equivalent to 9% of salary to the Australian Government Employees Superannuation Trust fund or to the complying fund nominated by the employee.

ANSTO makes employer contributions to the employees' superannuation scheme at rates determined by actuary to be sufficient to meet the current cost to the Government. ANSTO accounts for contributions as if they are contributions to defined contribution plans.

The liability for superannuation recognised as at 30 June represents outstanding contributions for the final fortnight of the year. Contributions during the year are detailed in Note 6A.

(i) Leases

Operating leases payments are expensed on a straight-line basis which is representative of the pattern of benefits derived from the leased assets.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

(j) Cash

Cash is recognised at its nominal amount. Cash and cash equivalents includes:

- cash on hand;
- demand deposits in bank accounts with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value.

(k) Financial instruments

ANSTO classifies its financial assets in the following categories:

- 'financial assets at fair value through profit or loss'
- 'held-to-maturity investments',
- 'loans and receivables'.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Financial assets are recognised and derecognised upon 'trade date'.

Effective interest method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis except for financial assets 'at fair value through profit or loss'.

Financial assets at fair value through profit or loss

Financial assets are classified as financial assets at fair value through profit or loss where the financial assets have been acquired principally for the purpose of selling in the near future. Assets in this category are classified as current assets.

Financial assets at fair value through profit or loss are stated at fair value, with any resultant gain or loss recognised in the profit or loss. The net gain or loss recognised in the profit or loss incorporates any interest earned on the financial assets.

Where a reliable fair value cannot be established for unlisted investments in equity instruments, cost is used less impairment if applicable.

Held-to-maturity investments

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are recorded at amortised cost using the effective interest method less impairment, with revenue recognised on an effective yield basis.

Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

Impairment of financial assets

Financial assets are assessed for impairment at each balance date.

• Financial assets held at amortised cost - If there is objective evidence that an impairment loss has been incurred for loans and receivables or held to maturity investments held at amortised cost, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the asset's original effective interest rate. The carrying amount is reduced by way of an allowance account. The loss is recognised in the statement of comprehensive income.

• Available for sale financial assets (*held at cost*) - If there is objective evidence that an impairment loss has been incurred the amount of the impairment loss is the difference between the carrying amount of the asset and the present value of the estimated future cash flows discounted at the current market rate for similar assets.

Financial Liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities.

Financial liabilities are recognised and derecognised upon 'trade date'.

Other financial liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs. These liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

Supplier and other payables

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

(l) Contingent Liabilities and Contingent Assets

Contingent liabilities and contingent assets are not recognised in the balance sheet but are reported in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

(m) Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and revenues at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor's accounts immediately prior to the restructuring.

(n) Buildings, infrastructure, plant and equipment and major facilities

Asset recognition threshold

Items of buildings, infrastructure, plant and equipment and major facilities are recorded at cost of acquisition and depreciated as outlined below. Items of plant and equipment with a cost of less than \$3,000 are expensed in the year of acquisition.

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located at the end of its useful life. This is particularly relevant to 'make good' or decommissioning provisions on buildings, infrastructure, plant and equipment and major facilities, taken up by ANSTO where there exists an obligation to restore the property to its original condition. These costs are included in the value of the asset it relates to with a corresponding provision for the 'make good' or decommissioning taken up.

Any changes to the initial decommissioning cost attributable to adjustments to the consumer price index (cpi) and discount rate at 30 June each year will be reflected as an adjustment to the Provision for Decommissioning cost and Asset Revaluation Reserve in accordance to the Department of Finance and Deregulation Accounting Guidance Note.

The cost of assets constructed by the entity includes the cost of materials, direct labour and an appropriate proportion of fixed and variable overheads.

Revaluations

Fair values for each class of asset are determined as shown below:

Asset Class	Fair value measured at
Land	Market Value
Buildings	Market Value
Site infrastructure	Market Value
Electrical infrastructure	Market Value
Plant and equipment	Market Value
National and major facilities	Market Value

Following initial recognition at cost, buildings, infrastructure, plant and equipment and major facilities are carried at fair value less accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised through profit and loss. Revaluation decrements for a class of assets are recognised directly through profit and loss except to the extent that they reverse a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

The valuations of land, buildings, infrastructure, plant and equipment including national and other major facilities were performed by independent valuers of the Australian Valuation Office (AVO), Mr. Frank Andreatta and Mr. Simon O'Leary (registered Valuer Nos. 2388 and 1128 respectively) at 30 June 2007, based on the asset list at 28 February 2007.

The OPAL and NBI valuations were performed by Mr. Simon O'Leary (registered Valuer No. 1128) of AVO based on the asset list at 31 May 2009.

The Australian Valuation Office (AVO) has reviewed the current book values for land, building and site improvements (LB&I) for ANSTO Lucas Height's site for 2010/11 financial reporting purposes. The Australian Valuation Office is of the opinion that the overall asset value of the LB&I appears to be at the upper limit that may warrant a revaluation at this time. However, after taking into consideration the components of materiality, AVO do not believe that a full revaluation is warranted at this time. This is also the view of the Directors. AVO have recommended that a full valuation be carried out during the 2011/12 financial year.

Depreciation and amortisation

Items of buildings, infrastructure, plant and equipment and major facilities, but excluding freehold land, are depreciated over their estimated useful lives to ANSTO using the straight line method.

Depreciation and amortisation rates applying to each class of depreciable asset are based on the following useful lives:

	2011	2010
Buildings on freehold land	5 to 50 years	5 to 50 years
Plant and equipment	2 to 30 years	2 to 30 years
Infrastructure	20 years	20 years
National and major facilities	5 to 40 years	5 to 40 years

The depreciation rates (useful lives) of ANSTO's buildings, infrastructure, plant and equipment and major facilities have been reviewed during the year and found to be appropriate.

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed in Note 6C.

Impairment

All assets were assessed for impairment at 30 June 2011. 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 cashflows 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 entity were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

(o) Inventories

Stores are valued at purchase cost on a first-in-first-out basis. Provision is made for obsolete inventory and diminution in value.

Inventories of Cobalt-60 and enriched uranium are valued on the basis of lower of cost and net realisable value.

Stocks of reactor fuel are valued at average purchase price.

Heavy water is valued at lower of cost and net realisable value.

Finished goods and work in progress are valued at cost of direct materials and labour plus attributable costs that are capable of being allocated on a reasonable basis.

(p) Intangibles

Software

Items of software are recorded at cost and amortised as outlined below. Items with a cost of less than \$3,000 are expensed in the year of acquisition.

There is no material internal software development.

Software and licences are reported at cost.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

Amortisation

Intangibles are amortised over their estimated useful lives to ANSTO using the straight line method.

Amortisation rates applying to intangibles are as follows:

	2011	2010
Purchased software	2 - 7 years	2 - 7 years
Licences	3 years	3 years

The amortisation rates (useful lives) of ANSTO's software and licences have been reviewed during the year and found to be appropriate.

The aggregate amount of amortisation allocated for each class of asset during the reporting period is disclosed in Note 6C.

Impairment

All assets were assessed for impairment at 30 June 2011. 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

(q) Patents

Due to the uncertain commercial value of patents, trademarks, designs and applications, and because benefits extending beyond one accounting period cannot be assured, the costs associated with the development and registration of patents are expensed in the year in which they are incurred, unless recoverability is assured beyond any reasonable doubt. At 30 June 2011 there were 212 patents, trademarks, design and applications (98 at 30 June 2010) registered to ANSTO and no associated costs are recognised as an asset (nil at 30 June 2010).

(r) Foreign currency

Transactions denominated in a foreign currency are converted to Australian currency at the rate of exchange prevailing at the date of the transaction. At balance date, amounts receivable and payable in foreign currency are translated to Australian currency at the exchange rate prevailing at that date and any exchange differences are brought to account in the Statement of Comprehensive Income. ANSTO did not enter into speculative forward exchange contracts during the reporting period.

(s) Taxation

ANSTO is exempt from all forms of taxation in Australia except fringe benefits tax (FBT) and the goods and services tax (GST).

ANSTO is not subject to exemption from any foreign taxation laws relative to its overseas operations.

ANSTO's subsidiaries are subject to normal taxation.

ANSTO Inc, a USA company, is subject to US tax laws. The Deferred Tax Asset of USD 369,000 or AUD 433,000 recognised as an asset at 30 June 2010 has been derecognised at 30 June 2011 as the directors do not believe it is probable that sufficient profits will be generated to utilise the tax losses.

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
- for receivable and payables.

Subsidiaries

Unbooked deferred tax assets in relation to unrecouped tax losses in the subsidiaries is \$1,047 thousand (2010: \$320 thousand).

In respect of the subsidiaries, current tax assets and liabilities for the current and prior periods are measured at the amount expected to be recovered from or paid to the taxation authorities based on the current period's taxable income. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted by the balance sheet date.

Deferred income tax is provided on all temporary differences at the balance sheet date between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred income tax liabilities are recognised for all taxable temporary differences except:

- when the deferred income tax liability arises from the initial recognition of goodwill or of an asset or liability in a transaction that is not a business combination and that, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; or
- when the taxable temporary difference is associated with investments in subsidiaries, associates or interests in joint ventures, and the timing of the reversal of the temporary difference can be controlled and it is probable that the temporary difference will not reverse in the foreseeable future.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

Deferred income tax assets are recognised for all deductible temporary differences, carry forward of unused tax credits and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences and the carry forward of unused tax credits and unused tax losses can be utilised, except:

- when the deferred income tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; or
- when the deductible temporary difference is associated with investments in subsidiaries, associates or interests in joint ventures, in which case a deferred tax asset is only recognised to the extent that it is probable that the temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilised.

Unrecognised deferred income tax assets are reassessed at each balance sheet date and are recognised to the extent that it has become probable that future taxable profit will allow the deferred tax asset to be recovered.

Deferred income tax assets and liabilities are measured at the tax rates that are expected to apply to the year when the asset is realised or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the balance sheet date.

Deferred tax assets and deferred tax liabilities are offset only if a legally enforceable right exists to set off current tax assets against current tax liabilities and the deferred tax assets and liabilities relate to the same taxable entity and the same taxation authority.

(t) Principles of consolidation

ANSTO has investments in a number of companies (refer Note 7D) over which it has control. These companies have been established for the purpose of (i) commercialisation of ANSTO's intellectual property or (ii) a requirement for ANSTO to operate in the industry as in the case of ANSTO Inc., an operation in the U.S.A..

(u) Interest in joint venture

A joint venture is a contractual arrangement whereby ANSTO and the other parties undertake an economic activity that is subject to joint control (i.e when the strategic financial and operating policy decisions relating to the activities of the joint venture require the unanimous consent of the parties sharing control).

ANSTO has an investment in Element 42 LLC (refer Note 7E) over which it has shared control.

(v) Change in accounting policies

During 2009-10, ANSTO received funding of \$20,000,000 from the Education Investment Fund (EIF). This funding was recorded as revenue in the prior year's Financial Statements. Under the program conditions, the funds are used for capital projects and the Department of Innovation, Industry, Science and Research (DIISR) has recognised these payments as capital in 2010-11. To ensure a consistent application with DIISR the EIF payments to ANSTO have been recognised as capital in 2010-11. The prior year adjustment has been reflected in the 2009-10 comparative information with a decrease in revenue (note 5c) of \$20,000,000 and an increase in equity of \$20,000,000 (note 10).

(w) Comparatives

Where necessary, comparative information for the preceding financial year has been reclassified to achieve consistency in disclosure with current financial year amounts and other disclosures.

Comparatives for 2009/10 have been adjusted to reflect the current year accounting treatment of EIF contributions from the Department of Finance and Deregulation and prior year errors. Refer note 26.

(x) Rounding

Amounts are rounded to the nearest one thousand dollars except in relation to:

- remuneration of members of the Board
- remuneration of executives
- audit fees

3 Events subsequent to reporting date

No events have arisen since the end of the financial year which require disclosure or the financial statements to be adjusted.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

4 Reporting of Outcomes

ANSTO operates mainly within Australia, and mainly in the nuclear scientific research industry.

Reporting by outcomes:

ANSTO has only one outcome.

Major Classes of Departmental Revenues and Expenses by Outcome - Consolidated

	Consolidated	
	2011	2010
	\$'000	\$'000
Operating revenues		
Revenue from Government	165,592	155,240
Sale of goods and services	56,582	47,660
Interest	7,357	6,268
Net gain from sale of assets	270	634
Other	5,466	5,417
Total operating revenues	235,267	215,219
Operating expenses		
Employees	103,062	90,164
Suppliers	61,255	73,867
Depreciation and amortisation	80,174	54,422
Finance costs	15,192	14,060
Write-down and impairment of assets	5,241	17
Other	10,417	6,431
Total operating expenses	275,341	238,961

Major Classes of Departmental Assets and Liabilities by Outcome - Consolidated

	Consolidated	
	2011	2010
	\$'000	\$'000
Assets		
Cash and cash equivalents	3,278	5,023
Trade and other receivables	11,727	9,045
Investments	115,268	134,000
Land and buildings	209,164	196,510
Infrastructure, plant and equipment	696,513	688,655
Inventories	15,629	13,784
Intangibles	18,948	15,417
Tax assets	-	433
Other	7,255	6,226
Total assets	1,077,782	1,069,093
Suppliers	11,383	12,578
Employees payables	3,836	2,815
Grants	687	562
Other payables	1,433	1,557
Interest bearing liabilities	2,484	3,497
Employee provisions	28,528	25,487
Decommissioning provision	291,465	269,517
Other provisions	286	270
Total liabilities	340,102	316,283

Notes:

The net costs include intra - government costs that would be eliminated in calculating the actual Budget outcome.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	Notes	Consolidated	
		2011 \$'000	2010 \$'000
5 Income			
5A. Revenue from Government			
CAC Act payments from DIISR		165,592	155,240
5B. Goods and services			
Radioisotope sales		27,176	22,623
Services and contract research		18,699	17,027
Silicon irradiation		4,310	2,883
CSIRO site support		1,218	1,080
Training courses		303	207
Land management		3,420	3,039
Australian Synchrotron Research Project		15	85
AINSE interactions		1,441	716
Total sales of goods and services		56,582	47,660
5C. Grants		2,084	4,222
5D. Interest - Bank		7,357	6,268
5E. Gain from sale of assets			
Proceeds from sale of assets		813	1,287
Carrying value of assets sold		(543)	(653)
Gain from disposal of infrastructure, plant and equipment		270	634
5F. Foreign exchange gains - non speculative		832	949
5G. Other income:			
Gain from Revaluation		-	61
Other		2,550	47
Total other income		2,550	108
Total Own-source income		69,675	59,841
Total revenues from ordinary activities		235,267	215,081
5H. Sales of goods and services			
Goods		27,176	22,623
Services		29,406	25,037
Total sales of goods and services	5B	56,582	47,660
Provision of goods to:			
External entities		27,176	22,623
Total sales of goods		27,176	22,623
Rendering of services to:			
Related entities		1,324	1,686
External entities		28,082	23,351
Total rendering of services		29,406	25,037

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

		Consolidated	
		2011	2010
		\$'000	\$'000
6	Expenses		
	The breakdown of operating expenses is:		
6A.	Employee expenses:		
	Wages and salaries	76,671	67,473
	Superannuation	14,776	12,827
	Leave and other entitlements	10,578	8,950
	Separation and redundancy	1,037	914
	Total employee expenses	103,062	90,164
6B.	Supplier expenses:		
	Goods from external entities	28,491	28,480
	Services from related entities	22,332	19,755
	Workers compensation premiums - related	1,042	1,078
	Services from external entities	9,187	24,545
	Operating lease rentals - external	203	9
	Total supplier expenses	61,255	73,867
6C.	Depreciation and amortisation		
	Depreciation of property, plant and equipment (a)	8B 74,447	51,387
	Amortisation of intangible assets - licence	8D 30	-
	Amortisation of intangible assets - software	8D 5,697	3,035
	Total depreciation and amortisation	80,174	54,422
6D.	Write-down and impairment of assets		
	Financial assets:		
	Receivables for goods and services	3	15
	Write-down of investment	7C 5,000	-
	Non financial assets:		
	Materials - write off obsolete stock	238	2
	Total write-down of assets	5,241	17
6E.	Grants		
	Public sector		
	Australian Government entities (related entities)	2,210	2,262
	State Government	1,400	-
	Local Government		1
	Private sector		
	Profit Organisation	1,183	582
	Non Profit Organisation	1,309	1,439
	Overseas	123	46
	Total grants	6,225	4,330
6F.	Finance costs		
	Unwinding of discount on decommissioning costs	15,087	13,862
	Interest	105	198
	Total finance costs	15,192	14,060
6G.	Foreign exchange losses		
	Foreign exchange loss - non speculative	-	-
	-realised	347	451
	-unrealised	349	(98)
	Total foreign exchange losses	696	353
6H.	Losses from asset sales		
	Proceeds from sale of assets	1,095	419
	Carrying values of assets sold	(4,246)	(1,297)
	Loss from sale of assets	3,151	878
	Loss on sale of subsidiary	-	870
	Total losses from asset sales	3,151	1,748
	Total operating expenses	274,996	238,961
(a)	Depreciation of property, plant and equipment:		
	The aggregate amounts of depreciation expensed during the reporting period for each depreciable class of property, plant and equipment are as follows:		
	Buildings on freehold land	4,565	7,405
	Plant and equipment	38,622	15,286
	Infrastructure	2,815	2,535
	National and major facilities	28,445	26,161
	Total allocated	74,447	51,387

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	Consolidated	
	2011	2010
	\$'000	\$'000
7 Financial assets		
7A. Cash and cash equivalents		
Cash on hand or on deposit	3,278	5,023
Total cash	3,278	5,023
7B. Trade and other receivables		
Goods and services (a)		
Goods and services - related entities	297	334
Goods and services - external parties	9,250	6,097
Total receivables for goods and services	9,547	6,431
Other receivables		
Interest accrued	628	1,648
Reimbursable foreign exchange loss	-	-
Other	768	471
Loans to related parties	-	-
GST receivable from the Australian Taxation Office	787	510
Total other receivables (a)	2,183	2,629
Less impairment allowance account:		
Goods and services	3	15
Total impairment allowance (b)	3	15
Total receivables (net)	11,727	9,045
(a) Total receivables are aged as follows:		
Age analysis of trade debtors		
Current	7,182	6,392
Overdue:		
Less than 30 days	1,991	1,849
30 to 60 days; and	721	277
60 to 90 days	763	354
More than 90 days	1,070	173
	11,727	9,045
(b) The provision for doubtful debts represents certain debts aged more than 90 days (2010: aged more than 90 days).		
The Impairment allowance is aged as follows:		
Age analysis of trade debtors		
More than 90 days	3	15
	3	15
Reconciliation of the Impairment Allowance Account:		
Opening Balance	15	36
Amount provided	3	15
Amount recovered and reversed	(15)	(36)
Closing Balance	3	15
7C. Investments		
Bank bills	108,000	129,000
Term deposit	7,268	-
Investment in Australian Synchrotron (c)	-	5,000
Total investments	115,268	134,000
(c) The investment in Australian Synchrotron Holding Company (ASHCo) of \$5 million was assessed as requiring impairment testing. Due to significant uncertainty regarding future funding, the decision was taken that the investment be impaired.		
Interest rates (weighted average)	2011	2010
Bank deposits	3.421%	2.617%
Term deposits	5.330%	6.830%

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

7D. Investment in subsidiaries

The details of the subsidiaries of ANSTO are:

Name	Place of Incorporation	% Owned	Investment		Loan/Convertible Notes	
			2011 \$	2010 \$	2011 \$	2010 \$
ACN 120 875 498 Pty Limited (formerly Australian Membrane Technologies Pty Limited)	Australia	100%	1	1	-	-
PETNET Australia Pty Ltd	Australia	100%	13,627,588	5,000,000	-	10,000,000
ANSTO Inc.	Delaware U.S.A.	100%	-	-	-	1,255,566
			<u>13,627,589</u>	<u>5,000,001</u>	<u>-</u>	<u>11,255,566</u>

ANSTO Inc. was incorporated in Delaware, USA on 27 October 1999. At 30 June 2011: US\$100 (2010: US\$100). of capital has been invested in this wholly owned subsidiary. This investment has been written off in prior periods.

In November 2004, the Board decided to utilise ANSTO Inc to promote the commercialisation of ANSTO Technology in the USA

The loan to ANSTO Inc., \$US1,470,118 (2010: \$US1,070,118) was considered impaired and hence fully provided as at 30 June 2011 in the parent entity due. to ANSTO Inc.'s net assets deficiency and unlikely ability to repay the loan.

On 24 June 2011, PETNET Australia Pty Ltd Board resolved to issue shares to ANSTO equivalent to the amount of the convertible notes which were converted from the loans and outstanding interest as at 31 May 2011.

ANSTO assessed the carrying value of the ANSTO investment in PETNET, including a review of the cash flow projections. The resulting PETNET valuation based on a discount rate of 13.81% and 15 years cash flow plus the value of cash on hand (surplus asset) was \$13,628 thousand compared to a carrying value of the investment of \$17,228 thousand, giving an impairment of \$3,600 thousand.

For the financial year ended 30 June 2011, the financial statements of ANSTO Inc. were audited by Galusha, Higgings & Galusha, P.C. and there were no requirements for financial statements to be prepared or audited for ACN 120 875 498 Pty Limited (previously Australian Membrane Technologies Pty Limited) as it is a dormant company.

7E. Investment in joint venture

Name	Place of Incorporation	% Owned
Element 42 LLC	Delaware U.S.A.	50%

Element 42 LLC. was incorporated in Delaware, USA on 1 June 2010. At 30 June 2011 ANSTO's investment was carrying value of investment: US\$200 (2010: US\$200). Element 42 LLC has not traded.

7F. Investment - other

Name	Place of Incorporation	% Owned	Investment	
			2011 \$	2010 \$
Clarity Pharmaceuticals Pty Ltd	Australia	5%	-	-
Advance Polymetrik	Australia	4%	-	-
			<u>-</u>	<u>-</u>

Clarity Pharmaceuticals Pty Ltd. was incorporated in New South Wales, Australia on 17 Sept 2010.

Advance Polymetrik Pty Ltd. was incorporated in Victoria, Australia on 20 Dec 2001.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	FINANCIAL YEAR Consolidated	
	2011 \$'000	2010 \$'000
8 Non-financial assets		
8A. Land and buildings		
Land - at independent valuation - 30 June 2007 (fair value)	78,700	78,700
	<u>78,700</u>	<u>78,700</u>
Buildings - at cost	58,499	47,351
Less accumulated depreciation	16,214	17,145
	<u>42,285</u>	<u>30,206</u>
Buildings - at independent valuation - 30 June 2007 (fair value)	83,540	83,316
Less accumulated depreciation	21,181	15,685
	<u>62,359</u>	<u>67,631</u>
Building under construction	25,820	19,973
Total buildings	130,464	117,810
Total land and buildings	209,164	196,510
8B. Infrastructure, plant, equipment and major facilities		
8B(i). Plant and equipment		
Plant and equipment - at cost	277,065	228,074
Less accumulated depreciation	92,649	60,971
	<u>184,416</u>	<u>167,103</u>
Plant and equipment - at independent valuation - 30 June 2007 (fair value)	59,167	60,274
Less accumulated depreciation	37,831	30,379
	<u>21,336</u>	<u>29,895</u>
Plant and equipment under construction	52,826	27,863
Total plant and equipment	258,578	224,861
8B(ii). Infrastructure		
Electrical/site services facilities - at cost	1,723	1,699
Less accumulated depreciation	564	195
	<u>1,159</u>	<u>1,504</u>
Electrical/site services facilities at independent valuation - 30 June 2007 (fair value)	28,005	28,006
Less accumulated depreciation	9,725	7,279
	<u>18,280</u>	<u>20,727</u>
Total infrastructure	19,439	22,231

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

8 Non-financial assets (continued)	FINANCIAL YEAR	
	Consolidated	
	2011	2009
	\$'000	\$'000
8B(iii). Major national and major research facilities		
Major national research facilities - at cost	4,926	4,988
Less accumulated depreciation	422	127
	<u>4,504</u>	<u>4,861</u>
Major national research facilities at independent valuation - 30 June 2007 (fair value)	2,869	2,825
Less accumulated depreciation	648	457
	<u>2,221</u>	<u>2,368</u>
Major research facilities at cost	338	143
Less accumulated depreciation	82	8
	<u>256</u>	<u>135</u>
Major research facilities at independent valuation - 30 June 2007 (fair value)	6,259	6,239
Less accumulated depreciation	2,805	2,101
	<u>3,454</u>	<u>4,138</u>
OPAL nuclear research reactor at cost	7,455	4,816
Less accumulated depreciation	420	113
	<u>7,035</u>	<u>4,703</u>
OPAL nuclear research reactor at independent valuation - 30 June 2009 (fair value)	450,482	450,084
Less accumulated depreciation	49,456	24,726
	<u>401,026</u>	<u>425,358</u>
Total major national and major research facilities	418,496	441,563
Total infrastructure, plant, equipment and major facilities	696,513	688,655
Total land, buildings, infrastructure, plant, equipment and major facilities	905,677	885,165

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

8 Non-financial assets (continued)

Movement summary 2010-2011 for all consolidated assets irrespective of valuation basis (excluding intangibles)

	Land	Buildings	Total Land and Buildings	Infrastructure, plant, equipment national and major facilities	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
Gross value as at 1 July 2010	78,700	150,640	229,340	815,011	1,044,351
Additions - new assets	-	16,757	16,757	54,558	71,315
Decommissioning Cost	-	1,553	1,553	25,942	27,495
Transfers/reclassifications	-	(1,091)	(1,091)	1,556	465
Disposals	-	-	-	(5,952)	(5,952)
Gross value as at 30 June 2011	78,700	167,859	246,559	891,115	1,137,674
Accumulated depreciation/ amortisation 1 July 2010	-	32,830	32,830	126,356	159,186
Depreciation/amortisation	-	4,565	4,565	66,171	70,736
Impairment	-	-	-	3,711	3,711
Adjustment for disposals	-	-	-	(1,636)	(1,636)
Accumulated depreciation/ amortisation 30 June 2011	-	37,395	37,395	194,602	231,997
Net book value as at 30 June 2011	78,700	130,464	209,164	696,513	905,677

Movement summary 2009-2010 for all consolidated assets irrespective of valuation basis (excluding intangibles)

	Land	Buildings	Total Land and Buildings	Infrastructure, plant, equipment national and major facilities	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
Gross value as at 1 July 2009	78,700	104,370	183,070	751,108	934,178
Additions - new assets	-	18,266	18,266	42,185	60,451
Net revaluation decrement	-	-	-	(51,109)	(51,109)
Decommissioning Cost	-	10,869	10,869	104,213	115,082
Transfers/reclassifications	-	17,135	17,135	(20,417)	(3,282)
Disposals	-	-	-	(10,969)	(10,969)
Gross value as at 30 June 2010	78,700	150,640	229,340	815,011	1,044,351
Accumulated depreciation/ amortisation 1 July 2009	-	25,425	25,425	138,810	164,235
Depreciation/amortisation	-	7,405	7,405	43,982	51,387
Net revaluation decrement	-	-	-	(51,109)	(51,109)
Adjustment for disposals	-	-	-	(5,327)	(5,327)
Accumulated depreciation/ amortisation 30 June 2010	-	32,830	32,830	126,356	159,186
Net book value as at 30 June 2010	78,700	117,810	196,510	688,655	885,165

Note:

Impairment of \$3,711 thousand for property, plant and equipment were booked for 2011 (Nil, 2010).

No Property, plant or equipment are expected to be sold or disposed of within the next 12 months.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	FINANCIAL YEAR	
	Consolidated	
	2011	2010
	\$'000	\$'000
8C. Inventories		
Raw materials and stores-not held for resale		
Stores - at cost	1,778	2,240
Cobalt-60 sources - at net realisable value	215	245
Reactor fuel and heavy water - at average purchase price	13,215	10,593
Nuclear materials - at net realisable value	-	134
Provision for stock diminution	(95)	(309)
	<u>15,113</u>	<u>12,903</u>
Work in progress - at cost	<u>237</u>	<u>584</u>
Finished goods - at cost	<u>279</u>	<u>297</u>
Total inventories	<u>15,629</u>	<u>13,784</u>
8D. Intangibles		
Licences at cost	1,224	1,009
Less accumulated amortisation	1,039	1,009
	<u>185</u>	<u>-</u>
Design fees at cost	1,882	466
Less accumulated amortisation	398	104
	<u>1,484</u>	<u>362</u>
Software at cost	32,603	18,466
Less accumulated amortisation	19,659	14,256
	<u>12,944</u>	<u>4,210</u>
Software under construction	<u>4,335</u>	<u>10,845</u>
Total intangibles	<u>18,948</u>	<u>15,417</u>

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

8D. Intangibles (continued)

Movement summary 2010-2011 for all consolidated intangibles irrespective of valuation basis

	Licenses	Software	Total
	\$'000	\$'000	\$'000
Gross value as at 30 June 2010	1,009	29,777	30,786
Additions - new assets	215	9,981	10,196
Transfer/Reclassification	-	(465)	(465)
Disposals	-	(473)	(473)
Gross value as at 30 June 2011	1,224	38,820	40,044
Accumulated depreciation/ amortisation 30 June 2010	1,009	14,360	15,369
Depreciation/amortisation	30	5,697	5,727
Accumulated depreciation/ amortisation 30 June 2011	1,039	20,057	21,096
Net book value as at 30 June 2011	185	18,763	18,948

Movement summary 2009-2010 for all consolidated intangibles irrespective of valuation basis

	Licenses	Software	Total
	\$'000	\$'000	\$'000
Gross value as at 1 July 2009	1,009	16,834	17,843
Additions - new assets	-	10,286	10,286
Transfer/Reclassification	-	3,282	3,282
Disposals	-	(625)	(625)
Gross value as at 30 June 2010	1,009	29,777	30,786
Accumulated depreciation/ amortisation 1 July 2008	1,009	11,593	12,602
Depreciation/amortisation	-	3,035	3,035
Adjustment for disposals	-	(268)	(268)
Accumulated depreciation/ amortisation 30 June 2010	1,009	14,360	15,369
Net book value as at 30 June 2010	-	15,417	15,417

Note:

No indicators of impairment were found for intangible assets.

No Intangibles are expected to be sold or disposed of within the next 12 months.

8E. Other

Deferred tax asset
Prepayments

FINANCIAL YEAR Consolidated

-	433
7,255	6,226
7,255	6,659
947,509	921,025

Total non-financial assets

No indicators of impairment were found for other non-financial assets

The Deferred Tax Asset of USD 369,000 or AUD 433,000 recognised as an asset at 30 June 2010 has been derecognised at 30 June 2011 as the directors do not believe it is probable that sufficient profits will be generated to utilise the tax losses.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

		Consolidated	
	2011	2010	2009
	\$'000	\$'000	\$'000
9 Liabilities			
9A. Interest bearing liabilities			
Other (a)	2,484	3,497	3,308
Total interest bearing liabilities	2,484	3,497	3,308
Provision			
9B. Employee provisions			
Annual leave	10,267	9,174	8,666
Long service leave	18,261	16,313	14,547
	28,528	25,487	23,213
Employee provisions are expected to be settled in:			
No more than 12 months	3,836	2,815	1,609
More than 12 months	24,692	22,672	21,604
Total employee provisions	28,528	25,487	23,213
9C. Decommissioning provisions			
Decommissioning cost (c)	291,465	269,517	181,762
	291,465	269,517	181,762
9D. Other			
Other claims (b)	286	270	2,007
	286	270	2,007
Total provision	320,279	295,274	206,982
Payables			
9E. Suppliers			
Trade creditors	11,383	12,578	8,263
	11,383	12,578	8,263
Supplier payables expected to be settled within 12 months			
Related entities	-	76	-
External parties	11,383	12,502	8,263
Total	11,383	12,578	8,263
9F. Employees			
Accrued salaries and wages	2,819	2,347	1,168
Incentives	1,017	468	441
	3,836	2,815	1,609
9G. Grants			
Non-profit entities	687	562	575
	687	562	575
9H. Other			
Revenue received in advance	1,433	1,557	1,171
	1,433	1,557	1,171
Total payables	17,339	17,512	11,618
Total liabilities	340,102	316,283	221,908

Notes:

(a) Relates to prepaid revenue under a lease of property.

(b) This provision includes redundancy.

(c) This provision includes decommissioning cost relating to property, plant & equipment and infrastructure, local and overseas legacy waste and current OPAL waste.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

91 Provision movement reconciliation

	Provision for Decommissioning Costs	Provision for Other Claims	Total Provisions
	\$'000	\$'000	\$'000
Carrying amount 1 July 2008	181,757	4,571	186,328
Amounts used	(4,536)	(2,564)	(7,100)
Change in accounting estimate	(14,865)	-	(14,865)
Unwinding discount	19,406	-	19,406
Closing balance 30 June 2009	181,762	2,007	183,769
Carrying amount 1 July 2009	181,762	2,007	183,769
Provisions not required	-	(1,605)	(1,605)
Additional provisions made	-	-	-
Amounts used	(5,525)	(132)	(5,657)
Change in accounting estimate	79,418	-	79,418
Unwinding discount	13,862	-	13,862
Closing balance 30 June 2010	269,517	270	269,787
Carrying amount 1 July 2010	269,517	270	269,787
Provisions not required	(3,909)	-	(3,909)
Additional provisions made	27,498	16	27,514
Amounts used	(8,964)	-	(8,964)
Change in accounting estimate	(7,764)	-	(7,764)
Unwinding discount	15,087	-	15,087
Closing balance 30 June 2011	291,465	286	291,751

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	2011 \$'000	Consolidated	
		2010 \$'000	2009 \$'000
10 Equity			
Contributed equity			
Replacement research reactor equity injections			
Balance 1 July	385,836	385,836	385,836
Balance 30 June	385,836	385,836	385,836
Other equity injections			
Balance 1 July	82,020	62,020	60,420
Equity injections from Government - Other (f)	14,100	20,000	1,600
Balance 30 June	96,120	82,020	62,020
Total contributed equity	481,956	467,856	447,856
Reserves, including movements			
<u>Asset revaluation reserve</u>			
Balance 1 July	328,456	294,271	229,248
Revaluation adjustment	10,652	34,185	65,023
Balance 30 June	339,108	328,456	294,271
<u>OPAL depreciation reserve</u>			
Balance 1 July	9,061	9,061	35,258
Transferred to retained surpluses (a)	-	-	(26,197)
Balance 30 June	9,061	9,061	9,061
<u>Reactor licensing reserve</u>			
Balance 1 July	-	-	1,500
Transferred to retained surpluses	-	-	(1,500)
Balance 30 June	-	-	-
<u>Regional security of radioactive reserve</u>			
Balance 1 July	939	629	757
Transferred (to)/from retained surpluses (b)	(372)	310	(128)
Balance 30 June	567	939	629
<u>Nuclear & radiological security reserve</u>			
Balance 1 July	539	539	360
Transferred to retained surpluses (c)	(539)	-	179
Balance 30 June	-	539	539

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	Consolidated		
	2011	2010	2009
	\$'000	\$'000	\$'000
Low Dose Nuclear Waste Repository			
Balance 1 July	4,211	3,032	3,032
Transferred to retained surpluses (d)	(3,137)	1,179	-
Balance 30 June	1,074	4,211	3,032
Intermediate low level waste (ILLW) return			
Balance 1 July	-	-	-
Transferred from retained surpluses (e)	785	-	-
Balance 30 June	785	-	-
Foreign currency reserve			
Balance 1 July	13	(3)	(22)
Movement (g)	201	16	19
Balance 30 June	214	13	(3)
Other reserve			
Balance 1 July	139	150	-
Movement (h)	(139)	(11)	150
Balance 30 June	-	139	150
Total reserves	350,809	343,358	307,679
Retained surpluses(deficit)			
Retained surpluses 1 July	(58,404)	(33,173)	(59,508)
Adjustment to opening Balance			
Transfer from OPAL depreciation reserve (a)	-	-	26,197
Transfer from regional security of radioactive reserve (b)	372	(310)	128
Transfer from nuclear & radiological security reserve (c)	539	-	(179)
Transfer from Low Dose Nuclear Waste Repository (d)	3,137	(1,179)	-
Transfer to Intermediate low level waste (ILLW) return (e)	(785)	-	-
Transfer from reactor licensing reserve	-	-	1,500
Transfer to other reserve	139	-	(150)
Transfer to foreign currency reserve	(9)	-	-
(Deficit)	(40,074)	(23,742)	(1,161)
Retained surpluses 30 June	(95,085)	(58,404)	(33,173)
Total equity	737,680	752,810	722,362

(a) OPAL depreciation reserve

This reserve represents unused funding for OPAL depreciation. This was due to a delay in final commissioning of OPAL.

(b) Regional security of radioactive materials reserve

This represents unused funding from prior years. This is due to delays in participation by some regional countries.

(c) Nuclear and radiological security reserve

This reserve relates to funding which started in 2009-10 and will run through up to 2010-11.

(d) Low Dose Nuclear Waste Repository

This reserve relates to funding for low level waste facility at ANSTO for its own use and used by other Commonwealth agencies.

(e) Intermediate low level waste (ILLW) return

This reserve relates to unspent appropriation for ILLW return.

(f) Equity Injection from Government

Comparatives for 2009/10 has been changed to reflect the current year accounting treatment of EIF contributions from Department of Finance and Deregulation (DOFD) from Revenue to Equity Injection.

(g) Foreign currency reserve

This reserve relates to foreign currency translation at balance date.

(h) Other reserves

This reserve relates to ANSTO Inc. deferred tax assets. During 2010/11 the balance of this reserve was transferred to retained surplus.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

11 Cash flow reconciliation

	Notes	Consolidated	
		2011 \$'000	2010 \$'000
Reconciliation of Operating Surplus (Deficit) to Net Cash from Operating Activities:			
Operating (deficit)	(a)	(40,074)	(23,742)
Non-cash items			
Depreciation/amortisation		80,174	54,422
Net write-down of Investment		5,000	-
Net loss on disposal of non-financial assets		3,264	243
Unrealised foreign exchange (gain) loss		349	(98)
Unwinding of Discount - decommissioning costs		15,087	13,862
Loss on sale of subsidiary		-	870
Changes in assets and liabilities			
(Increase) in trade goods and services receivables		(3,128)	(259)
(Increase)/Decrease in other receivables		(297)	1,191
(Increase)/Decrease in GST receivables		(277)	431
(Increase)/Decrease in accrued interest		1,020	(284)
(Increase) in prepayments		(1,029)	(2,140)
(Increase) in inventories		(1,845)	(5,073)
Increase/(Decrease) in payables		(1,545)	4,413
Increase in employee entitlements		4,062	3,480
Increase in revenue received in advance		1	373
Increase/(Decrease) in deferred income tax		433	(138)
Increase/(Decrease) in reserves		16,560	(1,018)
Increase/(Decrease) in other provision		16	(1,737)
Increase/(Decrease) in decommissioning cost provision		(26,350)	(2,663)
Increase/(Decrease) in interest bearing liabilities		(1,013)	189
Net cash from operating activities		50,408	42,322
12 Government funding			
Revenue from Government		165,592	155,240
Government equity injection		4,100	-
Education Investment Fund equity injection	(a)	10,000	20,000
		179,692	175,240

(a) Changes to 2010 comparatives refer note 26

Appropriations are made to the Department of Innovation, Industry, Science and Research (DIISR) which are then paid to ANSTO.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

13 Board membership

The members of the Board during the financial year and to the date of the report on the statements were:

Member	Appointed	Term Concluded	Term Concludes
Z Switkowski	1 January 2006	31 December 2010	
P Greenfield	25 July 2010		24 July 2014
C McLoughlin	13 March 2009		12 March 2013
A Scott	26 September 2007		25 September 2011
D Copolov	1 May 2008		30 April 2012
J Hearn	1 May 2008		30 April 2012
E Smyth	12 December 2008		11 December 2012
S Pond	1 July 2010		30 June 2014
J Ryan	24 February 2011		23 February 2016
A Paterson	1 March 2009		28 February 2014

For the 2010-2011 financial year the aggregate remuneration paid to members of the Board is disclosed in Note 14.

14 Remuneration of members of the Board

Members' remuneration is determined by the Remuneration Tribunal and payment is made in accordance with Section 12 of the ANSTO Act 1987 (as amended).

Included in operating expenses (Note 6) are:

The number of non-executive directors of ANSTO included in these figures are shown below in the relevant remuneration bands:

Remuneration between

less than \$150,000

Total

Total remuneration received or due and receivable by directors

Consolidated	
2011 Number	2010 Number
9	8
9	8
309,912	304,145

Remuneration of executive directors is included in Note 15: Remuneration of senior executives.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

15 Remuneration of senior executives

Note 15A: Senior Executive Remuneration Expense for the Reporting Period

	2011	2010
	\$	\$
Short-term employee benefits:		
Salary	3,455,858	2,972,514
Annual leave accrued	243,168	141,348
Performance bonuses	534,100	242,323
Other allowance	37,280	32,780
Total short-term employee benefits	4,270,406	3,388,965
Post-employment benefits:		
Superannuation	566,152	477,850
Total post-employment benefits	566,152	477,850
Other long-term benefits:		
Long-service leave	85,224	74,553
Total other long-term benefits	85,224	74,553
Termination benefits	-	-
Total	4,921,782	3,941,368

Notes:

- Note 15A was prepared on an accrual basis (so the performance bonus expenses disclosed above differ from the cash 'Bonus paid' in Note 15B).
- Note 15A excludes acting arrangements and part-year service where remuneration expensed for a senior executive was less than \$150,000.

Note 15B: Average Annual Remuneration Packages and Bonus Paid for Substantive Senior Executives as at the end of the Reporting Period

as at 30 June 2011					
Fixed Elements and Bonus Paid ¹	Fixed elements				
	Senior Executives No.	Salary \$	Allowances \$	Total \$	Bonus paid ² \$
Total remuneration (including part-time arrangements):					
less than \$150,000	3	122,859	-	122,859	5,767
\$150,000 to \$179,999	3	154,477	6,000	160,477	24,373
\$180,000 to \$209,999	4	191,549	2,547	194,096	15,094
\$210,000 to \$239,999	3	215,486	4,453	219,939	10,208
\$240,000 to \$269,999	4	259,789	-	259,789	7,500
\$270,000 to \$299,999	1	280,000	-	280,000	5,950
\$360,000 to \$389,999					
\$390,000 to \$419,999	1	346,698	44,884	391,582	67,540
Total	19				
as at 30 June 2010					
Fixed Elements and Bonus Paid ¹	Fixed elements				
	Senior Executives No.	Salary \$	Allowances \$	Total \$	Bonus paid ² \$
Total remuneration (including part-time arrangements):					
less than \$150,000	2	133,216	-	133,216	-
\$150,000 to \$179,999	-	-	-	-	-
\$180,000 to \$209,999	5	186,977	2,711	189,688	14,700
\$210,000 to \$239,999	1	218,944	-	218,944	12,000
\$240,000 to \$269,999	5	242,167	13,896	256,063	17,213
\$270,000 to \$299,999	1	280,000	-	280,000	-
\$360,000 to \$389,999	1	333,038	50,475	383,513	24,286
\$390,000 to \$419,999					
Total	15				

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

Notes:

1. This table reports substantive senior executives who were employed by the entity at the end of the reporting period. Fixed elements were based on the employment agreement of each individual. Each row represents an average annualised figure (based on headcount) for the individuals in that remuneration package band (i.e. the 'Total' column).
2. This represents average actual bonuses paid during the reporting period in that remuneration package band. The 'Bonus paid' was excluded from the 'Total' calculation, (for the purpose of determining remuneration package bands). The 'Bonus paid' within a particular band may vary between financial years due to various factors such as individuals commencing with or leaving the entity during the financial year.

Variable Elements:

With the exception of bonuses, variable elements were not included in the 'Fixed Elements and Bonus Paid' table above. The following variable elements were available as part of senior executives' remuneration package:

(a) Bonuses:

- Bonuses were based on the performance rating of each individual. The maximum bonus that an individual can receive were 10 per cent of his/her base salary.

(b) On average senior executives were entitled to the following leave entitlements:

- Annual Leave (AL): entitled to 20 days (2010: 20 days) each full year worked (pro-rata for part-time SES);
- Personal Leave (PL): entitled to 18 days (2010: 20 days) or part-time equivalent; and
- Long Service Leave (LSL): in accordance with Long Service Leave Act.

(c) Senior executives were members of one of the following superannuation funds:

- CSS rate at 15.4% (2010 15.4%) of salary.
- PSS rate at 17.0% (2010 19.1%) of salary.
- PSSap rate at 15.4% (2010 15.4%).
- Other at rate 9%

(d) Variable allowances:

- This represents Living away home allowance (LAFHA) and rentals as per individual package.

(e) Others:

Various salary sacrifice arrangements were available to senior executives including super, motor vehicle and expense payment fringe benefits.

Note 15C: Other Highly Paid Staff

During the reporting period, there were 26 (2010: 13) employees whose salary plus performance bonus were \$150,000 or more. These employees did not have a role as senior executive or director and were therefore not disclosed as senior executives in Note 15A and Note 15B.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

16 OPAL Nuclear Research Reactor

The OPAL nuclear research reactor operated for 276 days in the financial year, which translates into a planned availability of 90% for the financial year.

Irradiations for research, industry and radiopharmaceutical supply all increased throughout the year, and reliability of supply of these irradiated products was good.

The Cold Neutron Source, which is a major component of the OPAL reactor important for neutron beam research, was unavailable for about half the year, due to failures in the Helium gas part of the refrigerant system connected to the Cold Neutron Source. Similar failures occurred in 2009-10. Due to the importance of this system to neutron beam research programs, the ANSTO Executive has directly intervened with the major suppliers of the system regarding the need to establish a definitive root cause for the failures and to provide mitigation to protect against subsequent failures prior to the root cause being established. The Cold Neutron Source was functioning at the end of the financial year.

The Heavy Water Isotopic Purification System has been constructed, and pre-testing has been completed prior to the plant being commissioned. The plant will be used to continually upgrade the purity of the heavy water inventory in the reactor. This will assist with optimising reactor performance.

ANSTO continues to work with INVAP on the resolution of a small number of other engineering defects. Progress on achieving acceptable disposition of these defects continues to be monitored.

17 Insurances

Insurance risks, including professional indemnity, general liability, industrial special risk for property used substantially for commercial purposes, directors and officers, and travel, are placed through Comcover, the Government's insurable risk managed fund.

Workers compensation is insured through Comcare Australia and by virtue of statute under the *Safety Rehabilitation and Compensation Act 1988*.

A Deed of Indemnity between the Commonwealth Government and ANSTO, under which the government has formally agreed to indemnify ANSTO and ANSTO Officers from any loss or liability arising from claims caused by ionising radiation, remains in place until August 2018.

18 Remuneration of auditors

Audit fees in relation to the financial statements for the reporting period
Grant audits

Consolidated	
2011	2010
\$	\$
167,500	177,500
11,000	-
<u>178,500</u>	<u>177,500</u>

No other services were provided by the Auditor-General during the reporting period.

19 Related party disclosures

Several ANSTO Board Members were associated with entities with which ANSTO had commercial transactions during the year as part of their role in hospitals or universities. All such transactions were in accordance with ANSTO's normal commercial terms and conditions. None of those transactions led to any conflict of interest.

20 Trust money

ANSTO receives monies from trade creditors as security deposits for contracts to be performed. These monies are held in a Trust Account and refunded to the respective trade creditors on satisfactory completion of the contract.

Balance 1 July
Add: receipts
Deduct: payments
Balance 30 June

Consolidated	
2011	2010
\$	\$
7	20
1	-
-	(13)
<u>8</u>	<u>7</u>

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

(a) Fair value of financial instruments

Financial Instruments	Notes	Consolidated			
		Carrying Amount	Fair Value	Carrying Amount	Fair Value
		2011 \$'000	2011 \$'000	2010 \$'000	2010 \$'000
Financial assets					
Cash at bank	7A	3,278	3,278	5,023	5,023
Investment held to maturity	7C	115,268	115,268	129,000	129,000
Investment	7C	-	-	5,000	5,000
Receivables for goods and services	7B	9,125	9,125	6,296	6,296
Loans	7B	-	-	-	-
Interest accrued	7B	628	628	1,648	1,648
Other	7B	768	768	471	471
Total financial assets (recognised)		129,067	129,067	147,438	147,438
Total financial liabilities					
Trade creditors	9E	11,383	11,383	12,578	12,578
Employees	9F	3,836	3,836	2,815	2,815
Grant received in advance	9G	687	687	562	562
Interest bearing liabilities	9A	2,484	2,484	3,497	3,497
Other	9H	1,433	1,433	1,557	1,557
Total financial liabilities (recognised)		19,823	19,823	21,009	21,009

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

(b) Net income from financial assets

Financial Instruments	Notes	Consolidated	
		2011 \$'000	2010 \$'000
Financial assets			
Cash at bank	7A	124	124
Investment held to maturity	7C	7,233	6,144
Loans	7B	-	-
Net Income from financial assets		7,357	6,268

(c) Net expenses from financial liabilities

Financial liabilities	Notes	2011 \$'000	2010 \$'000
Interest bearing liabilities	9A	105	198
Net expenses from financial liabilities		105	198

Financial assets

The net fair values of cash, deposits on call and non-interest-bearing monetary financial assets are in accord with their carrying amounts.

Loans receivable are carried at cost, which is above their net fair value, because it is intended to hold them to maturity.

Financial liabilities

The net fair values for trade creditors and revenue received in advance, all of which are short-term in nature, are in accord with their carrying amounts.

(d) Credit risk exposures

The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This is equal to the total amount of trade and other receivables as per note 7B. ANSTO has assessed the risk of the default on payment and has provided for doubtful debts account as per note 7B(b).

ANSTO manages its credit risk by undertaking background and credit checks prior to allowing a debtor relationship. In addition, the Organisation has policies and procedures that guide employees to apply debt recovery techniques. The Organisation holds no collateral to mitigate against credit risk.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

21 Financial instruments (cont.)

(e) Liquidity risk

ANSTO financial liabilities are payables and other interest bearing liabilities. The exposure to liquidity risk is based on the notion that the Organisation will encounter difficulty in meeting its obligations associated with financial liabilities. This is highly unlikely due to Australian Government Appropriation funding and mechanism available to the Organisation and internal policies and procedures put in place to ensure there are appropriate resources to meet its financial obligations.

Consolidated		Notes					
Financial Instruments		Consolidated					
2011		Carrying Amount	On Demand	1 Year or Less	1 to 2 Years	More than 2 years	Total Contractual Cash Flows
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Financial liabilities							
Trade creditors	9E	11,383	-	11,383	-	-	11,383
Employees	9F	3,836	-	3,836	-	-	3,836
Grant received in advance	9G	687	-	687	-	-	687
Interest bearing liabilities	9A	2,484	-	2,484	-	-	2,484
Other	9H	1,433	-	1,433	-	-	1,433
Total financial liabilities (recognised)		19,823	-	19,823	-	-	19,823
2010		Consolidated					
		Carrying Amount	On Demand	1 Year or Less	1 to 2 Years	More than 2 years	Total Contractual Cash Flows
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Financial liabilities							
Trade creditors	9E	12,578	-	12,578	-	-	12,578
Employees	9F	2,815	-	2,815	-	-	2,815
Grant received in advance	9G	562	-	562	-	-	562
Interest bearing liabilities	9A	3,497	-	3,497	-	-	3,497
Other	9H	1,557	-	1,557	-	-	1,557
Total financial liabilities (recognised)		21,009	-	21,009	-	-	21,009

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

21 Financial instruments (cont.)

(f) Market risk - consolidated

(i) Interest rate risk

This refers to the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. ANSTO is exposed to interest rate risk primarily from Investment held to maturity. The impact as shown below.

Risk variable	Consolidated					
	Change in variable		Effect on		Effect on	
	2011	2010	1.75%	-1.75%	1.50%	-1.50%
\$'000			Profit or loss 2011 \$'000	Equity 2011 \$'000	Profit or loss 2010 \$'000	Equity 2010 \$'000
Investment held to maturity	115,268	137,661				
Interest	1.75%	1.50%	2,017	2,017	1,935	1,935
Interest	-1.75%	-1.50%	(2,017)	(2,017)	(1,935)	(1,935)

Interest rate sensitivity analysis has been calculated on a 'reasonably possible' change basis. A 'reasonably possible' change has been estimated using both statistical and non-statistical analyses. The statistical analysis has been based on the cash rate for the past five years issued by the Reserve Bank of Australia (RBA) as the underlying dataset. This information is then revised and adjusted for reasonableness under the current economic circumstances.

As a result of the analyses above, a standard rate of 175 basis points (2010: 150 basis points) shock level was selected as a 'reasonably possible' change in market interest rate.

175 basis points is managements best estimate of future volatility.

(ii) Foreign currency rate

This refers to the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign currency rates. ANSTO is exposed to foreign currency rate risk primarily from trade creditors. The impact only relates to assets and not profit and loss or equity.

Risk variable	Consolidated					
	Change in variable		Effect on		Effect on	
	2011	2010	15.00%	-15.00%	14.00%	-14.00%
\$'000			Profit or loss 2011 \$'000	Equity 2011 \$'000	Profit or loss 2010 \$'000	Equity 2010 \$'000
USD Currency	139	145				
Foreign currency	15.00%	14.00%	21	21	20	20
Foreign currency	-15.00%	-14.00%	(21)	(21)	(20)	(20)

The method used to arrive at the possible risk of 15% (2010, 14%) was based on both statistical and non-statistical analyses. The statistical analysis has been based on main currencies movement for the last five years. The two main currencies ANSTO has exposure to are USD and EURO currencies. This information is then revised and adjusted for reasonableness under the current economic circumstances.

15% (2010, 14%) is managements best estimate of future USD foreign exchange volatility.

(g) Reconciliation of level 3 fair value hierarchy

Opening balance

Total gains or losses for the period recognised in profit and loss

Closing Balance

Investments	
2011	2010
\$'000	\$'000
5,000	5,000
(5,000)	-
-	5,000

The investment in Australian Synchrotron Holding Company (AShCo) of \$5 million was assessed as requiring impairment testing. On the basis, ANSTO secured confirmation from the CEO of ASHCo that it only had secured funding to 30 June 2012 with a letter of comfort from the Victorian Government to 30 September 2012. On that basis ANSTO has determined that the investment of \$5,000 thousand is fully impaired.

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements
for the year ended 30 June 2011

	FINANCIAL YEAR	
	2011 \$	2010 \$
22 Operating lease arrangements		
<u>Payment recognised as expense</u>		
Minimum lease payments	203	9
	203	9
<u>Operating lease commitments</u>		
One year or less	137	137
From one to five years	685	685
Over five years	1,040	1,177
	1,862	1,999
ANSTO has a twenty five year lease contract with Central Sydney Area Health Services that will expire on 29 Jan 2025 with an annual rental payable of \$137,000 (2010: \$137,000). The annual rental is subject to review every three years.		
23 Income tax expense (benefit)		
Income tax benefit	-	(138)
Reversal of Deferred Tax Asset	345	-
Total income tax expense (benefit)	345	(138)
ANSTO's subsidiaries are subject to normal taxation but are in tax loss positions. Unbooked deferred tax assets in relation to unrecouped tax losses in the subsidiaries is \$1,047 thousand (2010: \$320 thousand).		
24 Other comprehensive income		
Changes in asset revaluation reserves	10,652	34,185
Total revaluation adjustments in other comprehensive income	10,652	34,185

25 Information relating to ANSTO ('the parent entity')

ANSTO only presents the financial statements on a Consolidated basis. A summary of ANSTO (parent company only) financial information is as follows:

	FINANCIAL YEAR	
	2011 \$	2010 \$
Current assets	141,891	163,551
Total assets	1,078,019	1,071,966
Current liabilities	21,318	21,850
Total liabilities	339,854	316,397
Contributed equity	481,956	467,856
Retained surplus	(94,387)	(55,494)
Asset revaluation reserve	339,109	328,457
Other reserve	11,487	14,750
Total equity	738,165	755,569
Profit or loss of the parent entity	(42,156)	(21,049)
Total comprehensive income of the parent entity	(31,504)	13,281

The parent has issued the following guarantees in relation to the debts of its subsidiaries:

The ANSTO's Board has passed resolutions that in the event that its subsidiaries, PETNET Aust Pty Ltd and ANSTO Inc., do not meet their obligations under the terms of the overdrafts, loans, leases or other liabilities, ANSTO will guarantee its payments.

The parent has no contingent liability for 2011 (2010: nil).

Financial Statements 2010-2011

Notes to and forming part of the Financial Statements for the year ended 30 June 2011

26 Prior year adjustments

Correction of calculations in estimating the decommissioning cost in the previous financial years as follows:

	\$'000
Balance Sheet items:	
Decommissioning provisions	
Reported 30 June 2009	119,374
(1) Decommissioning provision for local waste disposal	35,923
(2) Decommissioning provision relating to Intermediate Low Level waste returning to ANSTO	36,600
(3) Decommissioning provision relating to OPAL Spent Fuel	6,064
(4) Decommissioning provision relating to OPAL Property, plant & equipment Decommissioning Cost	(16,199)
Restated 30 June 2009	181,762
1 July 2009	181,762
(1) Decommissioning provision for local waste disposal	9,037
(2) Decommissioning provision relating to Intermediate Low Level waste returning to ANSTO	634
(3) Decommissioning provision relating to OPAL Spent Fuel	2,201
(4) Decommissioning provision relating to OPAL Property, plant & equipment Decommissioning Cost	34,715
(5) Amounts used	(5,525)
(6) Change in accounting estimate	41,950
(7) Unwinding discount	4,743
Restated 30 June 2010	269,517
Contributed Equity	
1 July 2009	447,856
(1) EIF Funds reclassified from Revenue to Equity as approved by Department of Finance and Deregulation.	20,000
30 June 2010	467,856
Retained Earnings	
30 June 2009	45,775
(1) Decommissioning provision for local waste disposal	(35,923)
(2) Decommissioning provision relating to Intermediate Low Level waste returning to ANSTO	(36,600)
(3) Decommissioning provision relating to OPAL Spent Fuel	(6,064)
(4) Decommissioning provision relating to OPAL Property, plant & equipment Decommissioning Cost	(361)
Restated 30 June 2009	(33,173)
Opening Retained Earnings - 1 July 2009	(33,173)
Reported 2010 Profit	8,239
Less: Prior year adjustments	
(1) Decommissioning provision for local waste disposal	9,037
(2) Decommissioning provision relating to Intermediate Low Level waste returning to ANSTO	634
(3) Decommissioning provision relating to OPAL Spent Fuel	2,201
(4) Decommissioning provision relating to OPAL Property, plant & equipment Decommissioning Cost	109
(5) EIF Funds reclassified from Revenue to Equity as approved by Department of Finance and Deregulation.	20,000
Total prior year adjustments	31,981
Restated 2010 Loss	(23,742)
Transfer between equity components	(1,489)
Closing Retained Earnings - 30 June 2010	(58,404)
Total Reserves	
Reported 30 June 2009	291,119
(1) Decommissioning provision relating to OPAL PPE Decommissioning Cost	16,560
Restated 30 June 2009	307,679

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Governance and performance

Governance and performance

Compliance

ANSTO is subject to the provisions of various Commonwealth Acts and Regulations made under these various Acts and Commonwealth Awards.

The principal Act is the *Australian Nuclear Science and Technology Organisation Act 1987*.

The principal Award is the Australian Nuclear Science and Technology Organisation (General) Award 1990.

Amendments to governance parts of the ANSTO Act

There were no changes to the governance part of the *ANSTO Act* during 2010-2011 reporting period.

Nuclear liability

The Minister executed a new Deed of Indemnity on 27 August 2008 for a period of ten-years. The Indemnity commits the Government to meeting any damages awarded against ANSTO, its employees and its contractors for damage caused by ionising radiation whilst providing comfort to the local community and to ANSTO's suppliers, who cannot be covered by ANSTO's normal insurance arrangements and are not accustomed to being exposed to risks of this nature. Any claim would first attach to the general \$50 million cover that ANSTO has with Comcover to the extent that it was insured under that policy, with the remainder covered by this indemnity agreement.

The functions of the Board

A Board established under Section 8 of the *Australian Nuclear Science and Technology Organisation Act 1987* governs ANSTO. The general functions of the Board, as set out in Section 10 of the *ANSTO Act*, are to ensure the proper and efficient performance of the functions of the organisation and to determine the policy of the organisation with respect to any matter, having regard to the current policies of the Commonwealth Government.

In particular, it has responsibility for:

- approval of organisational strategy and the annual business plan and budget
- monitoring financial performance
- monitoring managerial performance
- ensuring that the significant risks facing the organisation have been identified, and that appropriate control, monitoring and reporting mechanisms are in place.

The *Commonwealth Authorities and Companies Act (CAC Act)* requires the Board to comply with certain accountability and corporate governance principles, including:

- the maintenance of an Audit Committee
- specific financial and reporting provisions
- disclosure of all Board members' personal interests
- provision of indemnities and indemnity insurance in certain circumstances.

All *CAC Act* requirements are currently being met.

Processes are in place for performance assessment of both the Board as a whole and of the individual members.

The Board has established an Audit & Risk Committee and a Remuneration Committee. All matters considered by those Committees are submitted to the Board for information and, where appropriate, for ratification.

Board Charter

ANSTO has an established Board Charter, setting out the respective rights and responsibilities, functions and powers of Board members and ANSTO executives. It is made available internally on ANSTO's intranet and it is proposed to publish the Board Charters on ANSTO's website in line with current best practice.

Board membership

During the 2010-2011 financial year, the Board comprised eight non-executive members, drawn from the broader community, who are not involved in the day-to-day running of the organisation, and the Chief Executive Officer.

The ANSTO Act provides that the Chief Executive Officer shall manage the affairs of the organisation, subject to the directions of, and in accordance with, policies determined by the Board. Senior management attend Board meetings as required to report on matters relevant to their individual areas of responsibility.

Each Board member brings complementary skills and experience to the Board. Its members during the 2010-2011 financial year had experience in areas that included industry, information and communication technology, mining, scientific research, medicine and the commercialisation of research.

The Board meets regularly in accordance with a formally approved timetable and agenda.

Seven Board meetings were held during the 2010-2011 financial year. Details of the number of Board meetings attended by each member during the period in which each member held office during the financial year are shown on page 89.

Board remuneration and allowances

The remuneration and allowances of members of the Board, including the Chief Executive Officer, are determined by the Remuneration Tribunal. Remuneration of members of the Board is disclosed in the Financial Statements.

Disclosure of interests of Board Members

Sections 27F-27K of the *CAC Act* provides for the disclosure of material personal interests in a matter that is being considered by the Board, and prohibits participation, deliberation and decision making by any member on such matters. All these requirements were met during the year.

Governance and performance

Meetings – Board

Member	Eligible to attend	Attended
Professor Paul Greenfield AO (Chair from 24 February 2011)	7	7
Dr Zygmunt Switkowski (Chair to 31 December 2010)	4	4
Professor David Copolov, OAM	7	6
Professor John Hearn	7	5
Ms Christine McLoughlin	7	7
Dr Susan Pond, AM	7	7
Mr John Ryan, PSM	2	2
Ms Erica Smyth	7	7
Professor Andrew M Scott	7	6
Dr Adrian Paterson (Chief Executive Officer)	7	7

Board member access to independent professional advice

The Board has established procedures by which members, in the interests of their duties, may seek independent professional advice at ANSTO's expense. In brief, members must first seek permission from the ANSTO Chairman.

Report of operations

Section 9 and Schedule 1 of the *CAC Act* requires that the Organisation's Annual Report include a report of operations, financial statements and the Auditor General's report on those financial statements. The Commonwealth

Authorities and Companies (Report of Operations) Orders 2005 set out the requirements for such a report.

The Board reports that:

- ANSTO's mission and strategic directions are being actioned
- Actual performance is reported against approved performance indicators
- There have been no significant changes in ANSTO's state of affairs or principal activities during the year
- ANSTO has continued to manage both the risks and opportunities it faces.

The Board also reports that, in the opinion of senior management and the Board, at the time of making this report, adequate cash resources are, and will continue to be, available to cover ANSTO's requirement for working capital, to pay existing debts, and meet obligations during the next financial year.

The Board states that a risk oversight and management policy and supporting processes are in place to ensure both compliance with this policy and ongoing continuous improvement.

Health, safety and environmental protection

The Board places primary importance on the safe performance of all ANSTO activities. The monitoring of health, safety and environmental protection in general and compliance with relevant legislation in particular, is designated as a responsibility of the whole Board. During 2010-2011, ANSTO continued to focus on improving the organisational safety culture and on initiatives relating to key elements underpinning a good safety culture. Improvements were made to the event reporting system which has seen a significant improvement in the data, particularly from the "near-hit" events. This, coupled with a CEO directed focus on appropriate and timely investigation of all reported events has driven continuous improvement in safety performance, as evidenced in a significant reduction in worker injuries. Contractor safety management has also remained a key area of focus for the organisation, with the aim

of integrating ANSTO's contract partners into its safety culture and encouraging contractors to support ANSTO as a learning organisation by sharing elements of best safety practice. Increased compliance and governance was also initiated with the introduction of the Building Owner and Building Manager roles, whereby responsibility for safety management within a building, and including ancillary services and surrounding areas, was given to appointed Building Managers.

Audit & Risk Committee

The Audit & Risk Committee, a formal sub-committee of the Board, was comprised during the year of Ms C McLoughlin (Chair), Professor P Greenfield AO, (1 July 2010 - 23 February 2011), Professor AM Scott, Professor D Copolov, Professor J Hearn, Ms E Smyth, Dr S Pond AM, Mr J Ryan PSM and a member external to ANSTO, Mr W Wilton. Mr Wilton is a Chartered Accountant. The Chair of the ANSTO Board, the Chief Executive Officer, the Chief Financial Officer, representatives of the Australian National Audit Office, Deloitte representatives who are under contract by the Australian National Audit Office and the Chief Internal Auditor attended all meetings or relevant parts of all meetings by invitation. Others attend meetings, as appropriate, at the invitation of the Committee.

In accordance with good practice, all Board members receive copies of Audit & Risk Committee papers and meeting minutes, and can attend Committee meetings as a right. This Committee was established

Governance and performance

Meetings – Audit & Risk Committee

Member	Eligible to attend	Attended
Ms Christine McLoughlin	5	5
Professor David Copolov OAM	5	4
Professor John Hearn	5	3
Dr Susan Pond AM	5	5
Mr John Ryan PSM	1	1
Professor Andrew M Scott	5	5
Ms Erica Smyth	5	5
Mr Warren Wilton (External Representative)	5	5
Professor Paul Greenfield AO	4	4

by the Board under a formal written Charter to oversee the organisation's risk management policies, practices and controls in relation to financial and commercial activities, including the financial reporting process, legislative and regulatory conformance, corporate governance and asset protection. Its Charter extends to the review of safety and environmental systems and performance. Additionally in accordance with the provisions of the CAC Act, the Committee is responsible for assisting Board members to fulfil their specific responsibilities under that Act. The Committee has unlimited access to both the internal and external auditors and to senior management.

The Committee scrutinises the annual financial statements of ANSTO and considers the appropriateness of

accounting practices reflected therein. It receives a signed recommendation from the Chief Executive Officer, and the Chief Financial Officer, as to the veracity of the financial statements signed by the Board.

Five Audit & Risk Committee meetings were held during the financial year. Details of the number of Committee meetings held and attended during the period in which each member held office during the financial year are provided in the table above.

The Committee generally meets quarterly.

The remuneration and allowances of Board members who are members of the Audit & Risk Committee are determined by the Remuneration Tribunal. The remuneration of the External Representative is determined by the Board on appointment.

Meetings – Remuneration Committee

Member	Eligible to attend	Attended
Professor Paul Greenfield AO (Chair from 1 January 2011)	1	1
Dr Zygmunt Switkowski (Chair to 31 December 2010)	1	1
Mr John Ryan PSM (Member from 9 June 2011)	0	0

Remuneration Committee

The Remuneration Committee, a formal subcommittee of the Board, comprised during the year Ziggy Switkowski (Chair to 31 December 2010), Professor Paul Greenfield (Chair from 1 January 2011 and John Ryan. The Chief Executive Officer attends all meetings or relevant parts of all meetings by invitation. Others attend meetings, as appropriate, at the invitation of the Committee.

This Committee was established by the Board under a formal written Charter to oversee:

- The overall remuneration policy and strategy for the organisation
- The performance and remuneration policies for the Chief Executive Officer
- The compliance of remuneration policies and practices with statutory and regulatory requirements.

Induction and continuing professional development of ANSTO executives

Processes are in place for induction and ongoing education to inform executives

of their responsibilities and rights. New executives have access to appropriate induction documents and processes (including those relating to safety and security) and to ANSTO officers.

Risk management

The Board is responsible for the governance of risk through formal processes, which include the development and implementation of a policy and plan for a systematic and disciplined approach to evaluate and improve the effectiveness of risk management, as well as the related internal control, compliance and governance processes. Management is accountable to the Board for designing, implementing and monitoring the system and process of risk management and integrating it into the day-to-day activities of the organisation. During the financial year, the CEO appointed a suitably skilled and experienced Senior Manager to assist management with the execution of their risk management responsibility.

The Board recognises that developing and implementing ANSTO's strategies requires careful consideration and balancing of both risk and opportunity.

Governance and performance

In this regard, the Board ensures that it understands the implications of risks taken by management, as well as the potential impact of risk-taking on ANSTO's stakeholders.

The Board regularly receives and reviews a register of ANSTO's key risks and ensures that particular attention is focussed on those risks that may negatively impact the sustainability and reputation of the organisation. The Board also receives regular assurance regarding the implementation of the risk management plan and the risk management maturity of ANSTO.

Ethical standards

ANSTO's ethics policy is set out in a document entitled Code of Ethics. The Code provides a reference point for ethical behaviour and applies to members of the Board, management and all staff. The Code sets out the standards for ethical behaviour and conduct and provides guidance by defining the expected values and standards of workplace behaviour and performance.

Fraud control

The organisation has an established fraud control policy and plan, in line with the Fraud Control Policy of the Commonwealth and guidelines set out by the Attorney General's Department, Criminal Justice Division.

External audit

Under Section 8 of the *CAC Act* the Commonwealth Auditor-General, through

the Australian National Audit Office (ANAO), is the external auditor for ANSTO.

The ANAO, as a matter of policy, provides only audit services to ANSTO.

The Audit & Risk Committee reviews the ANAO audit plan and reports and meets with ANAO representatives prior to recommending to the Board that the annual financial statements be accepted and the Statement by Directors signed.

Internal audit

The ANSTO Internal Audit function has a dual reporting line to the Audit & Risk Committee and the Chief Executive Officer. Its responsibility is to provide an independent, risk-based review function, as set out in a formal Charter periodically reviewed by the Audit & Risk Committee and endorsed by the Board. The Audit & Risk Committee approves the annual Internal Audit plan and receives regular reports on progress against that plan.

Internal control

The Board is responsible for ensuring that appropriate policies and internal controls are in place and operating.

Compliance and review are monitored through the Audit & Risk Committee and the Internal Audit function.

Service Charter

ANSTO's Service Charter sets out a statement of what ANSTO does and the standards of product and service that customers, stakeholders and the community can expect from the organisation.

Judicial decisions and reviews by outside bodies

There were no judicial decisions or decisions of administrative tribunals that had a significant impact on the operations of ANSTO during the reporting year.

There were no specific reports issued by the Commonwealth Auditor-General, other than that issued in relation to the 2010-2011 financial statements.

There were no reports on the operations of ANSTO by a Parliamentary Committee or the Commonwealth Ombudsman during the reporting year.

The Minister for Innovation, Industry, Science & Research established a review into the current health and safety arrangements at ANSTO Health on 9 February 2011. The review panel reported back to the Minister on 26 May 2011. The review made 14 recommendations relating to ANSTO Health (ANSTO's radiopharmaceutical production division) and three recommendations to the external regulator, ARPANSA, and the remaining recommendation to the ANSTO Board. The Board has initiated a review of the recommendations and responded to the Minister. The Board will continue to monitor compliance with the recommendations.

During the year, Comcare also completed an investigation into a safety incident at ANSTO Health and alleged adverse action against a staff member for raising a safety complaint. Comcare provided its report in December 2010, without firstly

seeking ANSTO's input as to its accuracy. ANSTO challenged the findings of that investigation mainly on the grounds of denial of procedural fairness and wrong factual findings. Comcare subsequently undertook a review to assist its decision maker in determining whether a fresh investigation should occur. While Comcare did not agree that procedural fairness had been denied to ANSTO, the review panel accepted that the staff member had not been detrimentally affected for raising a safety allegation and that the initial investigation did have some flaws. ANSTO is currently working through and or responding to Comcare's recommendations.

The ANSTO Board initiated a review of the operations at ANSTO Health to be undertaken by a consultancy group with specific expertise in the nuclear and medical devices industry. In addition to a desk top review of processes, a site visit was completed in May. The output and recommendations from the review will be used to inform and direct the continuous improvement approach within the organisation.

Ministerial directions

There were no ministerial directions to ANSTO made under either the ANSTO Act or the *CAC Act* during the reporting year.

Indemnities and insurance premiums for officers

ANSTO's insurance coverage includes professional indemnity and directors' and officers' liability. Certain sections of

Governance and performance

the *CAC Act* contain prohibitions against ANSTO giving indemnities and paying insurance premiums relating to liabilities arising from conduct involving a lack of good faith by officers. There have been no exceptions to these provisions and no claims were made against ANSTO in respect of such liability that required a claim on ANSTO's insurer, Comcover.

Business continuity planning

Continuity of ANSTO business is a critical issue that has been considered and planned for by the Board, the Chief Executive Officer and senior management. Many services delivered by ANSTO are critical to the economic and social well-being of our society. A failure to deliver these could have significant consequences for those concerned. As a consequence, ANSTO regularly reviews all aspects of its business continuity management plans to ensure a constant state of readiness, including ANSTO's response to any incident that may eventuate at the OPAL research reactor. A test schedule is in place and is being monitored, additionally plans are scheduled to be reviewed and updated annually.

Following the Fukushima Daiichi accident, the Board requested a detailed review of the OPAL research reactor's safety case to ensure that health and safety risks are contained to a level that is as low as reasonably practical and that ANSTO will be able to respond effectively to any incident that may eventuate at the reactor. This review confirmed the robustness of the OPAL reactor's safety case.

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Appendices

Objectives

1. To ensure that Equal Employment Opportunity (EEO) principles and practices are actively incorporated into all people management practices.
2. To ensure that the structures and processes used to implement EEO adjust to changing employment needs.
3. To confirm and communicate the vision that ANSTO's employment activities reflect ANSTO's values. ANSTO actively seeks to implement EEO and diversity principles in its management practices. Human resource processes operate within the ISO 9001 framework.

Star Education Services to provide a range of family services, including parenting seminars; a range of qualified, background checked, and First Aid-trained nannies, babysitters and emergency care workers; and the purchase of educational resources.

ANSTO has entered into a partnership with Sutherland Shire Council for Vacation Care for ANSTO employees and contractors at their Lucas Heights venue during school holidays.

Tendering is underway for the design of the ANSTO Childcare Centre, and to select a not-for-profit operator. Construction is expected to start in December 2011 with completion scheduled for August 2012.

Family services and Childcare Centre

The Corporate Family Program is a partnership between ANSTO and Expect A

Equality of employment opportunity

	Number employed		% of total staff		Average salary	
	2009-2010	2010-2011	2009-2010	2010-2011	2009-2010	2010-2011
Female	291	358	28%	30%	\$69,499	\$71,976
Male	757	868	72%	70%	\$84,486	\$88,163

	Number employed		% of total staff		Average salary	
	2009-2010	2010-2011	2009-2010	2010-2011	2009-2010	2010-2011
People with disabilities	11	14	1.05%	1%	\$88,264	\$77,496
Aboriginal & Torres Straight Islander	9	11	0.9%	1%	\$74,404	\$74,495
Non-English speaking background	273	329	26.05%	27%	\$83,690	\$88,076

This appendix describes the functions and powers of the organisation under the *Australian Nuclear Science and Technology Organisation Act 1987 (ANSTO Act)*, which is ANSTO's enabling legislation. In the text below, 'Organisation' means the Australian Nuclear Science and Technology Organisation.

Section 5: Functions of the Organisation

- (1) The functions of the Organisation are:
 - (a) to undertake research and development in relation to:
 - (i) nuclear science and nuclear technology; and
 - (ia) the application and use of nuclear science and nuclear technology; and
 - (ii) the production and use of radioisotopes, and the use of isotopic techniques and nuclear radiation, for medicine, science, industry, commerce and agriculture; and
 - (iii) such other matters as the Minister directs; and
 - (b) to encourage and facilitate the application and use of the results of such research and development; and
 - (ba) to condition, manage and store radioactive materials and radioactive waste, arising from:
 - (i) the Organisation's activities (including the production of radioactive materials for other persons); or
 - (ii) the activities of companies in which the Organisation holds a controlling interest (including the production of radioactive materials for other persons); or
 - (iii) the use by other persons of radioactive materials produced by the Organisation or such companies; or
 - (iv) the activities of other persons who are specified in the regulations; and
 - (bb) to condition, manage and store radioactive materials and radioactive waste generated, possessed or controlled by the Commonwealth or a Commonwealth entity; and
 - (bc) to condition, manage and store radioactive materials and radioactive waste at the request of:
 - (i) a law enforcement agency; or

- (ii) a Commonwealth, State or Territory agency responsible for the management of emergencies or disasters; including, but not limited to, radioactive materials or radioactive waste involved in, or arising out of, a radiological incident or a radiological emergency; and
- (bd) to condition, manage and store radioactive waste that has been, or is to be, sent to Australia under contractual arrangements relating to the conditioning or reprocessing of ANSTO spent nuclear fuel; and
- (c) to produce, acquire, provide and sell goods, and to provide services, that are:
 - (i) in connection with the production and use of radioisotopes, and the use of isotopic techniques and nuclear radiation, for medicine, science, industry, commerce and agriculture; or
 - (ia) in connection with the conditioning, management and storage of radioactive materials or radioactive waste; or
 - (ib) in connection with nuclear science and nuclear technology; or
 - (ic) in connection with the application and use of nuclear science and nuclear technology; or
 - (ii) otherwise in connection with matters related to its activities; and
- (d) to act as a means of liaison between Australia and other countries in matters related to its activities; and
- (e) to provide advice on aspects of:
 - (i) nuclear science and nuclear technology; and
 - (ii) the application and use of nuclear science and nuclear technology; and
 - (iii) other matters related to its activities; and
- (ea) to make available to other persons, on a commercial basis, the knowledge, expertise, equipment, facilities, resources and property of the Organisation by:
 - (i) providing training and management expertise; or
 - (ii) selling or leasing equipment; or
 - (iii) leasing land, buildings and facilities; or
 - (iv) taking any other action that the Organisation thinks appropriate; and
- (f) to cooperate with appropriate authorities of the Commonwealth, the States and the Territories, and with other organisations and institutions in Australia or elsewhere, in matters related to its activities; and

- (g) to publish scientific and technical reports, periodicals and papers on matters related to its activities; and
 - (h) to collect and sell or distribute, as appropriate, information and advice on matters related to its activities; and
 - (j) to arrange for training, and the establishment and award of scientific research studentships and fellowships, in matters related to its activities; and
 - (k) to make grants in aid of research into matters related to its activities; and
 - (m) to make arrangements with universities and other educational research institutions, professional bodies and other persons for the conduct of research or of other activities in matters related to its activities.
- (1A) A regulation made for the purposes of subparagraph (1)(ba)(iv) must not have the effect of authorising the premises on which the Lucas Heights Research Laboratories are situated to become a national nuclear waste repository.
- (1B) In subsection (1A):
- national nuclear waste repository*** means a site chosen by the Commonwealth, after the commencement of this subsection, for the storage of nuclear waste with a view to it never being moved to another site.
- (1C) Without limiting paragraph 5(1)(bb):
- (a) radioactive materials and radioactive waste generated by a Commonwealth contractor under a contract between the Commonwealth contractor and the Commonwealth or a Commonwealth entity are taken to be generated by the Commonwealth or the Commonwealth entity, as the case requires; and
 - (b) radioactive materials and radioactive waste possessed or controlled by a Commonwealth contractor under a contract between the Commonwealth contractor and the Commonwealth or a Commonwealth entity are taken to be possessed or controlled by the Commonwealth or the Commonwealth entity, as the case requires.
- (2) The Organisation shall not undertake research or development into the design or production of nuclear weapons or other nuclear explosive devices.
- (3) In undertaking its functions, the Organisation is to have regard to:
- (a) the Commonwealth Government's national science, technology and energy policy objectives; and
 - (b) the Commonwealth Government's commercialisation objectives for public research institutions.

- (4) The Minister shall not give a direction under subparagraph (1)(a)(iii) to the Organisation to undertake research or development in relation to a matter unless the Minister is satisfied that research or development by the Organisation in relation to that matter would be an effective use of the staff of the Organisation, and would not duplicate unnecessarily any activity being carried on, or proposed to be carried on, by any other agency or authority of the Commonwealth.
- (5) The Organisation may perform its functions to the extent only that they are not in excess of the functions that may be conferred on it by virtue of any of the legislative powers of the Parliament, and, in particular, may perform its functions:
 - (a) in so far as it is appropriate for those functions to be performed by the Organisation on behalf of the Government of the Commonwealth as the national Government of Australia; and
 - (b) for purposes for which it is appropriate for the Parliament as the national Parliament of Australia to authorise the Organisation to perform functions; and
 - (c) by way of expenditure of money that is available for the purposes of the Organisation in accordance with an appropriation made by the Parliament; and
 - (d) in the course of, or in relation to, trade and commerce with other countries, among the States, between Territories or between a Territory and a State; and
 - (e) for purposes related to external affairs; and
 - (f) for purposes in or in relation to a Territory; and
 - (g) for purposes related to the defence of the Commonwealth.

Section 6: General powers of Organisation

- (1) Subject to this Act, the Organisation has power to do all things necessary or convenient to be done for or in connection with the performance of its functions and, in particular, has power:
 - (a) to enter into contracts;
 - (b) to acquire, hold and dispose of real or personal property;
 - (c) to occupy, use and control any land or building owned or held under lease by the Commonwealth and made available for the purposes of the Organisation;
 - (d) to erect buildings and structures and carry out works;
 - (e) to form, or participate in the formation of, a company or partnership;
 - (f) to appoint agents and attorneys, and to act as an agent for other persons;

- (g) to engage persons to perform services for the Organisation;
 - (h) to design, produce, construct and operate equipment and facilities; and
 - (j) to do anything incidental to any of its powers.
- (2) The powers of the Organisation may be exercised within or outside Australia.
- (3) To avoid doubt, the Organisation has the power to construct buildings and facilities for the sole purpose of performing the function referred to in paragraph 5(1)(ea).

Environmental Protection

ANSTO is committed to operating in a manner that protects the environment and is consistent with Australian and international standards. Environmental awareness is promoted throughout the organisation which strives for continual improvement in environmental performance.

Environmental management system

To provide assurance that ANSTO is maintaining sound environmental protection practices, we maintain an environmental management system (EMS) that is certified to the International Standard ISO 14001. This standard requires that environmental risks and legal requirements are understood and managed, an appropriate measurement and review system is in operation, and that there is an organisational commitment to continual improvement.

In addition all parts of our environmental monitoring program operate within a quality system certified to the ISO 9001:2000 standard for Quality Management Systems.

Environmental performance

Accurate measurements with independent verification

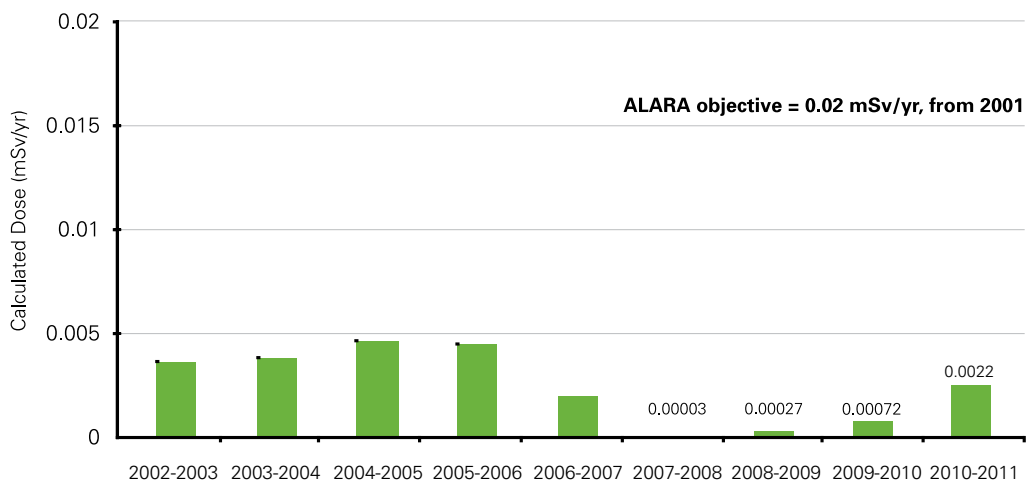
ANSTO conducts an extensive environmental monitoring program that measures radioactivity in authorised airborne emissions and liquid effluent discharges to the sewer, and in samples of air, surface water, ground water, sediment and biota from the local environment.

General environmental radiation and local weather conditions are measured and reported online via the ANSTO webpage. Many of the monitoring results are independently verified. Environmental monitoring in 2010-2011 confirmed that ANSTO's authorised releases of radioactive material to the air and sewer had minimal impact on the environment, and that the modern OPAL reactor has significantly reduced the contribution made by ANSTO's research reactor to the already tiny potential public dose from liquid and airborne emissions.

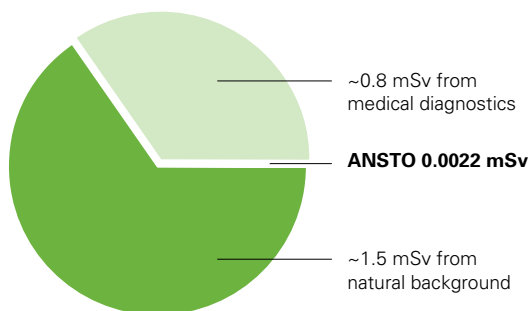
Emissions to air

Computer modelling is used to estimate the potential radiation doses to people at various distances from the Lucas Heights site. The measured stack discharges and concurrent weather data are inputs to the model, which incorporates conservative assumptions about environmental pathways and food consumption. The maximum public dose estimated for ANSTO's airborne emissions in 2010-2011 was 0.0022 mSv. This is 0.2 per cent of the annual public dose limit of 1.0 mSv established by ARPANSA, and continues the low dose pattern for the previous decade. Doses from ANSTO's airborne emissions in 2010-2011 remain at historical levels despite increased medical isotope production (see graph on following page). Note that 2007-2008 saw the shut down of major facilities including the medical isotope production facility and the HIFAR research reactor.

Maximum annual effective dose from LHSTC airborne discharges at the 1.6 km boundary of ANSTO's buffer zone, 1999 to 2011



For our closest neighbours, ANSTO's activities added less than 0.2 per cent to the 1.5 mSv dose that every Australian receives from natural background radiation each year, as shown in the chart below.



Annual dose to the general public from various sources compared to maximum potential dose due to ANSTO airborne emissions in 2010-11.

Liquid effluent discharges within limits

Effluent discharged from ANSTO into the sewer complied with all limits for radioactive discharges, in accordance with the Trade Waste Agreement with Sydney Water. Compliance with these limits ensures that water at the Cronulla sewage treatment plant meets World Health Organization drinking water standards for radioactivity. Concentration limits for nonradioactive materials such as ammonia, zinc and total dissolved solids were also met. Sydney Water conducts independent testing of liquid effluent discharges to sewer and the Trade Waste Agreement is periodically reviewed to provide assurance that ANSTO's discharges remain within authorised limits and pose no threat to the environment. Effluent from the Sutherland Shire undergoes tertiary treatment at the

Cronulla sewage treatment plant and is ultimately discharged to the ocean at Potter Point. Studies carried out for marine biota in the receiving environment at Potter Point have confirmed that the radiological risk to humans and marine life from ANSTO's liquid effluent discharges is negligible.

Good water quality

Stormwater runoff does not contribute to any public water supply, however ANSTO regularly monitors stormwater leaving the site, as well as sampling the nearby Woronora River. Results show that concentrations of tritiated water in the environment have decreased since the HIFAR reactor closed in January 2007, and are well below the level considered safe for Australian drinking water. Gross alpha and beta measurements were also below the levels required for surface waters under the *NSW Protection of the Environment Operations Act 1997*. In fact, most measurements were below the stricter levels of the Australian Drinking Water Guidelines. Groundwater from the Lucas Heights site contained only low levels of tritium and naturally-occurring radionuclides.

Detailed reporting

The results and findings from our environmental monitoring program are available to the public in the annual report series *Environmental and Effluent Monitoring at ANSTO Sites*, available on the ANSTO website.

ANSTO also reports annually to the Department of Environment and Heritage about any of its activities that fall under the National Environmental Protection Measures. Overall, ANSTO commits significant resources to effectively monitor, manage and report on its environmental impacts and responsibilities.

Ecologically sustainable development (ESD)

ANSTO's commitment to environmental protection and sustainability principles is defined in strategic plans which inform its social, economic and environmental core values. These priorities are integral to ANSTO's Business Management System – the framework that defines how business is conducted to deliver outcomes to our customers and stakeholders in a safe, consistent and environmentally responsible manner. Targets and objectives for protecting human health, safeguarding our operations and minimising our environmental footprint flow down from these overarching documents.

ANSTO activities that contribute to ESD include our research into significant environmental issues such as dry land salinity, groundwater movement, human impacts on climate and purification of waste water. This research enhances scientific knowledge and improves environmental outcomes.

ANSTO's active support of nuclear non-proliferation ideals and the development of nuclear safeguards through its

collaborative research with bodies such as the International Atomic Energy Agency and the Comprehensive Test Ban Treaty Organisation, also accords with ESD principles.

Finally, ANSTO's commitment to sound environmental management and ecologically sustainable development means that special emphasis is placed on reducing the environmental footprint by minimising waste production and the consumption of resources such as paper, electricity and water, and by recycling consumables. It also ensures that we manage our past and current waste in a manner that protects human health and the environment, now and in the future.

Safety arrangements

ANSTO is committed to ensuring a safe and healthy environment for employees, visitors, contractors and the external community. ANSTO strives, through a process of continuous improvement, to fully integrate health, safety and environment into all aspects of its activities. All ANSTO activities are governed by a 'safety first' philosophy that means work is planned and will only be performed if it is judged to be safe.

Safety and environmental principles, values and commitments are set out in the ANSTO Health, Safety and Environment Policy which is supported by a framework of documents that constitutes our safety management system. Key elements of the safety system are:

- documented requirements and guidance
- formal review and approval of potentially hazardous work
- auditing and evaluation of safety performance
- communication of safety issues and performance to employees, contractors and the community.

ANSTO fosters a cooperative, consultative relationship with employees and contractors regarding health, safety and welfare by having established:

- Occupational, health, safety and environmental management arrangements (OHSEMA)
- designated work groups (DWGs)
- health and safety representatives (HSRs)

- health and safety committees (HSCs).

Accidents and incidents

An important part of ANSTO's safety management system is the capturing of information on all safety-related events including accidents and 'near hits'. This ensures the proper investigation of all such events and the implementation of safety improvements. It also gives us data to drive improvements in ANSTO's safety performance.

One key indicator of safety performance is the number of near hit events reported. An emphasis on the reporting of near hits is an essential component of a robust safety culture and key driver for continuous safety improvement. 2010-2011 saw a focus on increased event reporting, focussed investigation and completion of arising actions; resulting in a 63 per cent increase in the number of near hit events reported with a consequential reduction in Lost Shift injuries of 65 per cent.

ANSTO also works with its regulators to improve Occupational Health & Safety (OHS) across site. In 2010-2011 ANSTO informed Comcare of 26 notifiable incidents. One of these was a Serious Personal Injury, 23 were Dangerous Occurrences and two were Incapacities resulting in more than 30 days off work.

Safety Initiatives

The following initiatives contributed to ANSTO's commitment to the health and safety of employees, visitors and contractors.

- Contractor Management Monitor and

Review – ongoing improvements to the management of contractors on site.

- Event Management – Introduction of an online notification system; introduction of an event rating process; introduction of an action management application.
- Legacy Issue Management – review of the Asbestos Management Plan and register
- Rollout of the role of Building Manager - local delegates of the relevant Building Owner who are responsible for a specified building and are authorised to address any health, safety and environment concerns relating to personnel, equipment, processes and ancillary services associated with that building.
- Emergency Management - a tabletop exercise of the ANSTO Pandemic Business Continuity Plan was conducted. The exercise identified that the plan was in line with current practices and advice given by health authorities and it considered all levels of a pandemic emergency.

The following initiatives targeted the health and welfare of employees.

- Men's Health Program – onsite medical appointments targeting men's health issues
- Women's Health Program – onsite medical appointments targeting women's health issues
- Bowel Screening – in line with the annual Rotary initiative, free screening kits were made available for all staff

- Flu Vaccination Program – free vaccinations available for employees and contractors.

Australian Radiation Protection and Nuclear Safety Regulations 1999, Statutory Rules 1999 No. 37 as amended.

Occupational Radiation Exposure

Everyone in the world is exposed to ionising radiation from natural sources. People may also be exposed to radiation from non-natural sources, including nuclear medical procedures for diagnosis and treatment of certain illnesses. Personal radiation exposure ('dose') is measured in sieverts (Sv), however, typical annual exposures are so small that they are usually expressed in units of one thousandth of a sievert, known as a millisievert (mSv).

According to the most recent data from ARPANSA, the average dose an Australian receives from natural background radiation (excluding medical sources) is 1.5 mSv per year. Federal and State regulations require that a member of the public should receive no more than 1 mSv per year from radiation sources other than background radiation and medical procedures. The regulatory limit for radiation workers is 20 mSv per year, averaged over five years, with no more than 50 mSv in any one year. In 2010-2011 the average effective dose across all ANSTO workers was 0.4mSv.

This is derived from recommendations made by the International Commission on Radiation Protection (ICRP), who have specified three basic principles for

In 2010-2011 the average effective dose across all ANSTO workers was 0.4mSv.

Table 1: Effective dose

	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Maximum effective dose mSv	9.4	8.9	8.6	7.0	6.2
Average effective dose mSv	0.6	0.6	0.6	0.4	0.4
Collective effective dose person-mSv	545	531	542	399	425

Table 2: Distribution of individual effective dose

mSv	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
0 to < 2	926	914	907	890	989
2 to < 5	41	36	37	28	23
5 to < 10	13	13	12	8	7
10 to < 15	0	0	0	0	0
> 15	0	0	0	0	0

radiation protection, which are applied at ANSTO:

- 1 All exposures to ionising radiation shall have a positive net benefit
- 2 All exposures shall be maintained as low as reasonably achievable (ALARA), accounting for social and economic factors
- 3 All exposures shall be less than the relevant statutory limit.

The application of these principles, requires us to ensure that our occupational exposures are not just less than the statutory dose limit(s), but are as far below them as we can reasonably achieve. To this end ANSTO has imposed its own annual dose constraint of 15 mSv to any member of staff.

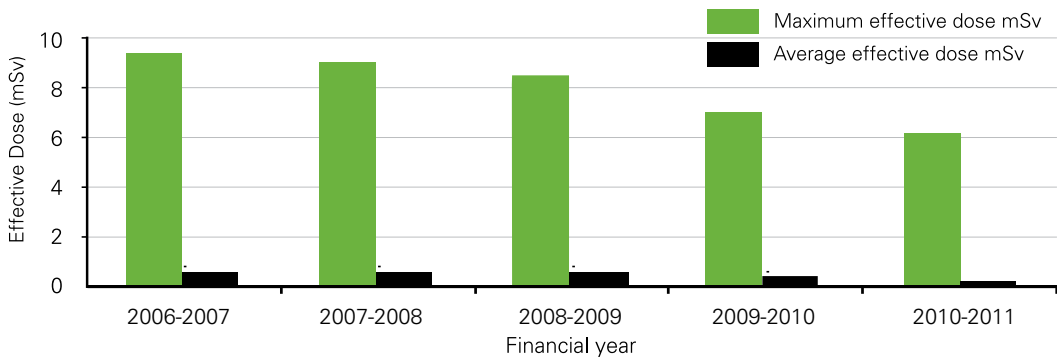
The radiation exposure of ANSTO's workers who are routinely engaged

in working with ionising radiation, is monitored by our specialist dosimetry service, with records of all exposures maintained. Monitoring results for 2010-2011 show that the radiation doses received by ANSTO workers remain significantly below regulatory limits.

Table 1 shows the maximum, average and collective effective doses for the past five years. Collective effective dose is the total cumulative dose to an exposed group, in this case all ANSTO personnel registered with our radiation dosimetry service.

Table 2 shows the distribution of individual effective doses over the same period. The graph in **Figure 1** compares maximum and average effective doses. Regulations give annual dose limits for radiation workers for the whole body (effective dose), for the skin (shallow dose) and for extremities such as hands or feet.

Figure 1: Comparison of Maximum and Average Effective Doses.



The dose limits are:

- whole body 20 mSv, averaged over five years
- shallow (skin) 500 mSv
- extremities 500 mSv.

Emergency preparedness and responses

ANSTO and emergency services organisations jointly maintain a 24-hour emergency response capability to deal with incidents at ANSTO's Southern Sydney campus. The Response Plan for Accidents and Incidents describes how an emergency response will be coordinated and identifies who is responsible for which actions. Each organisation has standing procedures detailing each individual response. NSW emergency services manage responses to emergencies with potential significant offsite radiological consequences at state level according to the Lucas Heights Emergency Sub Plan. There is also a district-level Lucas Heights Emergency Evacuation Sub Plan supporting these arrangements. In the

event of an emergency, ANSTO staff would give technical assistance and practical support to emergency service organisations.

ANSTO maintains a close working relationship with emergency service organisations through the Local Liaison Working Party. The Working Party includes ANSTO specialists and representatives of emergency service organisations, local government, and support organisations, including NSW Health. ARPANSA is an observer.

An ongoing program of emergency training and evacuation drills is in place for all of site. Staff in each work area undergo training in the local emergency response protocols and are familiarised with the appropriate muster points. This training is supplemented with evacuation drills that are run with the respective Building Wardens. Specific radiological training is also provided to Fire and Rescue NSW members as part of their hazardous materials (HAZMAT) training.

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 ANSTO. This general right is limited by exceptions to protect essential public interests, including the privacy of individuals and the business affairs of those who give information to the agency.

The following information is provided in compliance with the previous section 8 of the FOI Act (which ceased to be in effect as of 30 April 2011). Details of the functions of the organisation, membership of the Board and decision making powers of the Board and the Executive are provided on page 87, 88 and 98.

ANSTO has been preparing to implement the new proactive publication provisions under the current section 8 of the *FOI Act*, which came into force on 1 May 2011. ANSTO will comply with, and report on, the new requirements of section 8 in the next Annual Report.

Arrangements for external participation

Liaison groups

The Local Liaison Working Party (LLWP), established in 1967, comprises representatives from the NSW Police, Ambulance, Fire Brigades, Rural Fire Service, the NSW Department of Environment and Conservation, the NSW Department of Health, the Australian Federal Police, the Georges River District Emergency Management Officer, the State Emergency Management Committee, the State Emergency Service, Sutherland

Shire Council and ANSTO, as well as an observer from ARPANSA. The LLWP is a communication forum for all parties which play a role in emergency preparedness and response at ANSTO's Southern Sydney campus.

ANSTO state government arrangements

Given that ANSTO is located in New South Wales, it liaises with a range of NSW departments and authorities responsible for safety, environmental planning and related matters.

Associated organisations and other arrangements

AINSE arranges access by staff and students of Australasian universities to the major facilities at ANSTO.

Less formal arrangements exist for promoting discussions, the exchange of views and/or collaboration with organisations outside the Commonwealth Government. These organisations include local government, standards bodies, professional societies, unions and staff associations, industrial groups and international nuclear agencies.

Categories of documents held

Computer software packages, computer printouts, technical books and reports, and International Nuclear Information System documents are available for purchase. Single copies of the annual report, Nuclear Matters (staff newsletter), strategic plans, ANSTO emergency plans, environmental monitoring reports, general information literature, videos and DVDs (under loan

arrangements) are appropriately available on request.

Documents relating to decision-making processes include Cabinet documents about matters in which ANSTO has an interest; ministerial correspondence and directions; ANSTO Board agenda, memoranda and decisions; deeds, legal contracts and formal agreements; minutes and submissions; employment, delegations, security, finance and accounting handbooks and manuals.

General correspondence includes: ministerial briefs; speeches; conference papers for national and international meetings; parliamentary questions and answers; cables, telexes and facsimiles; and general records files.

Technical documents held include: scientific and technical reports and laboratory notes comprising patents and inventions; computer media; plant and equipment operating manuals; maintenance, quality assurance and safety manuals; reactor operating authorisations, records and log books; radioisotope quality control procedures manuals; radioisotope catalogues and price lists; engineering service general records; nuclear material movement vouchers and accounting records; photographs; and radiographs.

Health and safety documents include: staff medical records; safety-related survey records; film badge and radiological records; accident reports; and emergency response procedures.

Administration documents held include: personnel records such as staff promotion

files; ANSTO awards; organisation and establishment reports; compensation files; computer media with administrative

instructions and information storage; staff lists and classifications; mailing lists; visitor and contractor records; Freedom of Information requests; accounting records; pay-roll, flexitime and overtime records; tender and contract documents; building plans, specifications and instructions; directives; orders; memoranda; bulletins; notices; and information.

Other documents held include drawing office records such as plans, microfilm, drawings, maps and photographs.

Facilities for access

By arrangement, FOI inquirers can peruse information in the Visitors Centre at the entrance to ANSTO.

Information about ANSTO is also available on the internet through the organisation's website at www.ansto.gov.au. ANSTO also has a free enquiry service for members of the public, which is outlined in the Community Right to Know Charter available at www.ansto.gov.au. Interested parties are encouraged to contact enquiries@ansto.gov.au for any further information.

Members of the public may also obtain access to scientific publications from ANSTO Publications Online at apo.ansto.gov.au

Contact

Direct enquiries to ANSTO, Locked Bag 2001 Kirrawee DC NSW 2232, Australia or via email to foi@ansto.gov.au

Index of compliance with reporting guidelines under various Acts, Regulations and Orders applicable to ANSTO as a Commonwealth authority

ANSTO Act 1987 (As amended)

Functions and Powers 98-102

Commonwealth Authorities and Companies Orders (Financial statements for reporting periods ending on or after 30 June 2005) under the Commonwealth Authorities and Companies Act 1997 (As amended)

Financial statements and reports 40-85

Commonwealth Authorities and Companies (Report of Operations) Orders 2005 under the Commonwealth Authorities and Companies Act 1997 (As amended)

Certification of report of operations ii

Enabling legislation 87

Responsible minister 2

Board members

Names, qualifications, experience and special responsibilities, meeting attendance 3, 87-95

Organisational structure and location of major activities and facilities 1, 5-6

Review of operations for year and future prospects 16-39, 89-90

Judicial decisions and reviews by outside bodies 94

Statement on governance 87-95

Effects of ministerial directions 94

Indemnities and insurance premiums for officers 94-95

Requirements under other guidelines and legislation

Service charter 93

Ecologically sustainable development and environmental performance 103-106

Freedom of information 111-112

Occupational health and safety 107-110

Fraud control 93

Equality of employment opportunity 97

Acronyms

ACAS	Australian Collaboration for Accelerator Science
AINSE	Australian Institute of Nuclear Science and Engineering
ALARA	as low as reasonably achievable
AMS	Accelerator mass spectrometry
ANA	Australian Nuclear Association
ANAO	Australian National Audit Office
ANSTO	Australian Nuclear Science and Technology Organisation
ANTARES	Australian National Tandem Accelerator for Applied Research
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
BATAN	National Nuclear Energy Agency of Indonesia
CAC Act	Commonwealth Authorities and Companies Act
CAS	Centre for Accelerator Science
CEA	French Atomic Energy Commission
CERN	European Organisation for Nuclear Research
CRCBID	Cooperative Research Centre for Biomedical Imaging Development
DIISR	Department of Innovation, Industry, Science and Research
DOFD	Department of Finance and Deregulation
DWGs	Designated Work Groups
EIF	Education Investment Fund
EMS	Environmental management system
EPR	Emergency preparedness and response
ESD	Ecologically sustainable development
FOI	Freedom of Information
GATRI	Gamma Technology Research Irradiator
HAZMAT	Hazardous materials
HEU	Highly enriched uranium
HIFAR	High Flux Australian Reactor
HSRs	Health and safety representatives
IAEA	International Atomic Energy Commission
ICRP	International Commission on Radiation Protection
IER	Institute of Environmental Research

Acronyms

IME	Institute of Materials Engineering
IMSS	Institute of Materials Structure Science
J-PARC	Japan Proton Accelerator Research Complex
KAERI	Korean Atomic Energy Research Institute
KEK	High Energy Accelerator Research Organisation
LEU	Low enriched uranium
LLWP	Local Liaison Working Party
LHC	Large Hadron Collider
LHSTC	Lucas Heights Science and Technology Centre
MOU	Memorandum of understanding
MOX	Mixed oxide
NEA	Nuclear Energy Agency
NMC	National Medical Cyclotron
NYSF	National Youth Science Forum
OAM	Order of Australia Medal
OECD	Organisation for Economic Co-operation and Development
OPAL	Open Pool Australian Lightwater reactor
PET	Positron emission tomography
SANS	Small-angle neutron scattering
SAXS	Small-angle X-ray scattering
SERA	Safety, Environmental and Radiological Assurance
SINAP	Shanghai Institute of Applied Physics
STAR	Small Tandem for Applied Research
UMPNER	Uranium Mining, Processing and Nuclear Energy Review
US	United States
WTIA	Welding Technology Institute of Australia

A

- accelerator mass spectrometry (AMS), 37
 - dating techniques, 22–3
- Accelerator Mass Spectrometry Conference (AMS 12), 30
- accelerators, 27–8
- access to documents, 111–12
- Access to Major Research Facilities Program (AMRFP), 36
- accidents and incidents, 107
- acronyms, 114–15
- ANSTO *see* Australian Nuclear Science and Technology Organisation (ANSTO)
- ANSTO/AINSIE Neutron School on Dynamics and Kinetics, 36
- ANSTO BATAN Memorandum of Cooperation, 17
- ANSTO Childcare Centre, 37, 97
- ANSTO Eureka Prize for Innovative Use of Technology, 10, 29
- ANSTO Health, 7–8, 32, 94
 - Current Health and Safety
- Arrangements, 9
 - earnings, 12
- ANSTO Minerals, 8, 33
 - earnings, 12, 33
- ANSTO Minerals Precinct Facilities, 37
- Arambatzis, Peter, 5, 6
- Askew, Geoff, 5, 6
- audit
 - external, 93
 - internal, 93
- Audit & Risk Committee, 88, 90–1, 93
 - establishment, 90
 - meetings, 91
 - members, 90
- Austin Health, 35–6
 - Centre for Positron Emission Tomography (PET), 35–6
- Australian Collaboration for Accelerator Science (ACAS), 10
- Australian Drinking Water Guidelines, 105
- Australian Institute of Nuclear Science and Engineering (AINSE), 1, 34, 36
- Australian Institute of Physics Congress, 30
- Australian Institute of Project Management, 12
- Australian Museum's Science in the Bush/ Suburbs/City program, 30
- Australian National Audit Office (ANA)), 90
- Australian National Tandem Accelerator for Applied Research (ANTARES) accelerator, 22, 27
- Australian Nuclear Association (ANA), 32
- Australian Nuclear Science and Technology Organisation (ANSTO)
 - about, 1–2
 - activities, 17–37
 - annual report requirements, 89
 - Audit & Risk Committee, 88, 90–1
 - awards, 11–12
 - Board, 3–4, 10, 11 *see also* Board
 - Building Manager role, 90
 - Building Owner role, 90
 - business continuity planning, 95
 - Business Management System, 105
 - businesses, 32–3
 - capital investment, 36–7
 - Code of Ethics, 93
 - community and education, 28–30
 - compliance, 87, 94, 113
 - Corporate Plan 2010-2015, 2, 8, 9
 - Distinguished Lecture Series, 30–1

Index

- environmental protection, 103–6
 - Equality of Employment Opportunity, 97
 - ethics policy, 93
 - Executive Team, 5–6
 - executives, induction and continuing professional development, 92
 - external audit, 93
 - external revenue outcomes, 12
 - fraud control, 93
 - freedom of information, 111–12
 - functions under ANSTO Act, 98–101
 - governance and performance, 87–95
 - health, safety and environmental protection, 90, 107
 - highlights, 11–15
 - indemnities and insurance premiums, 94–5
 - innovation, 1
 - internal audit, 93
 - internal control, 93
 - international collaborations, 1–2, 9–10
 - judicial decisions and reviews by outside bodies, 94
 - key outcomes, 1
 - key performance indicators, 39
 - ministerial directions, 94
 - mission 7
 - networks, 1–2
 - neutron beam facilities, 2, 7, 14
 - outstanding staff achievements, 31–2
 - partnerships and associated organisations, 33–6
 - performance against strategic objectives, 39
 - policy advice, 1
 - powers, general, under ANSTO Act, 101–2
 - public support, 10
 - Remuneration Committee, 88, 91–2
 - reporting guidelines, index of compliance, 113
 - research, 1, 9–10
 - responsible Minister, 2
 - risk management, 92–3
 - role, 1, 10
 - Service Charter, 93
 - staff, 1, 31–2, 97
 - Statement of Compliance, 2
 - strategic directions 2010–2015, 2
 - vision, 2
 - visitors, 28–9
 - website, 88, 105
 - workshops, 36
- Australian Nuclear Science and Technology Organisation Act 1987 (ANSTO Act), 87*
- amendments to governance parts, 87
 - functions and powers of ANSTO under, 98–102
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), 14, 94, 103, 108
- Australian Standards committees, 15
- Australian Synchrotron, 33–4
- Australian wetlands research, 22
- B**
- Banati, Professor Richard, 5, 6, 30
 - Beckett, Michael, 5, 6
 - Best Small Project Award, 12
 - Bilby - time-of-flight SANS instrument, 26
 - Biomacromolecules, 19
 - Blazek, Jaroslav, 19
 - Blisset, Mr Robert (Rob), 5, 6
 - Board, 94
 - ANSTO Corporate Plan 2010–2015, 2

Audit & Risk Committee, 88, 90–1
 Charter, 88, 91
 Chief Executive Officer, 88–9
 disclosure of interests, 89
 functions, 87–8
 health, safety and environmental protection, 90
 independent professional advice, 89
 meetings, 88, 89
 members, 3–4, 88–9
 new leadership, 11
 remuneration and allowances, 89
 Remuneration Committee, 88, 91–2
 report of operations, 89–90
 risk management, 92–3
 bowel cancer, 19
 Bragg Institute, 1, 10, 27, 34, 36
 business continuity planning, 95
 businesses, 32–3
C
 capital investment, 36–7
 carbon dioxide monitoring, JB.24–5
 Carlson, Mr John, 31
 Carr, Senator Hon. Kim, 2, 9, 32
 CEA *see* French Atomic Energy Commission (CEA)
 Centre for Accelerator Science (CAS), 28, 37
 CERN *see* European Organisation for Nuclear Research (CERN)
 Chairman's Report, 7–8
Changing Climates, Earth Systems and Society, 14, 31
 Charles Darwin University, 23
 chemeca chemistry conference, 30
 Chief Executive Officer's Report, 9–10
 China, ancient
 farming and metallurgy in, 20
 Chinese Academy of Sciences, 9
 Chisari, Robert, 23
 climate change, 1, 20–3
 Changing Climates, Earth Systems and Society, 14, 31
 Code of Ethics, 93
 Cohen, Dr David, 31–2
 Cold Neutron Source, 26
 cold triple-axis spectrometer (SIKA), 26
 Cole, Stephanie, 5, 6
 Comcare, 94, 107
 Comcover, 87, 95
 Commonwealth Auditor-General, 93, 94
Commonwealth Authorities and Companies Act (CAC Act), 87, 88, 89, 91, 93, 95
 Commonwealth Authorities and Companies (Report of Operations) Orders 2005, 2, 89
 Commonwealth Ombudsman, 94
 community and education
 school tours, 29
 sponsorships, 29–30
 visitors, 28–9
 compliance, 87, 94, 113
 Comprehensive Test Ban Treaty, 106
 Cooperative Research Centre for Biomedical Imaging Development's (CRCBID) research program, 18, 19–20
 Copolov, Professor David, OAM., 3, 4, 11, 88, 90, 91
 cosmogenic radionuclide surface exposure dating, 21
 Craufurd-Hill, Jasmin, 30
 Cubbin, Douglas (Doug), 5, 6
 Cyclotek (Aust) Pty Ltd, 18, 20

Index

D

- Danilkin, Sergey, 14
- Darling River, effect of drought, 20
- Darwin Harbour, 23
- Darwish, Tamim, 24
- Davies, Justin, 30
- decommissioning
 - HIFAR, 28, 103, 105
 - Moata research reactor, 11–12, 28
 - National Medical Cyclotron (NMC), 28
- Deed of Indemnity, 87
- Department of Environment and Heritage, 105
- Department of Foreign Affairs and Trade, 17
- Department of Resources, Energy and Tourism, 11
- Dingo - neutron radiography, tomography and imaging station, 26
- Distinguished Lecture Series, 30–1
- Dodson, Professor Lyndon, 5, 6, 31, 35
 - book release, 14, 31
- Doser, Dr Michael, 31
- drought, effect on Darling River, 20

E

- East Antarctic Ice Sheet, 21
- Echidna - high-resolution powder diffractometer, 24, 26
- ecologically sustainable development (ESD), 105–6
- education *see* community and education
- Education Investment Fund, 26
- Edwards, Professor Lyndon, 5, 6
- electricity supplies, 13–14
- Embassy of Italy, 36
- emergency preparedness and responses, 110

- Emu - high-resolution backscattering spectrometer, 26
- Engineering Summit and Science meets Parliament events, 30
- engineering/technology
 - accelerators, 27–8
 - irradiation facility, 28
 - nuclear safety, 25
 - operation of OPAL and other facilities, 25–8
- environment and climate change, 20–3 *see also* climate change
- Environmental and Effluent Monitoring, 105
- environmental management system, 103
- environmental performance, 103
 - accurate measurements with independent verification, 103
- environmental protection, 103
 - ecologically sustainable development (ESD), 105–6
 - emissions to air, 103–4
 - environmental management system, 103
 - environmental performance, 103
 - liquid effluent discharges, 104–5
 - reporting, 105
 - water quality, 105
- Environmental Protection and Biodiversity Act 1999* (EPBC Act), 103–6
- Environmental Radioactivity Measurement Centre (ERMC), 36
- Equality of Employment Opportunity, 97
- ethics, 93
- European Organisation for Nuclear Research (CERN), 2, 33
- Executive Team, 5–6

external audit, 93

F

family services, 97

Felstead, Glen, 12

FlexLAB, 19–20

fraud control, 93

freedom of information, 111–12

- associated organisations, 111

- categories of documents, 111–12

- facilities for access, 112

- Liaison groups, 111

- requests, 112

- state government arrangements, 111

Freedom of Information Act 1982, 11–12

French Atomic Energy Commission (CEA),
2, 10

Fukushima Daiichi Nuclear Power Station,
7, 9, 17, 95

Fulbright Professional or Senior Scholarship
in Nuclear Science and Technology, 29

G

gallium-67 (Ga-67), 27

Gambell, Paul, 12

GATRI (Gamma Technology Research
Irradiator), 28

Gilbert, Elliot, 19

global sea levels, 21

GNS Science, 34

governance and performance, 87–95

- audits, 93

- Board, 87–93 *see also* Board

- ethical standards, 93

- fraud control, 93

- internal control, 93

- judicial decisions and reviews by
outside bodies, 94

- legislation covering, 87

- nuclear liability, 87

- professional development of
executives, 92

- risk management, 92–3

- Service Charter, 93

Great Barrier Reef, 22–3

Greenfield, Professor Paul, AO.,, 3, 4, 7–8,
11, 88, 90, 91, 92

Gregoire, Dr Marie-Claude, 5, 6

Greguric, Ivan, 18

Griffiths, Hefin, 5, 6

H

Hankin, Stuart, 23

HAZMAT Training, 110

health, safety and environmental
protection, 90 *see also* environmental
protection; occupational health and safety

Hearn, Professor John, 3, 4, 88, 90, 91

Heavy Water Isotopic Purification System
plant, 26

Heijnis, Professor Hank, 35

HEU (highly enriched uranium), 11

HIFAR reactor, decommissioning, 28, 103,
105

High Energy Accelerator Research
Organisation, 2

high-resolution backscattering
spectrometer (Emu), 26

Hodgkin's disease, 27

Hughes, Dr Cath, 23

Hutchings, Ron, 5, 6

I

IAEA, 106

IAEA International Working Group, 11

- Conversion Planning for Mo-99
Production Facilities, 11

IAEA Ministerial Conference on Nuclear

Index

- Safety, 9, 17
Iles, Jordan, 22
indemnities and insurance premiums, 94–5
Indemnity, Deed of, 87
Indonesian Counter Terrorism Cooperation, 17
Indonesian emergency preparedness and response (EPR) project, 17
industrial electrochemical processes, 25
Institute for Environmental Research, 8, 14, 31
Institute of Materials Engineering (IME), 15
 Company of the Year Award, 15, 31
Institute of Materials Structure Science (IMSS), High Energy Accelerator Research Organisation (KEK) MOU, 34–5
Integrated Waste Management Facility, 36–7
Interdepartmental Emergency Task Force, 17
internal audit, 93
International Atomic Energy Agency (IAEA), 106
International Commission on Radiation Protection (ICRP), 108–9
International Conference on Coordination Chemistry (ICCC 39), 30
International Nuclear Information System documents, 111
International Science Linkages program, 35
International Science Olympiads, 30
iodine 131 (I-131), 27
iodine-123 mIBG (I-123), 27
ion beam analysis (IBA) research, 37
ionic liquids, 25
irradiation services and facility, 1, 28
Italian and Australian Archaeology and Cultural Heritage Workshop, 36
- J**
James Cook University, 22
Japan
 earthquake and tsunami, 7, 9, 17
 High Energy Accelerator Research Organisation, 2
 Institute of Materials Structure Science (IMSS), High Energy Accelerator Research Organisation (KEK) MOU, 34–5
 Proton Accelerator Research Complex (J-PARC) neutron spallation source, 2, 35
Jenkinson, Shaun, 5, 6
Jones, Paul, 5, 6
judicial decisions and reviews by outside bodies, 94
- K**
key performance indicators, 39
Kimber, Alec, 12
Koala - single-crystal Laue diffractometer, 26
Kookaburra - ultra small-angle scattering instrument, 26
Korea Atomic Energy Research Institute (KAERI), 9
Kowari - residual-stress diffractometer, 26
- L**
Last Glacial Maximum, 21
LEU (low enriched uranium), 11, 13
Levin, Nadia, 5, 6
LHSTC airborne discharges, 104
LifeSciences, 8, 18, 20
liquid effluent discharges, 104–5
Lithium ion (Li-ion) batteries, 23–4
Local Liaison Working Party (LLWP), 110, 111
Lutetium-177 (Lu-177), 33
Lyras, Con, 5, 6, 35

M

McArdle, Amelia, 5, 6
Macleod, John, 12
McLoughlin, Ms Christine, 3, 4, 88, 90, 91
Malone, Geoff, 12
materials
 carbon dioxide, visual probes for, 24–5
 ionic liquids, 25
 Li-ion batteries, 23–4
 nuclear waste, 23
 radiation-tolerant, developing, 24
Mazumder, Debashish, 22, 30
medical radioisotopes, 1, 11, 13
 LEU targets, 13
melanoma, 8, 10, 18
microelectronics, 1
mining industry, 1
Minister for Innovation, Industry, Science and Research, 2, 9, 94
 ministerial directions, 94
Moata research reactor decommissioning, 11–12, 28
molecular logic-systems, 24–5
molybdenum-99 (Mo-99), 11, 12, 32–3
 export to US, 13
Monash University, 34
MOX fuel, 17
Murray-Darling Basin, 10
Myers, Dr Stephen, 31

N

National Deuteration Facility, 27
National Environmental Protection Measures, 105
National Medical Cyclotron (NMC), decommissioning, 28
National Nuclear Energy Agency of Indonesia (BATAN), 17

National Research Priorities, 35
National Youth Science Forum (NYSF), 29
Naude, Kobus, 5, 6
neutron beam instruments, 1, 26–7
neutron diffraction, 23–4
neutron radiography, tomography and imaging station (Dingo), 26
neutron scattering, 26
Neutrons and Food Workshop, 19
Northern Territory's Power and Water Corporation, 23
nuclear liability, 87
nuclear medicines, 1, 7–8, 13
nuclear plant breakdown in Japan, 7
nuclear safety, 25
nuclear waste, 1, 23

O

occupational health and safety, 107–10
 accidents and incidents, 107
 designated work groups (DWGs), 107
 emergency preparedness and responses, 110
 health and safety committees (HSCs), 107
 health and safety representatives (HSRs), 107
 occupational, health, safety and environmental management arrangements (OHSEMA), 107
 occupational radiation exposure, 108–10
 safety arrangements, 107
 safety initiatives, 107–8
Occupational Health and Safety Act 1991, 107–10
OECD Nuclear Energy Agency (NEA)
 High-level Group on Security of Supply of Medical Radioisotopes, 11

Index

Open Pool Australian Light-water Reactor (OPAL), 7, 8, 10, 11, 13, 25–6, 29, 33, 34, 103
building project, 37
neutron beam instruments, 1, 26–7
safety, 95
use, 1

P

Parkinson's Disease, 8, 10
particle accelerators, 1
partnerships and associated organisations, 33–6
Paterson, Dr Adi (Adrian), 3, 4, 5, 6, 9–10, 17, 32, 88
Pelican - time-of-flight spectrometer, 26
performance against strategic objectives, 39
Peter McCallum Cancer Centre, 18, 20
Photon Factory, 35
Platypus - neutron reflectometer, 26
pollutants in water, 23
Pond, Dr Susan, AM,, 3, 4, 88, 90, 91
Project Management Achievement Award, 12
Public Works Committee of the Australian Parliament, 27

Q

Quality Management Systems, 103
Quokka - small-angle neutron scattering instrument (SANS), 26, 34

R

radiation exposure, 108–10
ANSTO workers, 109, 110
radiation-tolerant materials, developing, 24
radiocarbon dating in China, 20
radiopharmaceuticals, 32
exports, 27

FlexLAB, 19–20
Me1050, 18
next generation, 18–19
production facilities, 27
shortage, 7–8

RemLife, 13–14

Remuneration Committee, 88, 91–2
meetings, 92
members, 92

Remuneration Tribunal, 89, 91

reporting guidelines, 113

risk management, 92–3

Robinson, Dr Robert, 5, 6

Ryan, Mr John, PSM,, 3, 4, 11, 88, 90, 91, 92

S

safety, 9, 25, 107 *see also* occupational health and safety
initiatives, 107–8

science research and innovation, 1

Scott, Professor Andrew, 3, 4, 88, 90, 91

sediment studies, 22–3

Shanghai Institute of Applied Physics (SINAP), 35

Sharma, Neeraj, 24, 30

SIKA - cold triple-axis spectrometer, 26

Simms, Gary, 12

Sloggett, Associate Professor Robyn, 31

small-angle X-ray scattering (SAXS) beamline, 34

Small Tandem for Applied Research (STAR) accelerator, 22, 27

Smyth, Ms Erica, 3, 4, 88, 90, 91

software for reliable power supply, 13–14

South Pacific Environmental Radioactivity Association Conference (SPERA 2010), 30

sponsorships, 29–30

staff achievements, 31–2

Storr, Dr Greg, 5, 6

Suter, Professor (Emeritus) Martin, 31

Sutherland Shire Australia Day events, 30

Switkowski, Dr Zygmunt (Ziggy), 11, 88, 92

Sydney Water, 104

Synchrotron and Neutron New Users Symposium, 34

Szabo, Alexander, 30

T

Taipan - thermal triple-axis spectrometer, 14, 26

technetium-99m (Tc-99m), 13, 32–3

thallium-201 (Tl-201), 27

Thomlinson, Dr William, 31

time-of-flight SANS instrument (Bilby), 26

time-of-flight spectrometer (Pelican), 26

Trade Waste Agreement, 104

U

ultra small-angle scattering instrument (Kookaburra), 26

uranium

highly enriched (HEU), 11

low enriched (LEU), 11

Uranium Mining, Processing and Nuclear Energy Review (UMPNER), 11

US Department of Energy, 8

V

Vikatos, Steve, 35

visitors, 28–9

W

Wehe, Professor David, 31

Weiner, Dr Ron, 5, 6

Weir, Michael, 30

Welding Technology Institute of Australia (WTIA)

Company of the Year Award, 15

Panels, 15

wetlands, 22

Wilton, Mr Warren, 90, 91

Wombat - high-intensity powder diffractometer, 24, 26

workshops, 36

World Health Organization (WHO), 104

Y

Yethiraj, Mohana, 14

Z

Zettinig, Michael, 30

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